Professional Factors Influencing Support in Paediatric Traumatic Brain Injury

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Abstract

A traumatic brain injury (TBI) results from a head trauma, such as from an accident or fall. TBIs can cause neuropsychological difficulties, which can be hidden or misdiagnosed. This can cause professional misunderstandings and misattributions, which can lead to inappropriate strategies being adopted. As a result, research into how professionals can best support brain-injured children is vital. A systematic literature review investigated the effectiveness of brain injury training on improving knowledge of parents and children impacted by brain injury, and professionals working with brain-injured children. Sixteen studies met the review criteria and were critically appraised using Gough's 'Weight of Evidence' framework. Findings demonstrated emerging evidence for the effectiveness of brain injury training immediately post-training, but was inconclusive longer-term. The empirical paper used a fully mixed sequential equal status design to explore professionals' TBI knowledge and attributions towards brain-injured children. The quantitative aspect utilised a survey to assess professionals' TBI knowledge. A between-subjects ANOVA demonstrated inter-professional differences, with health professionals having the greatest TBI knowledge, and education professionals having the least. In addition, the mean knowledge score of all professionals was less than 55%, indicating a lack of TBI knowledge across all professions. The qualitative aspect involved semi-structured interviews, which assessed professionals' attributions towards brain-injured children at three time points: pre-TBI, post-presentation change, and post-TBI diagnosis. Data was analysed using an exploratory multiple case study design. Attributions changed according to behavioural presentation, which was

consistent with Attribution Theory. Professionals also attributed each child's presentation change to the TBI, once this had been revealed, providing support for Labelling Theory. Data gathered also demonstrated that, when working with brain-injured children, professionals valued multi-disciplinary working and believed their roles could be both distinct and overlapping. Strengths, limitations and implications for practice, as well as future research, are discussed.

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Impact Statement

The findings of this research are relevant to all professionals who work with children and adolescents who have experienced a traumatic brain injury (TBI). It is also pertinent to charities who work with this population and the families and systems impacted by paediatric TBI. Researchers working in the fields of neuropsychology, health psychology, educational psychology, social care, health and education will also find this research of importance.

Firstly, the review paper reported evidence that brain injury training can be of benefit in raising the knowledge acquisition of parents, children and adolescents impacted by brain injury, and professionals working with brain-injured children, in the immediate period after training has taken place.

Secondly, the empirical paper found that there was a significant difference in the TBI knowledge among educational psychologists (EPs) and education, health and social care professionals. It also found that multi-disciplinary working around brain-injured children was valued by all professional groups working with this population and that the perceived roles and responsibilities of each professional group were seen as both distinct and overlapping. Evidence for Labelling and Attribution Theory was also found across all professional groups, with each making different attributions regarding a young person's presentation depending on the difficulties they presented with and how these challenges were labelled.

In order for the current research to be disseminated to interested and relevant audiences, the findings will be presented through both academic and professional journals, at conferences and through charitable organisations who have an interest in brain injury.

Chapter 1: Introduction to Thesis

1.1 Introduction

This introductory chapter provides an overview of the entire thesis, and includes the rationale for the topic selection, alongside epistemological and theoretical perspectives. It aims to provide an outline of the overall organisation of the thesis, as well as making explicit any assumptions that have been made by the researcher. Conceptual links between the review and empirical papers are also discussed alongside the unique contribution both have made to the research literature.

1.2. Rationale for Topic Selection

This thesis explored the effectiveness of brain injury training in increasing the knowledge of parents and children impacted by brain injury, and professionals working with brain-injured children. In addition, it assessed whether there were differences in TBI knowledge between key professional groups. Attribution Theory was also used as a framework to examine professionals' attributions towards children pre- and post- injury and the importance of multi-disciplinary working, the barriers and facilitating factors of doing this and professionals' perceived roles and responsibilities when working with brain-injured children, was also examined.

Brain injury studies typically include research participants who have experienced a TBI. This is because, it is usually known when, how and why a TBI occurred, which makes it easier to identify and analyse comparable data (Hughes et al., 2018). It is for this reason that TBI was the focus of this thesis. The terms 'ABI' and 'brain injury' are used in the general narrative to provide context and a wider understanding of the issues surrounding brain injury.

A child or adolescent may acquire a brain injury through a variety of means. These include a traumatic injury caused by a fall, accident, or sports injury; an illness such as a stroke, tumour or epilepsy; metabolic disorders such as a diabetic coma, infections such as meningitis, or a medical procedure such as epilepsy surgery or removal of a tumour. In order to meet the criteria for an acquired brain injury (ABI), the injury must have occurred after a period of normal development, therefore the term does not apply to children who have sustained a brain injury neonatally or during birth.

ABI is a hidden epidemic affecting many hundreds of thousands of people (UKABIF, 2018). Its impact can be hard to quantify due to a dearth of information in this area (Hawley et al., 2003) and inconsistencies in the definitions used, data collection methods and reporting. In addition, much of the research literature around this area relates to TBI, leading to underestimations in data around ABI (UKABIF, 2018). Estimates for solely TBI, indicate that 3% of the school population will be impacted by adolescence (Mira et al., 1992). This figure may also be an underestimate of true incidence rates as the number of children who sustain a brain injury but did not attend hospital are not accounted for. This indicates that TBIs constitute a major health issue in the UK. As a result, it is vital that accurate information is recorded on its prevalence and impact to enable professionals involved in rehabilitation to plan appropriate care and support.

The situation for many brain-injured children is also made more complex by the circumstances in which they find themselves. For example, research shows that children and adolescents are more likely to experience a brain injury if they are male (Frost et al., 2013), come from a disadvantaged

background (Trefan et al., 2016), live in an urban area (Yates et al., 2006), are a ‘person of colour’ (Brenner et al., 2020, p.801) or have experience of mental health difficulties (NASEN, 2018). This may lead to professionals associating a child’s difficulties with these factors rather than considering that they may have experienced a brain injury.

The UK government formed the All-Party Parliamentary Group for ABI in November 2017, with the aim of raising awareness of ABI, providing a voice for those impacted by ABI within government, and raising key issues related to ABI across health, social care and welfare settings. In 2018, the Sequential Intercept Model was developed by the same group, in order to disrupt the negative trajectories that can occur following brain injury, through encouraging the joint working of professionals supporting brain-injured children and adolescents (Hughes et al., 2018). This was deemed important as research indicated that early intervention, and on-going support from both health and education, reduced long term costs to public services and improved a range of life outcomes. In addition, as TBI is associated with increased risk of perpetrating a crime (Williams et al., 2018), this model aimed to improve access to justice, and prevent ongoing involvement in crime, through more effective multi-disciplinary working. Despite the development of this model, research demonstrates that multi-disciplinary practices among professionals working with brain-injured children and adolescents remains inconsistent (Li et al., 2022).

This topic area was chosen as, despite the World Health Organisation (WHO) ranking TBI as the leading cause of disability and mortality in children and young adults worldwide (Hyder et al., 2007), research shows that

professionals working with brain injury survivors do not have the wealth of knowledge required to be able to effectively support them (UKABIF, 2018). Due to the high prevalence and potentially long-term serious impact of this type of injury, it is important that all professionals who work with brain-injured children understand how to support their diverse needs. Despite this, research suggests that brain injury training is not routinely provided to all professionals leading to a lack of awareness and understanding of the needs of brain injury survivors (Watts et al., 2011; Linden et al., 2013).

In addition, a lack of brain injury knowledge among professionals may also indicate that any training that has been carried out has been ineffective. Research on what makes effective adult learning indicates that training needs to incorporate certain facets to be successful in maintaining knowledge in the long-term. Knowles (1984) argued that, as adults typically have greater autonomy over their learning than children, it is important that training incorporates self-directed learning and is rooted in the individual's experience. This is important as Wolf and Kolb (1984) report that learners may be at different stages of their learning journey and this will impact the learning activities and styles they can access and may prefer. This means that any brain injury training should be devised with the learners' current knowledge base and experience in mind and provide an extension of this knowledge and experience as part of the training, incorporating self-study as part of the process. Binstead's (1982) Lancaster model of learning also emphasised the importance of incorporating the learner's existing knowledge with any new ideas presented. Binstead argued that there were three types of learning cycles: reflection (gathering thoughts before starting an activity),

discovery (mode of learning when doing an active task) and reception (receiving information from a lecture/book etc.) and that effective learning takes place when several iterations of these three cycles have taken place. If the brain injury training that professionals, parents or children have attended has not included these components, it is less likely that the knowledge gained will be maintained and applied to brain-injured children.

Research indicates that the impact of this lack of knowledge and understanding is that these children develop negative trajectories including social and school exclusion and increased probability of being involved with Youth Offending Services. As a result, it is important to have a better understanding of how successful TBI knowledge acquisition is achieved so that brain-injured children receive appropriate support to help them have more positive outcomes.

While physical disabilities are more easily apparent, a large majority of individuals with brain injury have ‘hidden’ disabilities which affect memory, judgement, behaviour and other higher functions. Although these are less obvious, they can be as disabling and be misinterpreted by employers and professionals, and result in loss of employment, relationship breakdown and social isolation, further demonstrating the importance of increasing the wider public’s TBI knowledge.

1.3 Epistemology and Theoretical Perspectives

Overview

Epistemology is an important consideration in the research process. It aims to describe an individual’s assumptions and beliefs around the nature of

knowledge, how it is obtained and how we ascertain what we believe to be true (Lincoln & Guba, 2000). Crotty (1998) argues that there are three key epistemological positions: objectivism, subjectivism and constructionism. Objectivism refers to the belief that reality is there to be discovered and that the concrete world exists beyond human interpretation (Barker et al., 2016). Subjectivism differs as it posits that reality only exists within human interpretation and that there is not a concrete world outside of human interpretation. Finally, constructionism argues that reality is a social construct derived by the individuals who experience it (Gergen, 1999). This perspective allows for individuals to have different constructs about the same concepts as each person experiences the world differently and will therefore interpret the world in their own unique way.

Epistemological and Theoretical Perspectives

As this research aimed to better understand the knowledge and attributions of professionals working with children and adolescents with a TBI and the researchers' implicit belief was that each individual would derive their own attributions from their own knowledge and experience, it was felt that a constructionist epistemology was best suited to this research.

Constructionism supports different theoretical perspectives, which include critical realism, social constructivism and social constructionism. It was felt that critical realism was most suited to the current research as this posits that the real world cannot be fully understood with certainty as all individuals' knowledge is subjective (Madill et al., 2000). It also accepts that human activity has led to the existence of the social world, which supports the hypothesis-generating nature of this research, the role of an EP and

specifically fits in with the use of Attribution Theory to better understand professionals' perspectives of children with a TBI.

Methods and Methodology

The mixed methods approach used in this research also fits with the critical realist perspective as it has been argued that this stance suits both qualitative and quantitative approaches (Shannon-Baker, 2016). Mixed methods approaches have been criticised by researchers such as Collins et al. (2007) as they believe that quantitative and qualitative research come from different paradigms and are therefore not comparable. Critical realists disagree with this as they believe that theoretical perspectives cannot provide the whole picture. They believe that qualitative research adds value as it takes into consideration the perspectives of the individual and understands that each viewpoint can be different, thus contributing to the whole. Bhaskar (1998) is considered the originator of the critical realist approach and he supports this view. He argues that when we are studying the human world, we are studying something fundamentally different to the physical world therefore different tools need to be utilised. He argues that the use of measurement tools can interrupt how the observer interprets the observed and using solely quantitative measures can actually hinder our understanding of reality. As a result, a mixed methods approach, where individual perspectives are gathered alongside quantitative data, was deemed to best meet the aims of this research.

It is also important for researchers to be reflexive and understand how their own viewpoints, values and assumptions, may introduce biases into the research process. This is especially important in qualitative research approaches such as Thematic Analysis (Braun & Clark, 2006), which was used in the empirical paper. This reflexivity requires a consideration of the ways in which the researcher's own characteristics, experiences and knowledge may influence their interactions with any new data gained about participants' experiences (Peat et al., 2019) and influence data interpretation. As part of my own considerations, I reflected on my time prior to starting the Doctorate in Educational and Child Psychology at UCL, when I worked as a teacher and SENCO for over twenty years. Despite this extensive experience working with children and adolescents with additional needs, I became aware of my own lack of knowledge of brain injury through teachings on the Doctorate. It was this acute awareness of my own shortcomings, and my reflections on why this occurred, that shaped my interest in this field and provided a motivation to find out more about the knowledge of other professionals, how this could be best acquired and the impact a lack of TBI knowledge could have across different professional groups. Through the reflexivity process, it was acknowledged that my experiences could influence the current research and, if not properly checked, could affect the interpretation of the qualitative results. As a result, I facilitated a peer review and the member checking of my thematic coding and adjusted the themes accordingly, where necessary.

1.4 Thesis Organisation and Distinct Contribution

This thesis is made up of three parts: The Review Paper (Chapter 2), The Empirical Paper (Chapter 3) and Dissemination and Impact (Chapter 4), each of which are discussed in turn below.

Chapter 2, the Review Paper, systematically scrutinised the effectiveness of brain injury training on improving the knowledge of professionals, parents and children impacted by brain injury. A literature search was initially carried out in July 2021, and then repeated in August 2022, using the PsychINFO (OVID), SCOPUS and ERIC (EBSCO) databases. Sixteen papers were included in the review, all of which were published between 2009-2021. The included studies were rated using Gough's (2007) Weight of Evidence framework and coded using Gersten et al.'s (2007) protocol. Using these tools enabled the researcher to objectively assess if the papers' findings adequately answered the review question posed. They also facilitated the review of each study's methodological design.

The results of the Review Paper indicated that brain injury training was effective in increasing the knowledge of professionals, parents and children impacted by brain injury. The effectiveness was felt most immediately after the training; however, results were inconclusive as to whether knowledge was maintained in the long term. Implications for EP practice and recommendations for future research are discussed.

Chapter 3, the Empirical Paper, was entitled *'Working with Children with a Traumatic Brain Injury (TBI): The Knowledge and Attributions of EPs and Education, Health and Social Care Professionals.'* This paper focused more specifically on the role of professionals in supporting brain-injured children

and, how professionals' knowledge and attributions about brain-injured children impacted their feelings of competence and the support they provide.

The empirical paper had a mixed methods design and comprised of two parts: a survey and a semi-structured interview. The survey was completed by 120 participants which comprised of educational psychologists (n=43) and education (n=43), health (n=20) and social care professionals (n=14). The survey was devised from three existing instruments, namely the Common Misconceptions about Traumatic Brain Injury Questionnaire [CM-TBI] (Gouvier et al., 1988); the Head Injury Knowledge Scale [HIKS] (Ono et al., 2011) and the Informal Carer's Knowledge of Traumatic Brain Injury Questionnaire [IC-KTBIQ] (Bamatraf et al., 2020). These three surveys were revised to ensure they were appropriate for this research and then combined to make one survey, which was created using Opinio, an online survey platform. A between-subjects ANOVA was carried out to analyse whether there was a difference in knowledge scores between the professional groups, and this was found to be the case with a significant difference in the effect of 'professional groups' on knowledge scores achieved. A profile plot of the estimated marginal means indicated that health professionals had the strongest knowledge scores, with EPs second, social care professionals third and education professionals holding the lowest TBI knowledge on average. Further between-subjects ANOVAs were carried out to determine if there was a significant difference between professional groups and the different strands of knowledge being tested in the survey namely: 'cognition and learning'; 'behaviour and emotion'; 'recovery and rehabilitation' and 'physical' difficulties. A significant difference between 'professional group' and

knowledge scores was found in all areas except ‘behaviour and emotion’. Across each domain, health professionals demonstrated the most amount of knowledge and education professionals demonstrated the least. Educational psychologists and social care professionals typically had similar knowledge scores, with EPs typically scoring slightly higher except in the area of ‘cognition and learning’.

To explore the impact of attributions on the support given to brain-injured children, a semi-structured interview was carried out with 16 participants, four from each professional group. This required participants to answer questions about their attributions towards two children presented across two vignettes. Results were then analysed using an exploratory multiple case study design, which included a thematic analysis and the calculation of code frequencies. Results supported Attribution Theory as professionals’ attributions altered as the children’s presentations changed. A further attribution of ‘Professional Competency’ was also derived as professionals reflected on their own practice as the children in the vignettes presentation changed. In addition, when it was revealed that both children had experienced a TBI, this was the sole reason professionals gave for the children’s change in presentation, providing support for Labelling Theory. Data gathered also indicated that, when working with brain-injured children, all professionals valued multi-disciplinary working and felt that their roles were both distinct and overlapping. Strengths, limitations and implications for practice as well as future research are discussed.

Chapter 4, the final chapter, provides an overview of existing literature regarding evidence-based practice and practice-based evidence, as well as

providing a detailed overview of the impact of this research and future plans for dissemination, including a timeline.

1.5 Conceptual Links between the Review and Empirical Papers

Chapter 2, the Review Paper, and Chapter 3, the Empirical Paper, are distinct in their contribution to increasing awareness of TBI in educational psychology but are also conceptually linked in a number of ways.

Firstly, Chapter 2 analysed the effectiveness of brain injury training on knowledge acquisition whilst Chapter 3 aimed to further understand professionals' current knowledge and understanding of TBI and how this was developed and maintained. This indicates that, whilst distinct in their contribution to TBI knowledge in educational psychology, they both relate to TBI training and knowledge acquisition, which is important in ensuring the correct support is given to brain-injured children.

Secondly, the research outlined in Chapter 3 considered the impact professionals' attributions have on the support provided to brain-injured children. This provides a conceptual link to Chapter 2 as Medway (1979) found that professionals' TBI knowledge can impact the attributions they make about brain-injured children. As such, it is important to be aware of how best to develop professionals' TBI knowledge in order to understand where misattributions may occur.

Finally, the findings in Chapter 2 demonstrated that brain injury training can be beneficial in the short term but that knowledge is not necessarily maintained in the longer term. This corresponds with findings in Chapter 3, which found that the mean knowledge scores on the TBI survey, across all

professional groups, was 55% or less indicating TBI knowledge had not been maintained. This is despite many of these professionals receiving brain injury training either as part of their professional training or as part of their professional development. This further indicates the importance of understanding if brain injury training is effective (Chapter 2), and, if so, what makes it effective, in addition to the impact TBI knowledge acquisition has on professionals' attributions and the support they provide (Chapter 3).

This demonstrates that Chapter 2 and 3 are both distinct in their contribution to the educational psychology knowledge base around TBI, yet conceptually linked.

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Chapter 2: Review Paper

What is the Effectiveness of Brain Injury Training in Increasing the Knowledge of Professionals, Parents and Children?

2.1 Abstract

The purpose of this review was to evaluate the effectiveness of brain injury training on improving the knowledge of parents and children impacted by brain injury, and professionals working with brain-injured children. International literature was reviewed so that the UK, and other countries, could ensure that the most effective means of acquiring TBI knowledge was being utilised. A comprehensive literature search was carried out in July 2021, and repeated in August 2022, using the PsychINFO (OVID), SCOPUS and ERIC (EBSCO) databases. Sixteen studies met the review's inclusion criteria and were all based in the US. These were evaluated using Gough's (2007) Weight of Evidence (WoE) Framework. The medium to large overall quality of the reviewed studies, along with the medium to large effect sizes in most included studies, suggested that brain injury training can be recommended as evidence-based practice (Gersten et al., 2005) and should be considered a useful intervention from a UK and international perspective.

Limitations of the review, along with recommendations for educational psychology practice and for future research, are discussed.

2.2 Introduction

2.2.1 Brain Injury

An acquired brain injury (ABI) is defined by the British Psychological Society (BPS) (2006) as damage to the central nervous system caused by a traumatic injury, illness or infection. It is the leading cause of disability in children (Forsyth & Kirkham, 2012) and it is estimated that around 40,000 children visit hospitals each year with a brain injury, with many more children likely impacted. Those who have sustained a brain injury can experience a range of neuropsychological difficulties including problems with their attention, memory, fatigue, feelings of wellbeing and social isolation (Davies & Tedesco, 2018) among other issues. These can impede the child's everyday life and can have a negative impact on their academic success and lead to social and school exclusion (Oddy et al., 2017). Due to the high incidence of brain injury, and the potentially damaging and long-term impact of it, it is important that professionals, parents and brain-injured children are well-informed of the potential consequences of a brain injury and the support required should this occur. Despite this, prior research indicates that there is a significant gap in the knowledge of professionals in the UK (Watts et al., 2011; Linden et al., 2013) and the US (Ettel et al., 2016) with slightly higher brain injury knowledge reported in educators who specialise in special educational needs. This is concerning as, if professionals, parents and children are not adequately informed, it may lead to a child's academic, behavioural and social difficulties being misinterpreted, which could lead to incorrect adaptations being made and leave them vulnerable to social and school exclusion among other long-term effects (Glang et al., 2015).

2.2.2 Brain Injury Training

Research supports the notion that brain injury training can lead to increased awareness, knowledge, recognition and response rates in professionals working with brain-injured children (Covassin et al., 2012). Despite this, providing appropriate training, that is relevant to all children with a brain injury, can be challenging. This is because acquired brain injuries can be caused by trauma, illness or infection, and can therefore impact the brain, and the injured person's presentation, in different ways. This means that training needs to be personalised accordingly.

In addition, research on what makes training effective has shown that it is important to include several cycles of reflection, reception and discovery in order for effective learning to take place and for the knowledge gained to be applied to a real-world context (Binstead, 1982). 'Reflection' takes place when the learner is able to gather their thoughts and reflect on current knowledge and experiences before starting a new activity. This is believed to be important as it enables connections to be made between past knowledge and experiences and the new learning (Schon, 1987). 'Reception' is the receiving of information, such as from another person through a lecture or through self-directed learning and 'Discovery' is the learning that takes place through applying new knowledge to an activity. 'Reception' and 'Discovery' are thought to be important as they facilitate new knowledge being gained and applied to the workplace (Fraser & Greenhalgh, 2001) and encourage an active learning process. This is as opposed to a more didactic and passive learning process, which has been shown to be less effective when applying new knowledge to a real-life context (Khan & Coomarasamy, 2006).

There are a number of recognised programmes of training that seek to inform professionals, parents and children about brain injury. Some of these include: BrainSTEPS (Colarado Department of Education, 2021); Heads Up (Centers for Disease Control and Prevention, 2021); Return to Learn Concussion Team Model (Ohio Department of Health, 2016); In the Classroom After Concussion: Best Practices for Student Success (The Center on Brain Injury Research and Training [CBIRT], 2021); BrainSTARS (Dise-Lewis et al., 2002); ACTive: Athletic Concussion Training (Oregon Center for Applied Science, 2021); Understanding Childhood Acquired Brain Injury (Child Brain Injury Trust [CBIT], 2022) as well as other study-specific training programmes.

Each training programme focuses, in varying degrees, on paediatric brain injury signs and symptoms, identification and immediate response, 'return to learn' and 'return to play' protocols (Davies & Tedesco, 2018), accommodations and adjustments recommended, the management of the cognitive, behavioural and social changes post-brain injury, effective approaches to behaviour and learning problems, and educational laws and rights.

Due to the coronavirus restrictions, online training has become more common in recent years. However, there has always been a longstanding interest in online training delivery due to the increased accessibility, cost effectiveness and convenience of such an approach (Glang et al., 2010). Online training was adopted in half of the studies reviewed in this paper. Research indicates that there are not always significant performance differences between online and in-person training. However, in-person

training has been described as more engaging and easier to facilitate discussion work (Kemp & Grieve, 2014). Research also indicates that attention lapses are equally likely in both instances (Szpunar et al., 2013). Two systematic literature reviews indicated that online training was as effective as in-person training when improving healthcare provider knowledge (Richmond et al., 2017; Cook et al., 2008). This indicates that both types of training can carry equal weighting in relation to their effectiveness and ability to engage.

2.2.3 Rationale and Relevance

Due to the high prevalence of brain injury, and the potentially damaging and long-term impact of this type of injury, it is important that all professionals who work with brain-injured children understand how to support the diverse needs of this population. Despite this, a recent report suggested that brain injury training is not routinely provided to all professionals leading to a lack of awareness and understanding of the needs of this population (Linden et al., 2013). This has led some to argue that ABI should be a distinct category within the SEND Code of Practice (Department for Education and Department for Health [DfE & DH] (2014) due to its high prevalence and the severity of the impact it can have on children's lives. Raising the profile of ABI through brain injury training is especially important as the consequences can be invisible or misdiagnosed, which can lead to misinterpretation of a child's difficulties.

In the UK and US, educational psychologists (EPs), or school psychologists as they are known in the US, are well placed to support children post-brain injury. This is because they are responsible for assessing, identifying,

planning and evaluating educational interventions that could be used to support this population. This may be direct support to the child but could also include the training of parents and professionals working with brain-injured children. As a result, it is important that a review of brain injury training is carried out to ensure that it is an effective intervention for EPs to recommend and deliver.

2.2.4 Review Question

What is the Effectiveness of Brain Injury Training in Increasing the Knowledge of Professionals, Parents and Children?

2.3 Critical Review of the Evidence Base

2.3.1 Literature Search

A systematic literature search using PsychINFO (OVID), SCOPUS and ERIC (EBSCO) databases was carried out on 22nd July 2021 and repeated on 19th August 2022. The search terms used across all four databases are outlined in Table 2.1 and were confined to peer-reviewed journal articles and dissertations. Ancestral and citation searches were also conducted on articles selected for inclusion in the review.

Table 2.1: Search Terms used in this Systematic Literature Review

Search Term	Rationale
brain injury OR ABI OR TBI OR concussion OR acquired brain injury OR traumatic brain injury	These terms were used as this review was interested in studies about the effectiveness of brain injury training
Child OR children OR childhood OR youth* OR young pe* OR adolescent OR adolescence OR girl* OR gender OR boy OR juvenile* OR minor* OR teen* OR school* OR young OR pediatric OR paediatric	This review was interested in brain injury training which focuses on improving the outcomes of children with a brain injury
training OR psychoeducation OR INSET OR professional development OR programme OR teach OR learn OR intervention OR support OR TBI Consulting Team OR BrainSTARS OR In the Classroom with Brain Injury for Educators OR BrainSTEPs	This review was interested in studies measuring knowledge outcomes from brain injury training. Training can be described in numerous ways including by the name of the intervention or by the term used in a specific country.
teacher OR teaching assistant OR mentor OR psychologist OR social worker OR youth worker OR educators OR school professionals OR education OR social care OR healthcare OR parents OR caregivers OR coaches	This review was interested in studies measuring knowledge outcomes of brain injury training for professionals working with brain-injured children, parents of brain-injured children or children with, or at risk of, a brain injury.

2.3.2 Article Screening

Database, ancestral and citation searches, yielded 887 results. Two duplicates were removed before title and abstract screening was carried out on 885 studies to determine eligibility for inclusion in the review. At this stage, the inclusion and exclusion criteria were applied (see Table 2.2), and a further 860 records were excluded. This meant 25 articles remained for 'full-text' screening. 9 studies were removed at this stage (see Appendix A), leaving 16 studies eligible for review (see Table 2.3). This process is outlined in a flow diagram in Figure 2.1.

Table 2.2: Inclusion and Exclusion Criteria with Rationale

Criterion	Inclusion	Exclusion	Rationale
Location	Worldwide scope	No geographical location excluded	To ensure an international perspective was derived, where possible
Participants	All professionals working with children and adolescents with a brain injury[a], children and adolescents with or at risk of a brain injury and parents of a child with a brain injury	Professionals not working with children with a brain injury Children and adolescents without, or not at risk of, a brain injury and parents of a child without a brain injury	To assess the impact of training on the professionals who work most closely with brain-injured children, the children themselves and their parents
Intervention	Brain injury training designed to improve the brain injury knowledge of those being trained	Non-brain injury focused interventions Brain injury not the main focus of the training	To assess the impact of brain injury training on knowledge when compared to other approaches
Type of Study 1	Randomised Control Trial (RCT) Quasi-experimental designs	Studies with no pre- and post- training data	RCTs and quasi-experimental designs are suitable for effectiveness questions such as the one posed in this review (Petticrew & Roberts, 2003)
Type of Study 2	Must examine the relationship between brain injury training[b] and recipient's knowledge	Systematic literature reviews Meta-analysis	To review original findings

Language	Published in the English language	Not published in the English language	To ensure full understanding and correct interpretation
Type of Publication	Peer reviewed journal articles and dissertations	Non-peer reviewed literature excluding dissertations	To ensure the methodological quality has been scrutinised
Outcomes	Must measure the recipient's knowledge of brain injury pre- and post-training	Outcome measures not related to knowledge gained as a result of a brain injury	To ensure construct validity of findings
Data source	Primary data set	Data that has not been compiled for the purpose of the study	To ensure the validity of the data set
Publication Date	The article is published on or before 19th August 2022	The article is published after 19th August 2022	To ensure all articles on the date of the literature search are considered for inclusion

a The type of brain injury is not specified in the inclusion criterion as there are a variety of causes of brain injury outlined in the literature

b. The nature of brain injury training is evaluated in Weight of Evidence C; if a study explicitly claimed the main focus of the training was brain injury, it met the inclusion criterion.

Table 2.3: References of Included Studies

	Studies in this Review
1	Davies, S. C., & Tedesco, M. F. (2018). Efficacy of an Online Concussion Training Programme for School Professionals. *Contemporary School Psychology, 22*, 479-487. https://doi.org/10.1007/s40688-018-00213-0
2	McCart, M., Glang, A. E., Slocumb, J., Gau, J., Beck, L., & Gomez, D. (2020). A Quasi-Experimental Study Examining the Effects of Online Traumatic Brain Injury Professional Development on Educator Knowledge, Application and Efficacy in a Practitioner Setting. *Disability and Rehabilitation, 42*(17), 2430-2436. https://doi.org/10.1080/09638288.2019.1578423
3	Dise-Lewis, J. E., Lewis, H. C., & Reichardt, C. S. (2009). BrainSTARS: Pilot Data on a Team-Based Intervention Programme for Students who have Acquired Brain Injury. *Journal of Head Trauma Rehabilitation, 24*(3), 166–177. https://doi.org/10.1097/HTR.0b013e3181a7ecb0
4	Finn, C. (2020). Effects of a Faculty Training Programme on Knowledge and Awareness of Student Concussion and Academic Performance. *Journal of American College Health, 70*(2), 453-460. https://doi.org/10.1080/07448481.2020.1754220
5	Glang, A., Koester, M. C., Beaver, S., Clay, J., & McLaughlin, K. (2010). Online Training in Sports Concussion for Youth Sports Coaches. *International Journal of Sports Science and Coaching, 5*(1), 1–11. https://doi.org/10.1260/1747-9541.5.1.1

6 Glang, A. E., McCart, M., Slocumb, J., Gau, J. M., Davies, S. C., Gomez, D., & Beck, L. (2019). Preliminary Efficacy of Online Traumatic Brain Injury Professional Development for Educators: An Exploratory Randomized Clinical Trial. *Journal of Head Trauma Rehabilitation, 34*(2), 77–86. https://doi.org/10.1097/HTR.0000000000000447

7 Kroshus, E., Buth, D., Parsons, J. T., & Hainline, B. (2019). Randomized Evaluation of the National Collegiate Athletic Association's Concussion Education Fact Sheet for Coaches. *Health Education and Behavior, 46*(6), 960–968. https://doi.org/10.1177/1090198119864621

8 Davies, S. C., & Ray, A. M. (2014). Traumatic Brain Injury: The Efficacy of a Half-Day Training for School Psychologists. *Contemporary School Psychology, 18*(1), 81–89. https://doi.org/10.1007/s40688-013-0003-5

9 Hunt, T. N. (2015). Video Educational Intervention Improves Reporting of Concussion and Symptom Recognition. *Athletic Training Education Journal, 10*(1), 65–74. https://doi.org/10.4085/100165

10 Mgonja, B. W. (2016). *Concussion Education and Management for School Nurses.* Available from ProQuest Dissertations and Theses, 94. Retrieved from: https://www.proquest.com/docview/1868415397?accountid=17242 [Accessed on 22 July 2021].

11 Cuthbert, R. (2018). *A Quasi-Experimental Study of the Effectiveness of Pennsylvania's Mandatory Concussion Education Programme for High School and Middle School Football Coaches (Order No. 10747464).* Available from ProQuest Dissertations & Theses Global. (2026947453). Retrieved from: https://www-proquest-com.libproxy.ucl.ac.uk/dissertations-theses/quasi-experimental-study-effectiveness/docview/2026947453/se-2?accountid=14511 [Accessed on 22 July 2021].

12 Maitz, S. (2020). *The Effect of a Novel Peer Concussion Education Programme on Knowledge of Concussion, Intent to Report and Ability to Report Concussion among Collegiate Student-Athletes (Order No. 28095204).* Available from ProQuest Dissertations & Theses Global. (2450283274). Retrieved from: https://www-proquest-com.libproxy.ucl.ac.uk/dissertations-theses/effect-novel-peer-concussion-education-programme-on/docview/2450283274/se-2?accountid=14511 [Accessed on 22 July 2021].

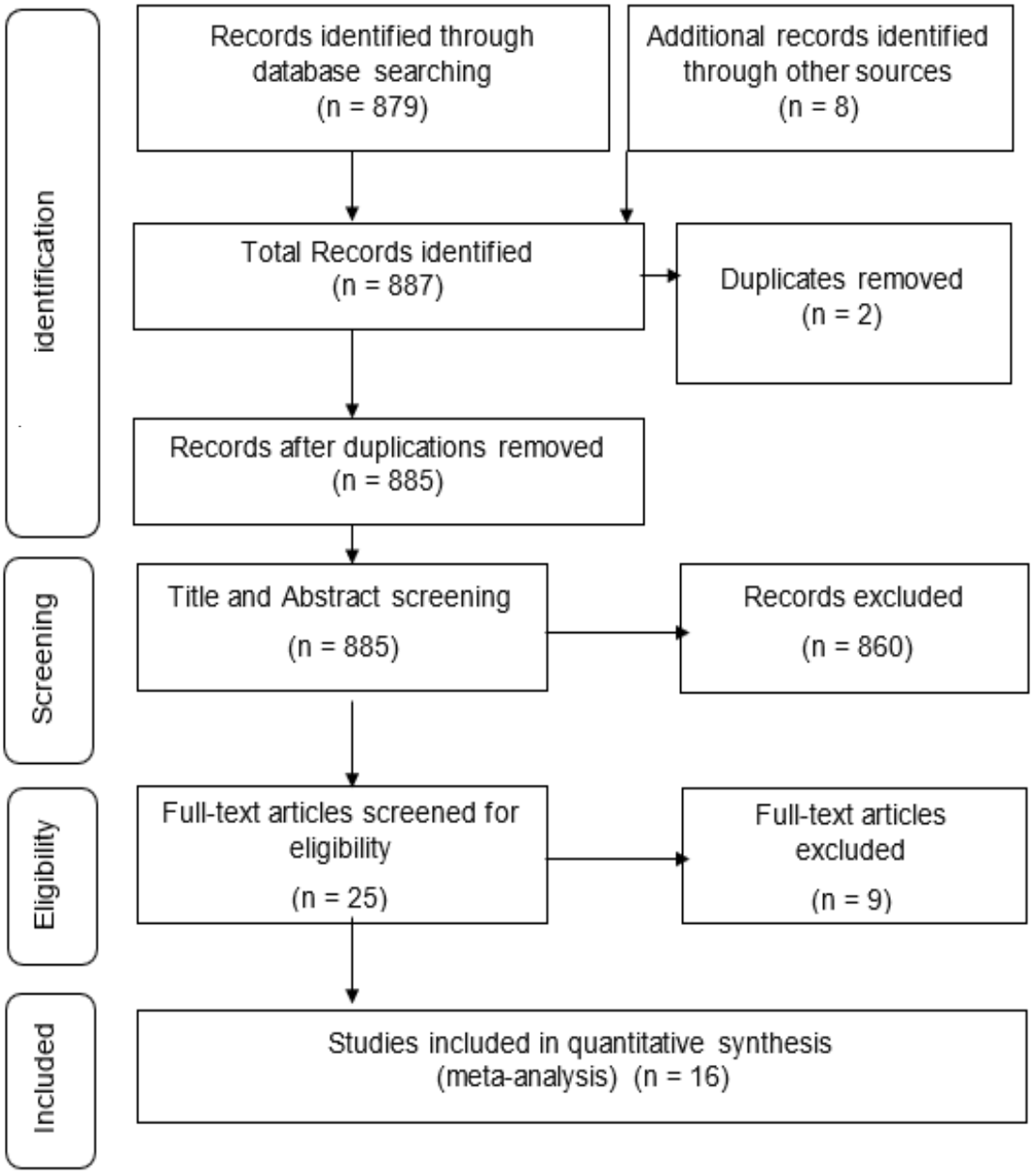
13 Wright, T. L. (2020). *Evaluating the Effectiveness of an Educational Programme for School Personnel with Students returning to the Classroom following a Traumatic Brain Injury: An Evidence-Based Project (Order No. 28094025).* Available from ProQuest Dissertations & Theses Global. (2448626618). Retrieved from: https://www-proquest-com.libproxy.ucl.ac.uk/dissertations-theses/evaluating-effectiveness-educational-programme/docview/2448626618/se-2?accountid=14511 [Accessed on 22 July 2021].

14 Kneavel, M., Ernst, W., & McCarthy, K. (2021). Moderating Effects of Gender Among Collegiate Student-Athletes Receiving a Novel Peer Concussion Education Programme. *Health, Education and Behavior, 48*(6), 907-917. https://doi.org/10.1177/1090198120977128

15 Scott, L. C., Langdon, J., Botnaru, D., & Hunt, T. (2021). Evaluating Knowledge Attainment and Retention of a Multimodal Approach to Concussion Education in Collegiate Athletes. *Athletic Training Education Journal, 16*(3), 198-207. https://doi.org/10.4085/1947-380X-20-119

16 Sarmiento, K., Daugherty, J., & Waltzman, D. (2021). Effectiveness of the CDC HEADS UP Online Training on Healthcare Providers' mTBI Knowledge and Self-Efficacy. *Journal of Safety Research, 78*, 221-228. https://doi.org/10.1016/j.jsr.2021.04.004

Figure 2.1: Flow Diagram depicting the Literature Search and Article Screening process based on PRISMA Statement Recommendations (Moher et al., 2010)



2.3.3 Mapping the Field

In order to be included, the reviewed studies and dissertations all needed to have an experimental design and would ideally be randomised control trials (RCTs). This is because Petticrew and Roberts (2003) state that RCTs are the most reliable research design for carrying out a systematic literature review evaluating the effectiveness of an intervention, such as brain injury training. They also deem quasi-experimental designs as appropriate and so studies with this design were also included. Despite all studies having experimental research designs, each study varied in relation to the participants, the training content, the training delivery, and the means of data analysis used.

2.3.4 Weight of Evidence (WoE)

In order to effectively assess the quality and relevance of the studies identified, Gough's (2007) Weight of Evidence (WoE) framework was used, which considered each study's methodological quality (WoE A), methodological relevance (WoE B) and topic relevance (WoE C). This was adopted as a means of evaluating each study as it evaluated the extent to which each weight of evidence contributed to answering the review question (Gough, 2007).

A modified version of Gersten et al.'s (2005) coding protocol was used to assess methodological quality (WoE A) as it was designed for use with studies that employ group experimental designs, including quasi-experimental designs and RCTs. Amendments were made to ensure compatibility with this review and are detailed in Appendix C.

The author developed a protocol, which analysed the strengths and weaknesses of each study's methodological relevance (WoE B), through adapting Petticrew and Robert's (2003) 'Typology of Evidence'. As Petticrew and Robert's deemed RCTs as preferable to quasi-experimental designs when answering effectiveness questions, like the one posed in this review, RCT studies were given a higher weight of evidence score than those with a quasi-experimental design.

A protocol, designed by the author, was created for WoE C, to assess each study's topic relevance in relation to the review question. It specifically considered the training's focus, the relevance of outcome measures, the setting of the training, the training programme's content, and the qualifications and experience of the trainer used for each study. These categories were deemed important as they take into consideration the aspect of brain injury focused on in the training, the pre- and post- measures used, how and where the training was carried out as well as the expertise of the person carrying out the training. All of these factors were outlined in the literature to be important in ensuring training is effective.

WoE A, B and C had equal weighting and the sum of these was averaged to give an overall Weight of Evidence D (WoE D). This indicated the strength of evidence in each study in relation to the research question posed. A summary of WoE ratings for each study is outlined in Table 2.4.

The criteria and rationale for all WoE ratings are outlined in Appendix B. Completed WoE A, B and C coding protocols are given in Appendix D, E and F respectively.

Table 2.4: Summary of WoE for each Study

Authors	WoE A: Methodological quality	WoE B: Methodological relevance	WoE C: Topic Relevance	WoE D: Overall Weight of Evidence
Davies & Tedesco (2018)	3 High	2 Medium	3 High	3 High
McCart et al. (2020)	3 High	1 Low	3 High	2 Medium
Dise-Lewis et al. (2009)	3 High	2 Medium	3 High	3 High
Finn (2020)	2 Medium	1 Low	3 High	2 Medium
Glang et al. (2010)	3 High	3 High	2 Medium	3 High
Glang et al. (2019)	3 High	3 High	3 High	3 High
Kroshus et al. (2019)	3 High	3 High	2 Medium	3 High
Davies & Ray (2014)	1 Low	1 Low	3 High	2 Medium
Hunt (2015)	2 Medium	3 High	2 Medium	2 Medium
Mgonja (2016)	2 Medium	1 Low	2 Medium	2 Medium

Cuthbert (2018)	2 Medium	1 Low	2 Medium	2 Medium
Maitz (2020)	2 Medium	1 Low	3 High	2 Medium
Wright (2020)	2 Medium	1 Low	3 High	2 Medium
Kneavel et al. (2021)	3 High	3 High	3 High	3 High
Scott et al. (2021)	3 High	1 Low	3 High	2 Medium
Sarmiento et al. (2021)	2 Medium	1 Low	2 Medium	2 Medium

Note: WoE ratings are described as: 'High' = 3; 'Medium' = 2; and 'Low' = 1.

WoE A, B and C were given equal weighting and the sum of these were averaged and rounded to the nearest whole number to give an overall Weight of Evidence D (WoE D).

2.4 Methods

2.4.1 Participants

7,622 participants were included across the sixteen studies. Each study varied in sample size, ranging from 11 (Davies & Tedesco, 2018) to 4210 participants (Kroshus et al., 2019). The participants in each study also varied with: four studies focusing on students who either had, or were at risk of, a brain injury (Hunt, 2015; Maitz, 2020; Scott et al., 2021; Kneavel et al., 2021); one focusing on parents of brain-injured children and school personnel (Dise-Lewis et al., 2009); six focusing on school staff, including general educators (Glang et al., 2019; McCart et al., 2020), sports coaches, (Glang et al., 2010;

Cuthbert, 2018; Kroshus et al., 2019) and college staff (Finn, 2020); two focusing on education and health professionals, including educators, nurses and school psychologists (Davies & Tedesco, 2018; Wright, 2020); two focusing solely on health professionals (Mgonja, 2016; Sarmiento et al, 2020); and one focusing solely on school psychologists (Davies & Ray, 2014). Across all studies, participants were of mixed gender and ethnicity and varied in the length of experience they had and time in current role.

Participants were identified as requiring brain injury training through their contact with children with brain injuries or, if participants were children, their susceptibility to brain injury. This meant that they were either a parent of a brain-injured child, a professional who worked with or could come into contact with a brain-injured child, or a child at risk of, or who had experienced, a brain injury. The studies were carried out across the US in a range of locations including: Arizona (Mgonja, 2016); Denver (Dise-Lewis et al., 2009); New York (Finn, 2020); Ohio (Davies & Tedesco, 2018); Oregon & Ohio (Glang et al., 2019); Oregon (McCart et al., 2020); Pennsylvania (Cuthbert, 2018; Maitz, 2020; Wright, 2020); South Carolina (Hunt, 2015); Nationwide in the USA (Glang et al., 2010; Kroshus et al., 2019; Kneavel et al., 2021); and three unknown destinations in the USA (Davies & Ray, 2014; Sarmiento et al., 2021; Scott et al., 2021). No suitable studies were found outside of the US, perhaps demonstrating that this is an area of research interest specific to this region. This is interesting given that there are numerous training programmes, in other countries, that are used for this purpose, including those used by UK charities such as CBIT (2022).

A variety of sampling methods were administered, with most of the studies using convenience sampling (Glang et al., 2010; Davies & Ray, 2014; Hunt, 2015; Cuthbert, 2018; Davies & Tedesco, 2018; Finn, 2020; Maitz, 2020; McCart et al., 2020; Wright, 2020; Sarmiento et al., 2021; Kneavel et al., 2021; Scott et al., 2021). Other sampling methods employed included parental or school referral (Dise-Lewis et al., 2009), snowball sampling (Glang et al., 2019) and purposive sampling (Mgonja, 2016; Kroshus et al., 2019). These are all non-probability sampling methods and therefore could exclude hard to reach participants and introduce volunteer bias. This is where the results of the study may be biased towards those willing to participate and make the error of assuming that the same results would apply to those unwilling or unable to participate.

2.4.2 Setting

The setting for the training varied by study with eight studies reporting on training carried out online (Glang et al., 2010; Glang et al., 2019; McCart et al., 2020; Mgonja, 2016; Kroshus et al., 2019; Cuthbert, 2018; Davies & Tedesco, 2018; Sarmiento et al., 2021) and eight studies taking place with a designated trainer in person (Hunt, 2015; Maitz, 2020; Dise-Lewis et al., 2009; Finn, 2020; Davies & Ray, 2014; Wright, 2020; Scott et al., 2021; Kneavel et al., 2021).

When the training was carried out in person the settings varied with one study taking place during a professional conference (Davies & Ray, 2014); six taking place within an educational environment (Hunt, 2015; Finn, 2020; Maitz, 2020; Wright, 2020; Kneavel et al., 2021; Scott et al., 2021); and one taking place within a clinic (Dise-Lewis et al., 2009).

The appropriateness of the setting was assessed in WoE C with a high rating being given when the training took place in a setting where the participant would be in contact with a brain-injured child as research shows that this aids the application of new knowledge (Knowles, 1984). Lower ratings were given when the setting was unrelated to where the participants would typically be in contact with brain-injured children. As a result, six studies (Hunt, 2015; Finn, 2020; Maitz, 2020; Wright, 2020; Kneavel et al., 2021; Scott et al., 2021) received a high WoE C rating for 'setting' due to the training being held in an educational setting; Davies and Ray (2014) received a medium WoE C as the setting was at a conference and Dise-Lewis et al. (2009) also received a medium weighting as it was in a clinic. The medium rating was given as it was thought participants would be less able to generalise their new knowledge in these locations. The remainder of the training was carried out online and so received varying WoE C ratings for setting depending on the location and management of the online course. This was because the quality of online training is reported to vary considerably and the time needed to benefit from this type of training is relatively unknown (Uppal et al., 2017). Furthermore, little is specifically known about brief online courses, which is typically how brain injury training is delivered (Davies & Tedesco, 2018). Out of the eight studies which included online training, three were awarded a high WoE C for setting. This was because the interventions devised had been piloted online before the study commenced, demonstrating that this was a suitable setting for their training. The remaining five studies all received low WoE C ratings for setting as they were deemed to have either provided limited information on setting (Kroshus et al., 2019; Glang et al., 2010;

Sarmiento et al., 2021) or the setting was non-specific and could change over time (Cuthbert, 2018; Mgonja, 2016).

2.4.3 Research Design

Randomised controlled trials (RCTs) are considered the most appropriate research design for 'effectiveness' questions (Petticrew & Roberts, 2003) and so were specified as desirable in this review's inclusion criteria with five studies meeting this criterion (Glang et al., 2010; Glang et al., 2019; Kroshus et al., 2019; Hunt, 2015; Kneavel et al., 2021). The remaining eleven studies were quasi-experimental designs.

The design used in each study was evaluated using the WoE A and B ratings. The five studies which were RCTs received a high WoE B, and two out of eleven quasi-experimental designs had a medium WoE B rating as they had a comparison group. The remaining nine studies received a Low WoE B rating as they did not have a control or comparison group within their studies.

The two studies which received a medium WoE B rating had two or more experimental groups. These were Davies and Tedesco (2018), which had three experimental groups (online Team Training; online Teacher Training; in-person Team Training) and Dise-Lewis et al. (2009), which had two experimental groups (parents; educators). The five RCTs had a control group with varying tasks given to them (Glang et al., 2010; Glang et al., 2019; Kroshus et al., 2019; Hunt, 2015; Kneavel et al., 2021). Two of the studies gave the control participants alternative non-brain injury training (Glang et al., 2010; Hunt, 2015); one study gave the control group access to a website with

brain injury materials (Glang et al., 2019) the fourth study had a waitlist control group (Kroshus et al., 2019) and the fifth gave the control group an unrelated activity of equal length to the training (Kneavel et al., 2021). The existence of a control group in the RCT studies decreased the likelihood that the positive effects of the training were due to external factors (Barker et al., 2015). However, it would have been useful to have an 'active' control condition in all of the studies so that the comparative benefits of the training relative to an alternative strategy could be explored.

Within the RCTs, once the sample was obtained, the participants were randomly allocated to the experimental or control group. The use of randomisation decreased the likelihood of selection bias and enabled a direct comparison between conditions to occur. It also ensured that the data demonstrated a more valid representation of how the wider population would respond to brain injury training (Barker et al., 2015), which justifies the high WoE B rating RCTs received in this review.

2.4.4 Training Analysis

The training within each study varied in terms of the length of the training, the group size, the training content and the outcome measure used, as can be seen in Table 2.5. The content of each training is summarised in Table 2.6.

The training programme content, authorship, and outcome measures will be explored in more detail over the next two sections.

2.4.5 Training Implementation

As can be seen in Tables 2.5 and 2.6 below, each study differed in terms of training implementation.

Online Training

The training in eight out of the sixteen studies (Glang et al., 2010; Glang et al., 2019; McCart et al., 2020; Mgonja, 2016; Kroshus et al., 2019; Cuthbert, 2018; Davies & Tedesco, 2018; Sarmiento et al., 2021) was provided online and delivered through electronic means such as a PowerPoint or video.

How the online content was produced was considered under 'Trainer' in WoE C. A high WoE C rating was given if the training was devised by someone trained in brain injury. This was the case for six out of eight studies and so each of these received a High WoE C rating for 'Trainer' (Glang et al., 2010; Glang et al., 2019; McCart et al., 2020; Kroshus et al., 2019; Davies & Tedesco, 2018; Sarmiento et al., 2022). Mgonja (2016) received a Medium WoE C rating for 'Trainer' as she created the training in this study and is trained in brain injury, however, she didn't actually deliver the training as it was sent to participants over email and viewed online. Cuthbert (2018) also received a Medium WoE C rating for 'Trainer' as the training was a recognised programme designed for middle school and high school football coaches but it was also not delivered by a trainer, instead leaving the participants to access it on their own.

In-Person Training

Hunt (2015), Finn (2020), Maitz (2020), Wright (2020), Kneavel et al. (2021) and Scott et al. (2021) included in-person training in their studies with each taking place in a setting where participants could come into contact with a brain-injured child or experience a brain injury themselves. As a result, each study received a WoE C rating of 3 for 'Setting' as, the authors were enabling

the participants to generalise their new brain injury knowledge to the context in which they would later need to apply it to.

In terms of WoE C for 'Trainer' the scores varied more widely than in the online training studies. Finn (2020) developed and administered the training in this study and he had clinical and research experience in concussion therefore he received a High WoE C rating in this area. Maitz (2020) also received a High WoE C rating as his training was led by a counselling psychologist and overseen by a neuropsychologist and/or athletic trainer. Scott et al. (2021) also received a high WoE C for 'Trainer' as it was developed alongside coaches, 'experts' and the team physician. The remaining three studies (Hunt, 2015; Wright, 2020; Kneavel et al., 2021) received Medium WoE C ratings as they were developed by the authors but it was unclear how knowledgeable the authors were on brain injury and therefore how effective they would be as trainers.

Conference and Clinic-led Training

Davies and Ray (2014) received a Medium WoE C rating for 'Setting' as the training they delivered was at a conference. Dise-Lewis et al. (2009) also received a medium weighting as training was delivered in a clinic. As these settings were not where the participants typically worked with brain-injured children, it was felt that less generalising of new knowledge would take place.

In terms of the 'Trainer', both studies received a high WoE C rating as Dise-Lewis et al.'s (2009) study was brain injury consultant-led and Davies and Ray's (2014) training was designed and conducted by a university researcher

and school psychology practitioner, both with expertise in traumatic brain injury (TBI).

2.4.6 Training Content

All of the studies included in this review, had brain injury training as the sole focus of the training and therefore all received a WoE C rating of 3 for 'Training'. The content of each study's training can be seen in Table 2.6 to demonstrate this.

There is some variation in the training content with thirteen of the studies focusing solely on brain injury as a result of concussion and the remaining three studies focusing on the wider concept of Traumatic Brain Injury (TBI). Despite the varying types of brain injury discussed, there are common themes within each of the training programmes. Topics included were signs and symptoms of a brain injury, the transition back to school and, in relation to concussion, the return to playing sport, as well as accommodations and modifications that may be beneficial. Many also included additional resources that could be used as part of the training or after the training for reference purposes.

In terms of the detail in which the studies outlined the contents of the training, each provided a list outlining what the training included but only one study, by Mgonja (2016), provided the full PowerPoint so that replication could take place. Wright (2020) also provided the training plan, which could be used as a guide, but did not provide the actual training materials.

Finally, WoE C also looked at the 'programme content and authorship' of the brain injury training, which considered whether or not the training was a

recognised programme. Nine out of the sixteen studies used recognised brain injury training programmes and so were awarded high WoE C ratings for ‘programme content and authorship’. The remaining seven studies received a medium WoE C rating as the training had been created by the authors or other brain injury specialists and therefore were deemed of sufficient quality to warrant this rating. These studies were not allocated high WoE C ratings for ‘programme content and authorship’ as the training was being carried out for the first time and therefore had not been independently reviewed.

Table 2.5: Table outlining the Training Content, Authorship and Outcome Measures

Study	Number of sessions/ modules	Group size	Length of Training	Training Delivery	Trainer(s)/ Content creators	Outcome measures
Davies & Tedesco (2018)	1	11	75 minutes Team Training	Online team training video	Developers consulted brain injury specialists and educators on content for all three training programmes	The following measures were used pre- and post- : Adapted version of 'Concussion in the Classroom' questionnaire (Nationwide Children's Hospital, 2012)
	1	30	30 minutes Teacher training	Online teacher training video		Adapted version of 'Sports Concussion Parents Measure' (Glang, 2012) They were adapted to make the wording more educator-orientated
	1	114 (4 groups/ sessions)	75 minutes Team Training	In-person team training video		

McCart et al. (2020)	21	81 (in own time)	15 minutes per module (10 hours total)	Online traumatic brain injury professional development video	Developers asked educators, brain-injured youths and families about content	Knowledge items from the 'In the Classroom' programme (Glang & McMart, 2021)
Dise-Lewis et al. (2009)	3 sessions	21 parents/38 teachers	4 months	In-person, consultative approach individualised to needs of the child	Consultant-led approach	ABI Parenting/Teaching Proficiency Scale (Dise-Lewis et al., 2003)
Finn (2020)	1	16	45 minutes	In-person training	Training developed and administered by study author who has clinical and research experience in concussion	Adapted version of Rosenbaum Concussion Knowledge and Attitude Survey (RoCKAS) (Rosenbaum & Arnett, 2010)

Glang et al. (2010)	3 modules	40	15-20 minutes	An interactive e-learning programme	Training developed and administered by study author	Author created measure for this study. 16 item Knowledge (general) checklist.
Glang et al. (2019)	21	50 (in own time)	15 minutes per module (10 hours total)	Online traumatic brain injury professional development video	Developers consulted educators, youths with a brain injury and their family	Knowledge items from the 'In the Classroom' programme (Glang & McMart, 2021)
Kroshus et al. (2019)	1	397	Given two weeks to complete	Paper-based training resource sent via email	Developed in consultation with coaches, health education professionals and NCAA taskforce	Author created measure for this study. 10 item Knowledge questionnaire.

Davies & Ray (2014)	1	19	Half day	In-person training	Designed and conducted by a university researcher and school psychology practitioner, both with expertise in traumatic brain injury (TBI)	Adapted SaLT Knowledge of TBI questionnaire (Hux, Walker & Sanger, 1996). Revised to improve phrasing of questions.
Hunt (2015)	1	34	9 minutes	In-person training	Training developed and administered by study author	Author created measure for this study. 14 item Knowledge questionnaire.
Mgonja (2016)	1	25	Given two weeks to complete	Online concussion training	Training developed and administered by study author	Author created measure for this study based on training. 11 item Knowledge questionnaire.

Cuthbert (2018)	1	15	1 hour	Online video tutorial	Recognised training for middle school/high school football coaches	RoCKAS-CH concussion knowledge survey (Rosenbaum & Arnett, 2010)
Maitz (2020)	2 modules	78	Not specified	In-person training	Counselling psychologist led/ overseen by a neuropsychologist and/or trainer	Modified ACE checklist (Gioia & Collins, 2006) Modified to include items from a concussion awareness checklist by McLeod et al., 2007.
Wright (2020)	1	69	90 minutes	In-person training	Training developed and administered by study author	Adapted TBI Knowledge Survey (Ettel et al., 2016) 30-item questionnaire. Adapted to include additional items from training materials

Kneavel et al. (2021)	Not specified	27	Not specified	In-person training	Two student athletes per team who were nominated to serve as educators by their coach, athletic trainer and athletic team administrator	Acute Concussion Evaluation (McLeod, Schwartz & Bay, 2007) Adapted Theory of Planned Behaviour Questionnaire (Kneavel et al., 2020) Concussion discussion and reporting
Scott et al. (2021)	1	57	Presentation & video (length unknown) 10-minute active reflection session	In-person training	Head Athletic Trainer	Rosenbaum Concussion Knowledge Index (Rosenbaum & Arnett, 2010) Qualitative Interviews
Sarmiento et al. (2021)	1	On own	Not specified	Online Brain Injury training	Created by Centre for Disease Control and Prevention (CDC)	Questions on knowledge and self-efficacy from the Heads Up training resource

Table 2.6: Training Content for Each Study

Study	Training	Format	Content
Davies & Tedesco (2018)	Ohio Return to Learn Concussion Team Model (Davies, 2016)	Non-interactive PowerPoint with voiceover Manual and supplementary materials	Concussion signs and symptoms Concussion identification and immediate response Return to Learn and Return to Play protocols Concussion team model List of accommodations for students with concussion Factsheet: concussion identification, response, classroom accommodations
	Teacher Training, using the above.	As above	As above
	Ohio Return to Learn Concussion Team Model (Davies, 2016)	As above	As above

McCart et al. (2020)	In the Classroom after Concussion: Best Practices for Student Success (Glang & McMart, 2021)	9 Modules/21 Lessons/23 Supplemental Resources Video Interviews with Real Educators Professionally produced instructional videos	Return to School Screening and Services Accommodations and Modifications Classroom strategies Promoting social interaction Behavioural Transition Parental communication
Dise-Lewis et al. (2009)	BrainSTARS (Dise-Lewis, Calvery & Lewis, 2006)	BrainSTARS manual Educational materials Team building around the child Consultation focused Planning and tracking of interventions around child's progress	Attention and Judgement Mental Processing Speed New Learning Social Skills and Self-Regulation Word Retrieval, Non-Verbal Learning and Expressive Language Praxis, Initiation and Sensory Processing Mental Flexibility, Organization, Memory and Planning Fine Motor and Gross Motor Control

Finn (2020)	Author devised training specific to this study	PowerPoint slides Videos Discussion questions	How concussion might affect academic performance Post-concussion symptoms Pragmatic guidelines for return to school Campus resources
Glang et al. (2010)	ACTive: Athletic Coaching Training	Interactive video education	Youth sports concussion Prevention, Recognition and Management of concussion
Glang et al. (2019)	In the Classroom after Concussion: Best Practices for Student Success (Glang & McMart, 2021)	9 Modules/21 Lessons/23 Supplemental Resources Video Interviews with Real Educators Professionally produced instructional videos	Return to School Screening and Services Accommodations and Modifications Classroom strategies and Transition Promoting social interaction and behaviour Parental communication

Kroshus et al. (2019)	NCAA Fact Sheet (National Collegiate Athletics Association, 2017)	Paper-based training resource	Concussion symptoms Consequences of continued play with concussion symptoms Moderators of injury recovery Potential long-term consequences of concussion
Davies & Ray (2014)	TBI in the Schools training	In-person training	Traumatic Brain Injury (TBI) focus Describe a TBI initiative in a local school Increase awareness of TBI Improve identification and education of children with a TBI
Hunt (2015)	Author devised training specific to this study	Concussion education video	Epidemiology Mechanisms of concussion Sports in which concussion occurs Signs and symptoms of concussion Reasons not to report and Whom and when to report Potential long-term effects

Mgonja (2016)	Concussion Education and Management for Utah School Nurses	Online electronic educational module PowerPoint slides Toolkit for nurses	Define concussion and identify prevalence Signs and symptoms Impact on students Post-concussive syndrome Management and accommodation Worsening signs
Cuthbert (2018)	Pennsylvania's mandatory concussion education programme for football coaches (National Federation of State High School Associations (NFHS), 2021)	Online video tutorial	Impact on sports related concussion on athletes How to recognise a suspected concussion Protocols to manage a suspected concussion Steps to help players return to play safely after a concussion

Maitz (2020)	Chestnut Hill College Peer Concussion Education Programme	In-person training	Module 1: Reinforcing and enhancing concussion knowledge Module 2: Enhancing concussion reporting Specifically: the pathophysiology of concussion, symptoms of concussion, recovery from concussion, the return to play protocol and its rationale, and concussion prevention.
Wright (2020)	Author devised training specific to this study	In-person training PowerPoint presentation 12-minute video Activities demonstrating impact of trauma to the brain	Causes, sign and symptoms of a TBI Challenges and difficulties associated with a TBI Strategies to successfully reintegration post-TBI
Kneavel et al. (2021)	Author devised training specific to this study	In-person training PowerPoint presentations Discussion work	Knowledge of concussion symptoms Attitudes to reporting concussions Intention to report concussions Subjective norms around reporting Return to Play (RTP) protocol

Scott et al. (2021)	Author devised training specific to this study	In-person training Didactic lecture Video Active reflection session	Definition of concussion and reporting procedures New research on concussions NCAA concussion fact sheet
Sarmiento et al. (2021)	CDC Heads Up online training	Online training from CDC website	Recommendations from the CDC paediatric mTBI guidelines

2.4.7 Outcome Measures

As can be seen in Table 2.5, each study assessed knowledge of brain injury, both pre- and post-training, using a variety of outcome measures. Five studies carried out follow-up assessments (McCart et al., 2020; Davies & Ray, 2014; Maitz, 2020; Glang et al., 2019; Kneavel et al., 2021).

There was some commonality with the measures used. For example, McCart et al. (2020) and Glang et al. (2019) both used the 'Knowledge' items from the 'In the Classroom' programme (Glang & McMart, 2021) as this was the training programme they were using and the assessment was linked to this. As they used a recognised measure that was associated with their training but was not a standardised assessment, and they did not triangulate their assessment results with other measures, they were given a Medium WoE C rating for 'Outcomes'. Finn (2020) and Cuthbert (2018) also both used the same measure which was the RoCKAS-CH Concussion Knowledge Survey (Rosenbaum & Arnett, 2010). As this is a standardised measure, they were given a High WoE C rating for 'Outcomes'.

Four studies in this review devised their own measure for their study (Glang et al., 2010; Kroshus et al., 2019; Hunt, 2015; Mgonja, 2016). Three of these studies, namely Glang et al. (2010), Hunt (2015) and Mgonja (2016), did this as they had also devised their own training for the purposes of their study. As a result, they created a researcher-constructed assessment of brain injury knowledge related to the training they had devised. Although Kroshus et al. (2019) did not devise his own training and instead used the NCAA Fact Sheet (National Collegiate Athletics Association, 2017), this training did not come with an assessment related to this training and so the authors designed

their own. As the outcome measures were researcher-constructed assessments of brain injury knowledge, specifically related to the training delivered in all four studies, they were all given a Medium WoE C rating for 'Outcomes'.

The remaining eight studies all used different instruments to measure brain injury knowledge. Scott et al. (2021) and Kneavel et al. (2021) used at least one standardised assessment alongside qualitative data so that they could triangulate their data and so they received a High WoE C rating for 'Outcomes'. Davies and Tedesco (2018), were also given a high WoE C for 'Outcomes' as they compared the results from two standardised assessments. As Dise-Lewis et al. (2009) used parents and teachers as their participants, they used the ABI Parenting/Teaching Proficiency Scale (Dise-Lewis et al., 2003). As this is a standardised assessment tool they also were awarded a high WoE C rating for 'Outcomes'. Davies and Ray (2014) used the Speech and Language therapy (SLT) Knowledge of TBI questionnaire (Hux, Walker & Sanger, 1996), which was a standardised measure initially designed for SLTs but was adapted for the purpose of this study for use with school psychologists. As this was an appropriate standardised tool to measure TBI knowledge, they were also awarded a high WoE C rating for 'Outcomes'. Maitz (2020) created one measure from two standardised measures in order to create an assessment of brain injury knowledge for his study. He modified the ACE checklist (Gioia & Collins, 2006) to include items from a concussion awareness checklist by McLeod et al. (2007) in order to ensure it fully assessed the knowledge gained from the Chestnut Hill College Peer Concussion Education Programme (CHC-PCEP). As these were two

standardised measures, a high WoE C rating was also given to this study. Wright (2020) took a similar approach to Maitz (2020) as he adapted an existing measure, namely the TBI Knowledge Survey (Ettel et al., 2016), to include items from the training he devised. As this was a standardised measure, a High WoE C rating was also given to this study. Sarmiento et al. (2021) used an existing but unstandardised measure which did not allow for any triangulation of results and was therefore given a low WoE C for 'Outcomes'.

2.5 Findings

As the focus of this review was on the effects of brain injury training on knowledge acquisition, only effect sizes on general measures of knowledge were reported. A summary of each study's effect size along with their main findings are summarised in Table 2.7 with the effect size descriptors outlined in Table 2.8.

Table 2.7: Summary of the Effect Size for each Study

Study	Main Findings	Outcome measures	Sample Size	Effect size	WoE D
Davies & Tedesco (2018)	a) Participants in the online Team Training group significantly improved accuracy of knowledge from pre-test to post-test b) Participants in the online Teacher Training group demonstrated a significant improvement in knowledge about brain injury from pre-test to post-test c) In-person participants in the Team Training group improved their scores on concussion knowledge questions from pre-test to post-test	Adapted version of 'Sports Concussion Parents Measure' (Glang, 2012) Adapted[a] version of 'Concussion in the Classroom' questionnaire (Nationwide Children's Hospital, 2012) [a]Adapted to make the wording more educator-orientated	a) 11 b) 30 c) 114	a) 1.12 b) 0.66 c) 0.76	3 High
McCart et al. (2020)	Participants showed significant gains in TBI knowledge from pre-test to post-test and this was sustained 30 days later.	Knowledge items from 'In the Classroom' (Glang & McMart, 2021)	81	3.2	2 Medium

Dise-Lewis et al. (2009)	a) Post-training there was an improved ability in parents and teachers to understand and respond effectively to children with an ABI. b) Parents only: The same results obtained when the sample was split with parents' post-training scores being higher than pre-training and the difference was statistically significant c) Teachers only: The same results obtained when the sample was split with teachers' post-training scores being higher than pre-training and the difference was statistically significant	ABI Parenting/Teaching Proficiency Scale (Dise-Lewis et al., 2003)	a) 59 b) 21 c) 38	a) 1.48 b) 1.89 c) 1.27	3 High
Finn (2020)	There was a significant difference in the pre-RoCKAS total score and post-RoCKAS total score. These results suggest that the concussion training led to improved faculty knowledge.	Adapted version of Rosenbaum Concussion Knowledge and Attitude Survey (RoCKAS) (Rosenbaum & Arnett, 2010)	16	0.2	2 Medium

Glang et al. (2010)	Coaches in the intervention group were found to have significant and large overall gains compared to coaches in the control condition. The greatest gains were obtained for knowledge about concussion symptoms followed by general knowledge about concussions and knowledge of misperceptions about concussion.	Author created measure for this study. 16 item Knowledge (general) checklist.	75	0.89	3 High
Glang et al. (2019)	On the post-test assessment, In the Classroom (ITC) educators showed significantly greater gains in TBI knowledge than the LEARNet controls.	Knowledge items from the 'In the Classroom' programme (Glang & McMart, 2021)	100	1.36	3 High
Kroshus et al. (2019)	Participants in the intervention condition had post-training scores that were on average 5% higher than coaches in the control condition. This was largely caused by significant differences in knowledge about the effect of continued play post-concussion.	Author created measure for this study. 10 item Knowledge questionnaire.	779	0.33	3 High

Davies & Ray (2014)	When examining the pre-training knowledge and skills with the 2-month follow-up results, the test yielded significant results. Participants reported significantly more knowledge and skills at the 2-months post-training when compared with pre-training. When examining the pre-training knowledge and skills with the 1-year follow-up, the test did not yield significant results indicating that participants did not report significantly more knowledge and skills when compared with pre-training.	Adapted SaLT knowledge of TBI questionnaire (Hux, Walker & Sanger, 1996). Revised to improve phrasing of questions.	19	0.75	2 Medium
Hunt (2015)	The control group started with a higher non-significant total symptom score, however, after the video intervention, the education group was able to correctly identify significantly more symptoms than the control group.	Author created measure for this study. 14 item Knowledge questionnaire.	68	0.66	2 Medium

Mgonja (2016)	School nurses' participation in this project demonstrated an improvement in knowledge related to management of post-concussion syndrome in the school setting.	Author created measure for this study based on the training PowerPoint. 11-item Knowledge questionnaire.	25	2.09	2 Medium
Cuthbert (2018)	Coaches were found to have significant gains in knowledge about concussion post-training relative to pre-training.	RoCKAS-CH concussion knowledge survey (Rosenbaum & Arnett, 2010)	15	0.82	2 Medium
Maitz (2020)	There was a significant effect of the training on knowledge over time with post-intervention knowledge having increased relative to the baseline. However, the differences in knowledge between post-intervention and one-month follow-up, and baseline and one-month follow-up were not significant.	Modified ACE checklist (Gioia & Collins, 2006) Modified to include items from a concussion awareness checklist (McLeod et al., 2007).	78	3.65	2 Medium

Wright (2020)	Participants scored higher on the post-test compared to the pre-test. These results suggest educators' TBI knowledge increased after a TBI educational programme.	Adapted TBI Knowledge Survey (Ettel et al., 2016) Adapted to include additional items from training	69	1.12	2 Medium
Kneavel et al. (2021)	Male and female student athletes responded similarly to the Concussion Education Programme in terms of their intention to report.	Acute Concussion Evaluation (McLeod, Schwartz & Bay, 2007) Adapted Theory of Planned Behaviour Questionnaire (Kneavel et al., 2020) Concussion discussion and reporting	1,611	Females: 0.33 Males: 0.27	3 High

Scott et al. (2021)	The analysis showed that there were no significant changes in knowledge or retention over time.	Rosenbaum Concussion Knowledge Index (Rosenbaum & Arnett, 2010) Qualitative Interviews	222	0.38 (non-significant)	2 Medium
Sarmiento et al. (2021)	The analysis showed a significant improvement in knowledge from pre- to post-training	Questions on knowledge and self-efficacy from the Heads-Up training resource	4,210	1.15	2 Medium

Table 2.8: Descriptors for Cohen's d and Hedge's g (Cohen, 1992)

Effect Size	Descriptor
0.8	Large
0.5	Medium
0.2	Small

Effect sizes were reported in nine out of the sixteen studies with two studies reporting the r equivalent effect size (McCart et al., 2020; Sarmiento et al., 2021); three reporting Cohen's d (Kroshus et al., 2019; Glang et al., 2019; Kneavel et al., 2021) and four studies reporting eta squared (Maitz, 2020; Hunt, 2015; Glang et al., 2010; Scott et al., 2021). To ensure consistency, and enable comparisons between studies, all effect sizes were converted into Cohen's d using the Psychometrica calculator (Lenhard & Lenhard, 2016). For the remaining studies, the Campbell Collaboration Online calculator (Wilson, n.d.) was used to calculate Cohen's d using the t-statistics and f-statistics provided by the authors of the studies. It is important to note that caution needs to be given when interpreting the effect sizes for some of the studies in this review as Cohen's criteria was devised for between-groups designs. As nine of the studies included in this review are pre-post single group designs, they are likely to have inflated effect sizes, which means that Cohen's absolute criteria should be applied with care to these studies.

Nine out of the sixteen studies reported a large effect size, two had a medium effect size and four had a small effect size. Only one study demonstrated no significant change in knowledge or retention over time. This suggests that

brain injury training can be used to improve the knowledge of professionals working with brain-injured children and children and parents impacted by brain injury. Out of the four studies which had a small effect size, Finn's (2020) small effect size could have arisen due to two of the participants making negative progress which may have skewed the data. In addition, in Kroshus et al. (2019), the small effect size could be due to the training being relatively passive with participants reading a fact sheet on their own, in their own time, which meant it would be hard to assess whether participants actually carried out the training at all.

This review therefore demonstrated that brain injury training improves the knowledge of professionals working with brain-injured children, and children and parents impacted by brain injury. As a variety of study designs were used in this review, and only five of the studies were RCTs, it was deemed inappropriate to carry out a meta-analysis to assess the overall effect of brain injury training on knowledge acquisition. This is because RCTs and single-group studies are not comparable and the use of quasi-experimental designs can lead to spuriously large effects sizes, when applying Cohen's criteria, rendering any meta-analysis meaningless.

2.6 Conclusions and Recommendations

2.6.1 Discussion of Findings

This review evaluated the effectiveness of brain injury training on improving knowledge acquisition in parents and children impacted by brain injury, and professionals working with brain-injured children. Sixteen studies met the inclusion criteria, with six receiving a high WoE D rating and ten receiving a medium WoE D rating.

Combining the evidence of statistical effect, methodological quality, and methodological and topical relevance, it can be concluded that brain injury training improves knowledge acquisition in parents and children impacted by brain injury, and professionals working with brain-injured children.

Gersten et al. (2005) proposed that there needs to be at least two studies with high WoE A and a combined effect size significantly greater than zero for an intervention to be classified as ‘evidence-based practice’. As eight studies within this review had high WoE A ratings, and the majority of studies had medium to high effect sizes, this review demonstrated an evidence base for the effectiveness of brain injury training on improving knowledge acquisition.

It cannot, however, be concluded that the effects of brain injury training are long-term as only four studies assessed effectiveness post-training and the results were contradictory. Two studies, McCart et al. (2020) and Davies and Ray (2014), found that the knowledge gained was maintained. McCart et al. (2020) found that although post-test gains were not significantly sustained, participants did continue to score higher than their pre-training scores 30

days post-training. Davies and Ray (2014) reviewed their data one year on and found that participants still demonstrated higher knowledge scores both two months and one year after the training compared to their pre-training scores. These findings contrast with Maitz (2020) who found that the differences in knowledge between post-training and a one month follow up were not significant and that there was a mean fall in knowledge across both genders and the three sports reported. Glang et al. (2019) also found that knowledge was not sustained by the two months follow up and that, in fact, the knowledge scores from post-test to two months follow up were lower.

In addition, as most of the studies in this review did not compare brain injury training with alternative interventions, it cannot be concluded that this is the most effective means of improving brain injury knowledge in this population.

2.6.2 Limitations of the Review

This review included studies which implemented training in a wide variety of formats, and utilised various outcome measures, which may have impacted the comparability of these studies. In order to counteract this, these factors were taken into consideration in WoE C.

The author of this review also created their own protocol for WoE C. This was essential due to the specificity of the review question and a lack of existing protocols in this field. The validity and reliability of the protocol could be questioned as it was not possible to test it for construct validity or inter-rater reliability prior to review submission.

2.6.3 Recommendations for Future Research

Given, the lack of UK-based research on the effectiveness of brain injury training, this could be an area for future research based on training programmes currently in place in the UK. In addition, the long-term benefits of brain injury training are unclear and were only investigated by four studies in this review, with contradictory results. Therefore, further research should include follow-up measures to evaluate why some training leads to knowledge being maintained whilst others do not.

It would also be beneficial for more RCTs to be carried out in this area and for these to include active control groups so that the effectiveness of brain injury training could be compared to alternative interventions and the most effective intervention could be selected for improving brain injury knowledge.

It would also be of benefit to find out if there is a difference in the knowledge held by different professional groups working with brain-injured children and adolescents and the attributions they make about this population. This is because, any differences in knowledge and attributions should impact the topics covered in any training that professionals attend (Wolf & Kolb, 1984). It could also enable more effective multi-disciplinary working if relative strengths in knowledge are held by different professional groups as knowledge could then be shared.

2.6.4 Recommendations for EP Practice

EPs have an ethical responsibility to ensure that they provide training and interventions, which have a current and sound evidence base (BPS, 2018). It is also important that their knowledge of best evidence is translated into

evidence-based practice (Lang, Wyer & Haynes, 2007), both by themselves and the professionals and families they work with, to ensure brain-injured children receive the best possible care. This review demonstrated an evidence base for brain injury training. Despite this, a recent report suggested that brain injury training is not routinely provided to all professionals and this has led to a lack of awareness and understanding of the needs of brain-injured children (Linden et al., 2013). This demonstrates that knowledge of the evidence base is not being translated into practice and EPs can play a vital role in facilitating this. This is important given the damaging effect a brain injury can have both in the short and long-term if the child is provided with inappropriate support. Glasziou and Haynes (2005) argue that there is a need to 'get the evidence straight' before it is possible to use the evidence in practice. EPs should work with colleagues and families of brain-injured children to support this process.

As the literature search found only US-based research in this area, it is unclear whether the results are generalisable to the UK, given its cultural disparity and the differences in the relative education systems. This may impact EPs' confidence in recommending brain injury training, without further UK-based evidence. In addition, the findings of this review suggest that the effectiveness of brain injury training may decrease over time, which may give EPs further pause and mean they would prefer to pursue another intervention, which has a stronger evidence base in the long-term.

Despite this, it is important to acknowledge that, within the current review, results did replicate between the different US states and with different training programmes being delivered. Therefore, it may be inferred that

similar results would be found within a UK sample when brain injury training is carried out.

Overall, given the benefits of brain injury training on knowledge acquisition, it should be seriously considered for use by EPs in the UK, with a view that further research could be carried out to explore the UK context and longer-term effects alongside the specific components of training that make it effective.

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Chapter 3: Empirical Paper

Working with Children with a Traumatic Brain Injury (TBI):

The Knowledge and Attributions of EPs and Education, Health and Social Care Professionals

3.1 Abstract

Paediatric brain injury is the most common neuro-disability in the UK (Hughes et al., 2012), and the World Health Organisation (WHO) ranked TBI as the leading cause of disability and death in children worldwide (NASEN, 2018). As a result, research on how professionals can best support brain-injured children is vital. This empirical paper used a fully mixed sequential equal status design to explore education, health, social care and educational psychology professionals' TBI knowledge, and attributions towards brain-injured children. The quantitative aspect utilised a survey to assess professionals' TBI knowledge. A between-subjects ANOVA demonstrated inter-professional differences, with health professionals having the greatest TBI knowledge, and education professionals the least. The qualitative aspect used semi-structured interviews to analyse professionals' attributions. Attributions were assessed at three time points: pre-injury, after a presentation change, and after a TBI diagnosis. A multiple case study design was used with the qualitative data analysed through Thematic Analysis and then verified through code frequencies. Attributions varied as the children's presentation changed, providing support for Attribution Theory. Professionals also attributed the change in presentation to the TBI, once this had been revealed, providing support for Labelling Theory. Data gathered also indicated that professionals valued multi-disciplinary working, and felt their roles were both distinct and overlapping, when working with brain-injured children. Strengths, limitations and implications for practice and future research are discussed.

3.2 Introduction

3.2.1 Defining Brain Injury

Acquired brain injury (ABI) is the term used for any injury to the brain occurring following birth and the immediate neonatal period (Walker & Wicks, 2005). The term is generally used to exclude congenital brain injuries such as injuries caused by birth trauma or a degenerative disease. For the purpose of this study, ABI is defined as: ‘damage to the central nervous system caused by traumatic injury, illness or infection’ (British Psychological Society [BPS], 2006, p. 3). It includes traumatic brain injuries (TBI), which are caused by a trauma to the head such as through an assault, a car accident or a fall, as well as atraumatic injuries, which can be due to substance abuse, insufficient oxygen to the brain or medical conditions such as meningitis, encephalitis or stroke (UK Acquired Brain Injury Forum [UKABIF], 2018). TBI was the key focus of this empirical paper, due to it being the most common form of brain injury in children (Trefan et al., 2016), however, ABI is also discussed to provide a wider context around brain injury.

3.2.2 Incidence and Prevalence of ABI in Children and Adolescents

Each year, in the UK, it is estimated that around 40,000 children visit hospitals with an ABI, with many more likely impacted (NHS, 2013). In addition, around half a million students return to school after an ABI (Hawley et al., 2004). It is the leading cause of disability in children (Forsyth & Kirkham, 2012) and has the highest prevalence of all neuropsychological difficulties (Hughes et al., 2012).

Its impact can be difficult to quantify due to inconsistencies in definitions used, data collection methods and inconsistent reporting. In addition, much of the research literature around this area relates to TBI, leading to underestimations in data around ABI (UKABIF, 2018).

It is difficult to determine the precise number of children affected by a brain injury in the UK for a number of reasons. Firstly, not all brain injuries will result in hospital attendance as the injury may be deemed too minor to take the child for assessment and so may go unrecorded. Furthermore, brain injury can be a hidden disability where symptoms may not present for a long-time post-injury, which can hinder connections being made between the injury and the difficulties the child may present with as a result of the injury. Finally, there is not currently a widely-used systematic way in which brain injuries are recorded, and information is poorly disseminated, between health, social care and education colleagues (UKABIF, 2018). This means that if a child presents with a special educational need (SEN), the root cause of the difficulty may not be known and so the child's difficulties might be recorded under their educational need on the school's Special Educational Needs and Disabilities (SEND) register, and dealt with as such. In addition, ABI is not a defined category on SEND registers therefore any injuries may be recorded on the school's medical register instead, omitting the fact that the injury could be associated with a child's additional needs that should also be recorded on the SEND register. This issue of incomplete and inappropriate recording can bring about a lack of awareness of the child's key areas of need amongst school staff, which, in turn, may mean the potential signs of a brain injury are not recognised and staff may misdiagnose the child

as having another condition with similar sequalae. This may lead to inappropriate interventions being adopted. Due to this issue, and the high prevalence and severity of the impact of a brain injury on a child's life, UKABIF (2018) recommended that ABI should be a distinct category within the SEND Code of Practice (Department for Education and Department for Health (DfE & DH), 2014) and have argued for a more systematic approach to communication between professionals when a child has experienced a brain injury (UKABIF, 2018). To date, neither of these recommendations have been widely adopted.

3.2.3 Sequelae of Brain Injury in Children and Adolescents

Those who have sustained a brain injury frequently experience a range of neuropsychological difficulties including, but not limited to: difficulties with executive functioning (Jantz & Coulter, 2007), attention (Catroppa & Anderson, 2004), memory (Oddy et al., 2017), novel learning (Hunter & Donders, 2007), social relationships (Ross, 2011) and motor skills (Walker & Wicks, 2018).

Whilst assessment post-injury can inform the nature of any existing difficulties, it cannot predict the real-life impact on a child, in school or at home, as environmental, social and parental factors can all have an effect (Woods et al., 2011). Research shows that a child's social, emotional and academic engagement and success can be impeded by a brain injury, which can increase their risk of school exclusion (Oddy et al., 2017). Children may also develop behavioural problems (Andrew et al., 1998), which impact on their social inclusion and school performance (Hawley, 2003) and increase the risk of criminal offending behaviour (UKABIF, 2018).

3.2.4 Key Issues regarding Brain Injury in Children and Adolescents

Due to the high prevalence of brain injury, and the potentially damaging and long-term impact of this type of injury, it is important that all professionals who work with brain-injured children understand how to support the diverse needs of this population. Despite this, Linden et al. (2013) reported that brain injury training is not routinely provided to all professionals leading to a lack of awareness and understanding of the needs of this population. Raising the profile of brain injury, as well as providing further training, is needed as the consequences of brain injury can be invisible or misdiagnosed, which can lead to misinterpretation of a child's difficulties.

In addition to this, it has been argued that children with a brain injury can have additional needs not encountered in children with other SEN and therefore need additional considerations (Walter & Wicks, 2018). For example, a child with an ABI may still hold onto their pre-injury self-concept and so still remember how they used to be physically, academically, socially, behaviourally and emotionally (Beadle et al., 2016). This loss of sense of self and potential change in identity may engender a sense of loss and grief over who they used to be compared to who they are post-injury. This may also be compounded by family and friends who may also be experiencing an ongoing grieving process for the person who once was (Walker & Wicks, 2005). As a result, it is necessary to consider the psychological impact alongside the neurological changes when devising an intervention to support brain-injured children.

It is also important to consider the growth and resiliency which may arise from experiencing a brain injury. Resilience can be defined as positive

adaptations arising out of significant hardship (Luthar et al., 2000). Hawley and Joseph (2008) argue that there is capacity for this type of psychological growth after a brain injury, with survivors feeling a sense of not wanting to take life for granted as well as valuing relationships with those around them more. This feeling can also be experienced by family and friends around the brain injury survivor (Collings, 2008) which, in turn, promotes the resiliency of the child who has experienced the brain injury. As a result, professionals working with brain-injured children and their families need to consider strengths as well as areas requiring further support so that a deficit-focused model of brain injury is not adopted.

3.2.5 Rehabilitation in Children and Adolescents

It is imperative that children who have experienced a brain injury receive early access to neurorehabilitation to optimise their recovery. Neurorehabilitation is the process of assessment, treatment and management of support of individuals and their family post-injury (UKABIF, 2018). The extent required will vary depending on the severity of the brain injury with some individuals not requiring specialist neurorehabilitation but still requiring timely, community-based support after being discharged from hospital. It is argued that all individuals with an ABI should receive a Rehabilitation Prescription, which outlines the support they require. However, research shows that there is a large variation in provision and access to neurorehabilitation across the UK (UKABIF, 2018).

In addition to clinical neurorehabilitation, the return to home and school needs to be carefully planned and supported as, for most children, this is where most of their neurorehabilitation will take place. Despite this, the

burden of ABI on the education system is under-recognised due to the previously noted inaccuracies in reporting. In addition, there is a lack of knowledge and understanding amongst education professionals about brain injury, its consequences and its impact on learning. Neurorehabilitation in schools is also made more challenging as there can be an element of developmental complexity to an ABI that may not be seen in other SEN. For example, a child may appear to make a good physical recovery after the brain injury and therefore assumed to be well again. However, the long-term effects of the brain injury may only arise many months or years later, when the injured part of the brain reaches a key stage of development, and the child is then unable to demonstrate some of the skills that they would have been able to prior to the injury (UKABIF, 2018). The consequence for education professionals is that the brain-injured child may begin to struggle in class but, because information about an earlier brain injury may not be readily available, the reason for these difficulties is not understood (UKABIF, 2018). This may lead to inappropriate assessment tools and strategies being adopted, leading to unsuitable support being given. This issue can be exacerbated by education professionals not routinely receiving brain injury training (Kahn et al., 2018), which can lead to staff experiencing difficulties in recognising the specific support required and they may consequently use inappropriate assessments, strategies and interventions, and monitor the child's progress less frequently than appropriate (Linden et al., 2013). Research also shows that education professionals who lack knowledge about brain injury may adopt strategies that they have used for children and adolescents with other disabilities. This lack of recognition of the

developmental complexities of brain injury can lead to children and adolescents receiving inappropriate and potentially detrimental support (UKABIF, 2018).

3.2.6 Multi-Disciplinary Approach

In order to ensure the most effective intervention and support is provided for a child with a brain injury, and their family, it is important that all of the professionals around the child work together, with the child and family, to make sure a bespoke programme of support is devised (Hughes et al., 2018). This should take into consideration the specific strengths and needs arising out of the brain injury. Despite this, the UKABIF (2018) found that there is a lack of liaison between professionals working with children who have experienced a brain injury and their families. This includes poor information sharing, lack of dissemination around assessment and support required, as well as poor communication and involvement of families. To combat this, UKABIF (2018) have suggested that a named lead professional from health should oversee a return to school pathway plan that is individualised to the child concerned and provides a consistent approach and support to the child, their family and the school that they are returning to. Despite this suggestion, this has not currently been put into practice (UKABIF, 2018).

3.2.7 Knowledge-base of Key Professionals around the Child

Multi-disciplinary working can aid information and knowledge sharing, however, there will be knowledge that needs to be taught prior to a child starting their neurorehabilitation that will be specific to the setting and the role

of the professional. Gouvier et al. (1988) outlined common misconceptions around TBI in the general public with later studies looking at this in more detail in relation to qualifications achieved (Pappadis et al., 2011) and previous experience of brain injury (Block et al, 2013). Higher levels of education, including those with professional health education, were seen to have fewer misconceptions than the general public in some instances (Browndyke et al., 1997). However, further research has highlighted that education and healthcare professionals still hold some of the same misconceptions as non-professionals. This lack of knowledge was demonstrated to be in areas such as recovery, brain injury sequelae and expectations post-injury, and there was also found to be no impact of prior experience of TBI on knowledge demonstrated (Redpath et al., 2010; Watts et al., 2011). This emphasises the need for further development of knowledge of brain injury among professionals and research on how this knowledge is best acquired.

Whilst it is widely acknowledged that there are gaps in professionals' knowledge of brain injury, research is varied in terms of how best this knowledge should be developed. Research into how knowledge is acquired, demonstrates the potential of visual and social media (Block et al., 2013; Hux et al., 2006), with professionals relying on this if training is not provided. One issue with this approach is that much of the information disseminated through TV shows, movies and on social media is likely to be unvetted, subjective or dramatized, leading to common misconceptions being perpetuated (Ahmed et al., 2011). This demonstrates the need for high quality, reliable training resources on brain injury to help minimise the consumption of inaccurate

information (Block et al., 2016). This is important as misconceptions not only lead to incorrect assessments and strategies being adopted, it can also lead to stigmatisation and subsequent discrimination through the use of patronising language (Morris et al., 2005), academic underachievement (Block et al., 2016), decreased social status and lower socio-economic status (Major & O'Brien, 2005; Pavalko et al., 2003).

3.2.8 Attributions of Key Professionals around the Child

In addition to poorly held knowledge around ABI in children, professionals can also misattribute the causes of a brain-injured child's presentation. Attribution Theory (AT) suggests that people try to understand the cause of others' behaviours (Heider,1958), and attribute feelings, beliefs, and intentions in order to try to better understand what they have observed. The reason for the behaviour might be attributed to internal or external, controllable or uncontrollable, stable or unstable factors (Weiner, 1985). Individual's attributions have been shown to have an impact on their thoughts and their subsequent behaviour towards that person (Medway, 1979). Therefore it is important that attributions made about these children are accurate so that they are not discriminated against because of their injury. Research shows that attributions held by education professionals are typically based on their experiences of working with children with additional needs, as well as their own attitudes and emotional responses (Medway, 1979). It is common for there to be misconceptions about children with a brain injury, as individuals can misattribute the child's actions due to a lack of any visible markers of the injury, and there is a tendency for comparisons to be made with same-age peers rather than the person's change in

performance from pre- to post-injury (McClure, 2011). This may impact professionals' impressions of this cohort and lead to a failure among professionals to recognise that changes in behaviour may be a result of a brain injury. This, in turn, may impact whether effective interventions are put in place and affect the success of these children both in and out of school.

3.2.9 Relevance to EP Practice

As the majority of brain-injured children are rehabilitated within their school setting, it is imperative that school staff are well-trained in how best to support these individuals. EPs are well placed, both in hospitals where they may be part of a neurodevelopmental team developing the child's reintegration plan, and in Local Authorities (LA) where they can support schools with their training needs and in ensuring a smooth transition for brain-injured children as they reintegrate back into school and the community.

EPs are also experienced in multi-disciplinary working and so can play an important role in bringing professionals together towards defining common goals with the child and family. Assessment and monitoring can also be carried out by EPs and this information disseminated to the wider professional community around the child and recommendations given in light of this information.

In addition, as the transition back to home and school can be challenging for children post- brain injury, due to the amount of time that they may have been absent from school, along with any cognitive, social, behavioural or physical difficulties they may have developed, EPs can support home and

school in making this transition as smooth as possible. This can be achieved through completing pupil voice activities with the child and working alongside the family and other professionals so that a return to home/school plan is devised, which the child feels is within their capability.

3.2.10 Aims and Objectives of the Current Study with Rationale

Due to professionals' apparent misunderstandings and misattributions about brain-injured children, this study aimed to better understand education, health, educational psychology (EP) and social care professionals' TBI knowledge. In addition, it aimed to provide a deeper understanding of the perceived roles and responsibilities of professionals working with brain-injured children and their views on multi-disciplinary working. It also aimed to assess professionals' attributions about brain-injured children, pre- and post-diagnosis, to help determine the best next steps for supporting a child who has experienced a TBI. This included how knowledge is best developed in the different, but often overlapping, professional groups working with these children.

The reason this research aimed to assess EPs and education, health and social care professionals' current knowledge of TBI in children is so that gaps could be identified, which could inform professional practice and aid multi-disciplinary working. This was important as, if professionals are inadequately informed of the nature of difficulties following a TBI, it may lead to the child being misunderstood and, if left unsupported, it could leave them vulnerable to social and school exclusion. Moreover, as there are a large number of young people with a TBI within the youth justice system (Clasby et al., 2020), it is important that brain injuries are identified, and the consequences

managed, at an early stage to attempt to reduce this impact. In addition, this research aimed to contribute to one of the key recommendations from the All-Party Parliamentary Group on ABI (UKABIF, 2018), which is for all education professionals to receive appropriate training on brain injury that is specifically pertinent to them. This study aimed to discover the core components that make brain injury training effective for education professionals and how training should be adapted for other professionals, including EPs and health and social care professionals. Health and social care professionals have been included, alongside education professionals and EPs, due to the importance of these sectors working collaboratively to support children with a special educational need (DfE & DH, 2014), including a brain injury. It is also important to include them because each of these sectors are likely to be involved, in some capacity, with brain-injured children, either as a result of the brain injury or as a result of the physical, cognitive, social, emotional or behavioural changes resulting from the injury. By including all of them in this research, a holistic and multi-disciplinary approach can be developed.

This research also aimed to explore how professionals' attributions could impact their understanding of TBI and feelings of competence. This was important as research demonstrates that professionals' attributions are often derived from their experiences (Linden et al., 2013). Therefore, if professionals lack experience, they may make misattributions about brain-injured children, which could be detrimental to the support they receive (Medway, 1979). This further demonstrates the importance of understanding professionals' current knowledge and attributions to ensure brain-injured children are effectively supported.

3.2.11 Research Questions

As a result of these aims the following research questions were posed:

Quantitative: Research Questions (RQ)

RQ1. How much knowledge do EPs and education, health and social care professionals hold about children with a TBI?

It was hypothesised that TBI knowledge scores between the professional groups would vary overall and in relation to four key themes: ‘recovery and rehabilitation’ ‘cognition and learning’, ‘behavioural and emotional’ and ‘physical’ difficulties.

RQ2. Do the TBI knowledge scores differ by ‘professional group’ and/or ‘years in service’?

It was hypothesised that there would be a significant difference between TBI knowledge scores and ‘professional groups’ and between TBI knowledge scores and ‘years in service’.

Qualitative: Research Questions

Due to the inductive nature of qualitative methods, hypotheses were not generated for RQ 3, 4 and 5. However, propositions were generation for RQ3 (see 3.3.6 in Methods section) due to the deductive element of this research question related to Attribution Theory.

RQ3. Do EPs and education, health and social care professionals make different attributions regarding a child's presentation depending on a child's perceived level of need (no apparent need, an unidentified need, or TBI)?

RQ4. What value do EPs and education, health and social care professionals place on multi-disciplinary working around children with a TBI and what are the barriers and facilitating factors to doing this?

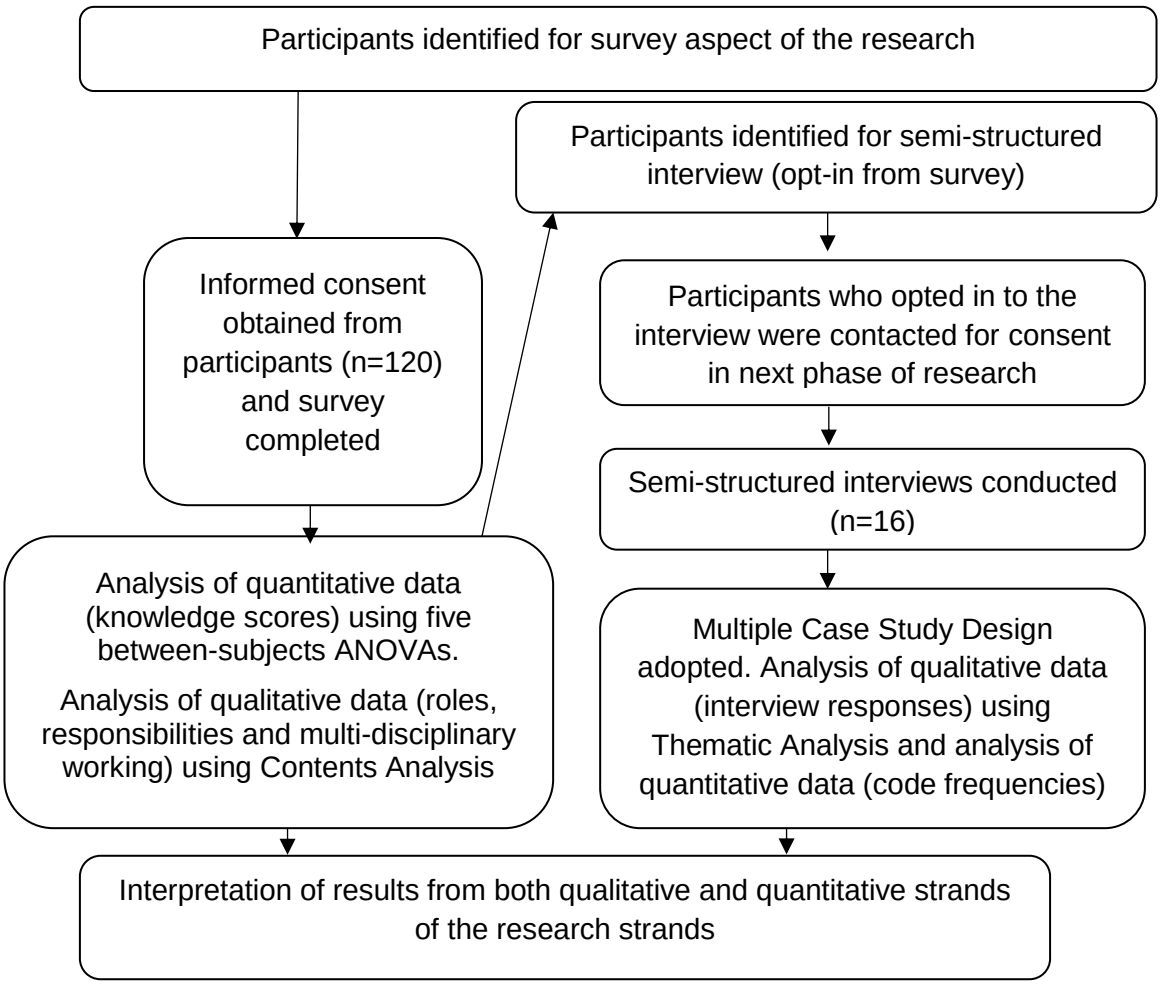
RQ5. What do EPs and education, health and social care professionals perceive theirs, and other professional groups', roles and responsibilities to be when working with children with a TBI?

3.3 Methods

3.3.1 Design

A mixed methods design was used to explore professionals' knowledge and attributions towards children with a TBI, alongside their perceived roles and responsibilities, and views on multi-disciplinary working. In particular, a fully mixed sequential equal status design was used as it enabled the combining of data during data collection, analysis and interpretation (Powell et al., 2008). In this design, one phase (quantitative) preceded another (qualitative) and both phases had equal weighting at both the analysis and interpretation stages. Figure 3.1 provides a visual representation of the overall research design. A mixed methods approach was used to facilitate the analysis of the research questions posed, enhance the richness of the data collected and aid triangulation (Powell et al., 2008; O'Cathain et al., 2010). Each phase is outlined in more detail below.

Figure 3.1: Diagrammatic Representation of Methods: Fully Mixed Sequential Equal Status Design



3.3.2 Participants

An opportunity sampling method was used to recruit EPs and education, health and social care professionals. This sampling method involved selecting people from the target population who were available at the time and willing to participate in the research (McLeod, 2022). This method was selected as it ensured the target population was reached and it was a quick and efficient way of selecting participants. Despite these benefits, this method might not have provided a representative sample of the population, and could have introduced bias into the research.

The research was advertised through the use of a recruitment poster (see Appendix I). EPnet (mailing list for Educational Psychologists), secondary school forums, health and social care forums and social media were some of the mediums explored for recruitment. Social media outlets utilised were: Facebook (for example, the SENCO Network Group page), and the researcher's own Twitter and Instagram accounts. Professionals were also contacted through the researcher's placement EP service and through the researcher's own contacts. The participants were either emailed the recruitment poster or viewed it on social media. Professionals from a variety of roles took part in the research. These are outlined in Table 3.1, alongside the number of participants in each role.

Table 3.1: Participants' Roles in each Sector

Education (n=43)	Health (n=20)	Social Care (n=14)	EP (n=43)
SENCO (8)	GP (4)	Social worker (13)	Lead psychologist (1)
Teacher (21)	GP trainee (1)	Play therapist (1)	Assistant EP (5)
TA (4)	Dental Surgeon (1)		Trainee EP (17)
Education advisor (2)	Consultant (infectious diseases) (1)		EP (20)
Director of ITE (1)	Physiotherapist (2)		
Assistant Head teacher (1)	Nurse (2)		
Moving and handling coordinator (1)	Clinical psychologist (2)		
Safeguarding officer (3)	Children's support assistant (1)		
Autism outreach worker (1)	Speech and language therapist (2)		
Education and mental health practitioner (1)	Paediatric neuropsychologist (2)		
	Developmental therapist (1)		
	Psychiatrist (1)		

Participants who opted in to complete the survey were screened against inclusion/exclusion criteria (see Table 3.2) and those that met the relevant criteria were contacted for involvement. If participants changed their mind, their data could be deleted, however, no participants requested this throughout the process. All aspects of the research were voluntary and required the participants to opt-in.

Table 3.2: Inclusion and Exclusion Criteria

Inclusion Criteria	Exclusion Criteria
Individuals that work in any role in education, health, social care or educational psychology	Individuals that are not currently in one of the roles outlined in the inclusion criteria
They are qualified to work with children aged 11-18	They are not qualified to work with children aged 11-18
They work in the UK	They do not work in the UK

Participants varied in age, ethnicity, gender and years of experience, and were all qualified to work with children aged 11-18. They did not need to have experience of working with children with a brain injury. Demographic information on survey participants are outlined in Table 3.3a, and for semi-structured interview participants in Table 3.3b.

Table 3.3a: Demographic Information on Survey Participants

Demographic Information	Survey Phase (120 participants)
Age	
18-25	10%
26-33	27.5%
34-41	24.2%
42-49	28.3%
50-57	4.2%
58-65	5.8%
65+	0%
Gender	
Male	13.3%
Female	86.7%
Other	0%
Ethnicity	
Asian/Asian British – Pakistani	1.7%
Asian/Asian British – Bangladeshi	0.8%
Asian/Asian British – Chinese	0.8%
Any other Asian background	1.7%
Black, Black British, African or Caribbean – Caribbean	1.7%
Any other Mixed or multiple ethnic group	3.3%
White - English/Welsh/Scottish/Northern Irish/British	78.3%
White – Irish	3.3%
Any other White background	6.7%
Other Ethnic group – Arab	0.8%
Any other ethnic group	0.8%

English as a Second Language	6.7%
Years in service	
0-3	43.3%
3-6	10.0%
6-9	11.7%
9-12	10%
12+	25%
Professional field	
Health	16.7%
Education	35.8%
Social Care	11.7%
EPs	35.8%
Highest qualification achieved	
GCSE	1.7%
A-Level	2.5%
Degree	18.3%
Post-graduate qualification	25.8%
Masters	30.8%
Doctorate	20.8%
Has experience of Brain Injury	51.7%

Table 3.3b: Demographic Information on Semi-Structured Interview Participants

Demographic Information	Semi-structured interview Phase (16 participants)
Age	
18-25	12.5%
26-33	12.5%
34-41	56.25%
42-49	12.5%
50-57	0
58-65	6.25%
65+	0
Gender	
Male	12.5%
Female	87.5%
Other	0
Ethnicity	
Black, Black British, African or Caribbean – Caribbean	6.25%
Mixed or multiple ethnic groups - White and Black Caribbean	6.25%
White - English/Welsh/Scottish/Northern Irish/British	81.25%
Any other White background	6.25%
English as a Second Language	0
Years in service	
0-3	31.25%
3-6	0
6-9	18.75%
9-12	6.25%
12+	43.75%

Professional field	
Health	25%
Education	25%
Social Care	25%
EPs	25%
Highest qualification achieved	
Degree	31.25%
Post-graduate qualification	31.25%
Masters	31.25%
Doctorate	6.25%
Has experience of Brain Injury	62.5%

As can be seen from the demographic data in Tables 3.3a and 3.3b, the vast majority of participants were white, female, and educated to at least degree level. Whilst this may be in some respects representative of the professions involved in this study (Association of Educational Psychologists [AEP], 2021; Department for Education, 2023; Nuffield Trust, 2022), it is not representative of the wider population (Office for National Statistics, 2023; Office for National Statistics, 2022) or of those usually impacted by brain injury. This is because, typically, individuals who have had a personal experience of brain injury are: male (Frost et al., 2013), from a disadvantaged background (Trefan et al., 2016), or a 'person of colour' (Brenner et al., 2020). It was therefore important to acknowledge that the differences between the participants in this study and the wider population could introduce bias into the data. As a result, this was considered when interpreting the results.

3.3.3 Procedure

Survey - Quantitative Phase

The quantitative phase of the study aimed to address RQ 1 and 2 and determine professionals' knowledge of TBI in children. It also aimed to assess if there were differences in knowledge due to the participants' profession or years in service. In order to do this, an online survey was circulated to participants, based on three pre-existing surveys that had been modified to ensure that they met the needs of this study (see Appendix FF for more details on the pre-existing surveys, Appendix G for the final revised survey, Appendix H for details on how the survey was amended and Appendix N for scoring).

An a priori power analysis was conducted using G*Power3 (Faul et al., 2007) to assess the number of participants required for the quantitative aspect of the study. A fixed effect ANOVA was used, with a large effect size (f^2=0.8) and an alpha of 0.05 to calculate the required sample size. Results showed that a minimum total sample of 54 participants was required to achieve a power of 0.95. As 120 participants took part in this phase of the research, it demonstrated that a sufficient number of EPs and education, health and social care professionals were recruited to the study to ensure that the cross-professional participant comparisons were statistically viable.

An opportunity sampling method was used to recruit participants, which involved targeting EPs and education, health and social care professionals who were available and willing to participate in the research.

In order to ensure the survey was fit for purpose and accessible to all participants, it was piloted with eight individuals, two from each professional group. Piloting was completed by emailing the survey to the relevant participants and then requesting feedback via email to the researcher. Amendments included making the language more accessible to give clarity to some questions, as well as changing the Likert scale response options from descriptive to numerical. These changes are shown in purple in the amended survey (Appendix H) with the final survey in Appendix G.

Once finalised, the survey was created in Opinio, an online survey platform. If participants wished to take part, they could access the survey via the link on the research poster, social media or ask for the link directly from the researcher via email. The participant information sheet and consent form (see Appendix J) were on the first page of the survey so that all participants were aware of what the survey involved and had to give their consent before proceeding.

Once consent had been received, the website indicated for the participant to start the survey. If the participant wished to complete the survey over a number of sessions, there was an option for participants to save their progress and continue another time. The survey closed in July 2022 and all data collected through Opinio was transferred to SPSS for analysis.

The survey gathered data on the participant's role and years in service, along with other socio-demographic factors so that analysis could take this into consideration. In the survey, participants were asked to answer knowledge-based questions about children with a TBI using a Likert scale.

The number of correct responses were calculated through totalling the number of correct answers on each survey (see Appendix N for scoring). This was calculated for the whole survey as well as for the key domains of 'cognition and learning'; 'behavioural and emotional' difficulties; 'recovery and rehabilitation' and 'physical' difficulties to assess where professions' knowledge varied. These domains were derived from the researcher looking for commonality in the pre-existing surveys' questions. Appendix Z shows the themes derived and how they were grouped into the key domains above.

In order to assess any differences in knowledge due to 'professional group' or 'years in service', a fixed effect ANOVA was carried out. There were two independent variables (IV), which each had further levels:

- The professional group (IV):
    - education; health; social care; educational psychology
- The professional's years in service (IV):
    - 0 - 3; 3 – 6; 6 – 9; 9 –12, 12+ years
- The dependent variable (DV) was TBI knowledge, which was measured by correct responses to the survey.

In addition to this, further between-subjects ANOVAs were planned for each of the knowledge domains to assess if knowledge in each of these areas differed between professions.

Survey - Qualitative Phase

The qualitative element of the survey aimed to gather data on professionals' views of multi-disciplinary working practices (RQ4) and their perceptions of their own, and other professionals', roles and responsibilities when working

with children with a TBI (RQ5). This data was gathered through open questions placed at the end of the survey.

Once this data had been collected, information was transferred into NVivo for analysis. NVivo is a software program which enables the analysis of unstructured text, audio, video, and image data. A contents analysis was carried out (Jones, 1996; Hsieh & Shannon, 2005), which is a type of thematic analysis where responses are reviewed in detail, and then grouped into broad categories by meaningful themes and then divided into further specific categories. The reason this form of analysis was used was to derive meaning from the gathered data in order to draw realistic conclusions (Polit & Beck, 2006). It is a valuable method as it stops researchers from using predefined categories (Kondracki & Wellman, 2002), and enables broad and specific categories to be derived directly from the data.

It is also effective in being able to identify themes from large amounts of data and enables the quantification of qualitative data. This was important as it facilitated the production of key categories within the dataset.

Survey Measures

The survey used in this study was based on three pre-existing instruments all of which measured different aspects of TBI knowledge. The instruments used were the Common Misconceptions about Traumatic Brain Injury Questionnaire [CM-TBI] (Gouvier et al., 1988); the Head Injury Knowledge Scale [HIKS] (Ono et al., 2011) and the Informal Carer's Knowledge of Traumatic Brain Injury Questionnaire [IC-KTBIQ] (Bamatraf et al., 2020) (see Appendix FF for more details). These three surveys were revised to make

them suitable for this research and then combined to make one survey, which was then piloted, as outlined in the 'Procedure' section.

Once finalised, a reliability analysis was carried out on the survey to determine the internal consistency of the scale within the current sample using Cronbach's alpha (α) (Field, 2005). Findings indicated that the survey devised for this study had good internal consistency, α =.84, and demonstrated an equal or higher internal consistency than using the surveys individually. Further details on each of the measures are given in Appendix FF, including how they were edited for this research.

Additional questions were devised by the researcher and added to the survey to elicit professionals' perceptions of the roles and responsibilities of professionals working with children with a TBI as well as their views on multi-disciplinary working. These were not based on any pre-existing measures.

Semi-structured Interview Qualitative and Quantitative Phase

In order to answer RQ3, participants took part in a semi-structured interview, which asked them for their attributions about two fictional children's presentations, prior to a brain injury, after a change in presentation had occurred and then after a TBI diagnosis had been revealed. The attributions of interest were professionals' views on the cause, stability and controllability of the children's presentations, along with any other attributions they made. The children's cases were presented in the form of two vignettes, which were written based on brain-injured children's experiences outlined on The Children's Trust website (2022). Each vignette contained two paragraphs and was written from the voice of the child. In the first paragraph, the child

described their presentation in the past tense when they were not experiencing any difficulties. In the second paragraph, the child described their current presentation and the difficulties they were experiencing. Professionals' attributions were assessed at three stages for each vignette: when the child presented without difficulty (paragraph 1), when the child's presentation changed (paragraph 2) and when the TBI diagnosis was revealed as the cause of the change in presentation (paragraph 1 and 2).

The semi-structured interview used alongside these vignettes enabled real-life examples to be explored in more detail than would have been possible with a survey. The semi-structured interview aspect of the study was opt-in and an equal number of participants from each sector were recruited to enable comparison between sectors. Self-report data can be unreliable due to factors around social desirability and reliability (Cook & Campbell, 1979) and so a semi-structured interview was used to enable participants' views to be further explored and to derive a greater understanding of the reasons behind participants' attributions.

Questions within the semi-structured interview were theoretically driven and deductive in nature and based on Whittingham et al.'s (2008) Parental Attribution Questionnaire (PAQ). The final semi-structured interview can be found in Appendix L with the annotated, amended version in Appendix M.

Once the semi-structured interview schedule was finalised, an equal number of participants from the different professional groups were recruited. Purposive sampling was used as it enabled the selection of participants due to certain characteristics needed for this research. All participants who opted-in to this aspect of the research had the required characteristics as these had

been previously specified in the inclusion/exclusion criteria (shown in Table 3.2). Participants who opted-in were contacted to ask if they still wanted to be involved. If participants had changed their mind or did not respond to the researcher's email, their personal data was deleted at this stage. Participant recruitment was halted when sufficient participants for each professional group had been recruited.

All interviews took place online, via Teams, at a time and date specified by the participant to ensure it was convenient for them and to encourage engagement. Interviews took between 1-2 hours to complete depending on the participants' contribution.

The interview involved the researcher asking questions to the interviewee from the script shown in Appendix L. The relevant part of the vignettes (see Appendix K) were presented by the researcher on screen throughout the interview for participants to refer to. Each question from the semi-structured interview was read out by the researcher and participants' responses were recorded for transcription post-interview.

The data from the semi-structured interviews was initially transcribed through the transcription service within the online platform used for the interviews. This was then corrected by the researcher manually through relistening to the recording and transcribing directly onto the semi-structured interview script. This was then uploaded into NVivo for analysis.

3.3.4 Multiple Case Study Design

An exploratory multiple case study design (Yin, 2014) was used to analyse the semi-structured interview data and answer RQ3. First, a thematic analysis was carried out to derive themes from participants' responses. Then, in order to triangulate the themes derived, code frequencies were calculated.

Case studies are typically used to gain a deeper understanding of a comparatively small number of individuals, problems, or situations (Patton, 2002), with a multiple-case study design enabling an in-depth exploration of a phenomena to take place through conducting a series of separate experiments on associated topics. Replication takes place over two stages. Firstly, a literal replication stage occurs where cases are selected to obtain similar results. This is followed by a theoretical replication stage, where cases are chosen to explore any patterns found in the initial cases. According to this approach, if a significant number of the cases demonstrate similar results, there is support for the development of a theory that describes the phenomena (Eisenhardt, 1989).

A multiple-case study design was used due to wanting to understand if the attributions made by professionals were similar across the two vignettes. Each case study represented a different vignette. The data from the semi-structured interviews was used to explore the differing attributions as a whole and in each of the case studies.

It was expected that there would be similarities and differences in professionals' attributions between the two case studies due to each child having a different presentation but the same TBI diagnosis, also known as a theoretical replication (Yin, 2014). Due to the low number of cases in this

study, it was not possible to make statistical generalisations from the analysis, however, important theoretical insights were drawn around the differences in attributions between the two vignettes, deepening understanding in this area. The findings from this part of the study were tested against theoretical propositions so that analytic generalisations could be made (Yin, 2014) and the nature of these contrasting perspectives could inform future research in this area.

In terms of analysing the data, a thematic analysis was carried out on the semi-structured interviews to identify themes in the attributions that the professionals made about the fictitious children with a TBI. In addition, code frequencies were calculated to corroborate the themes derived.

3.3.5 Thematic Analysis

In order to analyse the attributions that professionals made about the two vignettes, a thematic analysis was carried out, which is a means of identifying, analysing and reporting patterns within a data set (Braun & Clarke, 2022). This can incorporate both deductive and inductive approaches, and both were adopted as part of this analysis. In this study, some themes were based on Attribution Theory (Weiner, 1985), and were therefore deductive in nature as they were based on existing theoretical principles. However, some had an inductive element, which means they were grounded in the data (Patton, 2002) rather than having an existing theoretical basis. This was done in order to better understand alternative thoughts that professionals may have around their work with children with a TBI. Table 3.4 outlines the process followed in this study and is based on Braun and Clarke (2006).

Table 3.4: Thematic Analysis (TA) Phases

TA Phase	TA Process (general)	TA Process (study-specific)
Familiarise yourself with the data	Transcribe data, read and re-read data, note down initial thoughts	Transcriptions downloaded and corrected by researcher listening to recordings alongside transcriptions Initial reading of transcripts and ideas noted down
Generate initial codes	Systematically code the whole data set and collate data pertinent to each code	Transcripts uploaded to NVivo Researcher coded the transcripts inductively and without theoretical underpinning
Search for themes	Collate codes into possible themes and gather data relevant to each potential theme	The researcher reorganised, edited and combined similar codes taking into consideration Attribution Theory (deductive element) Codes joined to form potential sub-themes, sub-themes joined to form themes Data that did not fit with Weiner's Attribution Theory were grouped separately into new themes Rereading of all extracts to ensure they were allocated appropriately
Reviewing themes	Check if the themes work in relation to coded extract as well as the whole data set, then generating a thematic map showing the analysis	Peer analysis and member checking of coding and suggested amendments given to researcher Researcher reviewed the proposed amendments and made changes where appropriate Initial thematic map produced
Defining and naming the themes	Further scrutiny of the data to refine each theme and the overall analysis	Refine the thematic map included ensuring the names of themes/sub-themes accurately described the extracts they contained
Producing a report	Select extract examples and carry out a final analysis of these extracts. Link the analysis back to the research question(s) and literature	Thematic map finalised Analysis written up

In order to ensure the trustworthiness of the thematic analysis, themes derived were corroborated by a colleague who had a special interest in brain injury research. This external check is recommended by Lincoln and Guba (1985) to verify the findings against the raw data. Luo and McGregor (2020) argue that this peer review process facilitates the checking of the validity, significance and originality of the work, however, they also argue that the process can be biased as there is a lack of transparency over how the process is carried out. In the interests of transparency, in this research, this process involved sharing the dataset and themes derived, providing an overview of the whole study and a copy of the initial thematic map and having a transparent discussion about the themes and terminology used. Amendments were made in light of this discussion. These included, amalgamating initial sub-themes where there appeared to be an overlap in meaning. For example, combining 'professional experience' and 'training needs' into one sub-theme. The overall themes were also renamed to make their meaning more apparent.

In addition to this, in order to further support the trustworthiness of the findings of this research, member checking (Lincoln & Guba, 1985) was carried out with two participants from each professional group. Member checking involves taking any ideas, or in this case themes, back to the participants for their confirmation or to gather more information to further develop the categories (Charmaz, 2006). In this study this involved a follow-up interview with participants, after the initial data analysis, to read, review, and validate the common themes.

Lincoln and Guba (1985) suggest that member checking is the most crucial form of credibility check, and Braun and Clarke (2013) argue that this represents a qualitative version of reliability, as it allows further active involvement of the participants in correcting any misrepresentations of their experiences or, in this study, their attributions. It has been criticised for not typically generating any deeper opinions or reflections (Doyle, 2007; Harvey, 2015). However, in this research, it led to amendments to theme names and a greater understanding of what made professionals feel competent when working with brain-injured children, which was the inductive element of the TA. As a result, it was deemed an important part of the research process.

3.3.6 Theoretical Propositions

Propositions are statements which reflect the summative findings and conclusions of a study (Miles et al., 2020). The propositions in this study had theoretical underpinnings and were tested against each vignette in order to address RQ 3. These propositions were then validated based on whether they were supported by the data collected. Explanations were then considered within the theoretical framework (Cook & Botterill, 2005).

Proposition 1:

Professionals' attributions about the causes of a child's presentation will change depending on how the child presents.

Proposition 2:

Professionals' attributions about the stability of a child's presentation will change depending on how the child presents.

Proposition 3:

Professionals' attributions about the controllability of a child's presentation will change depending on how the child presents.

Proposition 4:

Professionals' attributions about their own competence will change depending on the child's presentation.

Semi-Structured Interview

Vignettes

Vignettes are hypothetical stories about a person or situation, presented to participants during qualitative research so that sensitive topics can be explored (Hughes & Huby, 2004). They enable a researcher to gather the perceptions and, in this case, attributions, of participants with respect to the situation or individual they are presented with (Steiner et al., 2016).

Two vignettes (see Appendix K) were created for this study for use during the semi-structured interview. Participants were presented with two stories, each describing a fictional child, and then were asked questions about them. Each vignette contained two paragraphs. In the first paragraph (Part A of the semi-structured interview), both children presented as having no apparent difficulties whilst, in the second paragraph, each child's presentation changed without reason (Part B of the semi-structured interview). In Part C of the semi-structured interview, the interviewer revealed both children had experienced a TBI and that this was the reason for the child's change in presentation. The same questions were asked in each of the different parts of

the semi-structured interview so only the presentation of the child differed each time.

The vignettes created for this study were based on real examples of brain-injured children from The Children's Trust website (2022). However, the contents were manipulated to give the researcher control over the independent variable, in order to try and improve internal and external validity (Aguinis & Bradley, 2014). In this study, this meant ensuring that the child in each vignette had an equal number of changes in presentation between paragraph one and two so that a difference in the presenting difficulties could not be seen as a confounding variable.

In paragraph two, the presentation of each child differed in order to assess if the professionals' attributions changed as a result. The first vignette was about a child called Milo and, when his presentation changed, he demonstrated physical difficulties such as being slower and more clumsy, low mood and cognitive difficulties in relation to accessing his school work. The second vignette was about a child called Aya and, when her presentation changed, she became angry, emotionally dysregulated and demonstrated disinhibition in the form of sexualised behaviour.

The vignettes were also based on the SPECS (Social, Physical, Emotional, Cognitive, Spiritual) framework, which include all factors known to be important for the quality of life of children with a brain injury (Jim & Norton, 2014). To support the credibility of the vignettes, they were piloted with professionals at The Children's Trust, UK's leading charity for children with a brain injury, and amended according to their feedback.

Interview Schedule

A semi-structured interview schedule was developed by the researcher, based on Whittingham et al.'s (2008) Parental Attribution Questionnaire (PAQ), to gain an insight into professionals' attributions towards children with a TBI. Questions within the semi-structured interview were theoretically driven and deductive in nature. They were also designed around the dimensions of Attribution Theory, which meant including questions about the cause, stability and controllability of a child's presentation.

In the PAQ, parents were asked to rate their agreement with a series of attributional statements. The PAQ was adapted for use in this study so that the language was applicable for use with professionals and open-ended clarifying questions were added so that participants could explain the attributions they were making. The final semi-structured interview is in Appendix L with the amended version in Appendix M.

In order to ensure the language used within the semi-structured interview was accessible, and the interview schedule was fit for purpose, the script for the semi-structured interview was piloted with four participants, one from each professional group. Amendments included rewording some of the statements to ensure clarity across professional groups in terms of terminology used, and the inclusion of the names of the children in the vignette 'Milo' and 'Aya', as opposed to a generic term such as 'the child', to make the interview more realistic.

Questions in the semi-structured interview were pre-determined prior to the interview, however, additional questions were used as prompts, when

necessary, to enable the deeper exploration of topics raised by the participants. The use of empathic reflections, probes, and open-ended questions were also used to facilitate the exploration of each participant's thoughts and feelings. It was, however, important that the researcher did not deviate too far away from the pre-determined questions in order to ensure a consistent experience for each participant and minimise interviewer bias (Osborne, 1990). In order to control for this, additional questions were limited to expansion questions, which offered clarification of the point being made. Unrelated discussions were minimised and notes were taken throughout each interview so that accurate records of the discussion were taken.

The researcher ensured that an appropriate number of participants were recruited for the semi-structured interview. Braun and Clarke (2013) recommend between 6-15 participants for interviews where thematic analysis data is only a part of a whole professional doctorate project. However, as an equal number of participants from each of the professional groups was desired, and take up of the second phase of the project was high, sixteen participants took part in the semi-structured interviews; four from each professional group.

3.3.7 Trustworthiness of Findings

Due to the trustworthiness of qualitative research being called into question (Shenton, 2004), Guba (1981) devised his own criteria for trustworthiness of qualitative methods which coincide with quantitative methods namely: credibility, as opposed to internal validity; transferability, as opposed to external validity; dependability, as opposed to reliability; and confirmability, as opposed to objectivity. Shenton (2004) defines credibility as ensuring that

the study measures what it intends to. In order to support the credibility of the findings in this research, and reduce the likelihood of researcher bias, participants opted-in to all phases of the study to ensure all participants were genuinely willing to take part and therefore more likely to give honest answers. Questions in the semi-structured interview were also iterative to ensure any contradictions were found. The use of a multiple case study design for the analysis of professional attributions also meant that the themes derived from the thematic analysis were corroborated through code frequencies.

Transferability is defined in quantitative methods as external validity and is the extent to which findings can be applied to other situations (Merriam, 1998). This was ensured in the quantitative findings by carrying out a G*Power calculation of the number of participants needed to ensure the results were statistically viable. As the number of participants exceeded requirements, it is believed that the findings regarding the TBI knowledge of professionals could be generalised to a wider population. In relation to the qualitative data, as there were only 16 participants, four from each professional group, transferability of findings was more challenging. Instead, as Gross (1998), Borgman (1986) and Pitts (1994) conclude, the qualitative findings were thought of as gaining a baseline understanding about the attributions of these professionals, which could be built upon by other researchers, using the same methods, in order to better understand the extent to which these findings could be generalised.

Dependability is the extent to which similar findings would be found if the same methods were employed (Shenton, 2004). For both the quantitative

and qualitative aspects of the research, the full details of the research design and its implementation, the operational details of data gathering, along with the survey, vignettes and semi-structured interview used in this study have been provided, in the main body and appendices, to enable the replication of this research.

In order to support the confirmability of the data, which is defined as the objectivity of the findings, in the multiple case study design, the themes derived from the thematic analysis were corroborated through code frequencies.

3.3.8 Ethical Considerations

The Departmental Ethical Committee at UCL was applied to for ethical approval due to participants being healthy adults and the research being non-invasive. This was approved in October 2021 (see Appendix AA for Ethics Application and Approval Letter).

Participants' rights were ensured throughout, including their right to withdraw, right to access their information and right for their data to be removed. It was made clear to participants that they could withdraw from the study at any time and without reason. However, they were also made aware that this would not be possible after July 2022 as the data would have been anonymised and collated by this point. Both the survey and semi-structured interviews were conducted online to reach as wide an audience as possible. Participants' permission for the interviews to be recorded and transcribed was gained prior to the interview commencing.

In order to support the wellbeing of participants, in the unlikely event that this study caused psychological stress, a multi-layered support pathway was devised. This meant that, if one of the participants experienced distress, perhaps due to recollecting past experiences of TBI, they would be directed, in the first instance, to their own support system such as their family, friends, union or colleagues. If they did not have this support system, would prefer not to speak to them or had explored this avenue but needed further support, they could contact the lead researcher to investigate other support organisations around them or to gain the necessary support, whichever was deemed most appropriate.

Finally, in order to ensure the research findings represented the participants' lived experiences, member checking was carried out on the thematic analysis in order to ensure that participants had a right of reply in relation to what was being written about them.

3.4 Results

This section details the results of this study and has been organised in order of research question. The quantitative findings on professionals' TBI knowledge, is discussed first. The qualitative findings follow with professionals' attributions towards brain-injured children outlined first, followed by professionals' views on multi-disciplinary working and ending with professionals' perceptions of theirs' and others' roles and responsibilities.

3.4.1 Quantitative Analysis: Professionals' TBI Knowledge

RQ 1 and 2. How much knowledge do EPs and education, health and social care professionals hold about children with a TBI? Do the TBI knowledge scores differ by 'professional group' and/or 'years in service'?

A between-subjects ANOVA was carried out in order to determine whether there was a significant effect of 'professional group' and 'years in service' on TBI knowledge scores achieved.

Descriptive statistics (means and standard deviations [SDs]) were calculated using IBM SPSS and all data was examined for outliers. Further assumptions of normality and homogeneity of variance were also examined. Homogeneity of variance was shown through non-significant results for 'professional group' and 'years in service'.

All data was analysed for normality with no violations observed. Participants' professions varied with the majority of participants being education professionals (n=43) or EPs (n=43). Participants' years in service ranged from 0-12+ years, with the majority having 0-3 years' experience (n=52) or 12+ years' experience (n=30).

The between-subjects ANOVA demonstrated a significant difference in the effect of 'professional group' (IV) on knowledge scores (DV) achieved [$F(1,120) = 3.372$, $p=0.021$, $\eta p2 = 0.092$]. There was a non-significant effect of 'years in service' (IV) on knowledge scores (DV) achieved [$F(3, 120) = 0.962$, $p=0.432$, $\eta p2 = 0.037$].

As a significant result was found between 'professional group' and knowledge scores, post hoc comparisons were carried out to further explore

these differences. As the homogeneity of variance was equal, the Bonferroni test was used. Results from this indicated that there was a significant difference in knowledge scores between education and health professionals (p<0.001) and education professionals and EPs (p=0.01).

Profile plots of the estimated marginal means demonstrated higher knowledge scores among health professionals compared to the other professional groups, with EPs being second and education professionals demonstrating the lowest knowledge scores (see Figure 3.2). Table 3.5 contains the mean knowledge scores of each professional group.

Figure 3.2: Professionals' Mean 'Knowledge of TBI' Scores

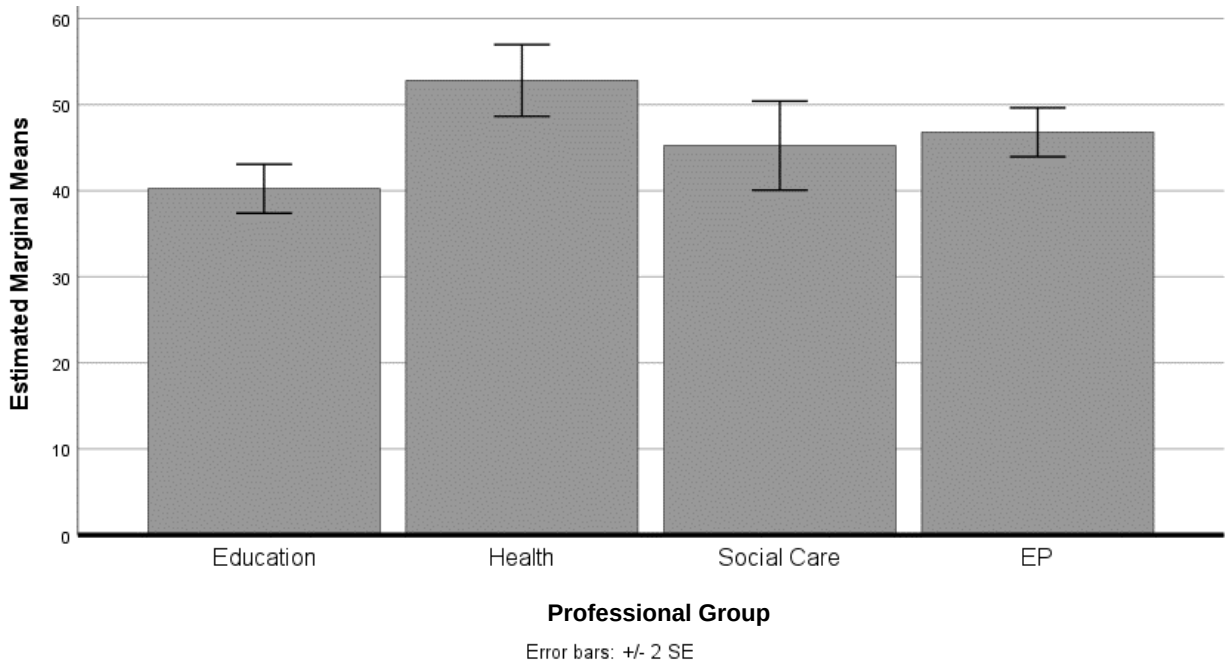


Table 3.5: Mean Total Knowledge Scores by Professional Group

Professional group	Mean Total Knowledge Score /97	Standard Deviation (SD)
Education	40.23	5.968
EPs	46.79	9.528
Health	52.8	8.569
Social Care	45.67	8.965

As a result of these findings, further between-subjects ANOVAs were carried out to determine if there was a significant difference between professional groups and the different strands of knowledge being tested in the survey. These strands were ‘cognition and learning’; ‘behaviour and emotion’; ‘recovery and rehabilitation’ and ‘physical’ difficulties.

In relation to the ‘cognition and learning’ strand, there was a significant difference in the effect of ‘professional group’ on knowledge scores achieved [$F(3,118) = 4.117$, $p=0.008$]. As a significant result was found between ‘professional group’, post hoc comparisons were carried out to further explore the differences that existed between professional groups on their ‘cognition and learning’ knowledge scores. As the homogeneity of variance was equal, the Bonferroni test was used. Results from this indicated a significant difference in knowledge scores on ‘cognition and learning’ between education and health professionals ($p=0.008$). Table 3.6 outlines the mean knowledge scores for ‘cognition and learning’ by profession and illustrates that health professionals had the greatest knowledge in this area, followed by social care professional with education professionals scoring the least.

Table 3.6: Mean Cognition and Learning Knowledge Scores by Profession

Professional group	Mean Knowledge Score – Cognition and Learning	Standard Deviation (SD)	Standard Error (SE)
Education	11.12	3.594	0.548
EPs	13.07	4.085	0.623
Health	14.45	3.086	0.690
Social Care	13.17	4.030	1.118

In relation to the 'recovery and rehabilitation' strand, there was a significant difference in the effect of 'professional group' on knowledge scores achieved [F (3,118) = 11.279, p<0.001]. As a significant result was found between professional groups, post hoc comparisons were carried out to further explore the differences that existed between professional groups on their 'recovery and rehabilitation' knowledge scores. As the homogeneity of variance was equal, the Bonferroni test was used. Results from this indicated a significant difference in knowledge scores on 'recovery and rehabilitation' between education and health professionals (p<0.001) and education professionals and EPs (p<0.001). Table 3.7 shows that health professionals had the highest knowledge scores, with EPs and social care professionals being closely matched and education professionals having the least knowledge in this area.

Table 3.7: Mean Recovery and Rehabilitation Knowledge Scores by Profession

Professional group	Mean Knowledge Score – Recovery and Rehabilitation	Standard Deviation (SD)	Standard Error (SE)
Education	14.42	3.917	0.597
EPs	17.86	3.536	0.539
Health	19.6	3.470	0.776
Social Care	16.85	3.262	0.905

In relation to the 'physical' strand, there was a further significant difference in the effect of 'professional group' on knowledge scores achieved [F (3,118) = 5.194, p=0.002]. As a significant result was found between professional groups, post hoc comparisons were carried out to further explore the differences between professional groups and their knowledge scores on 'physical' difficulties in a TBI population. As the homogeneity of variance was equal, the Bonferroni test was used. Results from this indicated a significant difference in knowledge of 'physical' difficulties in the TBI population between health and education professionals (p=0.001). Table 3.8 shows the knowledge scores in relation to 'physical' difficulties for each of the professional groups and illustrates that health professionals continued to have the greatest knowledge, with EPs and social care professional having almost equivalent knowledge, and education professionals having the least knowledge in this area.

Table 3.8: Mean Physical Difficulties Knowledge Scores by Profession

Professional group	Mean Knowledge Score – Physical Difficulties	Standard Deviation (SD)	Standard Error (SE)
Education	5.86	1.726	0.263
EPs	6.40	1.348	0.206
Health	7.45	1.317	0.294
Social Care	6.31	1.316	0.365

In relation to the 'behaviour and emotion' strand, there was no significant difference in the effect of professional groups on knowledge scores achieved [F (3,118) = 2.018, *p*=0.115]. Table 3.9 shows that health professionals demonstrated the greatest knowledge in this area, with EPs and social care professionals demonstrating almost equal knowledge. Education professionals continued to demonstrate the least knowledge.

Table 3.9: Mean Behavioural and Emotional Knowledge Scores by Profession

Professional Group	Mean Knowledge Score – Behavioural and Emotional	Standard Deviation (SD)	Standard Error (SE)
Education	8.81	3.881	0.592
EPs	9.37	3.606	0.550
Health	11.25	3.932	0.879
Social Care	9.0	3.464	0.961

Overall, in answer to RQ 1, when mean knowledge scores were analysed, health professionals' knowledge exceeded all other professional groups. EPs had the second highest knowledge score, social care professionals had the third highest knowledge score and education professionals achieved the lowest knowledge score overall.

In answer to RQ 2, there was a significant difference in knowledge of TBI sequalae between professional groups and specifically in areas of knowledge related to 'cognition and learning', 'recovery and rehabilitation' and 'physical difficulties'. There was a non-significant difference in professional groups' TBI knowledge compared to their years in service. There was also a non-significant difference between professional groups' knowledge of 'behaviour and emotional' difficulties in a paediatric TBI population.

3.4.2 Qualitative Analysis: Professionals' Attributions

RQ3: Do EPs and education, health and social care professionals make different attributions regarding a child's presentation depending on a child's perceived level of need (no apparent need, an unidentified need, or TBI)?

Thematic Analysis

Sixteen semi-structured interviews were recorded and transcribed by the author, with the mean length of interview being 105 minutes (range=66-158 minutes). Transcripts were uploaded to NVivo and coded inductively and without any theoretical underpinning. The author then reorganised, edited and combined similar codes deductively, taking Attribution Theory into consideration. Codes joined to form potential sub-themes, and then sub-themes were joined to form themes. The process of analysis was flexible, so

that all codes could be identified irrespective of whether they were consistent with the theoretical propositions being tested. This was done so that competing explanations and influences could be found (Yin, 2014). Themes generated were classified as global, organising and basic themes. The basic themes represented simple concepts that reoccurred in the dataset. When combined with other basic themes they formed organising themes, which aided understanding of the data. The organising themes enabled the sorting of the basic themes into groups with similar content and were then used to create links with other organising themes to form global themes. The global themes generated summarised the underlying data and articulated the deeper meaning and complexity of the professionals' attributions. This structure is shown in Table 3.10.

Table 3.10: Basic, Organising and Global themes

Global Themes	Organising Themes	Basic Themes
Determinants of Presentation (Locus of Causality)	Internal attributions	Genetic predisposition
		Personal characteristics
		Adolescence
		Personality factors
		Mental health
		Illness
		Learning difficulty
		Innate ability
		Neurodevelopmental difference
	External attributions	Home environment
		Social circle
		School
		Extra-curricular activities
		School-home-peer support
		Risk of exploitation
		Unforeseen circumstances
		Substance abuse
		Grooming and sexual exploitation
	Nature v Nurture attributions	-
	TBI attributions	-

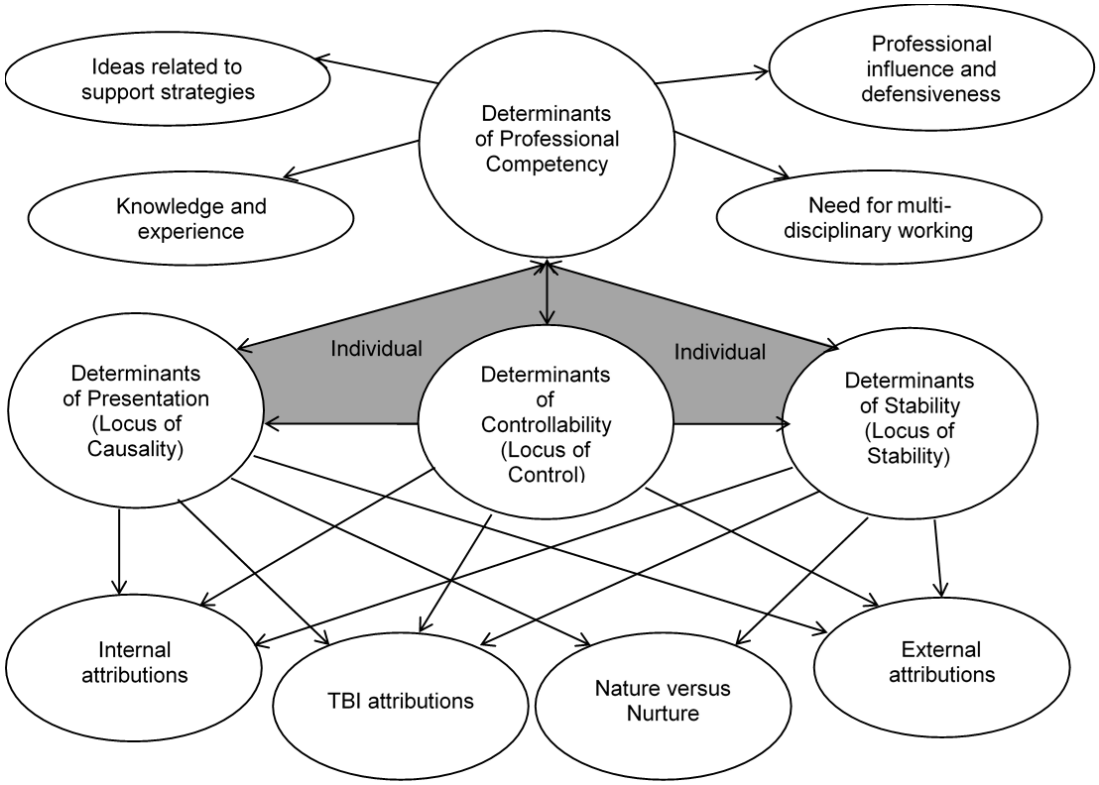
Determinants of Controllability (Locus of Control)	Internal attributions	Personal characteristics Mental health Adolescence Personality factors
	External attributions	School-home-peer support Home environment School Unforeseen circumstances
	TBI attributions	-
Determinants of Stability (Locus of Stability)	Internal attributions	Adolescence Personal characteristics Mental health Identity
	External attributions	Home environment School Unforeseen circumstances Social circle School-home-peer support State of flux Transition
	Nature v Nurture attributions	-
	TBI attributions	-

Determinants of Professional Competency	Ideas related to support strategies	-
	Need for multi-disciplinary working	-
	Knowledge and experience	-
	Professional influence	Professional defensiveness

Once the thematic analysis was completed, a thematic network (Attride-Stirling, 2001) was devised through thematic mapping (Braun & Clarke, 2006), in order to formalise the thematic structure.

The thematic map in Figure 3.3 represents the relationship between the global (circles) and organising (ovals) themes, with the individual at the centre.

Figure 3.3: Thematic Map demonstrating the Interconnection of Global and Organising Themes



This diagram was derived through thorough examination of the thematic analysis in NVivo. The global themes are shown in circles and are interconnected as each participant demonstrated all of these attributions across both vignettes and each scenario.

The 'Determinants of Presentation (Locus of Causality)', 'Determinants of Controllability (Locus of Control)', and the 'Determinants of Stability (Locus of Stability)' were derived deductively through the application of Attribution Theory. Each of these global themes had the organising themes of 'Internal attributions', 'External attributions' and 'TBI attributions', with the 'Determinants of Presentation (Locus of Causality)', and the 'Determinants of Stability (Locus of Stability)' having the additional organising theme of 'Nature

versus Nurture attributions'. The inductively-derived global theme of 'Determinants of Professional Competency' had the organising themes of 'Ideas related to support strategies', 'Need for Multi-Disciplinary Working', 'Knowledge and Experience', and 'Professional Influence'.

Code Frequencies

Code frequencies, overall as well as within each professional group, were calculated in order to corroborate and identify patterns in the themes (Guest et al., 2012) (see Appendix O-R). This was possible as all participants were asked the same questions therefore enabling the accurate counting of qualitative data (Guest et al., 2012). The code frequency data was used alongside the qualitative coded data to ensure the authenticity and accuracy of the themes derived and the appropriateness of the names given to the themes. This method of interpreting themes, using both inductive and deductive reasoning, was carried out to ensure a high-quality analysis of the data (Joffe, 2011).

Propositions

Three of the global themes that emerged were found to be consistent with Attribution Theory. Propositions 1-3 focused on Attribution Theory whilst proposition 4 was devised as it was hypothesised that, in contemplating the reasons behind the children's presentation, professionals would reflect on their own competence when working with these children.

Each proposition is examined further in the next section, and includes an outline of the similarities and differences in the attributions made between the two vignettes and across the three time points: pre-TBI, where there was no

apparent need (Part A), post-presentation change, where there was an unidentified need (Part B), and post-TBI diagnosis (Part C). Table 3.11 outlines the key differences in the vignettes.

Table 3.11: Key Differences between the two Vignettes

	Milo	Aya
A **No Apparent Need**	No presenting issues	No presenting issues
B **Unidentified Need**	Milo presented with physical, cognitive and emotional difficulties (no reason given)	Aya presented with disinhibition, in the form of highly sexualised behaviour, and emotional dysregulation (no reason given)
C **TBI Diagnosis**	TBI revealed as reason for change in presentation	TBI revealed as reason for change in presentation

Proposition 1:

Professionals' attributions about the causes of a child's presentation will change depending on how the child presents.

Professionals' attributions towards the causes of a child's presentation changed depending on how the child presented. This was the case across both vignettes and code frequencies confirming this can be found in Appendix O. In addition, quotations demonstrating professionals' causal attributions for both children, across all three time points, can be found in Appendix BB, which is separated into Parts A, B and C and then labelled with the child's name for ease of reference.

Part A – No Presenting Difficulties

For both Milo and Aya, when they presented without any difficulties, professionals predominantly attributed the cause of their presentation to external factors. For both adolescents, these external factors were 'extra-curricular activities', 'home environment', 'school' and 'social circle'.

Internal factors were also considered for both children but were seen as less of an influence. The internal factor attributed to both children at this stage was their 'personal characteristics'. Professionals also attributed Milo's presentation to 'genetic factors', which contrasted with Aya whose additional internal factor was her 'innate academic ability'.

When Milo was presenting without any difficulties it was at this point that the highest number of professionals reflected on the nature versus nurture debate with 9 out of 16 professionals doing this. No professionals attributed Aya's presentation to this factor at this juncture.

Part B – Change in Presentation

In Part B of the semi-structured interview, Milo's and Aya's presentation changed as they developed an unidentified need. Professionals' attributions changed as a result of this, with different attributions made for each child.

For Milo, both the number of external and internal attributions decreased and comments related to the nature versus nurture debate dropped from nine to one. Instead attributions were made about whether Milo had experienced a brain injury, with all ten professionals who made this attribution believing that a brain injury could have resulted in Milo's change in presentation.

This contrasted with Aya, where both the number of external and internal attributions increased. Attributions were also made about whether Aya had experienced a brain injury, however six out of seven professionals who made this attribution, expressed that they did not think Aya's presentation was indicative of a TBI, which contrasted with Milo.

As well as the number of external attributions decreasing for Milo, the type of attribution also changed. Professionals proposed the same external attributions as before as well as suggesting that Milo's change in presentation could be due to 'unforeseen circumstances' or 'exploitation'. This contrasted with Aya whose external attributions increased when her presentation changed. As with Milo, the type of attributions widened for Aya with professionals proposing the same external attributions as before (except 'extra-curricular activities') along with 'substance abuse', 'grooming/sexual exploitation' or 'unforeseen circumstances'.

There was a decrease in the number of internal attributions made for Milo, however, the type of internal attributions made became broader. The previous attributions of ‘personal characteristics’ and ‘genetics’ were no longer considered. Instead professionals reflected that Milo’s change in presentation could be caused by the onset of ‘adolescence’, a ‘medical issue or illness’, a ‘mental health’ difficulty, a ‘cognitive change’, a change in ‘self-perception’ or the onset of a ‘learning difficulty’. Aya also had a wider number of internal factors proposed, with internal attributions increasing for her. ‘Personal characteristics’ were still considered as a factor; however, ‘innate academic ability’ was not. Additional internal causal attributions included ‘mental health’, ‘adolescence’, ‘learning difficulty’, ‘medical issue or illness’ and ‘neurodevelopmental difference’.

The nature versus nurture debate came more to the fore for Aya than Milo at this stage though only three professionals made this attribution.

Part C – Change in Presentation due to TBI

In Part C, participants were told that the change in Milo’s and Aya’s presentation was due to a TBI caused by a car accident. Professionals’ attributions changed further, as a result.

For both Milo and Aya, both internal and external attributions reduced significantly with professionals attributing the causes of the change in presentation almost solely to the TBI and discounting factors previously considered. For Milo, the attributions made around external causes demonstrated that professionals thought that the type of support given could

influence his growth mindset and professionals emphasised the importance of positive reframing.

In addition, the attributions made around internal causes for both children demonstrated that professionals thought that, alongside the brain injury, there could be a trauma response, which could have led to a change in the child's sense of self.

Despite this, for Milo, fifteen out of the sixteen participants and 31 out of 35 causal attributions in Part C were related to TBI and fifteen out of the sixteen participants and 27 out of 29 causal attributions in Part C related to TBI for Aya.

The quotations in Appendix BB, as well as the number of professionals making this attribution, demonstrate that professionals' attributions became TBI-focused once it was revealed that Milo and Aya had experienced a brain injury and made fewer alternate attributions.

Proposition 2:

Professionals' attributions about the stability of a child's presentation will change depending on how the child presents.

Professionals' attributions towards the stability of a child's presentation changed depending on how the child presented. This was the case in both vignettes, and code frequencies confirming this are shown in Appendix P. In addition, quotations demonstrating professionals' attributions for both children, across all three time points, can be found in Appendix CC, which is separated into Parts A, B and C and then labelled with the child's name for ease of reference.

Part A – No Presenting Difficulties

For both Milo and Aya, when they presented without any difficulties, the stability of their presentation was attributed by professionals to be predominantly due to external factors. Despite this similarity, the external attributions associated with Milo were his 'home environment', 'school', 'social circle' and the potential for 'unforeseen circumstances' whereas for Aya it was just two of these, 'school' and the potential for 'unforeseen circumstances'. From the quotations in Appendix CC it can be seen that, where attributions were related to 'home' and 'social circle', Milo's presentation was expected to be stable in the future. Whereas when the attributions were related to 'school' or 'unforeseen circumstances', Milo's presentation was expected to be more variable. This was the same for Aya.

Internal factors such as their 'personal characteristics' were considered factors impacting stability by some professionals but were seen as less of an influence than external factors. For Milo, 'adolescence' was also considered a factor impacting his stability with professionals believing that Milo's presentation was going to be variable in the future. This contrasted with 'personal characteristics', which professionals believed would be more stable over time, for both Milo and Aya.

When Milo presented without difficulties, professionals reflected on the nature versus nurture debate with four out of sixteen professionals offering a perspective on this. The quotations in Appendix CC demonstrate that participants varied in terms of whether they thought Milo's presentation would be stable in this respect. Attributions related to the nature versus nurture debate were not considered a factor influencing Aya's stability at this stage.

Part B – Change in Presentation

In Part B, Milo's and Aya's presentation changed as they developed an unidentified need. Professionals' attributions around stability changed as a result of this, with different attributions made for each child.

For Milo and Aya, the number of external and internal attributions decreased at this stage and, for Milo, attributions related to nature versus nurture reduced to zero. Attributions related to external factors exceeded internal factors for both children at this stage. In addition, attributions related to a brain injury were not made about either child.

The external factors attributed to the stability of both Milo's and Aya's presentation were their 'social circle', 'support from others' and life being in a 'state of flux'. The additional external factor of 'home circumstances' was also attributed to Aya. In each of these attributions, professionals believed that Milo's and Aya's presentation had changed and could change again, demonstrating that professionals attributed instability to their presentation, which contrasts to the stability demonstrated for both of them in Part A.

There were also different internal factors attributed by professionals to be impacting the stability of both children's presentation. Professionals reflected that the instability of Milo's presentation could be due to the onset of 'adolescence' and 'mental health' difficulties, whereas professionals attributed instability in Aya's presentation to 'changes in identity', feelings of 'anger' and 'transition'. Similar to the external attributions, in each of the internal attributions in Part B, attributed greater instability to both children's presentation, which differs from the stability shown in Part A.

Part C – Change in Presentation due to TBI

In Part C, participants were told that the change in both children was due to a TBI caused by a car accident. Professionals' attributions changed again with external attributions decreasing and internal attributions staying the same for Milo and both external and internal attributions reducing for Aya. The number of professionals attributing the stability of both children's presentation solely to the TBI, and discounting factors previously considered, rose from 0 to 6 for Milo and 0 to 7 for Aya.

The attributions made around external causes demonstrated that professionals thought that the type of support given could influence both Milo's and Aya's progress. They believed that there was capacity for the stability of Milo's presentation to change again though this would be inhibited by the impact of the brain injury. For Aya, professionals believed Aya's willingness to accept support would influence the stability of her presentation. In both children, some professionals felt that the change in presentation resulting from the TBI may be fixed and stable, whilst others perceived the TBI to lead to variability.

The attributions made around internal causes demonstrated that professionals thought that factors such as 'adolescence', 'mental health' and 'self-perception' meant that Milo's presentation would continue to be unstable without support. For Aya, 'adolescence' was also named as a factor influencing her stability. Six participants' attributions were related to TBI for Milo, and seven for Aya.

The quotations in Appendix CC, demonstrate that professionals' attributions about the instability of both children's presentation were related to the unpredictability and uncertainty around their brain injury. They did, however, believe that both might have the capacity to recover.

Proposition 3:

Professionals' attributions about the controllability of a child's presentation will change depending on how the child presents.

Professionals' attributions towards the controllability of a child's presentation changed depending on the how the child presented. This was the case in both vignettes, and code frequencies confirming this are shown in Appendix Q. In addition, quotations demonstrating professionals' attributions for both children, across all three time points, can be found in Appendix DD, which is separated into Parts A, B and C and then labelled with the child's name for ease of reference.

Part A – No Presenting Difficulties

In contrast to attributions made about the causality and stability of Milo's and Aya's presentation, the controllability of the children's presentation was attributed by professionals to be predominantly due to internal factors. For Milo, these internal factors included: how he communicates through his 'behaviour', his 'self-control', as well as his 'personality traits'. For Aya, the main internal factor was 'self-control'. The quotations in Appendix DD illustrate that professionals believed that both Milo and Aya were in control of their presentation.

External factors were seen as less of an influence on Milo's and Aya's controllability than internal factors. For Milo and Aya, external factors included their 'home environment' and 'school' with 'support from others' being added for Milo and 'unforeseen circumstances' for Aya.

Professionals' external attributions overall were that Milo and Aya were able to self-regulate and control their presentation though one professional noted that, due to Milo's age, he may still need external support to do so. In addition, professionals wondered if Aya had ever experienced adverse life experiences that had tested her ability to self-control. They spoke about the perceived pressure Aya is under at school and home and how this could trigger her to lose control in the future if she became overwhelmed. Attributions were not made about nature versus nurture as they had been previously in professionals' attributions about stability and causality.

Part B – Change in Presentation

In Part B of the semi-structured interview, Milo's and Aya's presentation changed as they developed an unidentified need. Professionals' attributions about controllability changed as a result of this, with different attributions made for each child.

In Part B, professionals' external attributions decreased for Milo and stayed the same for Aya and the number of internal attributions increased for both children. Attributions related to internal factors exceeded those related to external factors at this stage demonstrating that professionals felt that both children's controllability of their presentation was predominantly due to internal factors.

In terms of external attributions, the types of attributions changed with professionals proposing that the controllability of Milo's presentation was less to do with 'home' and 'school-related factors' and more to do with 'unforeseen circumstances' and the support he received from others. This was the same for Aya with her 'social circle' seen as the main influence on the controllability of her presentation.

Professionals' attributions indicated that they believed that the controllability of Milo's presentation had decreased and that it was due to a change in circumstances and the support he was receiving in adapting to this change. This demonstrated that professionals now believed Milo's presentation was less controllable, which contrasts to the level of control demonstrated in Part A. Professionals also shared this view of Aya but believed her feelings of rejection from her family and friends were a contributing factor to her uncontrollability.

In terms of internal attributions, the types of attributions changed with professionals proposing that the controllability of Milo's presentation was influenced by 'adolescence', his 'motivation levels', 'mental health' difficulties and ability to 'self-control'. For Aya, professionals attributed her controllability to her self-control, her increased 'anger' and a change in 'self-perception'.

Similar to the external attributions, in each of the internal attributions in Part B, professionals attributed greater uncontrollability to each child's presentation, compared to Part A.

Part C – Change in Presentation due to TBI

In Part C, participants were told that the change in Milo's and Aya's presentation was due to a TBI caused by a car accident. Professionals' attributions changed further, as a result.

For Milo, the external attributions stayed the same and internal attributions reduced. The number of professionals attributing the controllability of Milo's presentation solely to the TBI and discounting other factors previously considered rose from zero to eleven. For Aya, internal attributions decreased, whilst external attributions stayed at four with the number of professionals attributing the controllability of Aya's presentation solely to the TBI, and discounting factors previously considered, rose from 0 to 5.

The attributions made around external causes demonstrated that professionals thought that the type of support given could influence both children's capacity for controlling their presentation. This is the same as in Part B for Milo but different for Aya where 'home', 'school factors' and 'unforeseen circumstances' were also seen as important.

For Milo, professionals felt that some of the changes in presentation resulting from the TBI may be fixed and stable and so additional support could only do so much. However, for Aya, professionals felt that Aya was feeling the impact of the lack of support from her family and friends and this was influencing her control over her presentation.

The attributions made around internal causes demonstrated that professionals still thought that factors such as 'adolescence', 'self-perception' and 'self-control' were important for Milo. This contrasted with Aya where

attributions made around internal causes demonstrated that professionals still thought that factors such as ‘anger’ and ‘self-perception’ were important but included ‘disinhibition’, as opposed to ‘self-control’, in Part C.

Professionals’ attributions demonstrated that they thought that Milo’s presentation may continue to be uncontrollable into the future. They also felt the same about Aya but cited that this was due to her having a lack of ‘self-awareness’ and her temper and ‘disinhibition’ not being within her control.

For Milo, ten professionals’ attributions were related to TBI and for Aya five professionals’ attributions were related to TBI, with examples shown in Appendix DD. These quotations demonstrate that professionals believed that Milo’s and Aya’s presentation was also unlikely to be controllable due to the unpredictability and uncertainty around the brain injury.

Proposition 4:

Professionals’ attributions about their own competence will change depending on the child’s presentation.

Professionals’ attributions related to their own competency changed depending on the child’s presentation. This was the case in both vignettes, and code frequencies confirming this are shown in Appendix R. In addition, quotations demonstrating professionals’ attributions for both children, across all three time points, can be found in Appendix EE, which is separated into the subthemes ‘Knowledge and Experience’, ‘Professional Influence and Defensiveness’, ‘Ideas related to Support Strategies’ and ‘Need for Multi-Disciplinary Working’. These are explored in more detail below.

Knowledge and Experience

Professionals' attributions about their knowledge and experience, and how this related to their professional competency, changed depending on both Milo's and Aya's presentation. Quotations to support this are shown in Appendix EE.

Part A

In Part A, when both Milo and Aya did not present with any difficulties, professionals felt competent in being able to support them as they felt that they had the experience and skill set to do so. The only contrasting perspective to this for Milo was a medic who felt that they did not have the training to support any social or educational needs that Milo might present with. For Aya, a different professional felt that Aya might come from a different cultural background to her own and so felt that she might be out of her depth in terms of supporting her with anything other than her academic work. Another professional also reflected that it would not be typical to work with children at the high end of the ability range and that her EP service had recently cleared out resources that were intended for this purpose making it harder for her to support children like Aya. Overall, professionals reflected on their experience in their different professions and felt that they would be able to support both Milo and Aya at this stage.

Part B

In Part B, when both Milo's and Aya's presentation changed without reason, professionals felt less competent in supporting them. This was especially the case for Aya where only one professional, with prior experience of working

with children like her, felt competent in working with her. Most professionals felt that they did not have the knowledge, experience or training to support Aya, especially around her increased sexualised behaviour. One professional had worked with children similar to Aya before but still felt that she required more input through supervision to ensure that she would best meet Aya's needs. Out of 16 professionals, four believed that they could support Milo, but this was also due to them having prior experience of working with children with similar presentations. When professionals felt they did not have the knowledge or experience of working with children like Milo and Aya, they felt that they lacked the competence to work with them and perceived the children as difficult to work with.

Part C

In Part C, when participants were made aware that the change in Milo's presentation was due to a TBI, ten professionals felt they did not have the required knowledge or training to be able to support him and some also reflected that it was not something that they had come across before. Despite this, five participants said they would want to go away and do research showing a willingness to develop their skills. Five professionals had prior experience of working with children with a brain injury but only four out of the five professionals felt competent in working with Milo with the fifth professional reflecting that they would want more experience so as to better understand Milo's needs.

This contrasted with Aya where six professionals felt they did not have the required knowledge or training to be able to support her. Two participants said they would want to go away and do research showing less of a

willingness to develop their skills than with Milo. One professional had prior experience of working with children with a brain injury but did not reflect on how competent they would feel working with Aya.

Summary

Overall, this demonstrates that professionals felt less competent as the complexity in both Milo's and Aya's presentations developed and that this was compounded by their TBI diagnosis. Professionals reflected that they would want more training and experience to feel more confident in supporting children like Milo and Aya, with Aya reported to be the one that professionals would feel less confident in supporting.

Professional Influence and Defensiveness

Professionals' attributions about their influence on a child's presentation changed depending on Milo's and Aya's presentation. Quotations to support this are shown in Appendix EE.

Part A

In Part A, when neither Milo or Aya presented with any difficulties, all professionals felt that they had influence over the children's presentation. For Milo, three professionals commented specifically about the impact education professionals could have whilst for Aya eight professionals did this. Three other professionals commented that all adults would have an influence on Milo's presentation, not just education professionals and that this could be both positive or negative. For Aya, professionals reflected that they thought they were particularly important in developing Aya's ambitions to become a doctor and in motivating her in school. All professionals felt that they could

build a positive rapport with Aya with one commenting that he would find it hard to believe that Aya would not get along with professionals that she worked with.

Part B

In Part B, when Milo's and Aya's presentation changed without reason, all professionals still felt that they had an influence over their presentation, however, when it was suggested that a professional could be the cause of their change in presentation it was met with professional defensiveness, as illustrated in the quotations in Appendix EE. This demonstrated that professionals found it easier to consider that they had a positive rather than a negative impact.

Instead of being able to reconcile that they could have a negative impact, professionals instead attributed Aya's change in behaviour to 'family' factors or factors internal to Aya and expressed a lack of confidence in being able to influence Aya's presentation.

Other issues raised included a professionals' influence being hindered by Milo's and Aya's willingness to engage with services, despite both children never demonstrating a reluctance to engage before.

Part C

In Part C, when the TBI was revealed, professionals reflected on the importance of having a positive relationship with both Milo and Aya, in order to make their influence more impactful and to build Milo's resiliency and sense of self.

Professionals seemed more open to reflecting on how it was the type of support that had a positive or negative impact on Milo and the importance of getting him the most appropriate support for his needs. The impact of the brain injury was also considered and how this could impact any influence a professional could have on his presentation. As professionals were more open to considering other factors that could lead to a negative trajectory for a child, professional defensiveness reduced.

For Aya, professionals openly discussed how challenging it would be to influence her presentation, which could be a reason for the reduced professional defensiveness. In addition, a quarter of participants felt it would be difficult, and that they would struggle, to make a difference but nine out of twelve still felt a positive impact could be made.

Summary

Professionals believed that they always have an influence over a child's presentation and became defensive when asked to think about whether it was possible that they could have negatively impacted Milo's or Aya's presentation. Instead, professionals blamed the family or the child rather than implicating themselves. This professional defensiveness increased when Milo's and Aya's presentation changed without reason but reduced when the TBI diagnosis was revealed. When the TBI diagnosis was revealed, professionals reflected on the complexity and the challenges they would face in these instances and appeared to better understand how professionals may not always have a positive impact on brain-injured children.

Need for Multi-Disciplinary Working

Professionals' attributions related to their need to work with other professionals changed depending on Milo's and Aya's presentation. Quotations to support this are shown in Appendix EE.

Part A

In Part A, when neither Milo or Aya presented with any difficulties, professionals did not feel they needed to work in a multi-disciplinary way.

Part B

However, when Milo's and Aya's presentation changed in Part B, all professionals reported that they would want to refer to other professionals to ensure they were giving them both the best support. Professionals stated they would want to seek advice and guidance from other professionals as well as rely on the expertise of other professionals when they felt their own knowledge and experience was lacking. The role of the parent was also reflected on to ensure professionals had all the information they needed.

For Aya, additional considerations were made. These included: resourcing issues, such as meeting the threshold to gain access to CAMHS, as well as how long it can take to access the necessary support.

Working in a multi-disciplinary way was seen to improve competency with both Milo and Aya, as it allowed each profession to share their knowledge and experience to gain an accurate idea of the child's strengths and needs.

Part C

In Part C, when the TBI was revealed, professionals continued to feel the need to work with other agencies. This was because they felt other professions may have different areas of specialism, which meant that they could work in a complementary way. In addition, it was felt that other professionals, and parents, could feed into the action plan being developed.

For Aya, additional reflections were made about the importance of professionals, within the same setting, working and communicating together and the positive impact this could have on Aya's outcomes.

Summary

All professionals felt that they could work with Aya and Milo in silo, without any multi-disciplinary working, when they presented without any difficulties. However, when both children's presentations changed, all professionals felt that they would be more competent in their own roles if they were also working alongside professionals from different disciplines. This was because they felt that expertise, especially in the realm of brain injury, may be a different professionals' role and they would need that knowledge and support in order to do their own job well.

Ideas Related to Support Strategies

Professionals' attributions about their knowledge of support strategies changed depending on Milo's and Aya's presentation. Quotations to support this are shown in Appendix EE.

Part A

In Part A, when neither Milo nor Aya presented with any difficulties, the question was raised around whether or not they actually required support. It was felt that any support that they did need was within the skill set of the professionals interviewed and that they would be easy to support.

For Aya, some professionals suggested that she may benefit from support with her wellbeing given the amount of activities she was involved in. One professional also stated that Aya may be difficult to engage, given her age but this was not expressed by any other professional.

Part B

In Part B, however, when Milo's and Aya's presentation changed, all professionals agreed that they now required additional support from other professionals.

For Milo, it was suggested that this would be in the form of assessment of need as well as eliciting his family's views on what support was needed. Building a relationship and rapport with Milo was seen as a priority and a stepping stone to exploring what had changed. Milo was still deemed to be someone all professionals felt they could work with.

For Aya, it was thought that she would require support with her emotional needs and anger management. Despite this, resourcing and school prioritising academic outcomes over wellbeing were cited as potential barriers to Aya getting the support she needed. As with Milo, building a relationship with Aya was seen as a priority and necessary in supporting her

through her emotional dysregulation. Like Milo, Aya was described as someone professionals could support.

Part C

In Part C, when the TBI was revealed, all professionals felt that they knew what support to provide or where to access this information and more strategies were suggested than in Part B.

For Milo, strategies suggested included differentiating classroom resources, interventions to support his wellbeing, as well as referrals to other professionals. Despite the complexity of Milo's needs, and prior reflections from professionals that they lacked sufficient TBI knowledge to feel completely competent, no professional felt that they would find working with Milo difficult.

For Aya, professionals suggested strategies related to relationship-building and development of coping mechanisms to support her emotional dysregulation. As the complexity of Aya's needs grew and the TBI was revealed, more professionals expressed concern over Aya accessing support and the difficulties professionals might have working with her due to her anger management difficulties. The inappropriateness of some school's behaviour policies was also mentioned, which might see Aya punished for emotion regulation difficulties that she may not be able to control.

Summary

For both Milo and Aya, professionals queried whether support was required when neither child was demonstrating any apparent difficulties. However, when their presentations changed, it was suggested that Milo would benefit

from strategies to support his cognitive processes whilst relationship building and emotional regulation were the key focus for Aya. Milo was thought to be easy to work with throughout, however, once Aya's presentation changed, one professional reflected that her age may be a barrier to her accessing support and three professionals reflected that her 'rages' and anger may be a barrier and could make her difficult to work with.

3.4.3 Qualitative Analysis: Multi-Disciplinary Working

RQ4: What value do EPs and education, health and social care professionals place on multi-disciplinary working around children with a TBI and what are the barriers and facilitating factors to doing this?

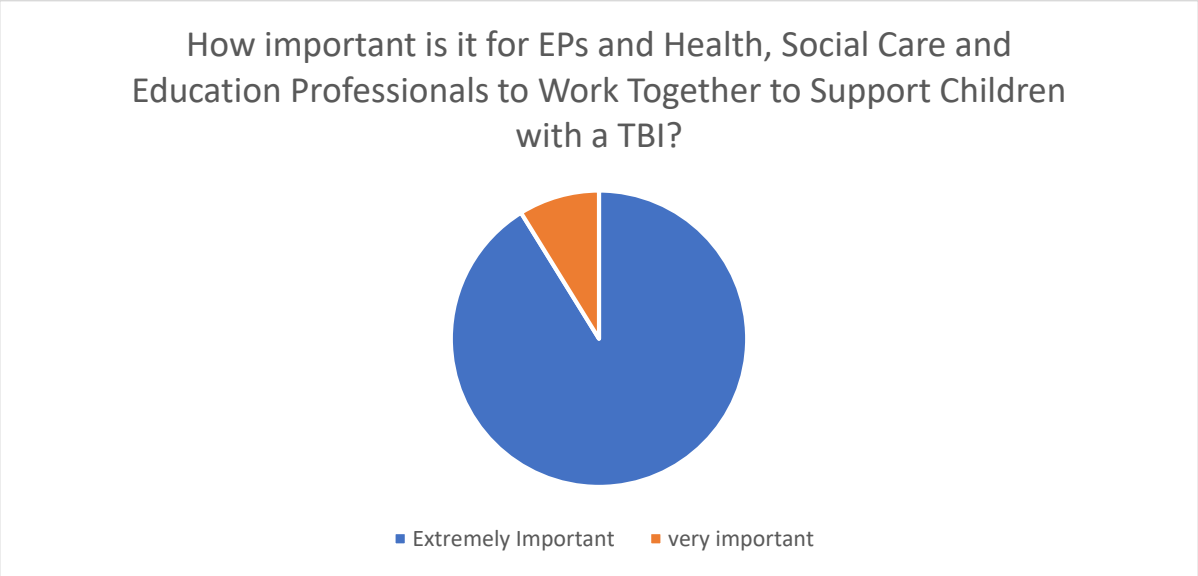
Contents Analysis

As part of the survey, 120 participants had the opportunity to give their views on the value of multi-disciplinary working when supporting children with a TBI and the barriers and facilitating factors to doing this. The qualitative data derived, was taken from written feedback to open questions and was analysed through a Content Analysis (Hsieh & Shannon, 2005).

Importance of Multi-disciplinary Working

Data demonstrated that all professionals believed that multi-disciplinary working was of value, with 91% believing it was extremely important and 9% stating it was very important (see Figure 3.4).

Figure 3.4: Professionals' Views on Importance of Multi-Disciplinary Working



Key Categories: Extremely Important and Very Important

Broad categories outlining why professionals felt multi-disciplinary working was important were derived. The resulting categories were 'Holistic and Complementary Approach'; 'Communicating and Sharing of Information'; 'Efficient and Effective Resourcing' and 'Legislative and Ethical Framework'. Quotations to support these categories are given in Appendix S with an explanation of each of these broad categories outlined below.

Figures 3.5a and 3.5b show the relative importance of each of the broad categories depending on whether professionals felt multi-disciplinary working was 'extremely important' or 'very important'.

Figure 3.5a: Broad Categories on why Multi-Disciplinary Working is Extremely Important to Professionals

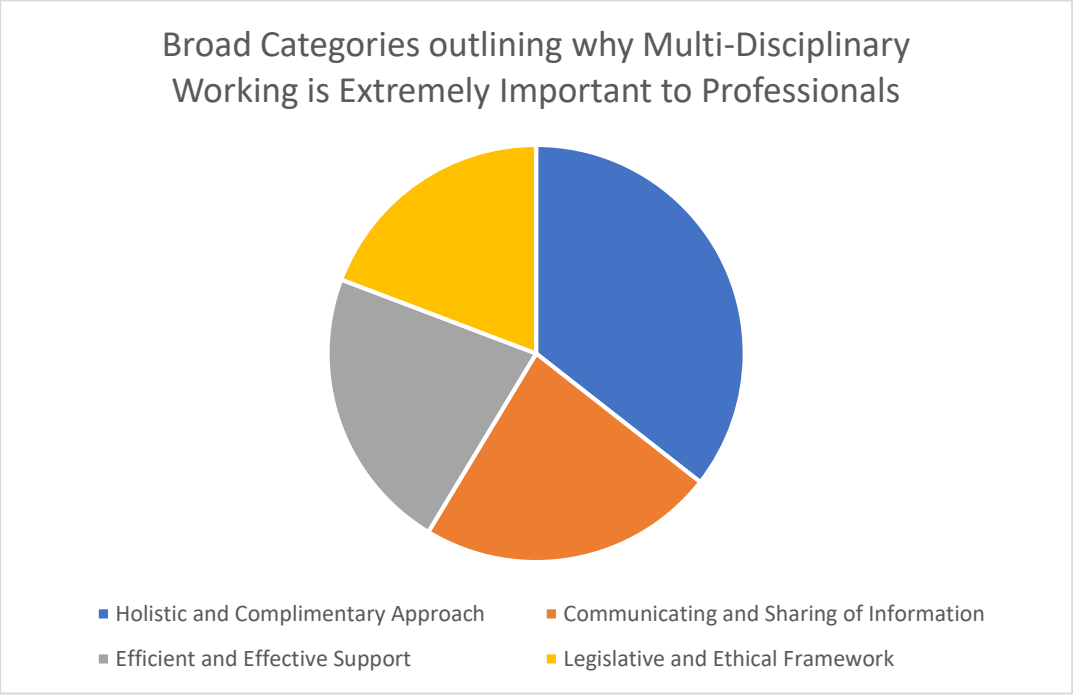


Figure 3.5a demonstrates that most professionals believed the key reason multi-disciplinary working is important is to provide a holistic and complementary approach. The remaining categories of 'Communicating and Sharing of Information'; 'Efficient and Effective Resourcing' and 'Legislative and Ethical Framework' were deemed as equally important as each other. See Appendix S for quotations to support these broad categories.

Figure 3.5b: Broad Categories on why Multi-Disciplinary Working is Very Important to Professionals

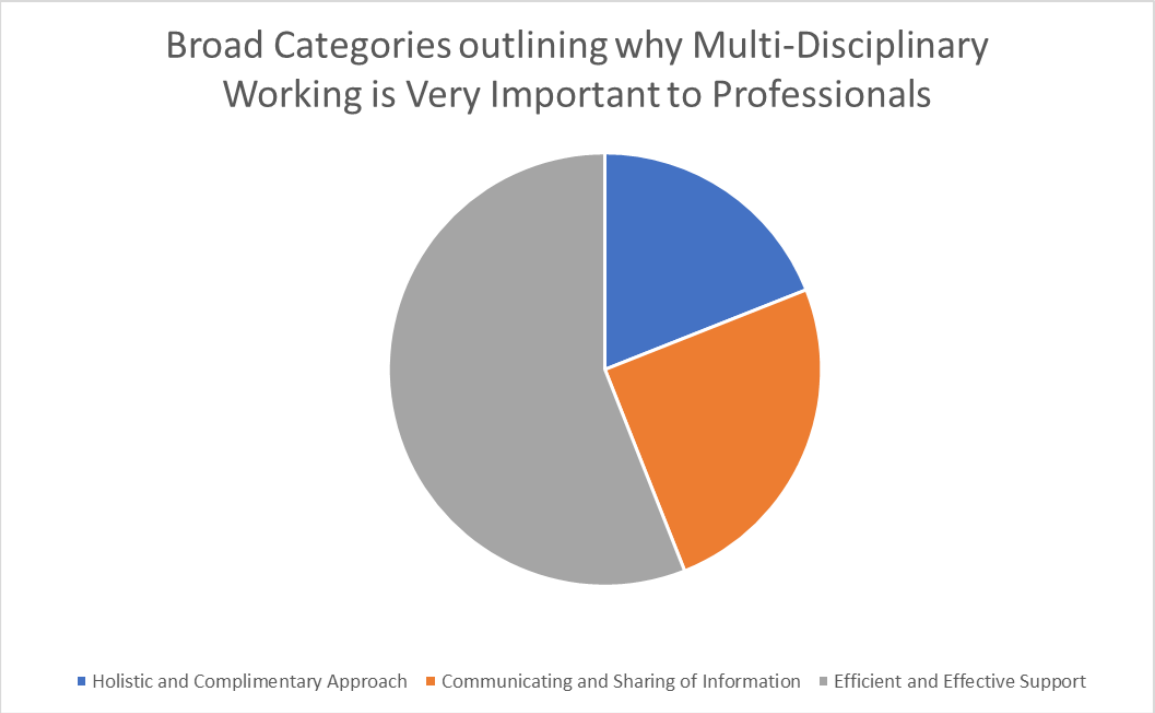


Figure 3.5b, shows that efficient and effective support was the predominant reason that professionals felt multi-disciplinary working was very important. Communicating and sharing of information was seen as the next most important with a holistic and complementary approach seen as also being important. Professionals who viewed multi-disciplinary working as very important did not consider the development of a legislative and ethical framework important to multi-disciplinary working.

Holistic and Complementary Approach

36% of participants who saw multi-disciplinary working as 'Extremely Important', and 19% of those who saw multi-disciplinary working as 'Very Important', aligned with this broad category. They stated that the roles they each play in multi-disciplinary working were, in many ways, distinct but also complementary, which was highlighted in the following quotation:

Supporting Quotation(s)
"For support to be effective it needs to be addressing all the needs and complementary of what else is in place and you can only ensure this through working together."

Professionals also felt that multi-disciplinary working facilitated the sharing of knowledge and enabled the creation of a holistic package of support around the brain-injured child. This was shown through the following quotation:

Supporting Quotation(s)
"Professionals may feel deskilled when encountering TBI for the first time and may require the input and support of colleagues in other services to upskill and empower them so that they can perform their own unique role to the best of their ability."

Some professionals also reflected that there can be differing perspectives between professionals and so, by working together, they can come to a shared understanding of the strengths and needs of the child. This was shown through the following quotation:

Supporting Quotation(s)
"Different professionals will see things from different perspectives and working together can help to address issues that might be impacting the young person."

In addition, it was acknowledged by professionals that a child's needs will change over time and, as a result, professionals' roles need to also adapt. This was highlighted in the following quotation:

Supporting Quotation(s)
"Needs fluctuate and therefore long-term health goals involves many agencies reducing as needs stabilise but 1 agency minimum to monitor child and family"

Overall, professionals believed that through working together, a better understanding of their different roles and the needs of the child can develop, supporting them to have a holistic and complimentary approach with brain-injured children.

Communicating and Sharing of Information

All professional groups emphasised that multi-disciplinary working aided effective communication and sharing of information, with 23% of coded data supporting this category for participants who saw multi-disciplinary working as 'Extremely Important', and 25% of participants who saw multi-disciplinary working as 'Very Important'.

Effective communication and sharing of information was seen as integral to effective multi-disciplinary working. This was shown in the following quotation:

Supporting Quotation(s)
"Each professional's efficiency in supporting the child and their family [is] contingent on sharing information about the nature of the harm the child endured, the impact on their behaviour, speech, movement, mood, personality, etc., and how best to support them to improve".

A further reason, professionals felt that multi-disciplinary working aided communication was that they felt that each profession holds unique information, as shown in the quotation below:

Supporting Quotation(s)
"Everyone holds different information and will be involved for differing periods of time."

So, by working in a multi-disciplinary team, other professionals around the child can better understand the roles and responsibilities of other staff and ensure a smooth transition when changes to support are made. When this does not occur, one professional noted:

Supporting Quotation(s)
"Pockets of information that aren't shared can lead to other professionals not responding correctly when difficulties arise that can, at best, reduce support opportunities and, at worst, could create further problems."

Overall, multi-disciplinary working was seen to aid effective communication which was observed to be important in ensuring professionals have the most complete picture of the young person's strengths and needs.

Efficient and Effective Support

All professional groups emphasised that multi-disciplinary working aided efficient and effective resourcing, with 22% of coded data supporting this category when participants saw multi-disciplinary working as 'Extremely Important', and 56% when participants saw multi-disciplinary working as 'Very Important'.

Many felt that multi-disciplinary working stopped resourcing being duplicated and children being over-assessed. This, in turn, meant that time was not wasted unnecessarily and that money was spent more wisely. It was also felt that, by ensuring efficient and effective resourcing took place, families and children would receive the most appropriate support and a more joined-up approach. Professionals commented:

Supporting Quotation(s)
"Without working together, the child and family will experience repetition of services in some areas and other gaps in provision missed that they may not know about or expect to be available."

It was also felt that by being aware of where resources were being used, it ensured support wasn't missed and families and children had greater consistency in the care they received.

Professionals also stated that, by professionals working together, support can be more stream-lined and effective, saving children and their families' precious time. This was shown by professionals stating:

Supporting Quotation(s)
"Working together will create a better coordinated support system for the child"

Overall, professionals felt that multi-disciplinary working ensured that the best support for the brain-injured child and their family whilst ensuring that finite resources were used effectively.

Legislative and Ethical Framework

Professional groups emphasised that multi-disciplinary working aided the development of a legislative and ethical framework around the child and their family with 19% of coded data supporting this category when participants saw multi-disciplinary working as ‘Extremely Important’. This broad category was not derived by participants who saw multi-disciplinary working as ‘Very Important’.

A key point that all professional groups made was that, through professionals working together, there was less of a need for children and families to have to retell their stories. This was shown through the following quotation:

Supporting Quotation(s)
“Children and their families who have already had a life-changing, frightening experience should not have to repeat the same information ad nauseam and feel that they are fighting battles on numerous fronts to get the support that they need.”

Safeguarding and the legislation around this was also mentioned as an integral role for all professionals working with children, and especially those with a brain injury who may be more vulnerable. A quotation that demonstrated this view was:

Supporting Quotation(s)
“Under legislation working together to safeguard children. Safeguarding is everyone's responsibility and services should be drawing on their specialisms and knowledge to explore what support they can offer.”

Overall, through working together, information sharing can become more efficient and this supports professionals in keeping brain-injured children safe.

Barriers and Facilitating Factors to Multi-disciplinary Working

Content Analysis

As part of the survey, professionals were also asked for their perceptions of the barriers and facilitating factors to multi-disciplinary working. The same broad categories arose for both barriers and facilitating factors and are shown in Table 3.12, and explored in more detail below. Quotations supporting these categories are in Appendix T.

Table 3.12: Broad Categories for Barriers/Facilitating Factors to Multi-Disciplinary Working

Broad Categories: Barriers and Facilitating Factors
Communication and Information Sharing
Systems and Resourcing
Knowledge and Understanding of Staff
Professional Relationships and Ability to Work towards Common Goals

Communication and Information Sharing

This was raised as both a barrier and a facilitating factor depending on how well it was carried out.

Factors which led to poor communication included: professional groups using different recording systems; poor understanding of GDPR making some professionals reluctant to share information that other professionals should by privy to; the use of different terminology between professional groups; professionals not having the time or capacity to engage in communicating

with other professionals or it being difficult to coordinate a multi-disciplinary meeting. Quotations to support these views are shown below:

Supporting Quotation(s)
"Databases are not shared. Poor sharing of information between health, education and social care (sometimes)."
"Sometimes information is not shared as people are worried about GDPR breaches."

Professionals cited effective communication and information sharing as a facilitating factor for multi-disciplinary working as it meant that each professional was aware of the other professionals' roles and responsibilities and it meant that there was more likely to be a shared way of thinking about the child they were caring for. A quotation to support this is shown below:

Supporting Quotation(s)
"Existing experience working together means that there is a better understanding of each other's roles (who does and can do what?) And more shared language/ways of thinking between different professions."

It was also emphasised that parents should be included in all communication and that a variety of formats for communication should be used to ensure that the audience was considered when information sharing took place. This, in turn, meant that everyone felt involved and was working towards a common goal, keeping the child at the forefront of their discussions and work.

Systems and Resourcing

This was also raised as both a barrier and a facilitating factor depending on how well the systems were resourced.

Barriers created by poor systems and resourcing were deemed to be due to a lack of funding and time, large geographical distances between professionals, workload pressures, conflicting diaries, and a traded model of service delivery. Professionals commented that due to austerity cuts, there were less services across health, education and social care leaving fewer staff to do more work, which meant staff were over-stretched and too busy to collaborate with other professionals. This is shown in the quotation below:

Supporting Quotation(s)
"Practical barriers feel quite significant - when there are so many professionals involved, how can time and space be found for all to meet together? There seems a need to have a representative from each professional group to make this more manageable. Is there a risk that waiting for 'time' to meet could hinder the young person if other decisions are not made in the mean time?"

Professionals commented that, when effective systems were in place and services were efficiently funded, multi-disciplinary working was more productive. It was suggested that video calls made geographical issues and high workload pressures more manageable as professionals were not wasting time on travel. In addition, when meetings were scheduled with clear expectations and professionals knew each other's roles and responsibilities, multi-agency working was more effective. This is demonstrated in the quotation below:

Supporting Quotation(s)
"I think it helps a lot when professionals are already used to working together e.g., have existing meeting spaces/MDTs set up for joint discussions in relation to adolescents."

Knowledge and Understanding of Staff

This was raised as both a barrier and facilitating factor depending on how well-trained and knowledgeable staff were about TBI.

Barriers occurred when professionals working with brain-injured children had a lack of knowledge and understanding of the area, and the responsibilities of other professionals working with the child. Lack of knowledge also included the use of different terminology between professionals leading to confusion and misunderstandings in multi-disciplinary documentation and meetings. This is shown in the following quotations:

Supporting Quotation(s)
"Lack of mutual understanding of terminology. Different tools used for assessment that are not understood by each other."
"Professionals are not aware of the others' roles and limitations. Often from a social care perspective, professionals feel that social care are responsible and can provide more services and support than they can."

Many professionals highlighted the benefits of having a key professional who was able to coordinate support and be the main contact for the child, their family and any professionals involved, as shown in the quotation below:

Supporting Quotation(s)
"I have worked with children who have case managers … and this has been so helpful in ensuring a coordinated response and making sure there is a professional team around the child."

Training was also highlighted as a facilitating factor in ensuring multi-disciplinary working was effective and it was noted that this could be carried out by other more knowledgeable professionals within the team around the child.

Professional Relationships and Ability to Work Towards Common Goals

The importance of professional relationships was also raised as both a barrier and a facilitating factor depending on how effectively professionals worked together.

Barriers were felt to occur when there was a distrust of other colleagues and an expectation from some professionals that something was another professional's responsibility and not theirs. Social care professionals felt this the most and commented:

Supporting Quotation(s)
"…as a social worker my experience is that social care are often given the responsibility to affect change when this is all services responsibility...social work professionals will encourage these joint networks".

This demonstrated that there can be a level of misunderstanding between professionals over the distinctness of their roles and where responsibilities should be shared, which is likely to hinder multi-disciplinary working.

A further challenge is clarifying roles where professionals are making recommendations with the view that other professionals will carry them out, which can lead to other professionals feeling aggrieved if they do not agree. Disagreements and misunderstandings about the care needed were also seen as barriers to multi-agency working as seen in the quotations below:

Supporting Quotation(s)
"Difficulties around professional identity and boundaries and the potential for conflict here e.g., … Who is responsible? Who is best placed to hold this role? Is there a risk of two professionals overlapping in their roles or stepping on the toes of others? Are there too many professionals involved?"

Despite these barriers, effective professional relationships were seen as facilitating multi-agency working. Factors which enabled this included, holding one another accountable for agreed actions, understanding the limitations of their own and others' roles, and the importance of regularly scheduled multi-disciplinary meetings so that plans can be drawn together and not dictated by others. Clear objectives and common goals were also highlighted as necessary in ensuring multi-disciplinary teams worked well together as can be seen in the quotation below:

Supporting Quotation(s)
"Clear objectives for collaborative work are important (with functional outcomes that are meaningful for the child)."

Overall, EPs and education, health and social care professionals place a significant value on multi-disciplinary working around brain-injured children but believe that there are a number of barriers and facilitating factors, which need to be acknowledged and overcome, for this to be successful.

3.4.4 Qualitative Analysis: Professionals' Roles and Responsibilities

RQ5: What do EPs and education, health and social care professionals perceive theirs, and other professional groups', roles and responsibilities to be when working with children with a TBI?

Contents Analysis

In the survey, professionals were also asked about theirs, and other professionals', roles and responsibilities when working with brain-injured children. The data demonstrated that some of the roles and responsibilities were shared among professionals (see Table 3.13), whilst others were unique to each profession. Appendix U contains quotations supporting the broad categories shared by professionals, whilst Appendix V-Y show the quotations supporting the broad categories unique to each profession.

Broad Categories Shared by All Professionals

Table 3.13: Roles and Responsibilities Shared by All Professionals

Broad Categories
Monitoring and Assessment
Recovery and Rehabilitation
Support of Family and Child within the System
Multi-Disciplinary Working and Training

Monitoring and Assessment

Monitoring and assessment were deemed as integral to all EPs' and education, health and social care professionals' roles and responsibilities.

In relation to health professionals, monitoring and assessment were deemed important as it gave them a greater understanding of the impact of the brain injury on the child's presentation and supported health professionals in having a greater understanding of what support they would recommend. Monitoring was essential throughout to track intervention success as well as the child's progress. Quotations to support this category are outlined below:

Supporting Quotation(s)
"Assessing and having an overall understanding of the impact of the brain injury on the child's functioning"
"Monitoring health and neural differences as a child continues the rehabilitation."

In relation to EP practice, monitoring and assessment was seen as integral because it enabled them to derive hypothesis around what might be causing the child's difficulties and also to monitor the success of any strategies put in place. EPs reflected on the different assessments they would use, and on the importance of gaining the child's perspective, which differed from other professional groups. Quotations to support these views are outlined below:

Supporting Quotation(s)
"Assessment of functioning in different areas, including informal assessment via observation and consultation. Monitoring (in collaboration with education professionals) of any changes in young person's presentation and functioning."
"To help explore the child's existing strengths and areas of difficulties (related to their learning and access to education)."

EPs also reflected on the importance of working with other professionals when carrying out monitoring and assessments and when looking at the impact of the brain injury not only on the child but on their wider systems, such as the family and school, which is demonstrated in the following quotation:

Supporting Quotation(s)
"Supporting other professionals in identifying the impact of the TBI on the young person's access to education in areas of communication, understanding, attention and processing, social interaction, wellbeing, considering impact of change on wellbeing and sense of self. This may take the form of assessment or consultations with school/family to identify need and consider what provision might be needed to support the young person within education in particular."

In terms of social care professionals, monitoring and assessment were seen as a key part of their role, but not as essential as for the other professional groups. Assessment focused more on the wider family and the impact of the brain injury on the child and how this related to functioning within the wider community. Assessment and monitoring at transition to adulthood was also seen as a key focus for social care professionals. Quotations to support these findings are outlined below:

Supporting Quotation(s)
"Consideration of assessment under the Children Act (s.17 Child in Need) with a view to longer term preparation for adulthood and potential transition into adult services."
"Assess how TBI impacts child and family at home and support them"

In relation to education professionals, assessment and monitoring were seen as essential in understanding academic, social and emotional progress. Goal setting and monitoring were also seen as key responsibilities of education

professionals so that tasks and the environment could be adjusted as the child recovers from their brain injury. Quotations to support these findings are outlined below:

Supporting Quotation(s)
"Monitoring the child's learning via baseline and regular assessments, for example through the use of the 'assess, plan, do, review' cycle."
"Assess the child's needs and any adjustments which may be needed to support their education - to be reflected in support plan"

Recovery and Rehabilitation

All professionals were deemed to have an important role in a child's recovery and rehabilitation.

For health professionals, recovery and rehabilitation was typically focused on the child's medical and physical recovery and the rehabilitation process around this. Their work was predominantly seen to be the assessment and monitoring of the recovery process as well as the implementation of therapy to address different areas of need. It was reflected in the quotations that multi-disciplinary working was an integral part of this process, including other medical professionals such as doctors liaising with OTs and physiotherapists, and also in disseminating information to children and their families.
Quotations to support these findings are outlined below:

Supporting Quotation(s)
"Thinking about how the trauma may affect physical and psychological functioning, sharing this with family and other systems. Providing psychological support/physical support/rehabilitation"
"To provide immediate medical intervention following the traumatic brain injury and the most suitable rehabilitation once the child has been medically stabilised."

In relation to EPs, the key focus of recovery and rehabilitation was on supporting the child's cognitive, social, emotional and psychological needs, ensuring that they have the best support when returning to school. Multi-disciplinary working was not explicitly mentioned; however, it was highlighted that working with both the child and family in this capacity was an essential part of an EP's roles. Quotations to support these findings are outlined below:

Supporting Quotation(s)
"Inform long term community rehab goals from cognition and learning and SEMH perspectives especially"
"Helping them cope with any disability"
"Supporting the child and family with the psychological impact"

Recovery and rehabilitation was also seen as a key role for social care professionals, with the focus for these professionals being on supporting recovery outside of school. This included ensuring that the necessary adaptations were made within the home as well as advocating for the child and family to make sure an appropriate care package had been put in place once they left hospital. Quotations to support these findings are outlined below:

Supporting Quotation(s)
"To ensure the child has access to appropriate rehabilitation based on their needs. To ensure the child has access to any appropriate aids to support the child to maximise their skills and achieve their outcomes"
"To ensure that the child has the correct package of care at home, with additional support for the family."

For education professionals, their perceived key role in a child's recovery and rehabilitation was to ensure the smooth transition back to school post-injury. This included making sure an appropriate support plan had been put in place as well as ensuring, once the child had returned to school, that they could physically navigate the environment and were safe. Supporting with aspects of health, such as the administering of medication in school, was also seen as a key responsibility. Quotations to support these views are outlined below:

Supporting Quotation(s)
"Education professionals are likely to take on the bulk of the student's long-term recovery once they are discharged. They will support the process of reintegration to school, ensure that support (physical, SALT, learning, social interactions etc) is in place. They may be responsible for helping the young person take medication, keep them safe when eating, help them navigate the physical environment. They may need to apply for an EHC needs assessment."
"To support the child and the family to return / stay in school by tailoring learning and access according to medical and emotional needs."

Support of Family and Child Within the System

Supporting the brain-injured child and their family within the wider education, health and social care systems, was also seen as a key role and responsibility for all professions.

For health professionals, this involved ensuring that both child and family were aware of the implications of the injury and educating them about TBI. It also involved supporting the child with the psychological impact of the trauma through the use of therapy. Quotations to support these findings are outlined below:

Supporting Quotation(s)
“Support the young person and their family to understand the impact of the traumatic brain injury and what support there is for the young person to live their best life.”
“I consider it especially important that health professionals involved over the medium/long term are willing to listen to the child and those around them who know them well and be aware of how their lives are impacted outside a clinic environment.”

Signposting was also seen as a key responsibility so that the child and family knew what support was available and how to access it.

In relation to EPs, supporting both the family and the child within the system was perceived to be an integral part of their role. Ensuring that the voices of the child and their family were heard and represented among professionals was seen by many as a key aspect of their role and, where necessary, advocating for the child to ensure they were part of the decision-making process. Quotations to support these findings are outlined below:

Supporting Quotation(s)
“Advocating for them in the educational environment and understanding the range of impacts that their TBI have had on them personally.”
“Finding ways to elicit the child's views and perception of their own needs, which need to be weighted alongside professional views”

This meant that working holistically with all professionals was needed in order to effectively support the family and the child. Working directly with the child was also seen as a key role of an EP, in order to better understand how the brain injury had impacted their educational ability, as well as any trauma responses it may have triggered. EPs were also seen in a psychoeducation role, ensuring that both the family and the child were aware of the

implications of what had happened to them and what support would be best placed for them to receive. The support of peer relationships was also seen as an important part of the EP role, including supporting the child's social inclusion at school.

Social care professionals were also perceived to have a key role in supporting the child and family within the wider system. This involved ensuring that they received additional support in accessing the community or respite care, if needed. Signposting was also seen as an integral part of their role and this included access to services as well as practical support around what benefits they might be entitled to and how to complete relevant forms. Quotations to support these findings are outlined below:

Supporting Quotation(s)
"Support the family to access help in the community as required. Perhaps including outreach with other families who have experienced similar situations."
"Thinking about child in family context - housing, finances, adaptations to home, support to deliver care and other needs, supporting applications for … benefits"

Advocating for the child and family was also see as a key aspect of the social care professionals' role to ensure their needs were being effectively addressed.

Education professionals were also seen to have an important role in supporting the child and family within the wider system. This could be achieved through promoting the voice of the child and family and making sure that they are an integral part of the decision-making process. As schools can also be the main place where rehabilitation takes place, professionals

reflected on the importance of education professionals supporting the child with any emotional difficulties that may arise out of the trauma they have experienced. Ensuring the child is included in school and has interventions in place to ensure they reach their potential was also seen as important. In addition, psychoeducation of staff and other children within the school was seen as vital to effective inclusion, both prior to and upon the child's return to school. A quotation to support these findings is outlined below:

Supporting Quotation(s)
"Inclusion within school community, ensuring staff, parents and children understand (at some level) ABI through training or otherwise and can show understanding and empathy. Extra support for parents from school staff."

Multi-Disciplinary Working and Training

A further shared role and responsibility was for all professionals to work effectively together.

For health professionals this involved disseminating medical information to other professionals involved in the care of the child, as well as sharing their health expertise and their findings from assessment of the child's cognitive, physical and behaviour needs. Quotations to support these findings are outlined below:

Supporting Quotation(s)
"Providing other professionals with health specific information/supports. Ensuring family and key staff are aware of possible impact of traumatic brain injuries. Offering report/advice towards the EHCP (if requested)"
"Provide a clear medical view of the brain injury and its impact and to share this in an accessible way with other professionals, the family and the CYP."

It also involved health professionals seeking support and advice from professionals with different specialisms.

As health professionals are often first responders when children experience a TBI, it was proposed that they could share their knowledge on what is needed for an effective recovery as well as liaise with professionals further down the rehabilitation journey over what steps were needed to ensure the child made progress. A quotation to support these views is outlined below:

Supporting Quotation(s)
"Giving advice to other professionals and family about supporting recovery, adapting to the change in circumstances and clearly explaining functional impacts, while managing expectations tactfully"

EPs were seen by many professionals as the intermediaries between health and school, helping schools to understand any medical advice and supporting the implementation of health recommendations upon the child's return to school. Quotations to support these views are outlined below:

Supporting Quotation(s)
"Supporting the school in implementing recommendations by health professionals, and considering how best to support the child's educational, social and emotional development."
"May act as collator … of information from other sources into one"

EPs were also seen to have an important role in gaining the views of the child and to ensure these views played a part in the developed program of support. EPs were also seen as integral in bringing together the voices of all stakeholders and creating uniformity in approach. Quotations to support these findings are outlined below:

Supporting Quotation(s)
"Understand a full and holistic picture of their needs and try to get others to … see this too"
"Facilitating collaboration between parents and school and other professionals. Gaining the views of important people around the child"

Providing psychoeducation on the impact of brain injury to other professionals was also seen as a key role along with working with education professionals on how best to support brain-injured children's return to school.

Social care professionals' role and responsibilities in relation to multi-disciplinary working and training were felt to be predominantly around ensuring the child was integrated back into the community and that they were receiving the support they needed. It was felt social care professionals were best placed to bridge the support between the different professionals as they typically lead on multi-disciplinary meetings and are involved in coordinating various support services for adolescents. Quotations to support these findings are outlined below:

Supporting Quotation(s)
"To bridge the support between home, school and between different professionals. They may work directly with the families to ensure there is clear communication and joint action plans between the key people involved with the child."
"To work collaboratively with other professionals to ensure that the child is engaging in society, fostering interests and hobbies, connecting them to possible support groups, ensuring they receive the support needed (financial, housing etc)."

Social care professionals' role was also perceived to be liaising with both the family and child to assess need and then working with other professionals to coordinate the relevant support.

In relation to education professionals, multi-disciplinary working and training were deemed necessary so that they had a thorough understanding of the child prior to them re-entering education. They were also thought to need to liaise closely with other professionals to best understand how to support the child. Quotations to support these views are outlined below:

Supporting Quotation(s)
"A key part of this role is likely to be regular communication with the young person's family and key professionals to make sure they are up to date with where the young person is at and what they need."
"Making sure they are aware … what impact a young person's brain injury may have on different areas of their everyday life"

Multi-disciplinary working was also deemed to be important as the child's presentation is likely to change over time and the monitoring of this, in part, would be carried out by different professionals. As a result, working with other professionals was deemed necessary so that the school knows how best to adjust their practice. Quotations to support this are outlined below:

Supporting Quotation(s)
"To liaise with health colleagues - physios, GP, school nurse, home care team, etc - to understand the child's needs and recovery care plan."
"Liaising with other professionals to understand changing needs over time"

It was also believed to be important for education professionals to work with other professionals within their setting to disseminate knowledge and training to others that may be working with the child.

Broad Categories Unique to Each Profession

Contents Analysis

As well as there being commonality in professionals' roles and responsibilities, the content analysis also demonstrated that professionals were perceived to have some distinct roles and responsibilities unique to their profession. These are outlined below with quotations to support these distinct categories in Appendix V-Y.

Health Professionals

In terms of health professionals, their unique roles and responsibilities were perceived to be around supporting the medical and physical needs of children with a TBI.

Medical Support

This category was specific to health professionals and demonstrated that they were unique in their role of assessing, monitoring and implementing medical support. It was suggested that this medical support could come in the form of assessing need, administration of medication as well as advising other professionals on what medical support the child may need going forward. Quotations which support these findings are outlined below:

Supporting Quotation(s)
"Ensuring that in the short term that the child's medical needs are met for survival and minimising the impact of the injury."
"Monitor and support the medical recovery, including all aspects of physical and mental well-being, in the community as well as an acute setting."

Physical Support

This category was also unique to health professionals and illustrated that they had a distinct role in supporting the child with any physical difficulties that may have arisen from the brain injury. The key aspects of the health professionals' role included the assessment and monitoring of the child's physical needs and the implementation of strategies to support them with these difficulties. Quotations which support this are outlined below:

Supporting Quotation(s)
"Supporting the physical needs of the child, testing, screening and monitoring their improvements over time, providing physical therapy plans, working 1:1 with the child to support their physical recovery and development"
"Consider all the other medical conditions alongside the brain injury to minimise physical illness hindering their recovery"

This could be through occupational or physiotherapy as well as working with non-health professionals to disseminate knowledge and offer recommendations for future support. Their role also included educating the child on their physical needs and how best to overcome them.

Education Professionals

In terms of education professionals, their unique roles and responsibilities were perceived to be around supporting children with a TBI in the classroom.

In Class Support

In class support was seen as a role exclusive to education professionals. This was unique to them as they were deemed best placed to support with the transition back to school, once children were ready. It was also felt that education professionals should monitor and assess the child's progress and

put adjustments in place so that the child achieves their potential. Emotional support was also considered to be important with many respondents seeing school staff as having a holistic attitude towards the child where their academic, social and emotional wellbeing was considered. Quotations to support these findings are outlined below:

Supporting Quotation(s)
"Monitoring the child's learning via baseline and regular assessments, for example through the use of the 'assess, plan, do, review' cycle."
"Put in place in the … setting the support needed both for the general safety and wellbeing of the young person, as well as to support them to develop and progress in areas that may have been significantly affected."

Social Care Professionals

In terms of social care professionals, their unique roles and responsibilities were perceived to be around supporting children both within and outside of the home, as well as safeguarding them against potential harm.

Activities Outside of Home/School

Professionals felt that social care professionals' role and responsibility was to support the brain-injured child to reintegrate more within wider society. This was perceived to involve supporting the child to attend groups, leisure and childcare activities as well as fostering their hobbies and interests. A quotation to support these findings is outlined below:

Supporting Quotation(s)
"Facilitating access to the best possible quality of life and range of experiences, either through direct work with the young person, or through practical and emotional support for those around them. Again, this would ideally be driven by a curiosity about, and understanding of, the individual's unique needs and experiences."

This was deemed as important in order to promote their independence post-injury.

At Home Care

It was also seen as unique to social care professionals, for them to coordinate the support a child may need in their home post-injury. This was deemed to involve the assessment and monitoring of the child's needs in order to decide what adaptations may be needed. A quotation to support these views is outlined below:

Supporting Quotation(s)
"To support the young person and their family in managing, understanding, responding to any changes in the home environment/context as a result of the TBI."

Social care professionals' role was also seen to involve supporting the child and family to better understand their change in circumstances and monitor the impact of the trauma on the family.

Safeguarding

Safeguarding was seen as unique to social care professionals, due to the potential for brain-injured children to be more vulnerable and therefore more at risk of harm. Social care professionals' role, in this respect, was deemed to be the assessment of any possible risk factors and monitoring and promoting their safety. Quotations to support these findings are outlined below:

Supporting Quotation(s)
"Assessing any possible risks as these children could be vulnerable."
"If the brain trauma is non-accidental, to undertake child protection intervention, etc"

They were also perceived to be responsible for exploring any safeguarding concerns and undertaking child protection interventions when there was concern over the cause of the brain injury.

Educational Psychologists

In terms of EPs, their unique roles and responsibilities were perceived to be around giving advice to schools on how best to support a brain-injured child.

Advice and Guidance to Schools

Professionals felt that it was the role of EPs to offer guidance to schools on how best to support a brain-injured child. This was perceived to involve assessment of need and the offering of recommendations on what schools could do to best support the child. It was suggested that this was likely to include adaptations to the environment and the curriculum, as well as supporting staff through training and supervision. Quotations to support these findings are outlined below:

Supporting Quotation(s)
"Supporting other professionals in identifying the impact of the TBI on the young person's access to education in areas of communication, understanding, attention and processing, social interaction, wellbeing, considering impact of change on wellbeing and sense of self."
"Support school primarily, but also the family, to ensure the environment and learning tasks are appropriate to the child, including support for monitoring and adapting to changes in behaviour or learning."

EPs were also seen to have an important role in ensuring the child's inclusion in the school environment, as well as signposting education professionals and parents to where else they could seek support when the child's needs fell outside the remit of the school or EP service.

3.5 Discussion

This research used a mixed methods approach to explore EPs' and education, health and social professionals' knowledge and attributions towards children with a TBI. The perceived roles and responsibilities of the different professional groups alongside their views on multi-disciplinary working were also investigated.

The quantitative phase of the survey analysed TBI knowledge in relation to 'professional group' and 'years in service', while the qualitative phase of the survey assessed professionals' views on their roles and responsibilities when working with children with a TBI, along with their views on multi-disciplinary working. In the semi-structured interview, an exploratory multiple case study design was adopted to better understand the attributions that professionals make towards children with a TBI.

This section discusses the findings of this research whilst also considering the methods used and existing literature. The strengths and limitations of the current study are discussed, alongside recommendations for future research and implications for practice.

3.5.1 Research Questions and Findings

RQ 1 and 2: How much knowledge do EPs and education, health and social care professionals hold about children with a TBI? Do the TBI knowledge scores differ by 'professional group' and/or 'years in service'?

The quantitative findings of this study indicated that, according to mean knowledge scores, health professionals had the greatest knowledge scores overall, and in relation to 'cognition and learning', 'recovery and

rehabilitation', 'physical' difficulties, and 'behaviour and emotion'. EPs had the second highest mean knowledge scores overall, and across all of the strands except 'cognition and learning' where they were slightly below the mean knowledge score of social care professionals. Social care professionals had the third highest mean knowledge scores overall and in relation to all other strands, except 'cognition and learning'. Education professionals had the lowest mean knowledge scores overall and across all strands.

The quantitative data also showed that there was a significant difference in knowledge of TBI sequalae between professional groups and specifically in areas of knowledge related to 'cognition and learning', 'recovery and rehabilitation' and 'physical' difficulties. There was not a significant difference in 'professional group' knowledge of 'behaviour and emotional' difficulties in the paediatric TBI population. In addition, there was no significant difference between professionals' 'years in service' and their TBI knowledge scores.

Despite health professionals having the highest knowledge scores out of all the professional groups, their overall mean knowledge score demonstrated a 55% average success rate, demonstrating that they still had a significant lack of TBI knowledge. This compared with a 49% success rate for EPs, 48% for social care professionals and 42% for education professionals. These results demonstrate that misconceptions around TBI in health professionals are common, which is supported by Swift and Wilson (2001) who found that many of the misconceptions around TBI held by the general public were also held by health professionals, who were not TBI experts. In addition, Linden et al. (2013) found that education professionals are ill-equipped to cope with

children who have sustained a brain injury due to their lack of TBI knowledge, with McKinlay and Buck (2018) reporting that gaps in knowledge were specifically around emotion, cognition and social behaviour. This is supported by the findings in this research. Norman et al. (2020) also found misconceptions in social care professionals' knowledge of ABI especially around recovery and rehabilitation. EPs reflected on their own lack of initial and post-qualification training in TBI in Bozic and Morris (2005) and how this impacted their confidence when working in this field. This supporting research demonstrates that a lack of TBI knowledge is a reoccurring issue within these professional domains that has not improved over time. As a result, there is a need to find effective ways of improving professionals' TBI knowledge acquisition in order to improve the outcomes of the children they support.

A non-significant difference was found between the 'behaviour and emotion' knowledge scores and each of the professional groups. This could be due to the overall mean knowledge scores being comparable between groups due to them all being equally knowledgeable in this area. However, upon further inspection of the questions in this domain, there was similarity in some of the questions which may have skewed the data in this section so that professionals scored more favourably than they might have done if the questions had been assessing different aspects of behaviour and emotions. For example, out of seventeen questions in the 'behaviour and emotion' section, four were regarding changes in a child's behaviour and three were related to an increase in anger. Further consideration and amendments of the questions in this part of the survey would be beneficial as a result.

There was also a non-significant difference in overall mean knowledge scores and 'years in service'. Overall, there was an uneven number of participants in each of the 'years in service' categories. There were 51 participants with 0-3 years' experience, 12 with 3-6 years' experience, 14 with 6-9 years' experience, 12 with 9-12 years' experience and 29 with 12+ years' experience. This may have impacted this non-significant result. In addition, the half-life of knowledge (Machlup, 1962), which refers to the amount of time it takes before half of the knowledge held in a particular field becomes obsolete or is superseded, may have also had an impact. This is because this phenomenon demonstrates that a greater number of years' experience does not necessarily lead to a greater level of knowledge. This is supported by the data with professionals with 6-9 years' experience achieving the highest mean knowledge scores (μ=51.4) and then the scores reducing after this point with professionals with 12+ years in service achieving a lower knowledge score (μ=46.4).

RQ3: Do EPs and education, health and social care professionals make different attributions regarding a child's presentation depending on a child's perceived level of need (no apparent need, an unidentified need, or TBI)?

The quantitative findings from the code frequencies indicate that all professional groups made different attributions depending on the child's presentation (no apparent need, an unidentified need or a TBI). This was further supported in the qualitative findings. This was the case in relation to the causality, stability, and controllability of the child's presentations when the child displayed with no apparent difficulties, with an unidentified need and

with a TBI. It was also the case in relation to professionals' attributions about their own competence when working with a child who displayed each of these presentations. This provides further support for Attribution Theory (Weiner, 1985).

External influences, such as 'home life', 'school' and 'peer relationships', were attributed to having more of an impact on the cause and stability of a child's presentation, than within child factors, when the child did not present with any difficulties. However, when Milo and Aya started to present with unidentified needs this changed. External attributions regarding the cause and stability of a child's presentation decreased for the child with internalising difficulties (Milo) but increased for the child with externalising difficulties (Aya). This demonstrates that when a child is demonstrating externalising behaviours such as anger or distress, environmental factors are assumed to be at fault. Whereas, when a child experiences low mood and motivation it was assumed to be due to internal factors.

A further contrast in the attributions made between Milo and Aya was that a TBI was deemed likely to be the cause of the internalising child's change in presentation (Milo), but was considered unlikely for Aya, who displayed more externalising behaviours. This may be due to Milo experiencing visible difficulties such as being slower and clumsier, therefore professionals found it easier to attribute this change to a TBI. However, as Aya's change in presentation was mood and behaviour related, a TBI was seen as less likely. This pattern in attributions was also observed in research by McClure (2011). A further possible explanation for the difference in TBI attributions could be related to gender. Hentschel et al. (2019) found that people assigned

different characteristics to males and females, which in turn impacted the attributions made about that person. Therefore, as Aya presented with more externalising behaviours, and Milo with more internalising difficulties, which could be deemed counter to gender-norms, this could impact the attributions professionals made about them and impact if a TBI attribution was made. Males are also more likely to suffer a TBI, which could have also influenced professionals' attributions towards Milo.

Once a TBI diagnosis was revealed for both children, this dominated professionals' attributions as to the causes and stability of both children's presentation, with professionals' previous attributions in relation to external and internal influences being largely dismissed. This is in line with research that indicates that labels can lead to wider environmental influences being ignored (Solvag, 2007). Labelling theory (Becker, 1973) suggests that when a label such as TBI is given, an individuals' presentation is defined by this term and used to describe or classify them. Youngman (2022) found that use of a label limited EPs' generation of hypotheses, which raises concerns that the TBI label could lead to stereotyping and detract from the individual needs of the child (Lauchlan & Boyle, 2007; Arishi et al., 2017). This, in turn, could lead to misattributions being made.

In relation to the controllability of Milo's and Aya's presentation, professionals attributed internal factors as more important than external factors when both children presented with no difficulties and felt that they would be able to control both children's presentation. However, internal attributions increased when both children developed unidentified needs. This increase in internal attributions might reflect the professional defensiveness which occurred at

this point for both children. This is where professionals found it difficult to attribute blame to professionals for having a negative impact on a child and instead believed this was more likely to have occurred due to internal factors to the child. Once the TBI was revealed, internal influences decreased, and the TBI was attributed as being the greatest contributor to controllability of the child's presentation.

Professionals' attributions about their own competence when working with children with a TBI, also changed depending on the perceived level of need of the child. In relation to knowledge and experience, professionals felt competent in supporting both children when they had no apparent need. However, they felt less competent as the complexity of the child's presentation increased and the least competent when the TBI diagnosis was revealed. This may explain why the need for multi-disciplinary working increased as the complexity in the presentation of the children became more apparent along with the level of support strategies needed.

RQ4: What value do EPs and education, health and social care professionals place on multi-disciplinary working around children with a TBI and what are the barriers and facilitating factors to doing this?

All professionals believed that multi-disciplinary working was of value. A Contents Analysis derived broad categories, which could act as either a barrier or facilitating factor to multi-disciplinary working, depending on how well they were carried out. Three of the broad categories, 'Holistic and Complementary Approach', 'Communicating and Sharing of Information', and

‘Efficient and Effective Resourcing’ were derived for all professionals, with the fourth broad category, ‘Legislative and Ethical Framework’, only being derived for professionals who viewed multi-disciplinary working as extremely important.

Research corroborates the findings in the study that multi-disciplinary collaboration is imperative in ensuring the right care is provided for the child with a TBI and their family (Feeney & Ylvisaker, 2003; Mottram & Berger-Gross, 2004; Bedell et al., 2005). Semlyen et al. (1998) also found that when an individual with a brain injury received coordinated multi-disciplinary rehabilitation, the individual demonstrated significant progress, which was also maintained post-treatment. It also had the additional benefit of reducing caregiver distress. This shows the importance of professionals working together to ensure the progress and improved outcomes for both the brain-injured child and their family.

RQ5: What do EPs and education, health and social care professionals perceive theirs and other professional groups’ roles and responsibilities to be when working with children with a TBI?

Four broad categories describing the roles and responsibilities of EPs and education, health and social care professionals were derived from a Contents Analysis of the qualitative data. The broad categories, which all professionals shared, were ‘Monitoring and Assessment’, ‘Recovery and Rehabilitation’, ‘Support of Family and Child within the System’ and ‘Multi-Disciplinary Working and Training’. In addition to these shared broad themes, each

profession was also found to have their own distinct roles and responsibilities. For health professionals these were ‘Medical Support’ and ‘Physical Support’; for education professionals it was ‘In Class Support’; for social care professionals, it was ‘Activities outside of Home/School’, ‘At Home Care’ and ‘Safeguarding’; and for EPs it was ‘Advice and Guidance to Schools’.

The broad categories shared between professionals demonstrate that there is an overlap in the work professionals do with children with an TBI and it is important that this is complementary, and not duplicated, in order to ensure that resources are effectively utilised.

In relation to monitoring and assessment, Jim and Cole (2020) proposed the development of biopsychosocial formulations to support children with a brain injury. This could be achieved through professionals in each of the disciplines carrying out assessments in their own field and then communicating their findings with other professionals through multi-disciplinary working, so that a joint formulation can be derived that takes into consideration the whole child.

Through adopting this approach to assessment, in the immediate period after a brain injury, it would initiate collaborative working of professionals from the point of injury, which participants reported was a facilitating factor to multi-disciplinary working. This would mean that professionals would know who the key professionals working with the child were, as well as clarifying their responsibilities, ensuring effective use of resources and minimising duplication of work.

EPs, as well as education and social care professionals, reflected that they were often brought in at a later stage in a child's rehabilitation journey, which meant that they did not always know what assessment and support had been put in place. They felt this led to fragmentation of support for the child and their family. Through involving all professionals from as early in the recovery process as possible, a comprehensive level of support is more likely to be devised.

Jim and Norton (2014) proposed that this could be achieved through the SPECS framework, which has been shown to assist multi-disciplinary working when some professionals have less knowledge about brain injury. The SPECS approach encourages a holistic perspective about the child and the domains implicated in their brain injury, and so can be used as an effective tool in helping professionals to work together to support a brain-injured child and their family. Using SPECS, alongside a biopsychosocial method of formulation, would further facilitate the multi-disciplinary working practices valued by all the professionals in this study and ensure all aspects of the child, their injury and the systems around them are considered in the action planning process.

Reflexivity

As a researcher, I was aware from the start of this research journey that my own personal knowledge and experience may influence the research process. I sought to remove any biases in interpretation of my data through a peer review and member checking, however, Barker et al. (2016) argue that, within the critical realist theoretical perspective which I adopted, the study

and its findings cannot be completely separated from my own beliefs and experiences.

This is demonstrated by my interest in this area arising out of my experience as a teacher and SENCO. Specifically, my interest in professionals' knowledge and attributions towards brain injured children arose from wanting to know whether my own lack of experience and knowledge of brain injury was common among other professional groups. In addition, it was from these reflections that I decided that it would also be interesting to explore how TBI knowledge is gained and how these professional groups interact with each other when working with brain injured children. If I had not had this extensive experience in education, but lack of experience with brain-injured children, this may not have been the direction my research took.

When reflecting on the results from this study, I felt some of the findings reflected my own expectations. For example, the increased need for multi-disciplinary working as the needs of a child becomes more complex, the barriers and facilitating factors of multi-disciplinary working and the knowledge base of the professional groups. However, some of the data challenged my own beliefs. For example, I wondered why health professionals did not have more knowledge of TBI and why did social care professionals have more TBI knowledge than educational professionals. I was uncertain as to whether these findings were reflective of the wider population of these professional groups and the children and families they support. This left me wanting to explore this topic further in both academic research and my own practice.

3.5.2 Strengths and Limitations

Strengths

A strength of this research is that it is currently the only study exploring EPs and education, health and social care professionals' knowledge and attributions towards children with a TBI, as well as looking at commonality and differences in professionals' perceived roles and responsibilities and their views on multi-disciplinary working. This was important to research as it furthers understanding of how these professionals can work together more effectively, in order to best support children with a TBI. It also facilitated a greater understanding of these professionals' training requirements and the need to prioritise the allocation of resources to this endeavour at a time of long-term austerity cuts.

This research utilised a mixed methods design. The quantitative phase investigated professionals' TBI knowledge, including where strengths and weaknesses in their knowledge base lie, as well as assessing whether there was a significant difference in knowledge scores based on the 'professional group' or 'years in service'. This contributed to the literature base around professionals' understanding of TBI and what needs to be done to support it.

This research also used Attribution Theory (Weiner, 1985) as a psychological framework for understanding professionals' attributions in relation to children with an TBI and adds weight to the theory, as all professionals reflected on each dimension in the semi-structured interviews. This research also added a further dimension related to professionals' attributions about their own competency when working with brain-injured children.

A further strength is that the sample size in both the survey and semi-structured interview met the minimum requirements in terms of G*Power calculation and Braun and Clarke's (2013) research around minimum participants in semi-structured interviews. In addition, there was a range of professions who took part in both the quantitative and qualitative phases. The open questions in the survey and the interviews both elicited a large amount of relevant information, which demonstrates that the approach taken in this research was effective.

In relation to the semi-structured interview, a Thematic Analysis was completed which used both an inductive and deductive approach to analysis. The deductive element was informed by Attribution Theory, with themes being organised by causal dimension. When the data did not fit within this framework, separate coding was carried out which led to new themes being developed inductively. This was carried out due to the researcher being aware of the limitations of using a purely deductive approach (Braun & Clarke, 2006).

Limitations

Triangulation of the data through also gathering the views of children with a TBI and their families would have been helpful in providing depth to the understanding of some of the results and ensuring the saturation of themes in the qualitative research. This may have also provided some useful insights into what additional roles and responsibilities professionals should have along with context about the children and their families' experiences of working individually with professionals and as part of a multi-disciplinary team.

Another limitation of this research is the use of vignettes, which were designed to replicate real world examples but were written from the voice of the child and this may have impacted the attributions made. The SPECS framework was used to ensure a holistic view of the child was provided and to illustrate the diversity of the impact of a TBI but this may have impacted the attributions made when typically, professionals may not have been provided with such detailed information. Strengths of the child were also omitted from the vignette when the child displayed additional needs, which may have also skewed professionals' responses and made the child's needs appear more challenging than they might have if strengths had also been communicated. Social workers in particular commented on a lack of contextual information, especially from the parents' perspective.

Due to a desire to gain a nationwide perspective of this research topic, all interviews were carried out online, however, it was felt that this may have inhibited rapport development in some of the interviews. Typically, semi-structured interviews are conducted face-to-face in order to build a positive relationship and to interpret non-verbal communication (Vogl, 2013). However, Sturges & Hanrahan (2004) found that, when comparing telephone conversations with face-to-face interviews, there was no differences in responses given or the length of the interview so conducting interviews online may not have impacted this study's results.

Despite the sample size in the survey exceeding the minimum requirements, it would have been helpful to stop participants from moving onto the next question before answering previous questions as some participants' responses had to be removed due to incomplete answers. A further reflection

on the survey is whether it was too long as some participants did not complete the whole survey. The fact that open ended questions were at the end of the survey, and needed to be completed before being allowed to finish the survey, may have also exacerbated this issue.

It could be argued that a further limitation is the use of code frequencies in the Thematic Analysis. Morgan (2022) argued that this procedure risks over-simplifying complex qualitative processes and the data derived by assuming themes are distinct and mutually exclusive. In addition, Driscoll et al. (2007) argued that code frequencies reduce rich qualitative data into single dimensional variables. Despite these criticisms, code frequencies were calculated and it was felt that they would be beneficial in corroborating the themes derived and to identify patterns in the themes within the data. Finally, there was a demographic imbalance between the participants who took part in this study and those in the general population and at greatest risk of brain injury. This may have introduced bias into the results. For example, research has demonstrated that females typically hold more positive views toward disadvantaged groups than males (Chambers et al., 2009; Linden et al., 2005;). As there were significantly more female participants than males in this study, this may have skewed the attributions that were made as well as the support professionals stated they would provide. As a result, future research should attempt to control for the effects of gender, among other demographic variables.

3.5.3 Recommendations for Future Research

In order to better understand the impact of the misconceptions and misattributions of these professional groups and why they occur, it would be

beneficial to carry out the knowledge aspect of the survey as an interview. This would further develop understanding of the gaps in knowledge and ensure that any training devised adequately meets the needs of the professionals attending. It would also aid understanding of where knowledge is gained and therefore where any misconceptions may arise from.

In order to ensure the saturation of themes around the roles and responsibilities of professionals outlined in this research, it would be helpful to explore if service users, such as children impacted by a TBI and their families, agree with the study's findings or have different or additional roles and responsibilities for each of the professional groups. This could be done through focus groups to ensure richness of data derived.

A further piece of research, which would be beneficial, is how to effectively develop professionals' TBI knowledge. This is important as this research demonstrated that education, health, social care and educational psychology professionals have significant gaps in their TBI knowledge, and that this may lead to misattributions being made about brain-injured children. In addition, research shows that brain injury training, in its current form, may not be sufficient to maintain knowledge in the long-term (Maitz, 2020; Glang et al., 2019). As a result, other approaches to improve knowledge acquisition may be required or current training should be adapted to incorporate certain facets such as self-directed learning (Knowles, 1984), flipped learning (Chun and Heo, 2018), and reflection, discovery and reception (Binstead, 1982). It would be beneficial for more systematic research to be carried out to develop a thorough understanding of how TBI knowledge could be best acquired.

Finally, it would be interesting to explore whether professionals' attributions were impacted by the fact that the adolescents in the vignettes were of different genders. It was difficult to isolate gender as an influencing factor in this study due to the differences in presentation and other factors which could have influenced the attributions. However, a further study where Aya and Milo had an identical counterpart of the opposite gender would enable this to be explored further. The author could not find any research on how gender impacts professionals' attributions, providing a further indication of the need for this research.

3.5.4 Implications for Practice

The results of this research demonstrated that health professionals had the greatest TBI knowledge overall and across the four domains. However, upon deeper inspection of the data, it was seen that there was a significant lack of TBI knowledge across all professional groups, including health. This demonstrates a need for brain injury knowledge to be developed across all professional groups, if the negative trajectory of these children is to be broken.

Training would be beneficial across all areas for EPs and education, health and social care professionals but would not suffice in ensuring that professionals would know what to do if they encountered a child with a brain injury. This is because no training can encompass all facets of a brain injury due to its complex and heterogenous nature. As a result, it is integral that multi-disciplinary working is embedded into professional practice so that learning is not limited to a short period of training but is a life-long journey where professionals can learn from each other as well as from the child and

their family. The SPECS framework, alongside a biopsychosocial method of formulation, has been proposed to support multi-disciplinary working practices around children with a TBI. This would ensure that all facets of the child, their injury and the systems around them are considered as part of the recovery process. In addition, in school settings, the SEND and Medical registers should be aligned and readily accessed by SENCOs, so that identification of brain-injured children with additional needs can be made easier.

Findings from this research also demonstrated the distinct and overlapping roles and responsibilities of these professional groups', which further supports the need for professionals to work closely together to ensure the work they do is complimentary and does not duplicate other professionals' work.

Research also demonstrates that professionals base their attributions on their experience of working with children with a TBI, and so by working in a multi-disciplinary way, professionals can widen their experience and knowledge, which should further reduce misattributions about this population.

EPs have a unique role to play at the individual, group and systemic level when working with children with a TBI. This could be in terms of assessing the strengths and needs of these children alongside the development of evidence-based interventions to be used at home and in school to aid recovery and rehabilitation. It could also be in raising awareness of paediatric TBI through developing the knowledge of other professionals working with these children. Research also shows that a systemic approach to data collection and policies around multi-disciplinary working needs to be

developed, which EPs, as agents of change, can help to develop and implement. However, in order to do this, it is integral that EPs' TBI knowledge is raised so that they can best support the child and the wider systems around them.

3.5.5 Conclusions

The findings from the quantitative aspect of this study, indicated that there is a lack of TBI knowledge across health, education, social care and educational psychology. This highlights the importance of allocating resources to improve knowledge acquisition amongst these professions, as part of their core training, through yearly Continuous Professional Development (CPD) and through effective multi-disciplinary working. This is important as a lack of knowledge can lead to misattributions being made about brain-injured children, and increase the risk of them encountering discrimination from professionals as a result. This is a particular risk factor for these children due to the neuropsychological difficulties they can experience often being hidden or misdiagnosed.

The qualitative findings of this research demonstrated that professionals' attributions changed with adaptations to each young person's presentation, providing further support for Attribution Theory. Results also indicated that professionals attributed the young person's presentation almost solely to the TBI, once this diagnosis had been revealed, providing support for Labelling Theory. Professionals viewed their roles, and that of other professionals, as both distinct and overlapping when working with brain-injured children and multi-disciplinary working was seen as more integral once a TBI diagnosis was revealed.

Overall, this study expanded existing literature on professionals' knowledge and attributions in relation to working with children and adolescents with a TBI, and made a unique contribution to the understanding of professionals' perceptions of theirs and other professionals' roles and responsibilities when working with children with a TBI. It also provided a greater understanding of the value placed by these professionals on multi-disciplinary working and how they felt this could effectively be carried out.

Based on the findings highlighted, a number of recommendations for future research and implications for practice were identified to support children who have experienced a TBI, both across and within the systems they inhabit.

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Chapter 4: Dissemination and Impact

4.1 Introduction

This chapter provides an overview of evidence-based practice and practice-based evidence, alongside a discussion on how research can be used to inform policy. This is followed by an outline of the potential impact of the research outlined in this thesis within the context of policy, practice and research, at academic, professional and societal levels. Finally, the dissemination plan is presented, including where and how this research could be published.

4.2 Knowledge Transfer

The transfer of knowledge into practice is a key role of psychologists and Lomas (1993) argues that there are three ways in which this can be achieved: through diffusion, dissemination, and implementation. Diffusion involves the sharing of information through widespread publicity. Dissemination is the planned sharing of information with a specific audience, that has been targeted to receive this information, with the aim of educating and changing attitudes. Implementation requires the use of research findings to adapt policies and practice in order to improve service delivery and professional behaviour. All three means of knowledge transfer are outlined further in this chapter in relation to the current research.

Whilst there has been an increase in research activity overtime (Dunsmuir & Kratochwill, 2013), there are concerns that there is a gap between the knowledge researchers hold and the implementation of these new findings into policy and practice (American Psychological Association Task Force on Evidence-Based Practice for Children and Adolescents, 2008). This knowledge transfer between researchers, policymakers, psychologists and

related professionals can take place both through evidence-based practice and practice-based evidence, both of which are explored further below, with further consideration of the facilitators and barriers to converting research into practice and policy.

4.3 Evidence-based Practice

Evidence-based practice is the dissemination of research into practice. In relation to educational psychology, this involves research findings being applied to and used in educational settings to adapt policies and practices in order to best support children and the wider systems around them. There has been increasing political pressure to ensure that educational practice is evidence-informed (Kratochwill, 2007) with widespread concern among British educational policymakers that there is a disconnect between research evidence and educational practice (Perry et al., 2010). This has become more complex overtime due to the large amount of research being carried out, making the critical analysis of relevant research more challenging. In order to make this process easier, high quality research needs to be more readily available, more easily identifiable, and demonstrate practical relevance to education professionals and related disciplines (Dunsmuir & Kratochwill, 2013).

In addition, in order for evidence-based practice to be effective, there needs to be professional expertise in knowing how the research can be applied to a real-world context. Educational psychologists, as scientist-practitioners (Kratochwill et al., 2012) and agents of change (Dunsmuir & Kratochwill, 2013), have the skills and ability to understand the research, the environments they work in, and the needs of the setting or young person that

they are supporting. This helps ensure the correct application of the research to the problem that they have been tasked to solve and aids the process of changing policy and practice. In order to be able to act as an effective intermediary between researchers, policymakers and education colleagues, educational psychologists need to have the necessary time to access, read and critically evaluate research and engage in debates around relevant topics, as well as being adept at translating potentially complex research into language that is unambiguous and supported by real-world examples (Kirst, 2000) so that policymakers and education professionals can see that the research presented is meaningful, relevant to their practice and manageable to implement.

In its purest form, evidence-based practice is designed to improve outcomes for a child, group or setting through effective psychological, practice-informed, empirical research. For educational psychologists this requires that professional experience is also considered in knowing how the research can be adapted to best suit the situations in which an educational psychologist might work. In addition, it is important that the research that educational psychologists are referring to, to inform their practice, is of the highest quality.

There are numerous ways in which research can be disseminated, such as through professional journals, textbooks, non-fiction texts and blogs, and professional and personal websites can be used to promote research and provide easily accessible downloads of information and resources (Dunsmuir & Kratochwill, 2013). Whilst, this means that research is more readily

available, it also increases the risk of poor-quality research being more widely disseminated and publicised.

In order to try to ensure the highest quality of evidence is put into practice, Petticrew and Roberts (2003), developed a typology of evidence. In this, Randomised Control Trials (RCTs) were valued as having the best research methodologies for effectiveness and safety questions, with case studies holding the least. This approach has, however, come under criticism as it can create a publication bias in favour of RCTs (Levine, 2013), so that other approaches, which may be equally valid but less dominant in publications, are not considered in as much detail. In addition, it is argued that the use of evidence hierarchies, such as that posed by Petticrew and Roberts (2003), do not consider the influence and importance of qualitative methodologies (Fox, 2003) and so should be used with caution.

A further concern raised by over-valuing RCTs is that they often involve heavily controlled conditions, which are not typical of the environment in which the research is being applied. This may lower the success rate of RCT-researched interventions when they are implemented in a less controlled context such as an education setting (Weisz et al., 2013). This is due to the complexity of the environments that children and adolescents exist within, which are often difficult to replicate in research. This can make it more difficult to generalise research findings to a real-world context. In addition, educational psychologists cannot control for all of the extraneous variables that may impact a child or young person that they are working with, in their educational or home environment. This means that research findings

extolling the benefits of certain interventions in controlled environments may not see the same benefit in real-world contexts.

Limitations of evidence-based practice can also arise if education professionals are resistant to change (Kirst, 2000) or lack the skills and knowledge to be able to apply new knowledge and use it to develop their practice (Hemsley-Brown & Oplatka, 2005). Educational psychologists, who are adept at understanding and assimilating research and applying it to the context in which they work, can support education professionals in this process (Rosenfeld & Humphrey, 2012). This can be achieved through psychologists, as agents of change, incorporating new knowledge into their own practice and having reciprocal conversations with researchers and education professionals about the necessary changes and how this can inform future research and educational practice. This is supported by O'Keefe and Medway (1997) who found that transferring research into practice was more effective when done in collaboration with knowledgeable professionals, who were then able to apply their new understanding to their existing experiences.

In addition to the benefits of evidence-based practice, it is also important that evidence is informed by practice.

4.4 Practice-based Evidence

Practice-based evidence is the knowledge gained through applying evidence to practice and then evaluating the success of the practice and using that to inform the evidence-base. Fox (2003) states that as evidence is developed, the practices of professionals should change accordingly; and interventions should be monitored and evaluated, using specific outcome measures, so that further evidence can be gathered through practice. This indicates that the evidence base should be used to inform practice and putting the evidence into practice can further inform the evidence base. It has been argued that this approach helps bridge the gap between research and practice, which cannot be created when a solely evidence-based practice approach is adopted (Crooke & Olswang, 2015).

As opposed to RCTs, which usually involve highly controlled environments and therefore can have poor external validity, the use of practice-based evidence, where the evidence is found within naturalistic settings, can significantly improve the external validity of the results (Barkham & Mellor-Clark, 2003). This approach may increase the alignment of research with practice so that research findings are more pertinent, actionable and considerate of a wider population (Green, 2008).

A further advantage of the use of practice-based evidence is that it promotes the exploration of issues that professionals are experiencing in their everyday practice. As a result, professionals may feel it is more relevant to them and thus be more engaged than if asked to participate in a more abstract and controlled study (Green & Nasser, 2012).

Despite these benefits, if practice-based evidence is based on small samples, either in terms of the number of settings or the number of participants, generalisability of findings can become more challenging. It can also make the replicability of the findings more difficult and open the research up to researcher bias, where the researcher's own subjective beliefs influence the results.

As can be seen, there are issues that arise when using either approach in isolation. However, it has been argued that neither approach is capable of independently delivering rigorous, easily replicable and relevant research (Barkham & Mellor-Clark, 2003). As a result, if evidence can inform practice and practice can, in turn, inform evidence, the two paradigms can be used together to inform policy and practice in educational psychology. Educational psychologists are best placed to support other professionals in adapting their policies and practice to best support the children and adolescents they work with and the wider systems around them.

4.5 Research, Policy and Practice

A further important consideration related to research is how it can be used to impact policy, both at a local and national level. This is important as, policies laid down by government and professional leaders, in turn, influence practice.

Despite the importance of research informing policy, studies have shown that policymakers can be selective in the research that they cite, focusing on research that supports their political or ideological stance rather than using

research to inform their decisions (Lindblom & Cohen, 1979; Perry et al., 2010).

A further key concern is that policymakers and researchers can be seen as two separate entities with conflicting agendas, who fundamentally misunderstand each other's viewpoints, frameworks and priorities (Dunsmuir & Kratochwill, 2013). This can lead to a breakdown in communication between the two and inhibit the transference of research into policy.

Innvaer et al. (2002) investigated the facilitating factors and barriers to effective transference of research into policy and found that factors that helped this process included: personal contact between the researcher and policymaker, current relevance of the research, and the clarity and accessibility of the recommendations that were given to the policymaker by the researcher. Barriers to the process included: lack of contact between the researcher and policymaker, the research being perceived as irrelevant to current context by the policymaker, personal mistrust between the researcher and policymaker, and difficulties related to budget and the balance of power between the domains of research and policy. This highlights the importance of effective dissemination of research by professionals who are able to explain research to policymakers clearly and concisely and put it in context so that policymakers understand its relevance to their current situation.

An added complexity to the transference of research into policy comes from the different values that researchers and policymakers may place on research evidence. Whereas a researcher may value the research evidence as extending current thinking and knowledge in a certain field, a policymaker may, more likely, be drawn to research that furthers their own interests such

as providing evidence in support of a particular policy which they wish to promote. In order to facilitate greater alignment between policymakers and researchers, policymakers can commission research and agree the research questions prior to the commencement of the research being carried out. However, if the research findings do not support the policymaker's goals, the research may still not be transformed into policy.

Further to this, in order for research to directly impact the development of policy, Solesbury (2001) argues that research needs to include theory, analysis, and description, as well as being diagnostic and evaluative. Kratochwill et al. (2012) also proposes that it is necessary for a range of research methods to be considered in order to answer the range of questions a policymaker may be interested in, including case studies and qualitative design. The methods chosen therefore may contrast with those suggested in Petticrew and Roberts (2003) 'typology of evidence'.

It is also important to note that the role of the researcher goes beyond advocating for their own research findings and requires them to consider and show an appreciation of other factors which are important to the policymaker and ensure these additional factors are considered in relation to the research findings. Such facets can include but are not limited to: the influence of the media, lobbyists and interest groups, the outcome of position papers (Asen et al., 2012), the perceived environmental impact of the proposed policy, and the effect it may have, directly or indirectly, on stakeholders and other individuals or groups (Dunsmuir & Kratochwill, 2013).

Educational psychologists can help support the transfer of research into policy and have an important role in mediating between the researcher and

policymaker. This is because an educational psychologists' role is to remain up to date with current research findings and, in their role, they are not only impacted by the policies that are implemented at the national and local level, they can also see the impact these policies have on the individuals and groups they work with. This can give educational psychologists a unique perspective and aid in the understanding of the two, often disparate perspectives of the researcher and policymaker.

Due to the diffuse nature of the current political landscape, it can be difficult to navigate and network within these structures in order to support knowledge transfer. However, educational psychologists, as part of their role, are required to consider external influences, understand and remain cognisant of the political landscape, contribute to and disseminate research findings and integrate theory and research into practice. This provides the potential for educational psychologists to take on the role of agents of change and support the bridging of the gap between policy, research and practice. In turn, educational psychologists can bring about positive change for the children, adolescents and families they work with and the educational settings they work within.

This demonstrates that the transference of research into policy and, in turn, practice, is a complex process influenced by a range of factors including: the current political and economic situation, pressure for change from the media, lobbyists and interest groups, and the relationship and effectiveness of communication between researchers and policymakers. Educational psychologists can have an important role in supporting this process within the boundaries of their competence (BPS, 2021).

4.6 Impact of Research

By research having an impact it means it is advancing knowledge, understanding, method, theory and policy (Economic and Social Research Council [ESRC], 2023). Research can make an impact at academic, professional and societal levels and Table 4.1 outlines some of the potential ways in which the research in this thesis could make an impact.

It can be seen in Table 4.1 that this research can influence policy and practice through ensuring government legislation and guidance around brain-injured children and adolescents is kept up to date with current research and is disseminated more widely to increase awareness of brain injury among professionals and the general public. This, in turn, should indicate to universities the importance of adapting curricula content across the fields of education, health, social care and educational psychology training to include more information on brain injury sequalae and how best to support brain-injured children and adolescents. Furthermore, it should highlight the importance of multi-disciplinary working to professionals working with brain-injured children and their families and promote the importance of more effective record keeping and sharing of information between professionals when working with this cohort.

In relation to research, Table 4.1 highlights the importance of extending the current research by continuing to research the areas of ABI and TBI, the knowledge and working practices of professionals, as well as how best to support brain-injured children and adolescents, so that they, and their families, get the best evidence-informed help and guidance they can.

Table 4.1: Potential Development Implications of the Research

	Policy	Practice	Research
Academic	Improved cross-discipline academic working so that appropriate adaptations to existing curricula can be made in education, health, social care and EP training	Direct teaching about the impact of a brain injury on DECPsy courses as well as education, health and social care training programmes	Further research on the impact of a brain injury on children and adolescents with an ABI to bridge the knowledge gap between ABI and TBI
Professional	Policies and guidelines developed on how best to support children and adolescents with a brain injury Tighter policies promoting professional engagement in multi-disciplinary working with children and adolescents with a brain injury Multi-disciplinary working and psychoeducation between professional groups to increase overall TBI knowledge acquisition	Improved dissemination of diagnosis, to all professionals involved with a child or young person with a brain injury Register held centrally for all professionals detailing children and adolescents who have a brain injury Medical and SEND register aligned to improve the sharing of information between professionals	Research on how best to support children and adolescents with a brain injury Research on how professionals can work in a more effective multi-disciplinary way when working with children and adolescents with a brain injury Research on how brain injury training can be improved to ensure knowledge is maintained in the long term

Societal	Adaptation of the legislation and guidance around children and adolescents with a brain injury	Government campaigns raising awareness in wider society over the impact of a brain injury Greater awareness in society of the implications of a brain injury	Further research to gain an understanding of TBI knowledge within the wider population so that information sharing can be targeted to gaps in knowledge

In order to maximise the potential impact of a piece of research, it is important to identify the main stakeholders who would most benefit from learning about this research. In order to influence academia, it would be important for academics working in education, health and social care as well as educational and neuropsychology to be aware of this research and to understand the implications it has for each of these professions. It would also be important for colleagues working in these areas to work together in order to better understand how the advancement in knowledge about brain injury could be achieved across each of the disciplines in the longer term through adaptations to the current training curricula in each of these areas. This would have an early impact on professional knowledge and understanding of brain injury across all professions that may come into contact with brain-injured children, which would aid identification and early help for these individuals.

In relation to advancing professional practice, it would also be important for existing education, health and social care professionals and educational

psychologists to be aware of this research. This would be important in order to advance existing practice in each of these fields so that brain-injured children and adolescents receive the most appropriate and evidence-informed care they can. It will also be important, as this research has identified that professionals need to develop better multi-disciplinary working practices in order to best support these children. The data on the barriers and facilitating factors to multi-disciplinary working, which are outlined in this research, should aid better policy development in this area.

At a societal level, it will be important for the government to advance its agenda to improve everyone's knowledge of brain injury (UKABIF, 2018). This will require adaptations to the legislation and guidance around children and adolescents with a brain injury. In order to facilitate this, the All-Party Parliamentary Group for ABI are holding an Acquired Brain Injury Reception, in May 2023, in order to raise awareness of the issues surrounding ABI and amplify the voices of children impacted by brain injury. The author of this research will be attending this event in order to raise awareness of the research outlined here and the implications for professional practice.

Additionally, there are many charities in the UK that support children and adolescents with brain injuries and their families, who should also be made aware of this research in order to aid their understanding of how to offer the most appropriate support. One such charity, the Child Brain Injury Trust (CBIT), alongside Swansea University, and UKABIF are currently carrying out research on education professionals' training opportunities and knowledge of ABI. As a result of the similarity of their research to the

research outlined in this thesis, the author of this thesis has been in contact with the key researchers at CBIT in order to inform them of this research.

4.7 Implications for Policy and Practice

Research has demonstrated that brain injury impacts around 24-31.6% of children and adolescents in the UK (Hughes et al., 2018) and so it is an important area in which knowledge needs to be advanced. Despite this, research has identified that the key professionals working with these children do not have adequate knowledge and training in order to provide the most appropriate support (Linden et al., 2013).

In Chapter 2, the review paper identified that training could be an effective way of advancing knowledge and understanding of brain injury, in the short term, but that knowledge was not necessarily maintained in the long-term. This is supported by Ebbinghaus (1974) who founded the Forgetting Curve, which indicated that individuals forget most rapidly at first and then slower over time. This effect may be due to the information being forgotten soon after it has been taught if not applied. This may indicate that training can only be part of the solution and that practice periods should be embedded soon after the training to support retention of new knowledge (Kolb, 1984).

Binstead (1982) also argued that, in order for training to be effective, it needed to include several cycles of the following three components: reflection (the gathering of thoughts before commencing an activity), discovery (learning through the completion of an activity) and reception (learning through a lecture/reading). Knowles (1984) also argued that training should incorporate self-directed learning and be rooted in the individual's

experience whilst Chun and Heo (2018) propose that flipped learning, which hands the learning materials over to the learner, could also be used to further embed new knowledge. If the brain injury training does not include these elements, it is less likely that the knowledge gained will be maintained and therefore unlikely that it would be transferred into the workplace. As a result, it will be important for trainers to take this into consideration when devising brain injury training.

Further to this, policymakers also need to consider the research presented here and adapt their policies accordingly so that brain injury training becomes an integral part of training courses across education, health, social care and educational psychology. Furthermore, the core training should include all of the required elements for effective training outlined in this study, in order to solidify and consolidate any new knowledge gained.

For education, health, social care and educational psychology professionals, brain injury training should also be incorporated into their annual Continuous Professional Development (CPD) and repeated at least once per year to ensure professionals are kept up to date with the most recent research in this area. This training will need to include headteachers, SENCOs, Principal EPs, and heads of departments in social care and health facilities so that any changes to policies and practice can be made in line with training.

Training should ideally be carried out by a paediatric neuropsychologist with a specialism in brain injury to ensure the knowledge imparted is accurate and detailed. The training should consider the specific needs of each professional group, which are outlined in this research, but could be further explored through a needs analysis completed prior to each training session. Training

should also incorporate the roles and responsibilities of other professionals that work with brain-injured children and adolescents, as well as the importance of multi-disciplinary working as identified through the research outlined in the review.

Chapter 3 confirmed the need for brain injury knowledge development in professionals due to the professionals' overall mean TBI knowledge scores being less than 55%, with health professionals holding the most TBI knowledge and education professionals holding the least. These research findings should be disseminated to academics who set course curricula so that they can support the professionals they train in developing their understanding of TBI. It should also be passed to senior staff and managers within health, social care, education and educational psychology, who devise CPD schedules for existing professionals, so that they can ensure knowledge of TBI is a key focus of training.

Chapter 3 also demonstrated support for Attribution Theory and Labelling Theory. Specifically, that without adequate knowledge and understanding of TBI, professionals can make misattributions about children and adolescents with a brain injury, which can then impact the support they provide and their own sense of professional competence. The research also indicated that once a label of TBI was given, professionals attributed all aspects of a child's presentation to this, which raises concerns that the TBI label could lead to stereotyping and detract from the individual needs of the child (Lauchlan & Boyle, 2007; Arishi et al., 2017). This, in turn, could lead to further misattributions being made. This justifies the need for the development of policies and practice so that all professionals have an increased knowledge

and understanding of TBI so that the likelihood of developing inappropriate attributions about this population are minimised and brain-injured children and adolescents, and their families, can get access to the most research-informed and appropriate support.

4.8 Dissemination and Pathways to Impact

Research indicates that having specific strategies in order to disseminate research findings is more effective than passive dissemination in effecting change (Bero et al., 1998). Impact can be at the academic, research or societal levels as demonstrated in Table 4.1. A detailed strategy for disseminating the findings of this research is outlined below.

4.8.1 Non-Academic Dissemination Pathway

Both the review paper and empirical paper will be disseminated to non-academic individuals and organisations. This requires identifying the key stakeholders who the research is most relevant to and could be most impacted by and ensuring that they have the opportunity to understand and learn from the research. Dissemination, in this instance, could be through public events, conferences and interactions with the media and can lead to improvements in societal welfare, the development of public services' practice, changes to public policy and contribute to both operational and organisational change and multi-agency practices.

Despite non-academic dissemination aiming to impact policy and service development, any changes are unlikely to be solely due to research evidence alone, which can make it challenging to assess the specific impact that a piece of research has had.

In relation to disseminating this research for non-academic purposes, the researcher will first share the findings of this research with participants. For the semi-structured interview aspect of the research, this will involve emailing the key findings to the participants. As the survey was anonymous, except for those who wanted to be included in the semi-structured interview, it is only those who volunteered that can be contacted regarding this research. A scoping email will first be sent to these participants asking if they would be interested in receiving the research findings. This will then be sent to the assenting participants via email.

It will also be important for charities and voluntary organisations to be aware of this research. To achieve this, key people within The Children's Trust, the Child Brain Injury Trust, Headway and Same You will be informed about this research and an offer will be extended to share it. Those that accept will be sent the research via email and a conversation about the research will be offered and given to those that request it. These organisations would then be able to share this research widely to their stakeholders, which could include relevant professionals in health, education, social care and psychology services, along with parents and children impacted by brain injury.

It is acknowledged by the researcher that written dissemination of research may not be an accessible way of sharing the research for all interested parties (Sharples, 2013), therefore a series of video recordings outlining the research will be recorded and disseminated via social media platforms such as Twitter and YouTube. This video could also be sent out to charities and voluntary organisations and participants alongside the written format.

4.8.2 Academic Dissemination Pathway

Alongside sharing the research with key non-academic stakeholders, it will also be important to reach a wider audience through disseminating it through academic channels.

This will first be achieved through presenting my findings at the University College London (UCL) Doctorate in Educational and Child Psychology (DECP) Research Conference. This is attended by trainee educational psychologists, tutors and research advisors and is an opportunity to share the research with immediate colleagues. This will be beneficial as it will be an opportunity to summarise my findings concisely and meaningfully through presenting, before disseminating it for publication at a later date, which Bell et al. (2019) believe is important.

As the UCL DECP Research Conference limits the dissemination of my research to immediate colleagues, it will be important to share it more widely within the academic community. This can be achieved through further presentations of my findings through conferences, such as those organised through the Association of Educational Psychologists (AEP) and the British Psychological Society (BPS), as well as through peer-reviewed journals.

Through sharing my research findings through publishing articles in peer-reviewed journals, the research can reach practitioners as well as research and academic professionals. The aim of dissemination through journals would be to raise awareness of professionals' knowledge gaps across education, health, social care and educational psychology in relation to TBI and the benefits of brain injury training, alongside multi-disciplinary working, in developing professional understanding. It would also be important to share

the perceptions of the roles and responsibilities of the different professionals working with brain-injured children and the important role multi-disciplinary working can play in facilitating effective support for brain-injured children and their families. Finally, it will also be important to share research on the attributions that professionals in education, health, social care and educational psychology make about children with different presentations pre- and post-TBI, and the benefits and risks that come with giving a child the 'TBI' label. This is important as it highlights some of the biases brain-injured children may be faced with as well as the importance a diagnosis of TBI can have on the responsiveness of professionals and the support brain-injured children receive.

The aim would be to publish the research over five separate papers. This would include articles on the review paper; professionals' knowledge of TBI; professionals' roles and responsibilities when working with brain-injured children; the importance of multi-disciplinary working with brain-injured children; and professional attributions about brain-injured children. Each article would make a unique contribution to the research literature on brain injury and professional knowledge and working practices.

The journals that have been chosen for publication purposes for each section of this research are outlined in Tables 4.2 below.

Table 4.2: Journals Shortlisted for Publication Purposes

Journal Title	Description	Impact factor*
Brain Injury	This journal publishes critical information relating to research and clinical practice in brain injury in adult and paediatric populations. Topics covered can address emergency and acute medical care, rehabilitation, family and vocational issues, and long-term supports.	2.2 (2021)
Neuropsychological Rehabilitation	This journal publishes articles on human experimental and clinical research related to rehabilitation, recovery of function, and brain plasticity.	2.9 (2021)
Behavioural Neurology	This journal publishes articles on cognitive neuroscience, neuropsychology and neuropsychiatry including TBI.	3.11 (2021)
Educational Psychology in Practice	This journal is peer reviewed and topics focus on research, theory and practice that is relevant to EP practice, mainly within the UK context. Most articles are written by psychologists and there is a focus on transferring research into practice.	1.7 (2021)

European Journal of Teacher Education (EJTE)	This journal focuses on educational research which investigates theory, policy and practice in teacher education at pre-service and in-service levels in Europe.	5.22 (2021)
Professional Development in Education	This journal publishes original contributions on professional learning and development (PLD) and how PLD can improve educators' and students' lives for the better.	2.51 (2021)
Research in Education	This journal publishes critical, trans-disciplinary, debates on theory, policy and practice in relation to Education.	0.33 (2022)
Social Work Education	This journal publishes articles of a critical and reflective nature concerned with the theory and practice of social care and social work education at all levels.	2.4 (2021)

*This refers to the average number of times the journal is cited in a year using data from the previous two years.

The proposed title and abstract for each of the papers are presented in Tables 4.3 to 4.7 along with the suggested journals that they could be published in from Table 4.2. The first author will be the lead researcher, with the research supervisor being the second author, due to their significant contribution towards the research process.

Table 4.3: Chapter 2: The Review Paper

Paper 1 – Systematic Literature Review	
Proposed Journal(s):	European Journal of Teacher Education (EJTE) Professional Development in Education Research in Education Social Work Education Educational Psychology in Practice
Title:	A Systematic Review of the Effectiveness of Brain Injury Training for Improving the Knowledge of Professionals, Parents and Children impacted by Brain Injury.
Abstract:	A systematic literature review was conducted to evaluate the effectiveness of brain injury training in improving the knowledge of professionals working with brain-injured children and parents and children impacted by brain injury. Three electronic databases, PsychINFO (OVID), SCOPUS and ERIC (EBSCO), were searched for relevant literature. Sixteen studies met the review criteria and were critically appraised using Gough's 'Weight of Evidence' framework (Gough, 2007). Findings indicated that brain injury training improved knowledge immediately after training, but was inconclusive over the longer-term. Overall, the review demonstrated an emerging evidence-base for the effectiveness of brain injury training in improving the TBI knowledge and understanding of professionals, parents and children.

Table 4.4: Chapter 3: Professionals' Knowledge of TBI

Paper 2 – Empirical Paper	
Proposed Journal(s):	Research in Education Social Work Education Educational Psychology in Practice Professional Development in Education
Title:	EPs and Education, Health and Social Care Professionals' Knowledge of TBI
Abstract:	Traumatic Brain Injury (TBI) is a leading cause of death and disability worldwide. Despite this, there is a lack of awareness and understanding amongst key professionals about TBI, its consequences and impact. As a result, the TBI knowledge of 120 education, health, social care and educational psychology professionals were assessed overall and across four domains: cognition and learning; recovery and rehabilitation; physical difficulties and behavioural and emotional difficulties. A between-subjects ANOVA was carried out in order to determine whether or not there was a significant effect of 'professional group' and 'years in service' on knowledge of TBI scores achieved. Results showed a significant difference in the effect of 'professional group' on knowledge scores achieved [$F(1,120) = 3.372$, $p=0.021$, $\eta p2 = 0.092$] but a non-significant effect of 'years in service' on knowledge scores achieved [$F(3, 120) = 0.962$, $p=0.432$, $\eta p2 = 0.037$]. In addition, there was found to be a significant difference of 'professional group' on knowledge scores achieved in relation to 'cognition and learning', 'recovery and rehabilitation' and 'physical' difficulties but a non-significant difference for the domain of 'behavioural and emotional' difficulties. Profile plots of the estimated marginal means demonstrated the highest TBI knowledge scores among health professionals compared to the other professional groups, with EPs being the second most knowledgeable, social care professionals the third and education professionals demonstrating the lowest knowledge scores. Implications for practice are discussed.

Table 4.5: Chapter 3: Professionals' Attributions towards Children and Adolescents with a TBI

Paper 3 – Empirical Paper	
Proposed Journal(s):	Educational Psychology in Practice Brain Injury Neuropsychological Rehabilitation Behavioural Neurology
Title:	EPs and Education, Health and Social Care Professionals' Attributions towards Children and Adolescents with a TBI
Abstract:	When a young person has experienced a brain injury, access to various forms of neurorehabilitation optimises recovery and maximises long term potential. Despite this, many children and adolescents with a brain injury do not receive the tailored care needed to maximise their potential. Research demonstrates this may be due to misattributions about TBI amongst key professionals, stopping TBI survivors from receiving the most appropriate care. As a result, professionals' attributions towards two adolescents with a TBI, were assessed using a semi-structured interview, which was devised using Attribution Theory as a framework. A multiple case study design was employed to analyse the data. Both qualitative findings, from the thematic analysis, and quantitative findings, from the code frequencies, indicated that all professional groups made different attributions depending on the child's presentation and perceived level of need. This was in relation to the causality, stability, and controllability of the child's presentations as well as to professionals' attributions about their own competency. This provided further support for Attribution Theory. In addition, once a TBI diagnosis was revealed for both adolescents, this dominated professionals' attributions as to the causes and stability of both children's presentation with professionals' previous attributions in relation to external and internal influences being largely dismissed. This is in line with research on Labelling Theory, which indicates that labels can lead to the wider environmental influences being ignored. Implications for practice are discussed.

Table 4.6: Chapter 3: Multi-Disciplinary Working with Brain-injured Children and Adolescents

Paper 4 – Empirical Paper	
Proposed Journal(s):	Research in Education Social Work Education Educational Psychology in Practice
Title:	The Importance, Barriers and Facilitating Factors of Multi-Disciplinary Working around Brain-Injured Children and Adolescents
Abstract:	Research indicates that there is a lack of liaison between key professionals when working with TBI survivors and their families. As a result, 120 education, health, social care and educational psychology professionals were asked about the importance of multi-disciplinary practices when working with brain-injured children and adolescents, as well as their views on the barriers and facilitating factors of doing this. Data was analysed, through content analysis, and showed that all professionals believed that multi-disciplinary working was important. The contents analysis derived broad categories, which could each act as either a barrier or facilitating factor to multi-disciplinary working, depending on how well they were implemented. These were, 'Holistic and Complementary Approach', 'Communicating and Sharing of Information', 'Efficient and Effective Resourcing' and 'Legislative and Ethical Framework'. This research corroborated the findings in previous studies, which indicated that multi-disciplinary collaboration is imperative in ensuring the right care is provided for children and adolescents with a TBI and their families.

Table 4.7: Chapter 3: Roles and Responsibilities of Professionals Working with Brain-injured Children and Adolescents

Paper 5 – Empirical Paper	
Proposed Journal(s):	Research in Education Social Work Education Educational Psychology in Practice
Title:	The Roles and Responsibilities of Professionals working with Brain-Injured Children and Adolescents
Abstract:	Traumatic Brain Injury (TBI) is a chronic condition with 'hidden' disabilities and life-long consequences. Despite this, there is a lack of clarity over the roles and responsibilities of key professionals when working with TBI survivors and their families. As a result, 120 education, health, social care and educational psychology professionals were asked about their own, and other professionals', roles and responsibilities when working with this cohort. Data was analysed through content analysis and indicated four broad roles and responsibilities which each profession shared, 'Monitoring and Assessment', 'Recovery and Rehabilitation', 'Support of Family/Child within the System' and 'Multi-Disciplinary Working and Training'. In addition, each profession had their own distinct responsibilities. For health professionals these were 'Medical Support' and 'Physical Support'; for education professionals it was 'In Class Support'; for social care professionals, it was 'Activities outside of Home/School', 'At Home Care' and 'Safeguarding'; and for EPs it was 'Advice and Guidance to Schools'. This demonstrates that professionals working with brain-injured children have both distinct and complementary roles and responsibilities, which can contribute to the effective care of brain-injured children.

4.9 Dissemination Timeline

The timeline in which the dissemination will take place is presented in the form of a GANTT chart in Table 4.8. This demonstrates that the first step will be the creation and presentation of my findings to the UCL DECP Research Conference. Once this has been completed, participants will be contacted to assess interest in accessing the findings of this research. Whilst awaiting responses, the author will create both video and written content outlining the research for dissemination to interested parties and on social media platforms. Once this has been completed draft articles will be created and sent out to relevant journals for their consideration and amendments made as needed. The dissemination plan will continue to be reviewed and adapted over time to ensure that the research outlined in this thesis is reaching the target audience and is having the desired impact.

Table 4.8: Dissemination Timeline

	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A
Create and present the presentation at the UCL DECP Research Conference																	
Attend the Houses of Parliament ABI Reception																	
Contact participants and voluntary organisations to offer to share research																	
Create summary of findings for dissemination to participants/voluntary organisations																	
Create recording of presentation to upload to social media and disseminate to participants/voluntary organisations																	
Disseminate video and summary of findings to those that request it																	
Prepare draft articles for submission to identified journals																	
Submit draft articles to identified journals																	
Edit draft articles and resubmit as needed																	
Evaluate dissemination progress and revise plan as needed																	

4.10 Conclusion

In summary, once an evidence-base has been established it is important to consider carefully how this new knowledge can be transferred into policy and practice. One of the key elements of this is the dissemination of the research to academia, research professionals and wider society.

The review presented in this research provided a unique contribution to understanding the effectiveness of brain injury training in increasing the knowledge of professionals working with brain-injured children and well as children and parents impacted by brain injury.

The empirical paper demonstrated that education, health, social care and educational psychology professionals varied in their knowledge of TBI, and that all of these professions needed further support in developing their understanding of this area, if they are to better support children and adolescents with a TBI. This research also highlighted the need for multi-disciplinary working, where all professionals are clear about their sometimes overlapping but often distinct roles and responsibilities in supporting children with a TBI and their families. Finally, it demonstrated the impact misattributions and labels can have on how professionals perceive the cause, controllability and stability of a child's presentation alongside their own professional competence and provided further support that all professionals working with brain-injured children and adolescents need upskilling in their TBI knowledge and practice. This is because, by increasing knowledge and understanding of TBI, misattributions may be less likely to occur, leading to improved support for TBI survivors.

Overall, this study made a unique contribution to the limited existing literature around TBI training and EPs and education, health and social care professionals' knowledge and attributions towards children with a TBI. It also shed light on the value placed on multi-disciplinary working and the roles and responsibilities of the different professional groups, when working with brain-injured children. Based on the findings highlighted, a number of recommendations for future research and implications for practice were identified, to ensure improved outcomes for brain-injured children.

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Appendices

Appendix A: List of Excluded Studies

Appendix A: List of Excluded Studies

A list of the references for the studies, which were excluded at full text screening is provided in Table A. References are not provided for studies excluded at title and abstract screening but the total number of studies excluded is shown in Figure 1.

Table A: Articles excluded after full-text screening with reasons (see Table 2)

Excluded Study	Rationale for exclusion	Exclusion criteria
Daugherty, J., Miles, I., Sarmiento, K., Sansone, C., Kroshus, E., & Bethea, B. (2019). A Description and Evaluation of the Concussion Education Application HEADS UP Rocket Blades. *Health Promotion Practice, 20*(1), 22–30. https://doi.org/10.1177/1524839918764670	Does not empirically examine the relationship between brain injury training[b] and recipient's knowledge of brain injury	5
Howe, J., & Ball, H. (2017). An Exploratory Study of Special Educational Needs Co-Ordinators' Knowledge and Experience of Working with Children who have sustained a Brain Injury. *Support for Learning, 32*(1), 85–100. https://doi.org/10.1111/1467-9604.12148	Does not empirically examine the relationship between brain injury training[b] and recipient's knowledge of brain injury	5
Knapp, M., Gillespie, E., Malec, J. F., Zier, M., & Harless, W. (2013). Evaluation of a Virtual Dialogue Method for Acquired Brain Injury Education: A Pilot Study. *Brain Injury, 27*(4), 388–393. https://doi.org/10.3109/02699052.2013.765596	Not a primary data set	9
Ball, H., & Howe, J. (2013). How Can Educational Psychologists Support the Reintegration of Children with An Acquired Brain Injury Upon Their Return to School? *Educational Psychology in Practice, 29*(1), 69–78. https://doi.org/10.1080/02667363.2012.755460	Does not empirically examine the relationship between brain injury training[b] and recipient's knowledge of brain injury	5

Schmidt, J. D., Weber, M. L., Suggs, D. W., Bierema, L., Stephen Miller, L.,… Dunham, J. (2020). Improving Concussion Reporting across National College Athletic Association Divisions Using a Theory-Based, Data-Driven, Multimedia Concussion Education Intervention. *Journal of Neurotrauma, 37*(4), 593–599. https://doi.org/10.1089/neu.2019.6637	Does not empirically examine the relationship between brain injury training[b] and recipient's knowledge of brain injury	5
Ernst, W. J., Gallo, A. B., Sellers, A. L., Mulrine, J., MacNamara, L., Abrahamson, A. & Kneavel, M. (2016). Knowledge of Traumatic Brain Injury among Educators. *Exceptionality, 24*(2), 123–136. https://doi.org/10.1080/09362835.2015.1107832	Does not empirically examine the relationship between brain injury training[b] and recipient's knowledge of brain injury	5
Koole, H. (2016). *Meeting the Needs of Students with Traumatic Brain Injury. Dissertation Abstracts International Section A: Humanities and Social Sciences, 76(7-A(E)).* Retrieved from: http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=psyc13&NEWS=N&AN=2016-99010-515 [Accessed on 23 August 2021]	Does not include professionals working with children and adolescents with a brain injury[a], children and adolescents with a brain injury or at risk of one and parents of a child with a brain injury	2
Glang, A., Todis, B., Sublette, P., Brown, B. E., & Vaccaro, M. (2010, November). Professional development in TBI for Educators: The Importance of Context. *Journal of Head Trauma Rehabilitation*, *25*(6), 426-432. https://doi.org/10.1097/HTR.0b013e3181fb8f45	Not a Randomised Control Trial (RCT) or Quasi-experimental design	4
Eagles, M. E., Bradbury-Squires, D. J., Powell, M. F., Murphy, J. R., Campbell, G. D. & Maroun, F. B. (2016). The Impact of a Concussion-U Educational Programme on Knowledge of and Attitudes about Concussion. *Canadian Journal of Neurological Sciences*, 43(5), 659–664. https://doi.org/10.1017/cjn.2016.263	Not a Randomised Control Trial (RCT) or Quasi-experimental design	4

Appendix B: Criteria and Rationale for all Weight of Evidence (WoE) Ratings

Appendix B: Criteria and rationale for all Weight of Evidence (WoE) Ratings

WoE A: Methodological Quality

WoE A enables a study's execution to be assessed (Gough, 2007). The Gersten et al. (2005) coding protocol was utilised with all sixteen studies as it is designed to evaluate group experimental designs, such as the RCTs and quasi-experimental designs in this review. This coding protocol includes both essential and desirable criteria. Modifications were made to some questions within this protocol and this is outlined, with rationale, in Appendix C. The criteria weighting for each WoE A rating is provided below, in Table B1. Table B2 contains a summary of scores for each study and Appendix D contains the completed WoE A protocols for each study.

Table B1: Criteria for WoE A Ratings

WoE A Rating	Criteria
3 High	Study meets at least 8 essential criteria and at least 4 desirable criteria
2 Medium	Study meets at least 4 essential criteria and at least 3 desirable criteria
1 Low	Study meets at least 1 but fewer than 3 essential criteria and meets at least 1 desirable criteria

Note: 'no evidence' would have been quantified by a zero rating but this did not apply to any studies in this review. These boundaries were adapted by the author from Gersten et al.'s (2005) coding protocol.

Table B2: WoE A scores for each study

	Essential Criteria (/10)				Desirable Criteria (/10)	Overall WoE A Rating
	Participants (/3)	Training implementation and comparison conditions (/4)	Outcome measures (/2)	Data analysis (/2)		
Davies & Tedesco (2018)	2	4	2	1	7	3 High
McCart et al. (2020)	3	2	1	2	6	3 High
Dise-Lewis et al. (2009)	3	4	2	1	4	3 High
Finn (2020)	3	2	1	1	3	2 Medium
Glang et al. (2010)	3	4	2	2	6	3 High
Glang et al. (2019)	2	4	1	2	4	3 High
Kroshus et al. (2019)	2	3	1	2	4	3 High
Davies & Ray (2014)	2	1	0	1	6	1 Low

Hunt (2015)	2	2	1	1	4	2 Medium
Mgonja (2016)	2	2	1	1	4	2 Medium
Cuthbert (2018)	3	1	1	1	3	2 Medium
Maitz (2020)	2	2	1	2	6	2 Medium
Wright (2020)	3	0	2	1	2	2 Medium
Kneavel et al. (2021)	3	3	2	2	2	3 High
Scott et al. (2021)	3	1	2	2	4	3 High
Sarmiento et al. (2021)	3	1	1	2	4	2 Medium

Note: WoE ratings are described as: ‘High’ = 3; ‘Medium’ = 2; and ‘Low’ = 1.

WoE B: Methodological Relevance

WoE B enables the quality and relevance of each study's research design to be judged relative to the review question (Gough, 2007). For this review, WoE B considered the relevance of the methodology for evaluating the effectiveness of brain injury training in improving the knowledge of professionals working with brain-injured children, children who have experienced or are at risk of brain injury and parents of children with a brain injury.

The WoE B coding protocol was developed by the author and based on Petticrew and Roberts (2003) 'typology of evidence'. This enabled the author to analyse the strengths and weaknesses of each study's methodological approach relative to the question of 'effectiveness' in this review. Petticrew and Robert's (2003) findings on the type of studies most suited for 'effectiveness' questions and the criteria allocated for 'low (1), 'medium' (2) and 'high' (3) ratings are outlined in Table B3 below along with the rating for each study. A completed example of a WoE B protocol is provided in Appendix E.

Table B3: Criteria for WoE B Ratings

	Criteria for WoE B Rating 3			Criteria for WoE B Rating 2			Criteria for WoE B Rating 1		
	Randomised Controlled trials (RCTs)	At least one control/comparison group	Pre- and post- data collected for all groups	Cohort studies or Quasi-experimental studies	At least one control/comparison group	Pre- and post- data collected for all groups	Research that collects qualitative data, surveys, non-experimental studies	No control/comparison group	Pre- and post- data collected
Davies & Tedesco (2018)					2 Medium				
McCart et al. (2020)								1 Low	
Dise-Lewis et al. (2009)					2 Medium				
Finn (2020)								1 Low	
Glang et al. (2010)			3 High						
Glang et al. (2019)			3 High						
Kroshus et al. (2019)			3 High						

Davies & Ray (2014)		1 Low
Hunt (2015)	3 High	
Mgonja (2016)		1 Low
Cuthbert (2018)		1 Low
Maitz (2020)		1 Low
Wright (2020)		1 Low
Kneavel et al. (2021)	3 High	
Scott et al. (2021)		1 Low
Sarmiento et al. (2021)		1 Low

Note: WoE ratings are described as: ‘High’ = 3; ‘Medium’ = 2; and ‘Low’ = 1.

WoE C: Topic Relevance

Weight of Evidence C (WoE C) evaluates the relevance of the focus of the study relative to the review question. Studies were rated on five areas: training, outcomes, setting, programme content and authorship, and the criteria are outlined in more detail below along with the rationale (see Table B4). The WoE C ratings for each study are outlined in Table B5 and a completed example of a WoE C protocol is provided in Appendix F.

Table B4 Criteria and Rationale for WoE C Ratings

Criteria	Rating	Rationale
A. Training	3- Brain injury training is the primary training or the core feature of the main training condition. 2- Brain injury training is combined with another training. 1- Brain injury training is the secondary or tertiary training.	It is important to understand how significant of a feature brain injury training was in the study. As a result, any studies which do not have brain injury training as the main component will be excluded.
B. Outcomes	3- Outcomes have been measured using a standardised assessment of brain injury knowledge. 2- Outcomes have been measured using a researcher constructed assessment of brain injury knowledge and/or uses a self-rating scale. 1- Outcomes have been measured using an assessment that indirectly measures brain injury knowledge.	Outcome measures must accurately assess the effect brain injury has on knowledge. Standardised measures can provide a more accurate portrayal but use of multiple measures allows for triangulation which can improve the accuracy of results.

C. Setting	3 - In person: The training was conducted in a setting that participants would typically associate with brain-injured children. 3 - Online: Clear how potential issues with the setting of online training had been addressed 2 - In person: The training was conducted in a separate location but within the building where the participants typically would associate with brain-injured children 2 - Online: Training is based on evidence-based practice of a relevant online training programme despite no specific evidence-base for the online training carried out in the study. 1 - In person: The training was carried out in a setting unrelated to where the participants would typically associate with brain-injured children 1 - Online: not based on evidence-based practice, no setting is set in relation to where online training has taken place	As the training is intended to be used to support brain-injured children, the study should also take place in a setting which participants would associate with brain-injured children in order for results to be generalisable.
D. Programme content and authorship	3- The training is a recognised programme and/or involves multiple types of brain injury and its sequalae. 2- The training is not recognised and involves one type of brain injury and its sequalae. 1- The training is not recognised and indirectly teaches about brain injury and its sequalae.	Brain injury training does not have clear implementation guidelines, however, there are a number of recognised programmes of training specialising in this area.

E. Trainer	3- The training is delivered by a professional trained in brain injury. 2- The training is delivered by a researcher who has been trained in brain injury training. 1- The training is delivered by an individual who has received minimal training in brain injury training or the trainer is unknown/not described.	Training is more likely to be of a higher quality if carried out by a trained professional. If it is an online training platform, the person setting up the training is deemed the trainer in this study.

Table B5: Each studies' summary of scores for WoE C

Study	Criteria Rating					Average
	A	B	C	D	E	WoE C
Davies & Tedesco (2018)	3	3	3	3	3	3 High
McCart et al. (2020)	3	2	3	3	3	3 High
Dise-Lewis et al. (2009)	3	3	2	3	3	3 High
Finn (2020)	3	3	3	2	3	3 High
Glang et al. (2010)	3	2	1	2	3	2 Medium
Glang et al. (2019)	3	2	3	3	3	3 High
Kroshus et al. (2019)	3	2	1	3	3	2 Medium
Davies & Ray (2014)	3	3	2	2	3	3 High
Hunt (2015)	3	2	3	2	2	2 Medium
Mgonja (2016)	3	2	1	2	2	2 Medium
Cuthbert (2018)	3	3	1	3	2	2 Medium

Maitz (2020)	3	3	3	3	3	3 High
Wright (2020)	3	3	3	2	2	3 High
Kneavel et al. (2021)	2	3	3	3	2	3 High
Scott et al., (2021)	3	3	3	2	3	3 High
Sarmiento et al. (2021)	3	1	1	3	3	2 Medium

Note: WoE ratings are described as: 'High' = 3; 'Medium' = 2; and 'Low' = 1.

Each Criteria Rating were given equal weighting and the sum of these were averaged and rounded to the nearest whole number to give an overall Weight of Evidence C (WoE C)

Weight of Evidence D (WoE D): Overall Weight of Evidence

WoE D provides a judgement of the overall WoE for each study and is calculated by averaging the ratings from WoE A, B and C for each study, each of which are equally weighted. This overall rating is important as it demonstrates the extent to which each study has contributed evidence towards the review question. The WoE D for each study is outlined in Table B6.

Table B6: WoE D for each study

Study	WoE A	WoE B	WoE C	WoE D
Davies & Tedesco (2018)	3 High	2 Medium	3 High	3 High
McCart et al. (2020)	3 High	1 Low	3 High	2 Medium
Dise-Lewis et al. (2009)	3 High	2 Medium	3 High	3 High
Finn (2020)	2 Medium	1 Low	3 High	2 Medium
Glang et al. (2010)	3 High	3 High	2 Medium	3 High
Glang et al. (2019)	3 High	3 High	3 High	3 High
Kroshus et al. (2019)	3 High	3 High	2 Medium	3 High

Davies & Ray (2014)	1 Low	1 Low	3 High	2 Medium
Hunt (2015)	2 Medium	3 High	2 Medium	2 Medium
Mgonja (2016)	2 Medium	1 Low	2 Medium	2 Medium
Cuthbert (2018)	2 Medium	1 Low	2 Medium	2 Medium
Maitz (2020)	2 Medium	1 Low	3 High	2 Medium
Wright (2020)	2 Medium	1 Low	3 High	2 Medium
Kneavel et al. (2021)	3 High	3 High	3 High	3 High
Scott et al. (2021)	3 High	1 Low	3 High	2 Medium
Sarmiento et al. (2021)	2 Medium	1 Low	2 Medium	2 Medium

Note: WoE ratings are described as: 'High' = 3; 'Medium' = 2; and 'Low' = 1.

WoE A, B and C were given equal weighting and the sum of these were averaged and rounded to the nearest whole number to give an overall Weight of Evidence D (WoE D).

Appendix C: Adaptations made to the WoE A Coding Protocol

Appendix C: Adaptations made to the WoE A Coding Protocol

Changes were made to Gersten et al.'s (2005) coding protocol to improve the clarity of the text and ensure it was appropriate for the review question posed. Deletions are shown by ~~strikes~~ through the text, additional text is in {curly brackets}, and the rationale for the changes are written in [square brackets]. All other text is the same as the original. As a result of these changes, there were 10 desirable criteria rather than the original 8 and 11 essential criteria rather than the original 10. As a result, the criteria of Gersten et al. (2005) for a 'high', 'medium' and 'low' quality study were altered and the amended version is shown in Table B1 above.

Essential Quality Indicators

Quality indicators for describing participants

> Was sufficient information provided to determine~~/confirm~~ whether the participants ~~demonstrated the~~ ~~disability(ies) or difficulties presented~~ {required this training}?

[Rationale: this study is focused on the improvements in the knowledge of participants after training]

> Were appropriate procedures used to increase the likelihood that relevant characteristics of participants in the sample were comparable ~~across conditions~~?

[Rationale: this study may include studies which may not have more than one condition]

Was sufficient information given characterizing the ~~interventionists or teachers~~ {trainers} provided? ~~Did it indicate whether they were comparable across conditions?~~

[Rationale: The studies focus on training therefore ‘trainer’ is more appropriate. This research includes studies with only one condition]

***Quality indicators for implementation of the ~~intervention~~ {training} and description of comparison* conditions**

[Rationale: The studies focus on training not interventions]

Was the ~~intervention~~ {training} clearly described and specified?

Was the fidelity of ~~implementation~~ {the training} described and assessed?

[Rationale: The studies focus on training not interventions]

{Were there any comparison conditions?}

{If so,} was the nature of services provided in comparison conditions described?

[Rationale: This study may include studies which may only have one condition so a question was added about this to lead more succinctly into the following question]

Quality indicators for outcome measures

Were multiple measures used to provide an appropriate balance between measures closely aligned with the ~~intervention~~ {training} and measures of generalised performance?

Were outcomes for capturing the ~~intervention's~~ {training's} effect measured at the appropriate times?

[Rationale: The studies focus on training not interventions]

Quality indicators for data analysis

Were the data analysis techniques appropriately linked to key research questions and hypotheses? Were they appropriately linked to the unit of analysis in the study?

Did the research report include not only inferential statistics but also effect size calculations?

Desirable Quality Indicators

Was data available on attrition rates among ~~intervention~~ {training} samples?

[Rationale: The studies focus on training not interventions]

~~Was severe overall attrition documented? If so, is attrition comparable across samples? Is overall attrition less than 30%?~~

{Was severe overall attrition (30% or more) avoided? Is attrition comparable across samples?}

[Rationale: It was possible that some studies may meet the first part of the criteria but would still be coded negatively if they did not meet the second part, therefore the questions were split into two parts to allow for each to be graded separately]

Did the study provide not only internal consistency reliability but also test-retest reliability and interrater reliability (when appropriate) for outcome measures? ~~Were data collectors and/or scorers blind to study conditions and equally (un)familiar to examinees across study conditions?~~

{Were data collectors and/or scorers blind to study conditions and equally (un)familiar to examinees across study conditions?}

[Rationale: It was possible that some studies may meet the first part of the criteria but would still be coded negatively if they did not meet the second part, therefore the questions were split into two parts to allow for each to be graded separately]

Were outcomes for capturing the ~~intervention's~~ {training's} effect measured beyond an immediate post-test?

[Rationale: The studies focus on training not interventions]

Was evidence of the criterion-related validity and construct validity of the measures provided?

Did the research team assess not only surface features of fidelity implementation (e.g. number of minutes allocated to ~~the intervention or teacher/interventionist~~ {training of trainers} following procedures specified), but also examine quality of implementation?

[Rationale: The studies focus on training not interventions]

Was any documentation of the nature of instruction or series provided ~~in comparison conditions~~?

[Rationale: This study may include studies with quasi-experimental designs, which may only have one condition]

Did the research report include actual {written,} audio or videotape excerpts that capture the nature of the ~~intervention~~ {training}?

[Rationale: The studies focus on training not interventions]

[Rationale: It would be possible for a study to capture the nature of the training in written form with similar levels of ecological validity to audio or videotape excerpts therefore it was deemed that this should be included as a further option]

Were results presented in a clear, coherent fashion?

Overall Rating of Evidence: ☐3 ☐2 ☐1 ☐ 0

Appendix D: Completed WoE A Coding Protocols

Appendix D: Completed WoE A Coding Protocols

Coding protocol:

Gersten, R., Fuchs, L. S., Compton, D., Coyne, M., Greenwood, C. & Innocenti, M. (2004). Quality indicators for group experimental and quasi-experimental research in special education. *Exceptional Children, 71*, 149-164.

Study 1:

Davies, S. C. & Tedesco, M. F. (2018). Efficacy of an Online Concussion Training Programme for School Professionals. *Contemporary School Psychology, 22*, 479-487. https://doi.org/10.1007/s40688-018-00213-0

Essential Quality Indicators

Quality indicators for describing participants

Was sufficient information provided to determine whether the participants required this training?

☒Yes

☐ No

☐ Unknown/Unable to Code

Were appropriate procedures used to increase the likelihood that relevant characteristics of participants in the sample were comparable?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Was sufficient information given characterizing the trainers provided? Did it indicate whether they were comparable across conditions?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Quality indicators for implementation of the training and description of comparison conditions

Was the training clearly described?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Was the fidelity of training described and assessed?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were there any comparison conditions?

☒ Yes

☐ No

☐ Unknown/Unable to Code

If so, was the nature of services provided in comparison conditions described?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Quality indicators for outcome measures

Were multiple measures used to provide an appropriate balance between measures closely aligned with the training and measures of generalised performance?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were outcomes for capturing the training's effect measured at the appropriate times?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Quality indicators for data analysis

Were the data analysis techniques appropriately linked to key research questions and hypotheses? Were they appropriately linked to the unit of analysis in the study?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Did the research report include not only inferential statistics but also effect size calculations?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Desirable Quality Indicators

Was data available on attrition rates among training samples?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Was severe overall attrition (30% or more) avoided? Is attrition comparable across samples?

☐ Yes

☐ No

☒ Unknown/Unable to Code

Did the study provide not only internal consistency reliability but also test-retest reliability and interrater reliability (when appropriate) for outcome measures?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were data collectors and/or scorers blind to study conditions and equally (un)familiar to examinees across study conditions?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were outcomes for capturing the training's effect measured beyond an immediate post-test?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Was evidence of the criterion-related validity and construct validity of the measures provided?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Did the research team assess not only surface features of fidelity implementation (e.g. number of minutes allocated to the training or trainers following procedures specified), but also examine quality of implementation?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Was any documentation of the nature of instruction or series provided in comparison conditions?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Did the research report include actual written, audio or videotape excerpts or examples of paperwork that capture the nature of the training?

☒ Yes – examples of materials used in all three groups

☐ No

☐ Unknown/Unable to Code

Were results presented in a clear, coherent fashion?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Overall Rating of Evidence: ☒3 (9/7) ☐ 2 ☐1 ☐ 0

Coding protocol:

Gersten, R., Fuchs, L. S., Compton, D., Coyne, M., Greenwood, C. & Innocenti, M. (2004). Quality indicators for group experimental and quasi-experimental research in special education. *Exceptional Children, 71*, 149-164.

Study 2:

McCart, M., Glang, A. E., Slocumb, J., Gau, J., Beck, L. & Gomez, D. (2020). A Quasi-Experimental Study Examining the Effects of Online Traumatic Brain Injury Professional Development on Educator Knowledge, Application and Efficacy in a Practitioner Setting. *Disability and Rehabilitation, 42* (17), 2430-2436. https://doi.org/10.1080/09638288.2019.1578423

Essential Quality Indicators

Quality indicators for describing participants

Was sufficient information provided to determine whether the participants required this training?

☒Yes

☐ No

☐ Unknown/Unable to Code

Were appropriate procedures used to increase the likelihood that relevant characteristics of participants in the sample were comparable?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Was sufficient information given characterizing the trainers provided? Did it indicate whether they were comparable across conditions?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Quality indicators for implementation of the training and description of comparison conditions

Was the training clearly described?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Was the fidelity of training described and assessed?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were there any comparison conditions?

☐ Yes

☒ No

☐ Unknown/Unable to Code

If so, was the nature of services provided in comparison conditions described?

☐ Yes

☐ No

☒Unknown/Unable to Code

Quality indicators for outcome measures

Were multiple measures used to provide an appropriate balance between measures closely aligned with the training and measures of generalised performance?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Were outcomes for capturing the training's effect measured at the appropriate times?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Quality indicators for data analysis

Were the data analysis techniques appropriately linked to key research questions and hypotheses? Were they appropriately linked to the unit of analysis in the study?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Did the research report include not only inferential statistics but also effect size calculations?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Desirable Quality Indicators

Was data available on attrition rates among training samples?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Was severe overall attrition (30% or more) avoided? Is attrition comparable across samples?

☐ Yes

☐ No

☒ Unknown/Unable to Code

Did the study provide not only internal consistency reliability but also test-retest reliability and interrater reliability (when appropriate) for outcome measures?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were data collectors and/or scorers blind to study conditions and equally (un)familiar to examinees across study conditions?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were outcomes for capturing the training's effect measured beyond an immediate post-test?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Was evidence of the criterion-related validity and construct validity of the measures provided?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Did the research team assess not only surface features of fidelity implementation (e.g. number of minutes allocated to the training or trainers following procedures specified), but also examine quality of implementation?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Was any documentation of the nature of instruction or series provided in comparison conditions?

☐ Yes

☐ No

☒ Unknown/Unable to Code

Did the research report include actual audio or videotape excerpts or examples of paperwork that capture the nature of the training?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Were results presented in a clear, coherent fashion?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Overall Rating of Evidence: ☒3 8/6 ☐ 2 ☐ 1 ☐ 0

Coding protocol:

Gersten, R., Fuchs, L. S., Compton, D., Coyne, M., Greenwood, C. & Innocenti, M. (2004). Quality indicators for group experimental and quasi-experimental research in special education. *Exceptional Children, 71*, 149-164.

Study 3:

Dise-Lewis, J. E., Lewis, H. C. & Reichardt, C. S. (2009). BrainSTARS: Pilot Data on a Team-Based Intervention Programme for Students who have Acquired Brain Injury. *Journal of Head Trauma Rehabilitation, 24*(3), 166–177. https://doi.org/10.1097/HTR.0b013e3181a7ecb0

Essential Quality Indicators

Quality indicators for describing participants

Was sufficient information provided to determine whether the participants required this training?

☒Yes

☐ No

☐ Unknown/Unable to Code

Were appropriate procedures used to increase the likelihood that relevant characteristics of participants in the sample were comparable?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Was sufficient information given characterizing the trainers provided? Did it indicate whether they were comparable across conditions?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Quality indicators for implementation of the training and description of comparison conditions

Was the training clearly described?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Was the fidelity of training described and assessed?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were there any comparison conditions?

☒ Yes

☐ No

☐ Unknown/Unable to Code

If so, was the nature of services provided in comparison conditions described?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Quality indicators for outcome measures

Were multiple measures used to provide an appropriate balance between measures closely aligned with the training and measures of generalised performance?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were outcomes for capturing the training's effect measured at the appropriate times?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Quality indicators for data analysis

Were the data analysis techniques appropriately linked to key research questions and hypotheses? Were they appropriately linked to the unit of analysis in the study?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Did the research report include not only inferential statistics but also effect size calculations?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Desirable Quality Indicators

Was data available on attrition rates among training samples?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Was severe overall attrition (30% or more) avoided? Is attrition comparable across samples?

☐ Yes

☐ No

☒ Unknown/Unable to Code

Did the study provide not only internal consistency reliability but also test-retest reliability and interrater reliability (when appropriate) for outcome measures?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were data collectors and/or scorers blind to study conditions and equally (un)familiar to examinees across study conditions?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Were outcomes for capturing the training's effect measured beyond an immediate post-test?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Was evidence of the criterion-related validity and construct validity of the measures provided?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Did the research team assess not only surface features of fidelity implementation (e.g. number of minutes allocated to the training or trainers following procedures specified), but also examine quality of implementation?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Was any documentation of the nature of instruction or series provided in comparison conditions?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Did the research report include actual audio or videotape excerpts or examples of paperwork that capture the nature of the training?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Were results presented in a clear, coherent fashion?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Overall Rating of Evidence: ☒ 3 8/4 ☐ 2 ☐1 ☐ 0

Coding protocol:

Gersten, R., Fuchs, L. S., Compton, D., Coyne, M., Greenwood, C. & Innocenti, M. (2004). Quality indicators for group experimental and quasi-experimental research in special education. *Exceptional Children, 71*, 149-164.

Study 4:

Finn, C. (2020). Effects of a Faculty Training Programme on Knowledge and Awareness of Student Concussion and Academic Performance. *Journal of American College Health*. https://doi.org/10.1080/07448481.2020.1754220

Essential Quality Indicators

Quality indicators for describing participants

Was sufficient information provided to determine whether the participants required this training?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were appropriate procedures used to increase the likelihood that relevant characteristics of participants in the sample were comparable?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Was sufficient information given characterizing the trainers provided? Did it indicate whether they were comparable across conditions?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Quality indicators for implementation of the training and description of comparison conditions

Was the training clearly described?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Was the fidelity of training described and assessed?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were there any comparison conditions?

☐ Yes

☒ No

☐ Unknown/Unable to Code

If so, was the nature of services provided in comparison conditions described?

☐ Yes

☐ No

☒ Unknown/Unable to Code

Quality indicators for outcome measures

Were multiple measures used to provide an appropriate balance between measures closely aligned with the training and measures of generalised performance?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Were outcomes for capturing the training's effect measured at the appropriate times?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Quality indicators for data analysis

Were the data analysis techniques appropriately linked to key research questions and hypotheses? Were they appropriately linked to the unit of analysis in the study?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Did the research report include not only inferential statistics but also effect size calculations?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Desirable Quality Indicators

Was data available on attrition rates among training samples?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Was severe overall attrition (30% or more) avoided? Is attrition comparable across samples?

☐ Yes

☐ No

☒ Unknown/Unable to Code

Did the study provide not only internal consistency reliability but also test-retest reliability and interrater reliability (when appropriate) for outcome measures?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were data collectors and/or scorers blind to study conditions and equally (un)familiar to examinees across study conditions?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Were outcomes for capturing the training's effect measured beyond an immediate post-test?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Was evidence of the criterion-related validity and construct validity of the measures provided?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Did the research team assess not only surface features of fidelity implementation (e.g. number of minutes allocated to the training or trainers following procedures specified), but also examine quality of implementation?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Was any documentation of the nature of instruction or series provided in comparison conditions?

☐ Yes

☐ No

☒ Unknown/Unable to Code

Did the research report include actual audio or videotape excerpts or examples of paperwork that capture the nature of the training?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Were results presented in a clear, coherent fashion?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Overall Rating of Evidence: ☐3 ☒ 2 7/3 ☐1 ☐ 0

Coding protocol:

Gersten, R., Fuchs, L. S., Compton, D., Coyne, M., Greenwood, C. & Innocenti, M. (2004). Quality indicators for group experimental and quasi-experimental research in special education. *Exceptional Children, 71*, 149-164.

Study 5:

Glang, A., Koester, M. C., Beaver, S., Clay, J. & McLaughlin, K. (2010). Online Training in Sports Concussion for Youth Sports Coaches. *International Journal of Sports Science and Coaching, 5*(1), 1–11. https://doi.org/10.1260/1747-9541.5.1.1

Essential Quality Indicators

Quality indicators for describing participants

Was sufficient information provided to determine whether the participants required this training?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were appropriate procedures used to increase the likelihood that relevant characteristics of participants in the sample were comparable?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Was sufficient information given characterizing the trainers provided? Did it indicate whether they were comparable across conditions?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Quality indicators for implementation of the training and description of comparison conditions

Was the training clearly described?

☒Yes

☐ No

☐ Unknown/Unable to Code

Was the fidelity of training described and assessed?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were there any comparison conditions?

☒ Yes

☐ No

☐ Unknown/Unable to Code

If so, was the nature of services provided in comparison conditions described?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Quality indicators for outcome measures

Were multiple measures used to provide an appropriate balance between measures closely aligned with the training and measures of generalised performance?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were outcomes for capturing the training's effect measured at the appropriate times?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Quality indicators for data analysis

Were the data analysis techniques appropriately linked to key research questions and hypotheses? Were they appropriately linked to the unit of analysis in the study?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Did the research report include not only inferential statistics but also effect size calculations?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Desirable Quality Indicators

Was data available on attrition rates among training samples?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Was severe overall attrition (30% or more) avoided? Is attrition comparable across samples?

☐ Yes

☐ No

☒ Unknown/Unable to Code

Did the study provide not only internal consistency reliability but also test-retest reliability and interrater reliability (when appropriate) for outcome measures?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were data collectors and/or scorers blind to study conditions and equally (un)familiar to examinees across study conditions?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were outcomes for capturing the training's effect measured beyond an immediate post-test?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Was evidence of the criterion-related validity and construct validity of the measures provided?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Did the research team assess not only surface features of fidelity implementation (e.g. number of minutes allocated to the training or trainers following procedures specified), but also examine quality of implementation?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Was any documentation of the nature of instruction or series provided in comparison conditions?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Did the research report include actual audio or videotape excerpts or examples of paperwork that capture the nature of the training?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were results presented in a clear, coherent fashion?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Overall Rating of Evidence: ☒ 3 11/6 ☐ 2 ☐1 ☐ 0

Coding protocol:

Gersten, R., Fuchs, L. S., Compton, D., Coyne, M., Greenwood, C. & Innocenti, M. (2004). Quality indicators for group experimental and quasi-experimental research in special education. *Exceptional Children, 71*, 149-164.

Study 6:

Glang, A. E., McCart, M., Slocumb, J., Gau, J. M., Davies, S. C., Gomez, D., & Beck, L. (2019). Preliminary Efficacy of Online Traumatic Brain Injury Professional Development for Educators: An Exploratory Randomized Clinical Trial. *Journal of Head Trauma Rehabilitation, 34*(2), 77–86. https://doi.org/10.1097/HTR.0000000000000447

Essential Quality Indicators

Quality indicators for describing participants

Was sufficient information provided to determine whether the participants required this training?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were appropriate procedures used to increase the likelihood that relevant characteristics of participants in the sample were comparable?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Was sufficient information given characterizing the trainers provided? Did it indicate whether they were comparable across conditions?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Quality indicators for implementation of the training and description of comparison conditions

Was the training clearly described?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Was the fidelity of training described and assessed?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were there any comparison conditions?

☒ Yes

☐ No

☐ Unknown/Unable to Code

If so, was the nature of services provided in comparison conditions described?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Quality indicators for outcome measures

Were multiple measures used to provide an appropriate balance between measures closely aligned with the training and measures of generalised performance?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Were outcomes for capturing the training's effect measured at the appropriate times?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Quality indicators for data analysis

Were the data analysis techniques appropriately linked to key research questions and hypotheses? Were they appropriately linked to the unit of analysis in the study?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Did the research report include not only inferential statistics but also effect size calculations?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Desirable Quality Indicators

Was data available on attrition rates among training samples?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Was severe overall attrition (30% or more) avoided? Is attrition comparable across samples?

☐ Yes

☐ No

☒ Unknown/Unable to Code

Did the study provide not only internal consistency reliability but also test-retest reliability and interrater reliability (when appropriate) for outcome measures?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were data collectors and/or scorers blind to study conditions and equally (un)familiar to examinees across study conditions?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were outcomes for capturing the training's effect measured beyond an immediate post-test?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Was evidence of the criterion-related validity and construct validity of the measures provided?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Did the research team assess not only surface features of fidelity implementation (e.g. number of minutes allocated to the training or trainers following procedures specified), but also examine quality of implementation?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Was any documentation of the nature of instruction or series provided in comparison conditions?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Did the research report include actual audio or videotape excerpts or examples of paperwork that capture the nature of the training?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Were results presented in a clear, coherent fashion?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Overall Rating of Evidence: ☒ 3 9/4 ☐ 2 ☐1 ☐ 0

Coding protocol:

Gersten, R., Fuchs, L. S., Compton, D., Coyne, M., Greenwood, C. & Innocenti, M. (2004). Quality indicators for group experimental and quasi-experimental research in special education. *Exceptional Children, 71*, 149-164.

Study 7:

Kroshus, E., Buth, D., Parsons, J. T., & Hainline, B. (2019). Randomized Evaluation of the National Collegiate Athletic Association's Concussion Education Fact Sheet for Coaches. *Health Education and Behavior, 46*(6), 960–968. https://doi.org/10.1177/1090198119864621

Essential Quality Indicators

Quality indicators for describing participants

Was sufficient information provided to determine whether the participants required this training?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were appropriate procedures used to increase the likelihood that relevant characteristics of participants in the sample were comparable?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Was sufficient information given characterizing the trainers provided? Did it indicate whether they were comparable across conditions?

☐ Yes

☐ No

☒ Unknown/Unable to Code

Quality indicators for implementation of the training and description of comparison conditions

Was the training clearly described?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Was the fidelity of training described and assessed?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Were there any comparison conditions?

☒ Yes

☐ No

☐ Unknown/Unable to Code

If so, was the nature of services provided in comparison conditions described?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Quality indicators for outcome measures

Were multiple measures used to provide an appropriate balance between measures closely aligned with the training and measures of generalised performance?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Were outcomes for capturing the training's effect measured at the appropriate times?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Quality indicators for data analysis

Were the data analysis techniques appropriately linked to key research questions and hypotheses? Were they appropriately linked to the unit of analysis in the study?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Did the research report include not only inferential statistics but also effect size calculations?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Desirable Quality Indicators

Was data available on attrition rates among training samples?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Was severe overall attrition (30% or more) avoided? Is attrition comparable across samples?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Did the study provide not only internal consistency reliability but also test-retest reliability and interrater reliability (when appropriate) for outcome measures?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were data collectors and/or scorers blind to study conditions and equally (un)familiar to examinees across study conditions?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were outcomes for capturing the training's effect measured beyond an immediate post-test?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Was evidence of the criterion-related validity and construct validity of the measures provided?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Did the research team assess not only surface features of fidelity implementation (e.g. number of minutes allocated to the training or trainers following procedures specified), but also examine quality of implementation?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Was any documentation of the nature of instruction or series provided in comparison conditions?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Did the research report include actual audio or videotape excerpts or examples of paperwork that capture the nature of the training?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Were results presented in a clear, coherent fashion?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Overall Rating of Evidence: ☒3 8/4 ☐ 2 ☐ 1 ☐ 0

Coding protocol:

Gersten, R., Fuchs, L. S., Compton, D., Coyne, M., Greenwood, C. & Innocenti, M. (2004). Quality indicators for group experimental and quasi-experimental research in special education. *Exceptional Children, 71*, 149-164.

Study 8:

Davies, S. C., & Ray, A. M. (2014). Traumatic Brain Injury: The Efficacy of a Half-Day Training for School Psychologists. *Contemporary School Psychology, 18*(1), 81–89. https://doi.org/10.1007/s40688-013-0003-5

Essential Quality Indicators

Quality indicators for describing participants

Was sufficient information provided to determine whether the participants required this training?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were appropriate procedures used to increase the likelihood that relevant characteristics of participants in the sample were comparable?

☐ Yes

☐ No

☒ Unknown/Unable to Code

Was sufficient information given characterizing the trainers provided? Did it indicate whether they were comparable across conditions?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Quality indicators for implementation of the training and description of comparison conditions

Was the training clearly described?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Was the fidelity of training described and assessed?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were there any comparison conditions?

☐ Yes

☒ No

☐ Unknown/Unable to Code

If so, was the nature of services provided in comparison conditions described?

☐ Yes

☐ No

☒ Unknown/Unable to Code

Quality indicators for outcome measures

Were multiple measures used to provide an appropriate balance between measures closely aligned with the training and measures of generalised performance?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Were outcomes for capturing the training's effect measured at the appropriate times?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Quality indicators for data analysis

Were the data analysis techniques appropriately linked to key research questions and hypotheses? Were they appropriately linked to the unit of analysis in the study?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Did the research report include not only inferential statistics but also effect size calculations?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Desirable Quality Indicators

Was data available on attrition rates among training samples?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Was severe overall attrition (30% or more) avoided? Is attrition comparable across samples?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Did the study provide not only internal consistency reliability but also test-retest reliability and interrater reliability (when appropriate) for outcome measures?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were data collectors and/or scorers blind to study conditions and equally (un)familiar to examinees across study conditions?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Were outcomes for capturing the training's effect measured beyond an immediate post-test?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Was evidence of the criterion-related validity and construct validity of the measures provided?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Did the research team assess not only surface features of fidelity implementation (e.g. number of minutes allocated to the training or trainers following procedures specified), but also examine quality of implementation?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Was any documentation of the nature of instruction or series provided in comparison conditions?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Did the research report include actual audio or videotape excerpts or examples of paperwork that capture the nature of the training?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were results presented in a clear, coherent fashion?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Overall Rating of Evidence: ☐3 ☐ 2 ☒ 1 4/6 ☐ 0

Coding protocol:

Gersten, R., Fuchs, L. S., Compton, D., Coyne, M., Greenwood, C. & Innocenti, M. (2004). Quality indicators for group experimental and quasi-experimental research in special education. *Exceptional Children, 71*, 149-164.

Study 9:

Hunt, T. N. (2015). Video Educational Intervention Improves Reporting of Concussion and Symptom Recognition. *Athletic Training Education Journal, 10*(1), 65–74. https://doi.org/10.4085/100165

Essential Quality Indicators

Quality indicators for describing participants

Was sufficient information provided to determine whether the participants required this training?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were appropriate procedures used to increase the likelihood that relevant characteristics of participants in the sample were comparable?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Was sufficient information given characterizing the trainers provided? Did it indicate whether they were comparable across conditions?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Quality indicators for implementation of the training and description of comparison conditions

Was the training clearly described?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Was the fidelity of training described and assessed?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were there any comparison conditions?

☐ Yes

☒ No

☐ Unknown/Unable to Code

If so, was the nature of services provided in comparison conditions described?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Quality indicators for outcome measures

Were multiple measures used to provide an appropriate balance between measures closely aligned with the training and measures of generalised performance?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Were outcomes for capturing the training's effect measured at the appropriate times?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Quality indicators for data analysis

Were the data analysis techniques appropriately linked to key research questions and hypotheses? Were they appropriately linked to the unit of analysis in the study?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Did the research report include not only inferential statistics but also effect size calculations?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Desirable Quality Indicators

Was data available on attrition rates among training samples?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Was severe overall attrition (30% or more) avoided? Is attrition comparable across samples?

☐ Yes

☐ No

☒ Unknown/Unable to Code

Did the study provide not only internal consistency reliability but also test-retest reliability and interrater reliability (when appropriate) for outcome measures?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were data collectors and/or scorers blind to study conditions and equally (un)familiar to examinees across study conditions?

☐ Yes

☐ No

☒ Unknown/Unable to Code

Were outcomes for capturing the training's effect measured beyond an immediate post-test?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Was evidence of the criterion-related validity and construct validity of the measures provided?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Did the research team assess not only surface features of fidelity implementation (e.g. number of minutes allocated to the training or trainers following procedures specified), but also examine quality of implementation?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Was any documentation of the nature of instruction or series provided in comparison conditions?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Did the research report include actual audio or videotape excerpts or examples of paperwork that capture the nature of the training?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Were results presented in a clear, coherent fashion?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Overall Rating of Evidence: ☐3 ☒ 2 6/4 ☐ 1 ☐ 0

Coding protocol:

Gersten, R., Fuchs, L. S., Compton, D., Coyne, M., Greenwood, C. & Innocenti, M. (2004). Quality indicators for group experimental and quasi-experimental research in special education. *Exceptional Children, 71*, 149-164.

Study 10:

Mgonja, B. W. (2016). *Concussion Education and Management for School Nurses.* Available from ProQuest Dissertations and Theses, 94. Retrieved on 22nd July 2021 from: https://search.proquest.com/docview/1868415397?accountid=17242

Essential Quality Indicators

Quality indicators for describing participants

Was sufficient information provided to determine whether the participants required this training?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Were appropriate procedures used to increase the likelihood that relevant characteristics of participants in the sample were comparable?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Was sufficient information given characterizing the trainers provided? Did it indicate whether they were comparable across conditions?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Quality indicators for implementation of the training and description of comparison conditions

Was the training clearly described?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Was the fidelity of training described and assessed?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were there any comparison conditions?

☐ Yes

☒ No

☐ Unknown/Unable to Code

If so, was the nature of services provided in comparison conditions described?

☐ Yes

☐ No

☒ Unknown/Unable to Code

Quality indicators for outcome measures

Were multiple measures used to provide an appropriate balance between measures closely aligned with the training and measures of generalised performance?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Were outcomes for capturing the training's effect measured at the appropriate times?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Quality indicators for data analysis

Were the data analysis techniques appropriately linked to key research questions and hypotheses? Were they appropriately linked to the unit of analysis in the study?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Did the research report include not only inferential statistics but also effect size calculations?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Desirable Quality Indicators

Was data available on attrition rates among training samples?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Was severe overall attrition (30% or more) avoided? Is attrition comparable across samples?

☐ Yes

☐ No

☒ Unknown/Unable to Code

Did the study provide not only internal consistency reliability but also test-retest reliability and interrater reliability (when appropriate) for outcome measures?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were data collectors and/or scorers blind to study conditions and equally (un)familiar to examinees across study conditions?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Were outcomes for capturing the training's effect measured beyond an immediate post-test?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Was evidence of the criterion-related validity and construct validity of the measures provided?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Did the research team assess not only surface features of fidelity implementation (e.g. number of minutes allocated to the training or trainers following procedures specified), but also examine quality of implementation?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Was any documentation of the nature of instruction or series provided in comparison conditions?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Did the research report include actual audio or videotape excerpts or examples of paperwork that capture the nature of the training?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were results presented in a clear, coherent fashion?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Overall Rating of Evidence: ☐3 ☒ 2 6/4 ☐ 1 ☐ 0

Coding protocol:

Gersten, R., Fuchs, L. S., Compton, D., Coyne, M., Greenwood, C. & Innocenti, M. (2004). Quality indicators for group experimental and quasi-experimental research in special education. *Exceptional Children, 71*, 149-164.

Study 11: Cuthbert, R. (2018). *A Quasi-Experimental Study of the Effectiveness of Pennsylvania's Mandatory Concussion Education Programme for High School and Middle School Football Coaches (Order No. 10747464).* Available from ProQuest Dissertations & Theses Global. (2026947453). Retrieved on 22nd July 2021 from: https://www-proquest-com.libproxy.ucl.ac.uk/dissertations-theses/quasi-experimental-study-effectiveness/docview/2026947453/se-2?accountid=14511

Essential Quality Indicators

Quality indicators for describing participants

Was sufficient information provided to determine whether the participants required this training?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were appropriate procedures used to increase the likelihood that relevant characteristics of participants in the sample were comparable?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Was sufficient information given characterizing the trainers provided? Did it indicate whether they were comparable across conditions?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Quality indicators for implementation of the training and description of comparison conditions

Was the training clearly described?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Was the fidelity of training described and assessed?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Were there any comparison conditions?

☐ Yes

☒ No

☐ Unknown/Unable to Code

If so, was the nature of services provided in comparison conditions described?

☐ Yes

☐ No

☒ Unknown/Unable to Code

Quality indicators for outcome measures

Were multiple measures used to provide an appropriate balance between measures closely aligned with the training and measures of generalised performance?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Were outcomes for capturing the training's effect measured at the appropriate times?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Quality indicators for data analysis

Were the data analysis techniques appropriately linked to key research questions and hypotheses? Were they appropriately linked to the unit of analysis in the study?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Did the research report include not only inferential statistics but also effect size calculations?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Desirable Quality Indicators

Was data available on attrition rates among training samples?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Was severe overall attrition (30% or more) avoided? Is attrition comparable across samples?

☐ Yes

☐ No

☒ Unknown/Unable to Code

Did the study provide not only internal consistency reliability but also test-retest reliability and interrater reliability (when appropriate) for outcome measures?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were data collectors and/or scorers blind to study conditions and equally (un)familiar to examinees across study conditions?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were outcomes for capturing the training's effect measured beyond an immediate post-test?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Was evidence of the criterion-related validity and construct validity of the measures provided?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Did the research team assess not only surface features of fidelity implementation (e.g. number of minutes allocated to the training or trainers following procedures specified), but also examine quality of implementation?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Was any documentation of the nature of instruction or series provided in comparison conditions?

☐ Yes

☐ No

☒ Unknown/Unable to Code

Did the research report include actual audio or videotape excerpts or examples of paperwork that capture the nature of the training?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Were results presented in a clear, coherent fashion?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Overall Rating of Evidence: ☐3 ☒ 2 6/3 ☐1 ☐ 0

Coding protocol:

Gersten, R., Fuchs, L. S., Compton, D., Coyne, M., Greenwood, C. & Innocenti, M. (2004). Quality indicators for group experimental and quasi-experimental research in special education. *Exceptional Children, 71*, 149-164.

Study 12: Maitz, S. (2020). *The Effect of a Novel Peer Concussion Education Programme on Knowledge of Concussion, Intent to Report and Ability to Report Concussion among Collegiate Student-Athletes (Order No. 28095204).* Available from ProQuest Dissertations & Theses Global. (2450283274). Retrieved from https://www-proquest-com.libproxy.ucl.ac.uk/dissertations-theses/effect-novel-peer-concussion-education-programme-on/docview/2450283274/se-2?accountid=14511

Essential Quality Indicators

Quality indicators for describing participants

Was sufficient information provided to determine whether the participants required this training?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were appropriate procedures used to increase the likelihood that relevant characteristics of participants in the sample were comparable?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Was sufficient information given characterizing the trainers provided? Did it indicate whether they were comparable across conditions?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Quality indicators for implementation of the training and description of comparison conditions

Was the training clearly described?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Was the fidelity of training described and assessed?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were there any comparison conditions?

☐ Yes

☒ No

☐ Unknown/Unable to Code

If so, was the nature of services provided in comparison conditions described?

☐ Yes

☐ No

☒ Unknown/Unable to Code

Quality indicators for outcome measures

Were multiple measures used to provide an appropriate balance between measures closely aligned with the training and measures of generalised performance?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Were outcomes for capturing the training's effect measured at the appropriate times?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Quality indicators for data analysis

Were the data analysis techniques appropriately linked to key research questions and hypotheses? Were they appropriately linked to the unit of analysis in the study?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Did the research report include not only inferential statistics but also effect size calculations?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Desirable Quality Indicators

Was data available on attrition rates among training samples?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Was severe overall attrition (30% or more) avoided? Is attrition comparable across samples?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Did the study provide not only internal consistency reliability but also test-retest reliability and interrater reliability (when appropriate) for outcome measures?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were data collectors and/or scorers blind to study conditions and equally (un)familiar to examinees across study conditions?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were outcomes for capturing the training's effect measured beyond an immediate post-test?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Was evidence of the criterion-related validity and construct validity of the measures provided?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Did the research team assess not only surface features of fidelity implementation (e.g. number of minutes allocated to the training or trainers following procedures specified), but also examine quality of implementation?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Was any documentation of the nature of instruction or series provided in comparison conditions?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Did the research report include actual audio or videotape excerpts or examples of paperwork that capture the nature of the training?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Were results presented in a clear, coherent fashion?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Overall Rating of Evidence: ☐3 ☒ 2 7/6 ☐1 ☐ 0

Coding protocol:

Gersten, R., Fuchs, L. S., Compton, D., Coyne, M., Greenwood, C. & Innocenti, M. (2004). Quality indicators for group experimental and quasi-experimental research in special education. *Exceptional Children, 71*, 149-164.

Study 13: Wright, T. L. (2020). *Evaluating the Effectiveness of an Educational Programme for School Personnel with Students returning to the Classroom following a Traumatic Brain Injury: An Evidence-Based Project (Order No. 28094025).* Available from ProQuest Dissertations & Theses Global. (2448626618). Retrieved on 22nd July 2021 from: https://www-proquest-com.libproxy.ucl.ac.uk/dissertations-theses/evaluating-effectiveness-educational-programme/docview/2448626618/se-2?accountid=14511

Essential Quality Indicators

Quality indicators for describing participants

Was sufficient information provided to determine whether the participants required this training?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were appropriate procedures used to increase the likelihood that relevant characteristics of participants in the sample were comparable?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Was sufficient information given characterizing the trainers provided? Did it indicate whether they were comparable across conditions?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Quality indicators for implementation of the training and description of comparison conditions

Was the training clearly described?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Was the fidelity of training described and assessed?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Were there any comparison conditions?

☐ Yes

☒ No

☐ Unknown/Unable to Code

If so, was the nature of services provided in comparison conditions described?

☐ Yes

☐ No

☒ Unknown/Unable to Code

Quality indicators for outcome measures

Were multiple measures used to provide an appropriate balance between measures closely aligned with the training and measures of generalised performance?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were outcomes for capturing the training's effect measured at the appropriate times?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Quality indicators for data analysis

Were the data analysis techniques appropriately linked to key research questions and hypotheses? Were they appropriately linked to the unit of analysis in the study?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Did the research report include not only inferential statistics but also effect size calculations?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Desirable Quality Indicators

Was data available on attrition rates among training samples?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Was severe overall attrition (30% or more) avoided? Is attrition comparable across samples?

☐ Yes

☐ No

☒ Unknown/Unable to Code

Did the study provide not only internal consistency reliability but also test-retest reliability and interrater reliability (when appropriate) for outcome measures?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Were data collectors and/or scorers blind to study conditions and equally (un)familiar to examinees across study conditions?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were outcomes for capturing the training's effect measured beyond an immediate post-test?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Was evidence of the criterion-related validity and construct validity of the measures provided?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Did the research team assess not only surface features of fidelity implementation (e.g. number of minutes allocated to the training or trainers following procedures specified), but also examine quality of implementation?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Was any documentation of the nature of instruction or series provided in comparison conditions?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Did the research report include actual audio or videotape excerpts or examples of paperwork that capture the nature of the training?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Were results presented in a clear, coherent fashion?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Overall Rating of Evidence: ☐3 ☒ 2 6/2 ☐1 ☐ 0

Coding protocol:

Gersten, R., Fuchs, L. S., Compton, D., Coyne, M., Greenwood, C, & Innocenti, M. (2004). Quality indicators for group experimental and quasi-experimental research in special education. Exceptional Children, 71, 149-164.

Study 14:

Kneavel, M., Ernst, W. & McCarthy, K. (2021). Moderating Effects of Gender Among Collegiate Student-Athletes Receiving a Novel Peer Concussion Education Programme. *Health, Education and Behavior, 48*(6), 907-917.

Essential Quality Indicators

Quality indicators for describing participants

Was sufficient information provided to determine whether the participants required this training?

☒Yes

☐ No

☐ Unknown/Unable to Code

Were appropriate procedures used to increase the likelihood that relevant characteristics of participants in the sample were comparable?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Was sufficient information given characterizing the trainers provided? Did it indicate whether they were comparable across conditions?

☒ Yes – not comparable

☐ No

☐ Unknown/Unable to Code

Quality indicators for implementation of the intervention and description of comparison conditions

Was the training clearly described?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Was the fidelity of training described and assessed?

☐ Yes

☒No

☐ Unknown/Unable to Code

Were there any comparison conditions?

☒ Yes

☐ No

☐ Unknown/Unable to Code

If so, was the nature of services provided in comparison conditions described?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Quality indicators for outcome measures

Were multiple measures used to provide an appropriate balance between measures closely aligned with the training and measures of generalised performance?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were outcomes for capturing the training's effect measured at the appropriate times?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Quality indicators for data analysis

Were the data analysis techniques appropriately linked to key research questions and hypotheses? Were they appropriately linked to the unit of analysis in the study?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Did the research report include not only inferential statistics but also effect size calculations?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Desirable Quality Indicators

Was data available on attrition rates among intervention samples?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Was severe overall attrition (30% or more) avoided? Is attrition comparable across samples?

☐ Yes

☐ No

☒ Unknown/Unable to Code

Did the study provide not only internal consistency reliability but also test-retest reliability and interrater reliability (when appropriate) for outcome measures?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Were data collectors and/or scorers blind to study conditions and equally (un)familiar to examinees across study conditions?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Were outcomes for capturing the training's effect measured beyond an immediate post-test?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Was evidence of the criterion-related validity and construct validity of the measures provided?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Did the research team assess not only surface features of fidelity implementation (e.g. number of minutes allocated to the training or trainers following procedures specified), but also examine quality of implementation?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Was any documentation of the nature of instruction or series provided?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Did the research report include actual audio or videotape excerpts or examples of paperwork that capture the nature of the intervention?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Were results presented in a clear, coherent fashion?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Overall Rating of Evidence: ☒3 (10/2) ☐ 2 ☐1 ☐ 0

Coding protocol:

Gersten, R., Fuchs, L. S., Compton, D., Coyne, M., Greenwood, C, & Innocenti, M. (2004). Quality indicators for group experimental and quasi-experimental research in special education. Exceptional Children, 71, 149-164.

Study 15:

Scott, L. C., Langdon, J., Botnaru, D. & Hunt, T. (2021). Evaluating Knowledge Attainment and Retention of a Multimodal Approach to Concussion Education in Collegiate Athletes. Athletic Training Education Journal, 16(3), 198-207.

Essential Quality Indicators

Quality indicators for describing participants

Was sufficient information provided to determine whether the participants required this training?

☒Yes

☐ No

☐ Unknown/Unable to Code

Were appropriate procedures used to increase the likelihood that relevant characteristics of participants in the sample were comparable?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Was sufficient information given characterizing the trainers provided? Did it indicate whether they were comparable across conditions?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Quality indicators for implementation of the intervention and description of comparison conditions

Was the training clearly described?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Was the fidelity of training described and assessed?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Were there any comparison conditions?

☐ Yes

☒ No

☐ Unknown/Unable to Code

If so, was the nature of services provided in comparison conditions described?

☐ Yes

☐ No

☒ Unknown/Unable to Code

Quality indicators for outcome measures

Were multiple measures used to provide an appropriate balance between measures closely aligned with the training and measures of generalised performance?

☒Yes

☐ No

☐ Unknown/Unable to Code

Were outcomes for capturing the training's effect measured at the appropriate times?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Quality indicators for data analysis

Were the data analysis techniques appropriately linked to key research questions and hypotheses? Were they appropriately linked to the unit of analysis in the study?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Did the research report include not only inferential statistics but also effect size calculations?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Desirable Quality Indicators

Was data available on attrition rates among intervention samples?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Was severe overall attrition (30% or more) avoided? Is attrition comparable across samples?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Did the study provide not only internal consistency reliability but also test-retest reliability and interrater reliability (when appropriate) for outcome measures?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Were data collectors and/or scorers blind to study conditions and equally (un)familiar to examinees across study conditions?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were outcomes for capturing the training's effect measured beyond an immediate post-test?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Was evidence of the criterion-related validity and construct validity of the measures provided?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Did the research team assess not only surface features of fidelity implementation (e.g. number of minutes allocated to the training or trainers following procedures specified), but also examine quality of implementation?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Was any documentation of the nature of instruction or series provided

☐ Yes

☒ No

☐ Unknown/Unable to Code

Did the research report include actual audio or videotape excerpts or examples of paperwork that capture the nature of the intervention?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Were results presented in a clear, coherent fashion?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Overall Rating of Evidence: ☒3 (8/4) ☐ 2 ☐1 ☐ 0

Coding protocol:

Gersten, R., Fuchs, L. S., Compton, D., Coyne, M., Greenwood, C, & Innocenti, M. (2004). Quality indicators for group experimental and quasi-experimental research in special education. Exceptional Children, 71, 149-164.

Study 16

Sarmiento, K., Daugherty, J. & Waltzman, D. (2021). Effectiveness of the CDC HEADS UP online training on healthcare providers' mTBI knowledge and self-efficacy. Journal of Safety Research, 78, 221-228

Essential Quality Indicators

Quality indicators for describing participants

Was sufficient information provided to determine whether the participants required this training?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were appropriate procedures used to increase the likelihood that relevant characteristics of participants in the sample were comparable?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Was sufficient information given characterizing the trainers provided? Did it indicate whether they were comparable across conditions?

☒ Yes – online CDC Website

☐ No

☐ Unknown/Unable to Code

Quality indicators for implementation of the intervention and description of comparison conditions

Was the training clearly described?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Was the fidelity of training described and assessed?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Were there any comparison conditions?

☐ Yes

☒ No

☐ Unknown/Unable to Code

If so, was the nature of services provided in comparison conditions described?

☐ Yes

☐ No

☒ Unknown/Unable to Code

Quality indicators for outcome measures

Were multiple measures used to provide an appropriate balance between measures closely aligned with the training and measures of generalised performance?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Were outcomes for capturing the training's effect measured at the appropriate times?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Quality indicators for data analysis

Were the data analysis techniques appropriately linked to key research questions and hypotheses? Were they appropriately linked to the unit of analysis in the study?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Did the research report include not only inferential statistics but also effect size calculations?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Desirable Quality Indicators

Was data available on attrition rates among intervention samples?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Was severe overall attrition (30% or more) avoided? Is attrition comparable across samples?

☒Yes

☐ No

☐ Unknown/Unable to Code

Did the study provide not only internal consistency reliability but also test-retest reliability and interrater reliability (when appropriate) for outcome measures?

☐ Yes

☒No

☐ Unknown/Unable to Code

Were data collectors and/or scorers blind to study conditions and equally (un)familiar to examinees across study conditions?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Were outcomes for capturing the training's effect measured beyond an immediate post-test?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Was evidence of the criterion-related validity and construct validity of the measures provided?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Did the research team assess not only surface features of fidelity implementation (e.g. number of minutes allocated to the training or trainers following procedures specified), but also examine quality of implementation?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Was any documentation of the nature of instruction or series provided

☐ Yes

☒No

☐ Unknown/Unable to Code

Did the research report include actual audio or videotape excerpts or examples of paperwork that capture the nature of the intervention?

☐ Yes

☒ No

☐ Unknown/Unable to Code

Were results presented in a clear, coherent fashion?

☒ Yes

☐ No

☐ Unknown/Unable to Code

Overall Rating of Evidence: ☐ 3 ☒ 2 (7/4) ☐1 ☐ 0

Appendix E: Example Completed WoE B Coding Protocol

Appendix E: Example Completed WoE B Coding Protocol

Coding protocol:

Created for the purposes of this review. Criteria rationale based on "Typology of evidence" recommendations for research best suited to studying the effectiveness of interventions (Petticrew and Roberts, 2003).

Study 1: Davies, S. C. & Tedesco, M. F. (2018). Efficacy of an Online Concussion Training Programme for School Professionals. *Contemporary School Psychology, 22*, 479-487.

https://doi.org/10.1007/s40688-018-00213-0

Overall Rating of Evidence: ☐ 3 ☒ 2 ☐ 1 ☐ 0

Criteria WoE B Rating Criteria 3 Randomised Controlled trials (RCTs) At least one control/comparison group Pre- and post- data collected for all groups	
Criteria WoE B Rating Criteria 2 Cohort studies or Quasi-experimental studies At least one control/comparison group Pre- and post- data collected for all groups	**X** **X** **X**
Criteria WoE B Rating Criteria 1 Research that collects qualitative data, surveys, non-experimental studies No control/comparison group Pre- and post- data collected	

Note: *Criteria rationale based on "Typology of evidence" recommendations for research best suited to studying the effectiveness of interventions (Petticrew and Roberts, 2003).*

Appendix F: Example completed WoE C Coding Protocol

Appendix F: Example completed WoE C Coding Protocol

Coding protocol:

Created for the purposes of this review.

Study 16: Sarmiento, K., Daugherty, J. & Waltzman, D. (2021). Effectiveness of the CDC HEADS UP online training on healthcare providers' mTBI knowledge and self-efficacy. Journal of Safety Research, 78, 221-228

Overall Rating of Evidence: ☐ 3 ☒ 2 ☐ 1 ☐ 0

A. Training

3- Brain injury training is the primary training or the core feature of the main training condition.

2- Brain injury training is combined with another training.

1- Brain injury training is the secondary or tertiary training.

It is important to understand how significant of a feature brain injury training was in the study.

B. Outcomes

3- Outcomes have been measured using a standardised assessment of brain injury knowledge.

2- Outcomes have been measured using a researcher constructed assessment of brain injury knowledge and/or uses a self-rating scale.

1- Outcomes have been measured using an assessment that indirectly measures brain injury knowledge.

This question focuses on the effect of brain injury training on brain injury knowledge, so outcome measures must accurately measure this. Standardised and/or validated measures will produce a more accurate portrayal.

C. Setting

3 - In person: The training was conducted in a setting that participants would typically associate with brain-injured children.

3 - Online: Clear how potential issues with the setting of online training had been addressed

2 - In person: The training was conducted in a separate location but within the building where the participants typically would associate with brain-injured children

2 - Online: Training is based on evidence-based practice of a relevant online training programme despite no specific evidence-base for the online training carried out in the study.

1 - In person: The training was carried out in a setting unrelated to where the participants would typically associate with brain-injured children

1 - Online: not based on evidence-based practice, no setting is set in relation to where online training has taken place

As the training is intended to be used to support brain-injured children, the study should ideally take place in a setting where the participants would typically be with brain-injured children in order for results to be generalisable.

D. Programme content and authorship

3- The training is a recognised programme and/or involves multiple types of brain injury and its sequalae.

2- The training is not recognised and involves one type of brain injury and its sequalae.

1- The training is not recognised and indirectly teaches about brain injury and its sequalae.

Brain injury training does not have clear implementation guidelines, however, there are a number of recognised programmes of training specialising in this area.

E. Trainer

3- The training is delivered by a professional trained in brain injury.

2- The training is delivered by a researcher who has been trained in Brain injury training.

1- The training is delivered by an individual who has received minimal training in Brain injury training or the trainer is unknown/not described.

Training is more likely to be of a higher quality if carried out by a trained professional. If it is an online training platform, the person setting up the training is deemed the trainer in this study.

Appendix G: Final Version of Survey

Appendix G: Final Version of Survey

Professionals' Knowledge of Acquired Brain Injury

Participant Information Sheet for Education, Health and Social Care Professionals

UCL Research Ethics Committee Approval ID Number: 21369/001

Title of Study:

Working with Children with a Traumatic Brain Injury (TBI):

The Perceptions and Attributions of Education, Health and Social Care Professionals

Department: Department of Clinical, Educational and Health Psychology

Name of the Principal Researcher: Sandra Dunsmuir, Director, Educational Psychology Group, and Professor of Educational and Child Psychology.

Name of the other Researcher: Claire Kenny, Trainee Education Psychologist

I would like to invite you to take part in this research study. Before you decide to take part, it is important that you understand why this research is being conducted and what your involvement would be if you participate. Please take your time to read through the following information carefully. If you have any remaining questions afterwards, please do not hesitate to contact Claire Kenny using the details at the end of this summary sheet.

What is the purpose of this research?

This study aims to assess education, health and social care professionals' current knowledge and understanding of traumatic brain injury (TBI) and how they would support children with those needs. The purpose of doing this is to assess any potential gaps in knowledge so that relevant training can be devised that is appropriate to the relevant setting, role and level of experience.

Why have I been invited to take part?

All education, health and social care professionals, who currently live in the UK and work with children aged 11-18, are welcome to take part in this research. Participants will need access to the internet to take part.

What will happen if I decide to take part?

If you agree to be in this study, phase 1 is the completion of an online questionnaire related to your knowledge and attitudes about TBI. Phase 2 is a semi-structured interview related to case studies of children aged 11-18. Both aspects of the study are voluntary. You need to have taken part in phase 1 in order to participate in phase 2. You will have the choice to opt in to the semi-structured interview at the end of the survey.

Do I have to take part?

You do not need to take part in this study. Nor do you need to decide straight away. Participation will be open to all appropriate participants until April 2022. Taking part is completely voluntary and, if you do decide to participate, you are free to withdraw up until July 2022. After this point, data will have been pseudonomised and therefore it will be impossible to identify your data and delete it.

Will I be recorded and how will the recorded media be used?

Audio recordings will only take place if you participate in the semi-structured interview part of the research in phase 2. The audio recordings made during this research will only be used for analysis. No other use will be made of them without your written permission, and no one outside of this research will be allowed access to the original recordings.

Are there any benefits or disadvantages to taking part?

This study will ask you questions about you, your knowledge and experience of TBI and your suggestions for how to support children with an TBI. Some questions may make you remember emotional events or lead to feelings of distress. If this occurs, please contact Claire Kenny using the details at the end of this participant information sheet for support.

Please note that there are no monetary or other reimbursements for taking part in this study. By taking part you will help facilitate a better understanding of the knowledge and experience of education, health and social care professionals in relation to TBI with the aim of providing more relevant TBI training to these professionals in the future, to improve the outcomes for children with an TBI. Claire would be happy to disseminate her findings and provide relevant training if requested.

What if something goes wrong?

If you wish to make a complaint, please raise this in the first instance with Sandra Dunsmuir, Director, Educational Psychology Group and Professor of Educational and Child Psychology. If you feel your complaint has not been handled to your satisfaction, please contact the Chair of the UCL Research Ethics Committee – ethics@ucl.ac.uk

Will my taking part in the study and the data I provide be kept confidential?

Your data and all the information you provide will be kept confidential and will be pseudonymised. Your survey responses will be stored securely on password-protected files held on the UCL network and the researchers are the only people who will have access to these files. They may be shared to responsible UCL colleagues for the purpose of this study but will be pseudonymised so that you are unidentifiable.

Are there any limits to confidentiality?

Please note that assurances on confidentiality will be strictly adhered to unless there are compelling and legitimate reasons for this to be breached. If this was the case, we would inform you of any decisions that might limit your confidentiality.

Will deception be used as part of this study?

Research designs often require that the full intent of the study not be explained prior to participation. Although we have described the general nature of the tasks that you will be asked to perform, the full intent of the study will not be explained to you until after the completion of the study.

What will happen to the results of this study?

The results will be used towards a thesis report for a Doctorate in Education and Child Psychology and may also be published in journals and spoken about at conferences. You will not be identifiable in any report or publication.

How will my personal information be used and protected?

This is the described below and is the ‘Local Data Protection Privacy Notice’.

The controller for this project will be University College London (UCL). The UCL Data Protection Officer provides oversight of UCL activities involving the processing of personal data, and can be contacted at: data-protection@ucl.ac.uk. This ‘local’ privacy notice sets out the information that applies to this particular study. Further information on how UCL uses participant information can be found in our ‘general’ privacy notice:

For participants in health and care research studies, click here

For participants in research studies, click here

The information that is required to be provided to participants under data protection legislation (GDPR and DPA 2018) is provided across both the 'local' and 'general' privacy notices. The lawful basis that will be used to process your personal data are: 'Public task' for personal data and 'Research purposes' for special category data. Your personal data will be processed so long as it is required for the research project. If we are able to anonymise or pseudonymise the personal data you provide we will undertake this, and will endeavour to minimise the processing of personal data wherever possible. If you are concerned about how your personal data is being processed, or if you would like to contact us about your rights, please contact UCL in the first instance at: data-protection@ucl.ac.uk. Detail any intended recipients of personal data if not explained elsewhere, and also advise if any personal data will be transferred outside the EEA, and if so to where.

Contacts and Questions about the Research Study:

The primary researcher is Claire Kenny. If you have any questions, please contact her at claire.kenny.20@ucl.ac.uk.

Thank you for reading this information sheet and for considering to take part in this research study.

By clicking on 'Start' you are consenting to take part in this survey.

Survey Questions

This survey aims to understand your current knowledge and understanding of brain injury.

SECTION A: Please answer all questions.

Name:	
Age:	
Gender:	
Ethnicity:	
EAL:	
Occupation:	
Years in Role:	
Setting:	
Highest qualification achieved:	
Do you have any experience of brain injury (personal or professional)?	Yes / No
If yes, please provide details:	

SECTION B: Please answer all questions.

Indicate your view on the following statements by selecting the answer you think is the most appropriate, where 1 indicates 'Strongly Agree' and 5 indicates 'Strongly Disagree'.

		1	2	3	4	5
1	Recovery from a traumatic brain injury is usually complete in around 5 months					
2	Sometimes a second blow to the head can help a child remember things that they had forgotten					
3	Once a child is able to walk again, his/her brain is almost fully recovered					
4	A child who has a traumatic brain injury will be ‘just like new’ within several months					
5	It is good advice to remain completely inactive during recovery from a traumatic brain injury					
6	Once a child recovering from a traumatic brain injury feels ‘back to normal’, the recovery process is complete					
7	How quickly a child recovers depends mainly on how hard he or she works at the recovery process					

8	The most important goal of brain injury rehabilitation is to increase physical abilities such as walking					
9	It is common for children with traumatic brain injuries to be easily angered					
10	It is common for a child's presentation to change after a traumatic brain injury					
11	Problems with irritability and difficulties controlling anger are common in children who have had a traumatic brain injury					
12	Most children with brain damage are not fully aware of its effect on their behaviour					
13	Traumatic brain injuries often cause a child to feel depressed, sad and hopeless					
14	It is common for children to experience changes in behaviour after a traumatic brain injury					
15	Children who have survived a traumatic brain injury usually show good understanding of their problems because they experience them every day					

16	Once a child with a traumatic brain injury realises their degree of impairment they will always be aware of this					
17	Asking children who have survived a traumatic brain injury about their progress is the most accurate, informative way to find out how they have progressed					
18	A traumatic head injury can cause brain damage even if the child is not knocked unconscious					
19	Whiplash injuries to the neck can cause brain damage even if there is no direct blow to the head					
20	Brain damage, caused by trauma, can cause problems with speech					
21	Brain damage, caused by trauma, can cause problems with coordination and walking					

SECTION C: Please answer all questions.

Indicate your view on the following statements by selecting the answer you think is the most appropriate, where 1 indicates 'Strongly Agree' and 5 indicates 'Strongly Disagree'.

		1	2	3	4	5
22	A child with a traumatic brain injury, can become upset and shout for no reason					
23	A child with a traumatic brain injury, can have trouble saying the letters of the alphabet					
24	A child with a traumatic brain injury, can have difficulty recognising faces of family members					
25	A child with a traumatic brain injury, can forget their own first name or surname					
26	A child with a traumatic brain injury, can feel pins and needles in their face and arms					
27	A child with a traumatic brain injury, can think and act as if they were a different person altogether					
28	A child with a traumatic brain injury, can feel tired more easily					
29	A child with a traumatic brain injury, can say things without thinking them through first					
30	A child with a traumatic brain injury, can have trouble remembering how to get dressed					

31	A child with a traumatic brain injury, can see things or images that are not really there					
32	A child with a traumatic brain injury, can have trouble finding the right words in conversation					
33	A child with a traumatic brain injury, can become frustrated more easily					
34	A child with a traumatic brain injury, can have trouble concentrating on more than one task at a time					
35	A child with a traumatic brain injury, can have trouble remembering details of recent conversations					

SECTION D: Please answer all questions.

Indicate your view on the following statements by selecting the answer you think is the most appropriate.

		True	False	Don't Know
36	A traumatic brain injury can occur as a result of an injury to the brain caused by external force for example a car accident			
37	Acute or early treatment is to stabilise the child's medical condition and prevent physical and emotional damage/disturbance			
38	The most common long-term treatment involves staying at a rehabilitation centre where the child will receive care for complications after brain injury			
39	Following a traumatic brain injury, many children who have been in a coma will wake up within 2 weeks.			
40	After several weeks in a coma, when the child wakes up, they are able to speak straight away			

41	After several weeks in a coma, when the child wakes up, they can recognise other people			
42	After a traumatic brain injury, there is always a period when the child is partially or fully conscious but is confused and disorientated			
43	After a traumatic brain injury, agitation can occur which is a state of anxiety or nervous excitement			
44	Children with a traumatic brain injury can have behavioural problems such as changes of mood even after 1 year of injury			
45	Many children with severe brain injury will suffer from loneliness and social isolation			
46	The anger related to a traumatic brain injury may be due to physical changes and psychological adjustment			
47	Children with a traumatic brain injury will always suffer from memory loss			
48	Sleeping problems are more common in children with a traumatic brain injury compared to those without a traumatic brain injury			
49	Inability to concentrate can affect children with a traumatic brain injury's return to school/college			
50	Many children will experience problems after a traumatic brain injury, such as language impairment and speech difficulties.			
51	Seizures, headaches and imbalance are problems which can occur following a traumatic brain injury			
52	Children with a traumatic brain injury will always experience vision problems related to the injury, but he/she will be ~~is~~ unaware of it			
53	Swallowing is a common problem affecting children with a traumatic brain injury			
54	Children who suffer from a traumatic brain injury will always suffer from constipation or diarrhoea problems			
55	Recovery from a traumatic brain injury is most rapid in the first 3–6 months but children may continue to recover for several years after the injury			
56	The more severe the injury, the more likely the child will need some form of additional support			

57	Asking the child with a traumatic brain injury to name given objects at home, such as animal pictures, will improve speech problems			
58	There are many daily activities such as making a bed, putting on clothes and bathing, which can be done at home to help children with a traumatic brain injury with attention problems			
59	A safe and effective exercise programme at home, for example balance training, can play an important role in reducing the risk of falls and fear of falling			
60	Sleepiness is a common side effect of medication used to control aggressive behaviour			
61	Memory loss is a common side effect of medication used to control aggressive behaviour			
62	Food intake will be affected due to memory loss			

SECTION E: Consider the professions in the table below before answering the following question:

Educational	Health	Social Care	Educational Psychology
Teachers	Clinical Psychologists	Social Workers	Educational Psychologist
Pastoral Team	Health Psychologists	Youth Workers	Trainee Educational Psychologist
SENCOs	Neurologists	Early Help Workers	
TAs	GPs	Disabled Children's Team	
Mentors	Emergency Care Doctors	Care Workers	
Head Teachers	Nurses	Community Support and Outreach Worker	
	Physiotherapists	Children's Support Assistant	
	Occupational Therapists	Family Support Worker	
	Paediatricians		

63. What do you see as education professionals' main role and responsibilities when working with children with a traumatic brain injury (consider only the roles above)?

_____

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64. What do you see as health professionals' main role and responsibilities when working with children with a traumatic brain injury (consider only the roles above)?

---

65. What do you see as social care professionals' main role and responsibilities when working with children with a traumatic brain injury (consider only the roles above)?

_____

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66. What do you see as educational psychology professionals’ main roles and responsibilities when working with children with a traumatic brain injury (consider only the roles above)?

---

67. How important do you think it is for health, social care and education professionals, including educational psychologists, to work together to support children with a traumatic brain injury?

- Extremely Important
- Very Important
- Moderately Important
- Slightly Important
- Not Important at All

68. Please explain your response in more detail.

_____

---

69. What do you believe hinders effective collaboration between these professionals when working with children with a traumatic brain injury?

_____

---

70. What do you believe facilitates effective collaboration between these professionals when working with children with a traumatic brain injury?

_____

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71. Please indicate if you are interested in taking part in Phase 2 of this study, which is a semi-structured interview with the primary researcher, Claire Kenny. This will last approximately 45 minutes and will be carried out online.

Audio recordings will be made during this part of the research, which will only be used for analysis. No other use will be made of them without your written permission, and no one outside of this research will be allowed access to the original recordings. Your screen can be turned off during recording if you prefer.

- Yes
- No

72. If you have selected yes above, please write your name and email address below.

Name:

Email address:

Thank you for completing my survey

Appendix H: Survey with Explanation, Amends and Scoring

Appendix H: Survey with Explanation, Amends and Scoring

Key:

RED – CM-TBI adapted by Linden et al (2013)

BLUE – HIKS adapted by Thomas and Jobse (2015)

GREEN – IC-KTBIQ created by Bamatraf et al. (2020) and adapted by author to exclude questions not relevant to the thesis

Crossed out text e.g. ~~crossed~~ indicates a revision from the original measure.

For the CM-TBI measure, this is mainly due to the piloting by Linden et al (2013) to make it specifically related to children but also a few amends by the author to improve clarity.

For the IC-KTBI, text has been crossed out to make it more relevant to the UK and to discount questions deemed irrelevant to the author's research question or duplicated by the other measures used.

~~**Crossed out bold**~~ means I have decided to remove it due to Americanisation of language

Bold normal text indicates additional text added by Linden et al (2013)

Bold italicised text indicates additional text added by author.

PURPLE - indicates changes made as a result of the piloting of the survey

Professionals' Knowledge of Acquired Brain Injury

Participant Information Sheet for Education, Health and Social Care Professionals

UCL Research Ethics Committee Approval ID Number: 21369/001

Title of Study:

Working with Children with a Traumatic Brain Injury (TBI):

The Perceptions and Attributions of Education, Health and Social Care Professionals

Department: Department of Clinical, Educational and Health Psychology

Name ~~and Contact Details~~ of the Principal Researcher: Sandra Dunsmuir, Director, Educational Psychology Group, and Professor of Educational and Child Psychology.

Name ~~and Contact Details~~ of the other Researcher: Claire Kenny, Trainee Education Psychologist

I would like to invite you to take part in this research study. Before you decide to take part, it is important that you understand why this research is being conducted and what your involvement would be if you participate. Please take your time to read through the following information carefully. If you have any remaining questions afterwards, please do not hesitate to contact Claire Kenny using the details at the end of this summary sheet.

What is the purpose of this research?

This study aims to assess education, health and social care professionals' current knowledge and understanding of acquired brain injury (TBI) and how they would support children with those needs. The purpose of doing this is to assess any potential gaps in knowledge so that relevant training can be devised that is appropriate to the relevant setting, role and level of experience.

Why have I been invited to take part?

All education, health and social care professionals, who currently live in the UK and work with children aged 11-18, are welcome to take part in this research. Participants will need access to the internet to take part.

What will happen if I decide to take part?

If you agree to be in this study, phase 1 is the completion of an online questionnaire related to your knowledge and attitudes about TBI. Phase 2 is a semi-structured interview related to case studies of children ***aged 11-18*** ~~with an TBI~~. Both aspects of the study are voluntary. You need to have taken part in phase 1 in order to participate in phase 2. You will have the choice to opt in to the semi-structured interview at the end of the survey.

Do I have to take part?

You do not need to take part in this study. Nor do you need to decide straight away. Participation will be open to all appropriate participants until April 2022. Taking part is completely voluntary and, if you do decide to participate, you are free to withdraw up until July 2022. After this point, data will have been pseudonomised and therefore it will be impossible to identify your data and delete it.

Will I be recorded and how will the recorded media be used?

Audio recordings will only take place if you participate in the semi-structured interview part of the research in phase 2. The audio recordings made during this research will only be used for analysis. No other use will be made of them without your written permission, and no one outside of this research will be allowed access to the original recordings.

Are there any benefits or disadvantages to taking part?

This study will ask you questions about you, your knowledge and experience of TBI and your suggestions for how to support children with an TBI. Some questions may make you remember emotional events or lead to feelings of distress. If this occurs, please contact Claire Kenny using the details at the end of this participant information sheet for support.

Please note that there are no monetary or other reimbursements for taking part in this study. By taking part you will help facilitate a better understanding of the knowledge and experience of education, health and social care professionals in relation to TBI with the aim of providing more relevant TBI training to these professionals in the future, to improve the outcomes for children with an TBI. Claire would be happy to disseminate her findings and provide relevant training if requested.

What if something goes wrong?

If you wish to make a complaint, please raise this in the first instance with Sandra Dunsmuir, Director, Educational Psychology Group and Professor of Educational and Child Psychology. If you feel your complaint has not been handled to your satisfaction, please contact the Chair of the UCL Research Ethics Committee – ethics@ucl.ac.uk

Will my taking part in the study and the data I provide be kept confidential?

Your data and all the information you provide will be kept confidential and will be pseudonymised. Your survey responses will be stored securely on password-protected files held on the UCL network and the researchers are the only people who will have access to these files. They may be shared to responsible UCL colleagues for the purpose of this study but will be pseudonymised so that you are unidentifiable.

Are there any limits to confidentiality?

Please note that assurances on confidentiality will be strictly adhered to unless there are compelling and legitimate reasons for this to be breached. If this was the case, we would inform you of any decisions that might limit your confidentiality.

Will deception be used as part of this study?

Research designs often require that the full intent of the study not be explained prior to participation. Although we have described the general nature of the tasks that you will be asked to perform, the full intent of the study will not be explained to you until after the completion of the study.

What will happen to the results of this study?

The results will be used towards a thesis report for a Doctorate in Education and Child Psychology and may also be published in journals and spoken about at conferences. You will not be identifiable in any report or publication.

How will my personal information be used and protected?

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The controller for this project will be University College London (UCL). The UCL Data Protection Officer provides oversight of UCL activities involving the

processing of personal data, and can be contacted at: data-protection@ucl.ac.uk. This ‘local’ privacy notice sets out the information that applies to this particular study. Further information on how UCL uses participant information can be found in our ‘general’ privacy notice:

For participants in health and care research studies, click here

For participants in research studies, click here

The information that is required to be provided to participants under data protection legislation (GDPR and DPA 2018) is provided across both the ‘local’ and ‘general’ privacy notices. The lawful basis that will be used to process your personal data are: ‘Public task’ for personal data and 'Research purposes’ for special category data. Your personal data will be processed so long as it is required for the research project. If we are able to anonymise or pseudonymise the personal data you provide we will undertake this, and will endeavour to minimise the processing of personal data wherever possible. If you are concerned about how your personal data is being processed, or if you would like to contact us about your rights, please contact UCL in the first instance at: data-protection@ucl.ac.uk. Detail any intended recipients of personal data if not explained elsewhere, and also advise if any personal data will be transferred outside the EEA, and if so to where.

Contacts and Questions about the Research Study:

The primary researcher is Claire Kenny. If you have any questions, please contact her at claire.kenny.20@ucl.ac.uk.

Thank you for reading this information sheet and for considering to take part in this research study.

By clicking on 'Start' you are consenting to take part in this survey.

Survey Questions

This survey aims to understand your current knowledge and understanding of brain injury.

SECTION A: Please answer all questions.

Name:	
Age:	
Gender:	
Ethnicity:	
EAL:	
Occupation:	
Years in Role:	
Setting:	
Highest qualification achieved:	
Do you have any experience of traumatic brain injury (personal or professional)?	Yes / No
If yes, please provide details:	

SECTION B: Please answer all questions.

Indicate your view on the following statements by selecting the answer you think is the most appropriate, where 1 indicates 'Strongly Agree' and 5 indicates 'Strongly Disagree'.

.

		~~Strongly agree~~ 1	~~Agree~~ 2	~~Don't know~~ 3	~~Disagree~~ 4	~~Strongly disagree~~ 5
1	Recovery from a **traumatic** brain injury is usually complete in around ~~about~~ 5 months (FALSE/DISAGREE)					
2	Sometimes a second blow to the head can help a **child** ~~person~~ remember things that ~~were~~ **they had** forgotten (FALSE/DISAGREE)					
3	Once a **child** ~~person~~ is able to walk again, his/her brain is almost fully recovered (FALSE/DISAGREE)					
4	A **child** ~~person~~ who has a **traumatic** brain injury will be 'just like new' ***within*** ~~in~~ several months (FALSE/DISAGREE)					
5	It is good advice to remain completely inactive during recovery from a **traumatic** brain injury (FALSE/DISAGREE)					
6	Once a **child** ~~person~~ recovering from a **traumatic** brain injury feels 'back to normal', the recovery process is complete (FALSE/DISAGREE)					

7	How quickly a **child** ~~person~~ recovers depends mainly on how hard ~~they~~ ***he or she*** works at **the recovery process** ~~recovering~~ (FALSE/DISAGREE)					
8	The ~~primary~~ **most important goal** of brain injury rehabilitation is to increase physical abilities such as walking (FALSE/DISAGREE)					
9	It is common for **children** ~~people~~ with **traumatic** brain injuries to be easily angered (TRUE/AGREE)					
10	It is common for a **child's** ~~possible that a person's~~ ~~personality~~ **presentation to** ~~will~~ change after a **traumatic** brain injury (TRUE/AGREE)					
11	Problems with irritability ~~and~~ **as well as** difficulties controlling **their** anger are common in **children** ~~people who have had~~ **with** a **traumatic** brain injury (TRUE/AGREE)					
12	Most **children** ~~people~~ with **traumatic** brain damage are not fully aware of its effect on their behaviour (TRUE/AGREE)					

13	**Traumatic** brain injuries **often cause a child** ~~may cause one~~ to feel depressed, sad and hopeless (TRUE/AGREE)					
14	It is common for **children** ~~people~~ to experience changes in behaviour after a **traumatic** brain injury (TRUE/AGREE)					
15	**Children who have survived a traumatic brain injury** ~~Brain injury patients~~ usually show ~~a~~ good understanding of their problems because they experience them every day (FALSE/DISAGREE)					
16	**Once a child with a traumatic brain injury ~~realizes~~ *realises* their degree of impairment they will always be aware of it** ~~Once a person with a brain injury realises where they are, they will always be aware of this~~ (FALSE/DISAGREE)					
17	Asking **children** ~~persons~~ who have survived ~~had~~ a **traumatic** brain injury about their progress is the most accurate, informative way to find out how they have progressed (FALSE/DISAGREE)					

18	A head injury**, as a result of trauma,** can cause brain damage even if the **child** ~~person~~ ~~is not~~ **has not been** knocked unconscious (TRUE/AGREE)					
19	Whiplash injuries to the neck can cause brain damage even if there is no direct blow to the head (TRUE/AGREE)					
20	~~Problems with speech, co-ordination and walking~~ ~~can be caused by brain damage~~ Brain damage, **caused by trauma,** can cause **speech** problems ~~with~~ ~~speech~~ (TRUE/AGREE) (made into two questions see question 21)					
21	Brain damage, **caused by trauma,** can cause problems with coordination and walking (TRUE/AGREE)					

SECTION C: Please answer all questions.

Indicate your view on the following statements by selecting the answer you think is the most appropriate, where 1 indicates 'Strongly Agree' and 5 indicates 'Strongly Disagree'.

		~~Never~~ **1**	~~Rarely~~ **2**	~~Often~~ **3**	~~Most of the time~~ **4**	**5**
1	***A child with a traumatic brain injury can*** become upset and ~~**yell**~~ ***shout*** for no reason (O) Never or Rarely (False)					
2	***A child with a traumatic brain injury can*** have trouble saying the letters of the alphabet (O) Never or Rarely (False)					
3	***A child with a traumatic brain injury can*** have difficulty ~~**recognizing**~~ ***recognising*** faces of family members (O) Never or Rarely (False)					
4	***A child with a traumatic brain injury can*** forget their own first name or surname (O) Never or Rarely (False)					
5	***A child with a traumatic brain injury can*** feel pins and needles in the**ir** face and ~~both~~ arms (O) Never or Rarely (False)					
6	***A child with a traumatic brain injury can*** think and act as if they were a different person altogether (O) Never or Rarely (False)					
7	***A child with a traumatic brain injury can*** feel tired more easily (M) Often or Most of the time (True)					

8	***A child with a traumatic brain injury can*** say things without thinking them through first (M) Often or Most of the time (True)					
9	***A child with a traumatic brain injury can*** have trouble remembering how to get dressed (O) Never or Rarely (False)					
10	***A child with a traumatic brain injury can*** see things or images that are not really there (O) Never or Rarely (False)					
11	***A child with a traumatic brain injury can*** have trouble finding the right words in conversation (M) Often or Most of the time (True)					
12	***A child with a traumatic brain injury can*** become frustrated more easily (M) Often or Most of the time (True)					
13	***A child with a traumatic brain injury can*** have trouble concentrating on more than one task at a time (M) Often or Most of the time (True)					
14	***A child with a traumatic brain injury can*** have trouble remembering details of recent conversations (M) Often or Most of the time (True)					

SECTION D: Please answer all questions.

Indicate your view on the following statements by putting an x in the relevant column

		True	Don't know	False
1	**A traumatic** brain injury ~~is~~ can occur as a result of an injury to the brain caused by external force for example~~;~~ a car accident (T)			
2	~~Brain injury is equally common in males and females~~			
3	~~3. The most common cause of brain injury in Malaysia is due to motor cycle accident~~			
4	~~**An** operation for **a** brain injury is sometimes necessary to repair skull fracture, bleeding or remove large blood clots~~			
5	Acute or early treatment is to ~~**stabilize**~~ ***stabilise*** the ~~patient's~~ **child's** medical condition and prevent physical and emotional damage/disturbance (T)			
6	The most common long-term treatment involves staying at ~~nursing care facility~~ ***a rehabilitation centre*** where the ~~patient~~ ***child*** will receive care for complications after brain injury (F)			
7	~~Kumpulan Wang Persaraan (KWAP) is a place to get financial support for retired government servant with brain injury~~			
8	~~Many people **children** who had ***were in a*** coma following a **traumatic** brain injury~~~~,~~~~ wake up from coma within 2 weeks~~ ***Following a traumatic brain injury, many children who have been in a coma will wake up within 2 weeks.*** (F)			
9	After several weeks in a coma, when the ~~patient~~ ***child*** wakes up, they ~~can **recognize** ***recognise*** people and~~ ***are*** able to speak ~~right~~ **straight** away (F) (made into two questions see question 10)			

10	After several weeks in a coma, when the child wakes up, they can recognise **other** people (F)			
11	After a **traumatic** brain injury, there is always a period when the ~~patient~~ ***child*** is partially or fully conscious but is confused and disorientated (F)			
12	After a **traumatic** brain injury, agitation can occur which is a state of anxiety or nervous excitement ~~hyperactivity accompanied by increased tension and irritability~~ (T)			
13	~~Brain injury patients~~ ***Children with a*** **traumatic** ***brain injury*** ~~will~~ can have behavioural problems such as changes of mood even after 1 year of injury (F)			
14	Many ~~people~~ ***children*** with severe brain injury will suffer from loneliness and social isolation (T)			
15	The anger related to a **traumatic** brain injury may be due to physical changes and psychological adjustment (T)			
16	~~Brain injury patients~~ ***Children with a*** **traumatic** ***brain injury*** will always suffer from memory loss ~~for the rest of his\her life~~ (F)			
17	Sleeping problems are more common ***in children with a*** **traumatic** brain injury ~~patient~~ ***compared to those without a traumatic brain injury (F)***			
18	Inability to concentrate can affect ~~patient~~ ***children*** with **a traumatic** brain injury's return to ~~work~~ ***school/college (T)***			
19	**After a traumatic brain injury, m**any ~~patients~~ ***children*** will experience problems such as language impairment and speech difficulties. (F)			
20	Seizures, headaches and imbalance are problems~~,~~ ***which can occur*** following a **traumatic** brain injury (T)			
21	~~Individual~~ ***Children*** with ***a*** **traumatic** brain injury will always experience vision problems related to the injury, but he/she ***will be*** ~~is~~ unaware of it (F)			

22	Swallowing is **a** common problem affecting ***children with a* traumatic** brain injury ~~patient~~ (F)			
23	~~Individual~~ ***Children*** who suffer from ***a* traumatic** brain injury ~~can~~ will always ~~also~~ suffer from constipation or diarrhoea problems (F)			
24	~~The goal of rehabilitation after brain injury is to increase physical abilities such as: walking~~ *NB: this is covered on CM-TBI and so has been removed here*			
25	~~Therapy or rehabilitation for a brain injury patient may continue even after 5 years after injury~~			
26	Recovery from a **traumatic** brain injury is most rapid in the first 3–6 months~~,~~ but ***children*** ~~***with a TBI traumatic brain injury***~~ may continue to recover for several years after the injury (T)			
27	The more severe the injury, the more likely the ***child will need some form of*** ~~person needs assistance~~ **additional support** (T)			
28	~~Home rehabilitation can be performed by the patient at home under the supervision of caregiver~~			
29	Asking the ***child with a* traumatic** brain injury ~~patients~~ to name given objects at home such as~~;~~ animal pictures, will improve speech problems (F)			
30	There are many daily activities such as~~;~~ making a bed, putting on clothes and bathing, ***which*** can be done at home to help ***children with a* traumatic** brain injury ~~patient~~ with attention problems (F)			
31	A safe and effective exercise programme at home, for example~~;~~ balance training, can play an important role in reducing the risk of falls and fear of falling (T)			
32	Sleepiness ~~and memory loss are~~ is a common side effect~~s~~ of medication used to control aggressive behaviour (T) (made into two questions see question 32)			

33	Memory loss is a common side effect~~s~~ of medication used to control aggressive behaviour (T)			
34	~~Traditional herbs are not suitable for someone recovering from brain injury~~			
35	Food intake will be ~~affected~~ **impacted** due to memory loss (F)			
36	~~A healthy diet such as: vegetables, fruits, fish and lots of water becomes more important after brain injury as the patient ***child*** starts the recovery process~~			

SECTION E: Consider the professions in the table below before answering the following question:

Educational	Health	Social Care	Educational psychology
Teachers Pastoral Team SENCOs TAs/mentors Head Teachers	Clinical psychologists Health psychologists Neurologists GPs Emergency care doctors	Social Workers Youth workers Early Help Workers Disabled Children's Team	Educational psychologist Trainee Educational psychologist

37. What do you see as education professionals' main roles and responsibilities when working with children with a traumatic brain injury (consider only the roles above)?

---

38. What do you see as health professionals' main roles and responsibilities when working with children with a traumatic brain injury (consider only the roles above)?

---

39. What do you see as social care professionals' main roles and responsibilities when working with children with a traumatic brain injury (consider only the roles above)?

---

40. What do you see as educational psychology professionals' main roles and responsibilities when working with children with a traumatic brain injury (consider only the roles above)?

---

41. How important do you think it is for health, social care and education professionals, including educational psychologists, to work together to support children with a traumatic brain injury?

o Extremely Important

o Very Important

o Moderately Important

o Slightly Important

o Not Important at All

42. Please explain your response in more detail.

---

43. What do you believe hinders effective collaboration between these professionals when working with children with a traumatic brain injury?

---

44. What do you believe facilitates effective collaboration between these professionals when working with children with a traumatic brain injury?

---

45. Please indicate if you are interested in taking part in Phase 2 of this study, which is a semi-structured interview with the primary researcher, Claire Kenny. This will last approximately 45 minutes and will be carried out online.

Audio recordings will be made during this part of the research, which will only be used for analysis. No other use will be made of them without your written permission, and no one outside of this research will be allowed access to the original recordings. Your screen can be turned off during recording if you prefer.

o Yes

o No

46. If you have selected yes above, please write your name and email address below.

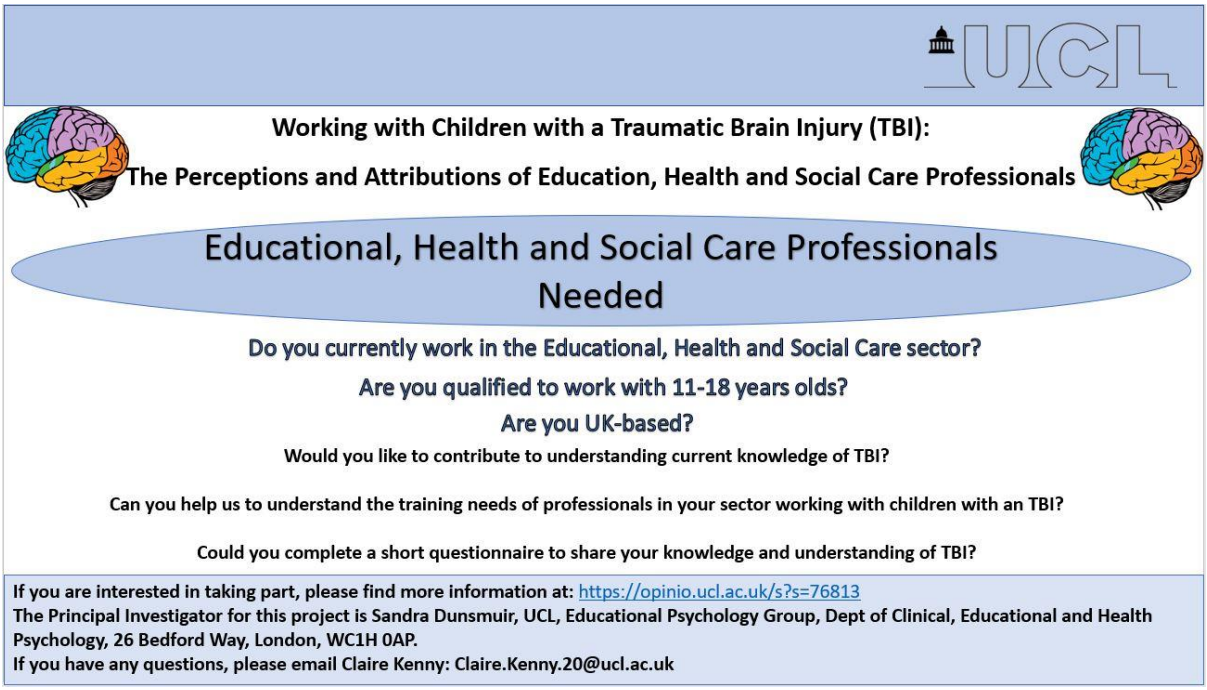
Name:

Email address:

Thank you for completing my survey

Appendix I: Recruitment Poster

Appendix I: Recruitment Poster



Appendix J: Participant Information Sheet and Consent Form

Appendix J: Participant Information Sheet and Consent Form

Professionals' Knowledge of Acquired Brain Injury

Participant Information Sheet for Education, Health and Social Care Professionals

UCL Research Ethics Committee Approval ID Number: 21369/001

Title of Study:

Working with Children with a Traumatic Brain Injury (TBI):

The Perceptions and Attributions of Education, Health and Social Care Professionals

Department: Department of Clinical, Educational and Health Psychology

Name of the Principal Researcher: Sandra Dunsmuir, Director, Educational Psychology Group, and Professor of Educational and Child Psychology.

Name of the other Researcher: Claire Kenny, Trainee Education Psychologist

I would like to invite you to take part in this research study. Before you decide to take part, it is important that you understand why this research is being conducted and what your involvement would be if you participate. Please take your time to read through the following information carefully. If you have any remaining questions afterwards, please do not hesitate to contact Claire Kenny using the details at the end of this summary sheet.

What is the purpose of this research?

This study aims to assess education, health and social care professionals' current knowledge and understanding of acquired brain injury (TBI) and how they would support children with those needs. The purpose of doing this is to assess any potential gaps in knowledge so that relevant training can be devised that is appropriate to the relevant setting, role and level of experience.

Why have I been invited to take part?

All education, health and social care professionals, who currently live in the UK and work with children aged 11-18, are welcome to take part in this research. Participants will need access to the internet to take part.

What will happen if I decide to take part?

If you agree to be in this study, phase 1 is the completion of an online questionnaire related to your knowledge and attitudes about TBI. Phase 2 is a semi-structured interview related to case studies of children ***aged 11-18***. Both aspects of the study are voluntary. You need to have taken part in phase 1 in order to participate in phase 2. You will have the choice to opt in to the semi-structured interview at the end of the survey.

Do I have to take part?

You do not need to take part in this study. Nor do you need to decide straight away. Participation will be open to all appropriate participants until April 2022. Taking part is completely voluntary and, if you do decide to participate, you are free to withdraw up until July 2022. After this point, data will have been pseudonomised and therefore it will be impossible to identify your data and delete it.

Will I be recorded and how will the recorded media be used?

Audio recordings will only take place if you participate in the semi-structured interview part of the research in phase 2. The audio recordings made during this research will only be used for analysis. No other use will be made of them without your written permission, and no one outside of this research will be allowed access to the original recordings.

Are there any benefits or disadvantages to taking part?

This study will ask you questions about you, your knowledge and experience of TBI and your suggestions for how to support children with an TBI. Some questions may make you remember emotional events or lead to feelings of distress. If this occurs, please contact Claire Kenny using the details at the end of this participant information sheet for support.

Please note that there are no monetary or other reimbursements for taking part in this study. By taking part you will help facilitate a better understanding of the knowledge and experience of education, health and social care professionals in relation to TBI with the aim of providing more relevant TBI

training to these professionals in the future, to improve the outcomes for children with an TBI. Claire would be happy to disseminate her findings and provide relevant training if requested.

What if something goes wrong?

If you wish to make a complaint, please raise this in the first instance with Sandra Dunsmuir, Director, Educational Psychology Group and Professor of Educational and Child Psychology. If you feel your complaint has not been handled to your satisfaction, please contact the Chair of the UCL Research Ethics Committee – ethics@ucl.ac.uk

Will my taking part in the study and the data I provide be kept confidential?

Your data and all the information you provide will be kept confidential and will be pseudonymised. Your survey responses will be stored securely on password-protected files held on the UCL network and the researchers are the only people who will have access to these files. They may be shared to responsible UCL colleagues for the purpose of this study but will be pseudonymised so that you are unidentifiable.

Are there any limits to confidentiality?

Please note that assurances on confidentiality will be strictly adhered to unless there are compelling and legitimate reasons for this to be breached. If this was the case, we would inform you of any decisions that might limit your confidentiality.

Will deception be used as part of this study?

Research designs often require that the full intent of the study not be explained prior to participation. Although we have described the general nature of the tasks that you will be asked to perform, the full intent of the study will not be explained to you until after the completion of the study.

What will happen to the results of this study?

The results will be used towards a thesis report for a Doctorate in Education and Child Psychology and may also be published in journals and spoken about at conferences. You will not be identifiable in any report or publication.

How will my personal information be used and protected?

This is the described below and is the ‘Local Data Protection Privacy Notice’.

The controller for this project will be University College London (UCL). The UCL Data Protection Officer provides oversight of UCL activities involving the processing of personal data, and can be contacted at: data-protection@ucl.ac.uk. This ‘local’ privacy notice sets out the information that applies to this particular study. Further information on how UCL uses participant information can be found in our ‘general’ privacy notice:

For participants in health and care research studies, click here

For participants in research studies, click here

The information that is required to be provided to participants under data protection legislation (GDPR and DPA 2018) is provided across both the ‘local’ and ‘general’ privacy notices. The lawful basis that will be used to process your personal data are: ‘Public task’ for personal data and 'Research purposes’ for special category data. Your personal data will be processed so long as it is required for the research project. If we are able to anonymise or pseudonymise the personal data you provide we will undertake this, and will endeavour to minimise the processing of personal data wherever possible. If you are concerned about how your personal data is being processed, or if you would like to contact us about your rights, please contact UCL in the first instance at: data-protection@ucl.ac.uk. Detail any intended recipients of personal data if not explained elsewhere, and also advise if any personal data will be transferred outside the EEA, and if so to where.

Contacts and Questions about the Research Study:

The primary researcher is Claire Kenny. If you have any questions, please contact her at claire.kenny.20@ucl.ac.uk.

Thank you for reading this information sheet and for considering to take part in this research study.

By clicking on 'Start' you are consenting to take part in this survey.

Consent Form

UCL EDUCATIONAL PSYCHOLOGY GROUP
RESEARCH DEPARTMENT OF CLINICAL, EDUCATIONAL & HEALTH PSYCHOLOGY

CONSENT FORM FOR EDUCATIONAL, HEALTH AND SOCIAL CARE PROFESSIONALS IN RESEARCH STUDIES

Please complete this form after you have read the Information Sheet and/or listened to an explanation about the research.

Title of Study: Working with Children with an Acquired Brain Injury (ABI): The Perceptions and Attributions of Education, Health and Social Care Professionals
Department: Department of Clinical, Educational and Health Psychology
Name and Contact Details of the Principal Researcher: Sandra Dunsmuir, Director, Educational Psychology Group, and Professor of Educational and Child Psychology.
Name and Contact Details of the other Researchers: Claire Kenny, claire.kenny.20@ucl.ac.uk
Name and Contact Details of the UCL Data Protection Officer: data-protection@ucl.ac.uk
This study has been approved by the UCL Research Ethics Committee: Project ID number: 21369/001

Thank you for considering taking part in this research. The person organising the research must explain the project to you before you agree to take part. If you have any questions arising from the Information Sheet or explanation already given to you, please ask the researcher before you decide whether to join in. You will be given a copy of this Consent Form to keep and refer to at any time.

I confirm that I understand that by ticking/initialling each box below I am consenting to this element of the study. I understand that it will be assumed that unticked/initialled boxes means that I DO NOT consent to that part of the study. I understand that by not giving consent for any one element that I may be deemed ineligible for the study.

		Tick Box
1.	I confirm that I have read and understood the Information Sheet for the above study. I have had an opportunity to consider the information and what will be expected of me. I have also had the opportunity to ask questions which have been answered to my satisfaction and would like to take part in (please select one or more of the following): - a survey - a semi-structured interview NB: you must have taken part in the survey to be eligible to be involved in the semi-structured interview	 Yes/No Yes/No
2.	I understand that I will be able to withdraw my data up to the beginning of July 2022	
3.	I consent to participate in the study. I understand that my personal information will be used for the purposes explained to me. I understand that according to data protection legislation, 'public task' will be the lawful basis for processing, and 'research purposes' will be the lawful basis for processing special category data.	
4.	**Use of the information for this project only** I understand that all personal information will remain confidential and that all efforts will be made to ensure I cannot be identified.	

	I understand that my data gathered in this study will be stored anonymously and securely and any correspondence will be via secure email. It will not be possible to identify me in any publications.	
5.	I understand that my information may be subject to review by responsible individuals from the University for monitoring and audit purposes.	
6.	I understand that my participation is voluntary and that I am free to withdraw at any time without any reason. If I withdraw I will be asked whether or not I want to withdraw my data. I understand that if I decide to withdraw before July 2022, any personal data I have provided up to that point will be deleted unless I agree otherwise. This will not be possible after July 2022 as the data will have been anonymised and collated.	
7.	I understand the potential risks of participating and the support that will be available to me should I become distressed during the course of the research.	
8.	I understand the direct and indirect benefits of participating.	
9.	I understand that the data will not be made available to any commercial organisations but is solely the responsibility of the researcher(s) undertaking this study.	
10.	I understand that I will not benefit financially from this study or from any possible outcome it may result in in the future	
11.	I agree that my pseudonymized research data may be used by others for future research and that no one will be able to identify me when this data is shared.	
12.	I understand that the information I have submitted will be published as a report and I wish to receive a copy of it.	Yes/No
13.	I consent to my interview being audio recorded and understand that the recordings will be destroyed by 31-7-2023, which is the completion date for the report. NB: If you do not want your participation audio-recorded you cannot take part in the study	
14.	I hereby confirm that I understand the inclusion criteria as detailed in the Information Sheet and explained to me by the researcher.	
15.	I hereby confirm that: (a) I understand the exclusion criteria as detailed in the Information Sheet and explained to me by the researcher; and (b) I do not fall under the exclusion criteria.	
16.	I have informed the researcher of any other research in which I am currently involved or have been involved in during the past 12 months.	
17.	I am aware of who I should contact if I wish to lodge a complaint.	
18.	I voluntarily agree to take part in this study.	
19.	**Use of information for this project and beyond** I would be happy for the data I provide to be archived at UCL. I understand that other authenticated researchers will have access to my pseudonymized data.	

If you would like your contact details to be retained so that you can be contacted in the future by UCL researchers who would like to invite you to participate in follow up studies to this project, or in future studies of a similar nature, please tick the appropriate box below.

	Yes, I would be happy to be contacted in this way	
	No, I would not like to be contacted	

_____ Name of participant	_____ Date	_____ Signature
_____ Name of witness (If applicable)	_____ Date	_____ Signature
_____ Researcher	_____ Date	_____ Signature

Appendix K: Vignettes

Appendix K: Vignettes

Vignette 1: Milo

When I was around 10-years-old, I was pretty active and loved hanging out with my friends and I think, I was pretty popular with the other kids in my year. I loved playing football, being on my PlayStation and watching The Simpsons, which was my favourite show – life was good and I was happy. My family have always been a huge support to me - I'm very close to my brother and sister, who are older. In terms of how people would describe me back then, I think they'd say I was well-mannered, calm, kind and lots of fun to be around. In school, I was pretty average but I always tried hard in lessons and contributed to class discussions, which I think my teachers appreciated.

Things have changed now. I've just turned 12 and I'm feeling really down. I find it much harder to concentrate and am not as good at remembering things as I used to be. I find reading and writing harder so work more slowly in class and I can't move as quickly so have been dropped from the football team, which I loved. I find myself getting upset more easily, especially when I can't keep up with my friends. I guess I just feel like I have no energy and can't manage more than the basics in school. I've lost motivation to do anything and have started to fall behind. Some classmates call me moody, but I'm quiet as well, which I think is because I don't feel like my old self anymore. My parents are worried that I'm less sociable and am not doing as well in school. I'm also noticeably clumsier and messier at home but I can't be bothered to do anything about it, which I think frustrates them.

Vignette 2: Aya

I would say that I was a caring and outgoing person, when I first started Year 10. I was doing well at school and hoped one day to go to medical school and become a doctor. I enjoyed school and was pretty active helping out at events and supporting my friends and school staff when they needed it, which I think they appreciated. I was pleased with my Year 9 SATs exams results and was put in the top sets for my GCSEs. I was quite busy during this time but happy as I enjoyed having lots to do and helping others. Some of the activities I was involved in at the time were volunteering at the local women's refuge and I also worked in a local charity shop during the weekend. Any free time I had I spent raising money for these charities as they were, and still are, so close to my heart. I also played in the local Hockey team and had a great group of friends on the team. At the time my relationship with my parents was also good and I often helped my younger siblings with their homework when I could.

Over the Summer before entering Year 11, things changed. My parents said that they noticed a difference in me. They felt that I was angrier and I guess that was evident when I destroyed some of the furniture in the living room during one of my rages. My friends are also saying that they are worried about me as I have met some boys I like and started having sex with a few of them which they don't approve of. I don't really think it's that big of a deal as I'm just enjoying myself but obviously it bothers them. As a result of this and other things, we've started to argue a lot, which I always get the blame for, and they've started to not want to be friends with me anymore. My family have also started to withdraw from me - they say it's because they don't know how to help me and I think my younger brother and sister are a little afraid of me. I know I've changed, I remember how I used to be, but I don't know how to be the person they used to know anymore. I just feel different and rejected by my family and friends who I think I've been such a good support to in the past. I just can't understand why they are now not doing the same. The charities I worked for have also asked me to leave as they feel I'm no longer as reliable as I used to be, which is a further blow.

Appendix L: Semi-Structured Interview

Appendix L: Semi-Structured Interview

Semi Structured Interview- Attribution Questionnaire

In this interview, I am interested in finding out your opinion on two children, who I will present to you shortly, in the form of two vignettes. Simply give your own opinion to the best of your ability.

Part A

First Scenario: (See separate document for vignettes)

Now you have read the paragraph presented about Aya, answer the following questions:

1. What do you think has influenced the way Aya presents?

.....

.....

With Aya in mind, please consider the appropriate response for each of the following statements. Remember, I am interested in your opinion. If you are unsure, simply make the best response possible.

2. Aya's presentation is mostly due to her personal characteristics.

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please give a reason for your response.

.....

3. Aya's presentation is most likely due to the situation that she is in. That is, Aya would not behave like that under different circumstances.

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please give a reason for your response.

.....

4. The way that Aya presents is stable and will continue in the future.

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please give a reason for your response.

.....

5. The way that Aya presents is variable and will change over time.

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please give a reason for your response.

.....

6. Aya is in control of regulating her behaviour.

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please give a reason for your response.

.....

7. Aya will find it hard to regulate her behaviour, even if she wanted to.

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please give a reason for your response.

.....

Now, this time, focus **not on Aya** but on the role of professionals working with Aya.

8. Work completed by professionals with Aya, is likely to have contributed to her presentation, whether deliberately or accidentally.

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please give a reason for your response in relation to your own personal practise.

.....

9. Aya's presentation is not likely to be influenced by the professionals that work with her.

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please give a reason for this in relation to your personal/professional experience.

.....

10. If I worked with Aya, I would know how best to support her.

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please give a reason for this in relation to your personal/professional experience.

.....

11. If I worked with Aya, I would find it difficult to support her.

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please give a reason for this in relation to your personal/professional experience.

.....

12. Now think about the judgements you have given. The items below concern your impression of Aya and the cause or causes of her presentation. Circle one number for each of the following questions.

Is Aya's presentation:

Due to Aya's personal characteristics	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Not due to Aya's personal characteristics**
Within Aya's control	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Not in Aya's control**
Permanent	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Temporary**
Aya has the ability to regulate her behaviour	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Aya will find it hard to regulate her behaviour**
Within other people's control	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Not in other people's control**
Due to internal factors	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Due to external factors**
Stable over time	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Variable over time**
Within the power of other people	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Not within the power of other people**
Related to Aya	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Related to other people**
Aya has power over her presentation	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Aya does not have power over her presentation**
Unchangeable	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Changeable**
Something other people can control	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Something other people cannot control**

Part B

Second Scenario: (See separate document for vignettes)

For the following questions, consider the second paragraph about Aya:

1. What do you think has influenced the way Aya presents in this second scenario?

.....

.....

With Aya's change in presentation in mind, please consider the appropriate response for each of the following statements. Remember, I am interested in your opinion. If you are unsure, simply make the best response possible.

2. Aya's change in presentation is mostly due to her personal characteristics.

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please give a reason for your response.

.....

3. Aya's change in presentation is most likely due to the situation that she is in. That is, Aya would not behave like that under different circumstances.

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please give a reason for your response.

.....

4. The way that Aya presents is now stable and will continue in the future.

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please give a reason for your response.

.....

5. The way that Aya presents is variable and will change over time.

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please give a reason for your response.

.....

6. Aya is in control of regulating her behaviour.

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please give a reason for your response.

.....

7. Aya will find it hard to regulate her behaviour, even if she wanted to.

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please give a reason for your response.

.....

Now, this time, focus **not on Aya** but on the role of professionals working with Aya.

8. Work completed by professionals with Aya, is likely to have contributed to Aya's change in presentation, whether deliberately or accidentally.

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please give a reason for your response in relation to your own personal practise.

.....

9. Aya's presentation is not likely to be influenced by the professionals that work with her.

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please give a reason for this in relation to your personal/professional experience.

.....

10. If I worked with Aya, I would know how best to support her.

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please give a reason for this in relation to your personal/professional experience.

.....

11. If I worked with Aya, I would find it difficult to support her.

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please give a reason for this in relation to your personal/professional experience.

.....

12. Now think about the judgements you have given above. The items below concern your impression of Aya and the cause or causes of her change in presentation. Circle one number for each of the following questions.

Is Aya's change in presentation:

Due to Aya's personal characteristics	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Not due to Aya's personal characteristics**
Within Aya's control	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Not in Aya's control**
Permanent	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Temporary**
Aya has the ability to regulate her behaviour	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Aya will find it hard to regulate her behaviour**
Within other people's control	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Not in other people's control**
Due to internal factors	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Due to external factors**
Stable over time	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Variable over time**
Within the power of other people	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Not within the power of other people**
Related to Aya	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Related to other people**
Aya has power over her presentation	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Aya does not have power over her presentation**
Unchangeable	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Changeable**
Something other people can control	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Something other people cannot control**

Part C

Complete Scenario: (See separate document for vignettes)

1. Aya's presentation changed between paragraph 1 and 2. What do you perceive to be the possible reasons behind this change?

…….....

.....

The changes Aya experienced were actually as a result of a traumatic brain injury. This is a brain injury caused by trauma e.g. a car accident or a fall.

With the TBI diagnosis in mind, please consider the appropriate response for each of the following statements. Remember, I am interested in your opinion. If you are unsure simply make the best response possible.

2. Aya's change in presentation is mostly due to her personal characteristics.

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please give a reason for your response.

.....

3. Aya's change in presentation is most likely due to her TBI. That is, Aya would not behave like that under different circumstances.

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please give a reason for your response.

.....

4. The way that Aya presents is now stable and will continue in the future.

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please give a reason for your response.

.....

5. The way that Aya presents is variable and will change over time.

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please give a reason for your response.

.....

6. Aya is in control of regulating her behaviour.

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please give a reason for your response.

.....

7. Aya will find it hard to regulate her behaviour, even if she wanted to.

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please give a reason for your response.

.....

Now, this time, focus **not on Aya** but on the role of professionals working with Aya.

8. Work completed by professionals with Aya, is likely to have contributed to Aya's change in presentation, whether deliberately or accidentally.

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please give a reason for your response in relation to your own personal practise.

.....

9. Aya's presentation is not likely to be influenced by the professionals that work with her.

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please give a reason for this in relation to your personal/professional experience.

.....

10. If I worked with Aya, I would know how best to support her.

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please give a reason for this in relation to your personal/professional experience.

.....

11. If I worked with Aya, I would find it difficult to support her.

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please give a reason for this in relation to your personal/professional experience.

.....

12. Now think about the judgements you have made above, now that you know that she has experienced a traumatic brain injury. The items below concern your impression of Aya and the cause or causes of her change in presentation. Circle one number for each of the following questions.

    Is Aya's change in presentation:

Due to Aya's personal characteristics	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Not due to Aya's personal characteristics**
Within Aya's control	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Not in Aya's control**
Permanent	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Temporary**
Aya has the ability to regulate her behaviour	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Aya will find it hard to regulate her behaviour**
Within other people's control	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Not in other people's control**
Due to internal factors	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Due to external factors**
Stable over time	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Variable over time**
Within the power of other people	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Not within the power of other people**
Related to Aya	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Related to other people**
Aya has power over her presentation	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Aya does not have power over her presentation**
Unchangeable	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Changeable**
Something other people can control	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Something other people cannot control**

Appendix M: Semi-Structured Interview with Amendments Shown

Appendix M: Semi-Structured Interview with Amendments Shown

NB:

1. **This is the script I will use and it will not be seen by participants. Scripted elements are shown in** Blue **font.**
2. **Vignettes (shown in** red**) will be presented one paragraph at a time for Part A and B and then as a whole for Part C**
3. Green text – **demonstrates that an explanation is being given**
4. Additional words have been put in **bold** in the relevant colour
5. **I have labelled the type of attribution in** (pink brackets) e.g. locus of causality, stability, control
6. ~~Striked out~~ is where original text has been removed
7. Amendments made due to piloting are written in purple

Semi Structured Interview- Attribution Questionnaire

In this interview, I am interested in finding out your opinion on **two children, who I will present to you** shortly**, in the form of two vignettes** ~~the child's behaviour in the scenario below~~. Simply give your own opinion to the best of your ability.

When giving the participant the vignette to read, I will present each paragraph separately so they cannot read the whole vignette ahead of time.

Example: First Scenario: Milo – each vignette presented will be on a separate sheet for participants to read

When I was around 10-years-old, I was pretty active and loved hanging out with my friends and I think, I was pretty popular with the other kids in my year. I loved playing football, being on my PlayStation and watching The Simpsons, which was my favourite show – life was good and I was happy. My family have always been a huge support to me - I'm very close to my brother and sister, who are older. In terms of how people would describe me back then, I think they'd say I was well-mannered, calm, kind and lots of fun to be around. In school, I was pretty average but I always tried hard in lessons and contributed to class discussions, which I think my teachers appreciated.

Example: First Scenario: Aya – as above

I would say that I was a caring and outgoing person, when I first started Year 10. I was doing well at school and hoped one day to go to medical school and become a doctor. I enjoyed school and was pretty active helping out at events and supporting my friends and school staff when they needed it, which I think they appreciated. I was pleased with my Year 9 SATs exams results and was put in the top sets for my GCSEs. I was quite busy during this time but happy as I enjoyed having lots to do and helping others. Some of the activities I was involved in at the time were volunteering at the local women's refuge and I also worked in a local charity shop during the weekend. Any free time I had I spent raising money for these charities as they were, and still are, so close to my heart. I also played in the local Hockey team and had a great group of friends on the team. At the time my relationship with my parents was also good and I often helped my younger siblings with their homework when I could.

Part A (this is to assess professionals' attributions towards the child pre-injury)

~~Consider solely the~~ Now you have read the paragraph presented, answer ~~for~~ the following questions:

1. ~~Firstly, consider~~ ~~what~~ **~~Why~~** ~~do you think the child presents like this,~~ ~~were the reasons for Milo's behaviour~~ ~~in this paragraph?~~ What do you think has influenced Milo's/Aya's presentation? (causality)

   .....

   .....

~~Then~~, With Milo/Aya **~~the child~~** in mind, please consider the appropriate response for each of the following statements. Remember, I am interested in your opinion, if you are unsure simply make the best response possible.

2. Milo's ~~The child's~~ ~~behaviour~~ presentation is ~~The causes are~~ mostly due to **~~their~~ his/her personal** characteristics ~~(for example, ability, intelligence, personality etc.).~~ (causality)

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please ~~can you~~ give a reason for your response.

.....

3. ~~His~~ ~~The child's~~ Milo's/Aya's presentation is ~~The causes are~~ most likely ~~to be to do with~~ due to ~~aspects of~~ the ~~particular~~ situation that he/she ~~they~~ is in. That is, Milo/Aya ~~the child~~ would not behave like that ~~in other situations~~ under different circumstances. (control)

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please ~~can you~~ give a reason for your response.

.....

4. ~~The causes of His exhibited behaviours~~ ~~are mostly permanent~~ **The way ~~the child~~ that Milo/Aya presents is now stable** and will continue ~~to exist~~ in the future (stability)

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please ~~can you~~ give a reason for your response.

.....

5. ~~The causes of His exhibited behaviours are mostly temporary~~ **The way ~~the child~~ that Milo/Aya present is variable** and will ~~pass with~~ **change over** time. (stability)

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please ~~can you~~ give a reason for your response.

.....

6. ~~**The child**~~ Milo/Aya ~~has the ability to regulate~~ is in control of his/her ~~own~~ behaviour ~~better if he wanted they want to.~~ (control)

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please ~~can you~~ give a reason for your response.

.....

7. Milo ~~cannot~~ **will find it hard to** regulate his behaviour, **even if ~~they~~ he wanted to**. (control)

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please ~~can you~~ give a reason for your response.

.....

Now, ~~remember the scenario in paragraph one again and~~ this time, focus not on Milo/Aya but on the role of professionals working with ~~children~~ ~~like~~ Milo/Aya ~~this one~~.

8. ~~What adults **working with this child** have done~~, Work completed by professionals with Milo/Aya ~~this child~~, is likely to have contributed to ~~**the child's**~~ **his/her presentation** ~~the change in Milo's behaviour~~, whether deliberately or accidentally (causality)

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please ~~can you~~ give a reason for your response in relation to your own personal practise.

.....

9. ~~In my opinion the causes of the changes in~~ **Milo's/Aya's change in** ~~behaviour~~ presentation is **not** likely to be influenced by ~~**dependent on**~~ the professionals that work with him/her. (causality)

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please give a reason for this in relation to your personal/professional experience.

.....

10. ~~The causes are **child's presentation** is Milo's behaviour mostly **stable** permanent and will continue to exist in the future (stability)~~

~~Strongly Disagree Disagree Undecided Agree Strongly Agree~~

~~Please give a reason for this in relation to your personal/professional experience.~~

.....

11. ~~The causes **The child's presentation** behaviour is mostly temporary **variable** and will pass with **change over** time. (stability)~~

~~Strongly Disagree Disagree Undecided Agree Strongly Agree~~

~~Please give a reason for this in relation to your personal/professional experience.~~

.....

12. If I worked with Milo/Aya, ~~there are ways that~~ I ~~could~~ **would know how best to support him/her** ~~manage **his/her** behaviour.~~ (control)

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please give a reason for this in relation to your personal/professional experience.

.....

13. If I worked with Milo**/Aya**, I would find it ~~very~~ difficult ~~to how~~ to ~~manage his **their** behaviour~~ support her. (control)

Strongly Disagree Disagree Undecided Agree Strongly Agree

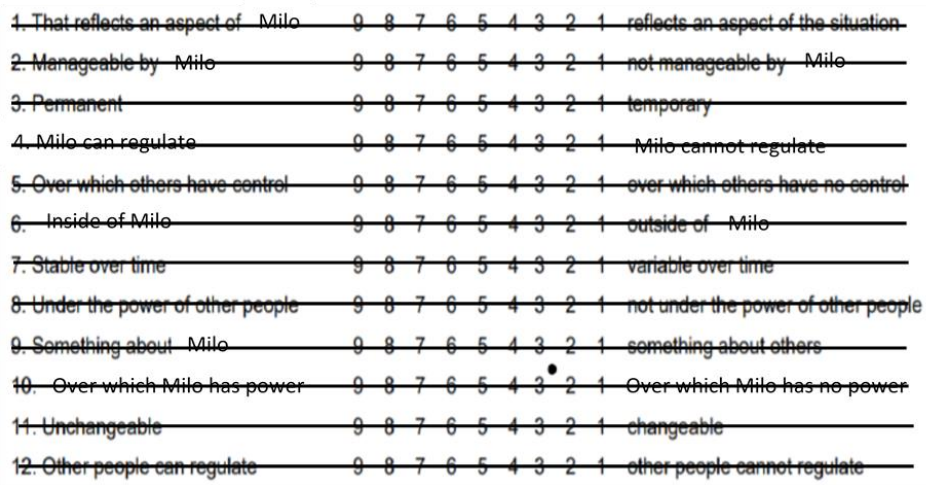
Please give a reason for this in relation to your personal/professional experience.

.....

14. Now think about the ~~reason or reasons~~ **judgements** you have given ~~above~~. The items below concern your impression of Milo/Aya and the cause or causes of his/her ~~behaviour~~ **presentation**. Circle one number for each of the following questions. I would show this on the screen at the end of each section of the semi-structured interview.

Is Milo's/Aya's presentation: ~~this cause(s) something:~~

Due to Aya's personal characteristics	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Not due to Aya's personal characteristics**
Within Aya's control	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Not in Aya's control**
Permanent	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Temporary**
Aya has the ability to regulate her behaviour	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Aya will find it hard to regulate her behaviour**
Within other people's control	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Not in other people's control**
Due to internal factors	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Due to external factors**
Stable over time	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Variable over time**
Within the power of other people	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Not within the power of other people**
Related to Aya	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Related to other people**
Aya has power over her presentation	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Aya does not have power over her presentation**
Unchangeable	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Changeable**
Something other people can control	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**Something other people cannot control**



Part B (this is to assess the attributions post-injury but prior to knowing it's TBI-related)

For the following questions, consider ~~solely~~ ~~this~~ the second paragraph about Milo/Aya:

Vignette 1: Second Scenario: Milo

Things have changed now. I've just turned 12 and I'm feeling really down. I find it much harder to concentrate and am not as good at remembering things as I used to be. I find reading and writing harder so work more slowly in class and I can't move as quickly so have been dropped from the football team, which I loved. I find myself getting upset more easily, especially when I can't keep up with my friends. I guess I just feel like I have no energy and can't manage more than the basics in school. I've lost motivation to do anything and have started to fall behind. Some classmates call me moody, but I'm quiet as well, which I think is because I don't feel like my old self anymore. My parents are worried that I'm less sociable and am not doing as well in school. I'm also noticeably clumsier and messier at home but I can't be bothered to do anything about it, which I think frustrates them.

Vignette 2: Second Scenario: Aya

Over the Summer before entering Year 11, things changed. My parents said that they noticed a difference in me. They felt that I was angrier and I guess that was evident when I destroyed some of the furniture in the living room during one of my rages. My friends are also saying that they are worried about me as I have met some boys I like and started having sex with a few of them which they don't approve of. I don't really think it's that big of a deal as I'm just enjoying myself but obviously it bothers them. As a result of this and other things, we've started to argue a lot, which I always get the blame for, and they've started to not want to be friends with me anymore. My family have also started to withdraw from me - they say it's because they don't know how to help me and I think my younger brother and sister are a little afraid of me. I know I've changed, I remember how I used to be, but I don't know how to be the person they used to know anymore. I just feel different and rejected by my family and friends who I think I've been such a good support to in the past. I just can't understand why they are now not doing the same. The charities I worked for have also asked me to leave as they feel I'm no longer as reliable as I used to be, which is a further blow.

Now, consider solely this second paragraph presented for the following questions:

8. In this paragraph, ~~Firstly, consider~~ ~~what~~ **~~why~~** ~~do you think the child presents like this were the reasons for Milo's behaviour?~~ What do you think has influenced the way Milo/Aya presents in this second scenario? (causality)

   .....

   .....

~~Then,~~ With Milo's/Aya's ~~different behaviours~~ change in ~~behaviour~~ presentation in mind, please consider the appropriate response for each of the following statements. Remember, ~~we are~~ I am interested in your opinion. If you are unsure, simply make the best response possible.

9. Milo's/Aya's **change in** ~~behaviour~~ presentation is ~~The causes are~~ mostly due to **his/her personal** characteristics ~~(for example, ability, intelligence, personality etc.).~~ (causality)

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please ~~can you~~ give a reason for your response.

.....

10. ~~His~~ Milo's/Aya's **change in** ~~behaviour~~ **presentation** is ~~The causes are~~ most likely ~~to be to do with~~ due to ~~aspects of~~ the ~~particular~~ situation that ~~he is~~ they are in. That is, Milo/Aya would not behave like that ~~in other situations~~ under different circumstances. (control)

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please ~~can you~~ give a reason for your response.

.....

11. ~~The causes of His exhibited behaviours~~ ~~are mostly permanent~~ **The way that Milo/Aya presents is now stable** and will continue ~~to exist~~ in the future (stability)

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please ~~can you~~ give a reason for your response.

.....

12. ~~The causes of His exhibited behaviours are mostly temporary~~ **The way that Milo/Aya presents is variable** and will ~~pass with~~ **change over** time. (stability)

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please ~~can you~~ give a reason for your response.

.....

13. Milo/Aya is in control of regulating her behaviour. ~~has the ability to regulate his **their** own behaviour better if he wanted they want to.~~ (control)

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please ~~can you~~ give a reason for your response.

.....

14. Milo/Aya ~~cannot~~ **will find it hard to** regulate his/her behaviour, **even if he/she wanted to**. (control)

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please ~~can you~~ give a reason for your response.

.....

Now, ~~remember the scenario in paragraph one again and~~ this time, focus not on Milo/Aya but on the role of professionals working with Milo/Aya.

15. ~~What adults working with this child have done,~~ **Work completed by professionals with Milo/Aya**, is likely to have contributed to **Milo's/Aya's change in presentation** ~~the change in Milo's behaviour~~, whether deliberately or accidentally (causality)

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please ~~can you~~ give a reason for your response in relation to your own personal practise.

.....

15. ~~In my opinion the causes of the changes in~~ **Milo's/Aya's change in** ~~behaviour~~ presentation is **not** likely to be influenced by ~~**dependent on**~~ the professionals that work with him/her. (causality)

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please give a reason for this in relation to your personal/professional experience.

.....

16. ~~The causes are **The child's change in presentation** behaviour is mostly stable and will continue to exist in the future (stability)~~

~~Strongly Disagree Disagree Undecided Agree Strongly Agree~~

~~Please give a reason for this in relation to your personal/professional experience.~~

.....

17. ~~The causes **The child's presentation** behaviour is mostly temporary **will continue to be variable** and will pass with **change over** time. (stability)~~

~~Strongly Disagree Disagree Undecided Agree Strongly Agree~~

~~Please give a reason for this in relation to your personal/professional experience.~~

.....

18. If I worked with Milo**/Aya**, **I would know how** ~~**to**~~ ~~there are ways that I could manage his **their** behaviour~~ best to support him/her. (control)

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please give a reason for this in relation to your personal/professional experience.

.....

19. If I worked with Milo/Aya, I would find it ~~very~~ difficult to ~~know how to~~ ~~manage his **their** behaviour~~ support her. (control)

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please give a reason for this in relation to your personal/professional experience.

.....

Now think about the ~~reason or reasons~~ **judgements** you have ~~given~~ **made** ~~above~~. The items below concern your impression of Milo/Aya and the cause or causes of his/her **change in** ~~behaviour~~ presentation. Circle one number for each of the following questions.

Is Milo's/Aya's change in presentation: ~~this cause(s) something~~:

Due to the child's personal characteristics	9	8	7	6	5	4	3	2	1	Due to the situation that they are in
Within the child's control	9	8	7	6	5	4	3	2	1	Not in the child's control
Permanent	9	8	7	6	5	4	3	2	1	Temporary
The child has the ability to regulate their behaviour	9	8	7	6	5	4	3	2	1	The child will find it hard to regulate their behaviour
Within other people's control	9	8	7	6	5	4	3	2	1	Not in other people's control
Due to internal factors	9	8	7	6	5	4	3	2	1	Due to external factors
Stable over time	9	8	7	6	5	4	3	2	1	Variable over time
Within the power of other people	9	8	7	6	5	4	3	2	1	Not within the power of other people
Related to the child	9	8	7	6	5	4	3	2	1	Related to other people
The child has power over their presentation	9	8	7	6	5	4	3	2	1	The child does not have power over their presentation
Unchangeable	9	8	7	6	5	4	3	2	1	Changeable
Other people can regulate	9	8	7	6	5	4	3	2	1	Other people cannot regulate

~~1. That reflects an aspect of Milo 9 8 7 6 5 4 3 2 1 reflects an aspect of the situation~~

~~2. Manageable by Milo 9 8 7 6 5 4 3 2 1 not manageable by Milo~~

~~3. Permanent 9 8 7 6 5 4 3 2 1 temporary~~

~~4. Milo can regulate 9 8 7 6 5 4 3 2 1 Milo cannot regulate~~

~~5. Over which others have control 9 8 7 6 5 4 3 2 1 over which others have no control~~

~~6. Inside of Milo 9 8 7 6 5 4 3 2 1 outside of Milo~~

~~7. Stable over time 9 8 7 6 5 4 3 2 1 variable over time~~

~~8. Under the power of other people 9 8 7 6 5 4 3 2 1 not under the power of other people~~

~~9. Something about Milo 9 8 7 6 5 4 3 2 1 something about others~~

~~10. Over which Milo has power 9 8 7 6 5 4 3 2 1 Over which Milo has no power~~

~~11. Unchangeable 9 8 7 6 5 4 3 2 1 changeable~~

~~12. Other people can regulate 9 8 7 6 5 4 3 2 1 other people cannot regulate~~

Part C (this is to assess the attributions participants' have when they know the child has a TBI)

I would now present the full vignette:

Vignette 1: Complete Scenario: Milo

When I was around 10-years-old, I was pretty active and loved hanging out with my friends and I think, I was pretty popular with the other kids in my year. I loved playing football, being on my PlayStation and watching The Simpsons, which was my favourite show – life was good and I was happy. My family have always been a huge support to me - I'm very close to my brother and sister, who are older. In terms of how people would describe me back then, I think they'd say I was well-mannered, calm, kind and lots of fun to be around. In school, I was pretty average but I always tried hard in lessons and contributed to class discussions, which I think my teachers appreciated.

Things have changed now. I've just turned 12 and I'm feeling really down. I find it much harder to concentrate and am not as good at remembering things as I used to be. I find reading and writing harder so work more slowly in class and I can't move as quickly so have been dropped from the football team, which I loved. I find myself getting upset more easily, especially when I can't keep up with my friends. I guess I just feel like I have no energy and can't manage more than the basics in school. I've lost motivation to do anything and have started to fall behind. Some classmates call me moody, but I'm quiet as well, which I think is because I don't feel like my old self anymore. My parents are worried that I'm less sociable and am not doing as well in school. I'm also noticeably clumsier and messier at home but I can't be bothered to do anything about it, which I think frustrates them.

Vignette 2: Complete Scenario: Aya

I would say that I was a caring and outgoing person, when I first started Year 10. I was doing well at school and hoped one day to go to medical school and become a doctor. I enjoyed school and was pretty active helping out at events and supporting my friends and school staff when they needed it, which I think they appreciated. I was pleased with my Year 9 SATs exams results and was put in the top sets for my GCSEs. I was quite busy during this time but happy as I enjoyed having lots to do and helping others. Some of the activities I was involved in at the time were volunteering at the local women's refuge and I also worked in a local charity shop during the weekend. Any free time I had I spent raising money for these charities as they were, and still are, so close to my heart. I also played in the local Hockey team and had a great group of friends on the team. At the time my relationship with my parents was also good and I often helped my younger siblings with their homework when I could.

Over the Summer before entering Year 11, things changed. My parents said that they noticed a difference in me. They felt that I was angrier and I guess that was evident when I destroyed some of the furniture in the living room during one of my rages. My friends are also saying that they are worried about me as I have met some boys I like and started having sex with a few of them which they don't approve of. I don't really think it's that big of a deal as I'm just enjoying myself but obviously it bothers them. As a result of this and other things, we've started to argue a lot, which

I always get the blame for, and they've started to not want to be friends with me anymore. My family have also started to withdraw from me - they say it's because they don't know how to help me and I think my younger brother and sister are a little afraid of me. I know I've changed, I remember how I used to be, but I don't know how to be the person they used to know anymore. I just feel different and rejected by my family and friends who I think I've been such a good support to in the past. I just can't understand why they are now not doing the same. The charities I worked for have also asked me to leave as they feel I'm no longer as reliable as I used to be, which is a further blow.

3. **Milo's/Aya's** ~~behaviour~~ **presentation** changed between paragraph 1 and 2. What do you perceive to be the possible reasons behind ~~cause or causes behind~~ this change? ~~Please can you give a reason for your response.~~

.....

The changes **Milo/Aya** experienced were actually as a result of a traumatic brain injury. This is a brain injury causes by trauma e.g. a car accident or a fall.

(I have chosen to define it for those not clear on what it is but not to state what specifically caused the TBI as this could influence the attributions)

With the TBI diagnosis in mind, please consider the appropriate response for each of the following statements. Remember, ~~we are~~ I am interested in your opinion. If you are unsure, simply make the best response possible.

4. **Milo's/Aya's change in** ~~behaviour~~ **presentation** is ~~The causes are~~ mostly due to **their personal** characteristics ~~(for example, ability, intelligence, personality etc.).~~ (causality)

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please ~~can you~~ give a reason for your response.

.....

5. ~~His~~ **Milo's/Aya's** change in ~~behaviour~~ presentation is ~~The causes are~~ most likely ~~to be to do with~~ due to ~~aspects of~~ the ~~particular~~ situation that he/she is in. That is, Milo/Aya would not behave like that ~~in other situations~~ under different circumstances. (control)

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please ~~can you~~ give a reason for your response.

.....

4. ~~The causes of His exhibited behaviours are mostly permanent~~ **The way that Milo/Aya presents is now stable** and will continue ~~to exist~~ in the future (stability)

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please ~~can you~~ give a reason for your response.

.....

5. ~~The causes of His exhibited behaviours are mostly temporary~~ **The way that Milo/Aya presents is variable** and will ~~pass with~~ **change over** time. (stability)

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please ~~can you~~ give a reason for your response.

.....

6. Milo/Aya is in control of regulating her behaviour ~~has the ability to regulate his~~ **their** ~~own behaviour better if he wanted they want to~~. (control)

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please ~~can you~~ give a reason for your response.

.....

7. Milo/Aya ~~cannot~~ **will find it hard to** regulate ~~his~~ his/her behaviour, **even if he/she want to**. (control)

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please ~~can you~~ give a reason for your response.

.....

Now, ~~remember the scenario in paragraph one again and~~ this time, focus not on Milo/Aya but on the role of professionals working with Milo/Aya ~~**similar** children~~.

8. ~~What adults working with this child have done,~~ **Work completed by professionals with Milo/Aya**, is likely to have contributed to **Milo's/Aya's change in presentation** ~~the change in Milo's behaviour~~, whether deliberately or accidentally (causality)

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please ~~can you~~ give a reason for your response in relation to your own personal practise.

.....

9. ~~In my opinion the causes of the changes in~~ **Milo's/Aya's change in** ~~behaviour~~ presentation is **not** likely to be influenced by ~~**dependent on**~~ the professionals that work with him/her. (causality)

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please give a reason for this in relation to your personal/professional experience.

.....

~~The causes are **The child's change in presentation** behaviour is mostly stable and will continue to exist in the future (stability)~~

~~Strongly Disagree Disagree Undecided Agree Strongly Agree~~

~~Please give a reason for this in relation to your personal/professional experience.~~

.....

10. ~~The causes **The child's presentation** behaviour is mostly temporary **will continue to be variable** and will pass with **change over** time. (stability)~~

~~Strongly Disagree Disagree Undecided Agree Strongly Agree~~

~~Please give a reason for this in relation to your personal/professional experience.~~

.....

11. If I worked with Milo/Aya, **I would know how best to support her** ~~**to** there are ways that I could manage his **their** behaviour.~~ (control)

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please give a reason for this in relation to your personal/professional experience.

.....

12. If I worked with Milo/Aya, I would find it ~~very~~ difficult to support him/her. ~~know how to manage his **their** behaviour.~~ (control)

Strongly Disagree Disagree Undecided Agree Strongly Agree

Please give a reason for this in relation to your personal/professional experience.

.....

13. Now think about the ~~reason or reasons~~ **judgements** you have made above, given ~~**for the child's change in presentation about Milo overall**~~ now that you know Milo/Aya has experienced a traumatic brain injury. The items below concern your impression of Milo/Aya and the cause or causes of his/her change in presentation ~~behaviour~~. Circle one number for each of the following questions.

Is Milo's/Aya's change in presentation: ~~this cause(s) something~~:

Due to the child's personal characteristics	9	8	7	6	5	4	3	2	1	Due to the situation that they are in
Within the child's control	9	8	7	6	5	4	3	2	1	Not in the child's control
Permanent	9	8	7	6	5	4	3	2	1	Temporary
The child has the ability to regulate their behaviour	9	8	7	6	5	4	3	2	1	The child will find it hard to regulate their behaviour
Within other people's control	9	8	7	6	5	4	3	2	1	Not in other people's control
Due to internal factors	9	8	7	6	5	4	3	2	1	Due to external factors
Stable over time	9	8	7	6	5	4	3	2	1	Variable over time
Within the power of other people	9	8	7	6	5	4	3	2	1	Not within the power of other people
Related to the child	9	8	7	6	5	4	3	2	1	Related to other people
The child has power over their presentation	9	8	7	6	5	4	3	2	1	The child does not have power over their presentation
Unchangeable	9	8	7	6	5	4	3	2	1	Changeable
Other people can regulate	9	8	7	6	5	4	3	2	1	Other people cannot regulate

~~1. That reflects an aspect of Milo 9 8 7 6 5 4 3 2 1 reflects an aspect of the situation~~
~~2. Manageable by Milo 9 8 7 6 5 4 3 2 1 not manageable by Milo~~
~~3. Permanent 9 8 7 6 5 4 3 2 1 temporary~~
~~4. Milo can regulate 9 8 7 6 5 4 3 2 1 Milo cannot regulate~~
~~5. Over which others have control 9 8 7 6 5 4 3 2 1 over which others have no control~~
~~6. Inside of Milo 9 8 7 6 5 4 3 2 1 outside of Milo~~
~~7. Stable over time 9 8 7 6 5 4 3 2 1 variable over time~~
~~8. Under the power of other people 9 8 7 6 5 4 3 2 1 not under the power of other people~~
~~9. Something about Milo 9 8 7 6 5 4 3 2 1 something about others~~
~~10. Over which Milo has power 9 8 7 6 5 4 3 2 1 Over which Milo has no power~~
~~11. Unchangeable 9 8 7 6 5 4 3 2 1 changeable~~
~~12. Other people can regulate 9 8 7 6 5 4 3 2 1 other people cannot regulate~~

Appendix N: Survey Scoring

Appendix N: Survey Scoring

The survey devised for this study was based on three existing instruments, all of which measure different aspects of TBI knowledge. The scoring of each is outlined below.

The Common Misconceptions about Traumatic Brain Injury Questionnaire (CM-TBI).

Scoring of the CM-TBI: This was calculated by adding up the correct answers and deducting the wrong answers as per the table below.

Response	Correct	Incorrect
Strongly Agree/Disagree (1 or 5)	+2	-2
Agree/Disagree (2 or 4)	+1	-1
Don't Know/Neither Agree or Disagree (3)	-	-3

As can be seen in the table, a correct answer of Strongly Agree/Disagree led to two points being added (+2), but if the response of Strongly Agree/Disagree was incorrect two points were deducted (-2). If the participant answered with Agree/Disagree and they were correct it led to one point being added (+1), however if they answered Agree/Disagree and were incorrect it led to one point being deducted (-1). A response of 'Don't Know' or 'Neither Agree or Disagree' led to three points being deducted (-3). This procedure allowed for the calculation of a total score.

The Head Injury Knowledge Scale (HIKS).

Scoring of the HIKS: The intended scoring of this, based on Thomas and Jobse, is that a score would be generated for Overgeneralisation and one for Minimisation and then they can be deducted from each other to see whether the participant over or under generalises the symptoms of TBI.

However, in order to tie in better with the scoring of the CM-TBI, the score was calculated by adding up the correct answers and deducting the wrong answers as per the table below.

Response	Correct	Incorrect
Strongly Agree/Disagree (1 or 5)	+2	-2
Agree/Disagree (2 or 4)	+1	-1
Don't Know/Neither Agree or Disagree (3)		-3

As can be seen in the table, a correct answer of Strongly Agree/Disagree led to two points being added (+2), but if the response of Strongly Agree/Disagree was incorrect two points were deducted (-2). If the participant answered with Agree/Disagree and they were correct it led to one point being added (+1), however, if they answered Agree/Disagree and were incorrect it led to one point being deducted (-1). A response of 'Don't Know' or 'Neither Agree or Disagree' led to three points being deducted (-3). This procedure allowed for the production of a total score.

Informal Carer's Knowledge of Traumatic Brain Injury Questionnaire (IC-KTBIQ).

Scoring of the IC-KTBIQ: The scoring of the IC-KTBIQ, based on Bamatraf et al., scores each correct answer with 1 point and any incorrect responses, unanswered items or 'don't know' responses are scored 0. The cut-off point for the Informal Carer's Knowledge of Traumatic Brain Injury Questionnaire score is 22, which was obtained from the median score of the pilot study; a score below 22 is considered to be poor knowledge, while a score equal or above 22 is considered to be good knowledge.

Response	Correct	Incorrect
True	+1	-1
False	+1	-1
Don't Know		-1

The 'Don't Know' response indicated a lack of knowledge so was scored to keep with the format proposed by Bamatraf et al. of scoring 'Incorrect' and 'Don't Know' responses the same. The advantage of using Bamatraf et al.'s approach is that this approach has already been used albeit only in one study by the authors.

Calculating the overall score: By using the scoring methods above, a total score (calculated by adding the scores for Sections B, C and D) for each participant was derived.

Appendix O: Code frequencies Illustrating Proposition 1: Causality

Appendix O: Code frequencies Illustrating Proposition 1: Causality

MILO

Part A

	External attributions on presentation	Internal attributions on presentation	Nature v Nurture
EDUCATION	24	10	3
EP	11	6	5
HEALTH	12	7	4
SOCIAL CARE	14	4	2
total	61	27	14

Part B

	External attributions on presentation	Internal attributions on presentation	Nature v Nurture	TBI
EDUCATION	18	6	0	5
EP	16	6	0	2
HEALTH	11	17	1	0
SOCIAL CARE	12	5	0	2
total	57	34	1	9

Part C

	External attributions on presentation	Internal attributions on presentation	Nature v Nurture	TBI
EDUCATION	2	0	0	5
EP	0	1	0	10
HEALTH	0	0	0	9
SOCIAL CARE	0	1		7
total	2	2	0 0	31

AYA

Part A

	External attributions on presentation	Internal attributions on presentation
EDUCATION	14	14
EP	12	5
HEALTH	17	8
SOCIAL CARE	12	4
TOTAL	55	31

Part B

	External attributions on presentation	Internal attributions on presentation	Nature v Nurture	TBI
EDUCATION	28	18	2	1
EP	7	6	0	2
HEALTH	24	7	0	2
SOCIAL CARE	25	9	1	1
TOTAL	84	40	3	6

Part C

	External attributions on presentation	Internal attributions on presentation	Nature v Nurture	TBI
EDUCATION	1	0	0	10
EP	0	0	0	6
HEALTH	0	0	0	4
SOCIAL CARE	0	1	0	7
TOTAL	1	1	0	27

Appendix P: Code frequencies Illustrating Proposition 2: Stability

Appendix P: Code frequencies Illustrating Proposition 2: Stability

MILO

Part A

	External attributions on stability	Internal attributions on stability	Nature v Nurture
EDUCATION	6	3	1
EP	3	1	1
HEALTH	3	1	1
SOCIAL CARE	4	1	1
total	16	6	4

Part B

	External attributions on stability	Internal attributions on stability	Nature v Nurture
EDUCATION	4	1	0
EP	4	0	0
HEALTH	2	1	0
SOCIAL CARE	5	0	
total	15	2	0 0

Part C

	External attributions on stability	Internal attributions on stability	Nature v Nurture	TBI
EDUCATION	2	1	0	2
EP	3	1	0	0
HEALTH	1	0	0	3
SOCIAL CARE	3	1	0	1
total	9	3	0	6

AYA

Part A

	External attributions on stability	Internal attributions on stability
EDUCATION	5	2
EP	3	1
HEALTH	3	3
SOCIAL CARE	2	0
total	13	6

Part B

	External attributions on stability	Internal attributions on stability
EDUCATION	3	1
EP	3	0
HEALTH	5	3
SOCIAL CARE	3	2
total	14	6

Part C

	External attributions on stability	Internal attributions on stability	TBI
EDUCATION	2	1	2
EP	1	0	4
HEALTH	4	0	0
SOCIAL CARE	2	1	1
total	9	2	7

Appendix Q: Code frequencies Illustrating Proposition 3: Controllability

Appendix Q: Code frequencies Illustrating Proposition 3: Controllability

MILO

Part A

	External attributions on Controllability	Internal attributions on Controllability
EDUCATION	2	4
EP	2	3
HEALTH	1	4
SOCIAL CARE	1	0
TOTAL	6	11

Part B

	External attributions on Controllability	Internal attributions on Controllability
EDUCATION	1	5
EP	2	5
HEALTH	0	7
SOCIAL CARE	1	4
TOTAL	4	21

Part C

	External attributions on Controllability	Internal attributions on Controllability	TBI
EDUCATION	1	1	2
EP	0	3	1
HEALTH	0	3	4
SOCIAL CARE	1	1	4
TOTAL	2	8	11

AYA

Part A

	External attributions on Controllability	Internal attributions on Controllability
EDUCATION	1	2
EP	1	4
HEALTH	1	1
SOCIAL CARE	1	0
TOTAL	4	7

Part B

	External attributions on Controllability	Internal attributions on Controllability
EDUCATION	0	6
EP	0	6
HEALTH	2	5
SOCIAL CARE	2	2
TOTAL	4	19

Part C

	External attributions on Controllability	Internal attributions on Controllability	TBI
EDUCATION	0	0	2
EP	1	0	1
HEALTH	2	0	1
SOCIAL CARE	1	0	1
TOTAL	4	0	5

Appendix R: Code frequencies Illustrating Proposition 4: Professional Competence

Appendix R: Code frequencies Illustrating Proposition 4: Professional Competence

MILO

Part A

	Attributions on professional influence	Attributions on professional defensiveness	Attributions on ideas related to support strategies	Attributions on knowledge and experience	Attributions on need for multi-disciplinary working
EDUCATION	7	0	4	2	0
EP	3	0	3	2	0
HEALTH	5	0	0	5	0
SOCIAL CARE	7	0	1	3	0
total	22	0	8	12	0

Part B

	Attributions on professional influence	Attributions on professional defensiveness	Attributions on ideas related to support strategies	Attributions on knowledge and experience	Attributions on need for multi-disciplinary working
EDUCATION	6	4	1	2	2
EP	3	1	9	1	2
HEALTH	4	2	4	4	4
SOCIAL CARE	7	3	4	3	1
total	20	10	18	10	9

Part C	Attributions on professional influence	Attributions on professional defensiveness	Attributions on ideas related to support strategies	Attributions on knowledge and experience	Attributions on need for multi-disciplinary working
EDUCATION	6	0	1	11	3
EP	5	0	5	6	2
HEALTH	8	0	5	5	2
SOCIAL CARE	1	1	3	6	11
total	20	1	14	28	18

AYA

Part A

	Attributions on professional influence	Attributions on professional defensiveness	Attributions on ideas related to support strategies	Attributions on knowledge and experience	Attributions on need for multi-disciplinary working
EDUCATION	8	1	5	3	0
EP	7	0	2	2	0
HEALTH	7	0	1	1	0
SOCIAL CARE	7	0	5	0	0
total	29	1	13	6	0

Part B

	Attributions on professional influence	Attributions on professional defensiveness	Attributions on ideas related to support strategies	Attributions on knowledge and experience	Attributions on need for multi-disciplinary working
EDUCATION	6	1	1	4	3
EP	8	3	2	5	3
HEALTH	8	5	0	1	2
SOCIAL CARE	4	1	2	1	1
total	26	10	5	11	9

Part C

	Attributions on professional influence	Attributions on professional defensiveness	Attributions on ideas related to support strategies	Attributions on knowledge and experience	Attributions on need for multi-disciplinary working
EDUCATION	2	1	8	6	6
EP	5	0	4	2	0
HEALTH	9	1	4	3	3
SOCIAL CARE	2	0	2	6	3
total	18	2	18	17	12

Appendix S: Professionals' Quotations on Multi-Disciplinary Working

Appendix S: Professionals' Quotations on Multi-Disciplinary Working

Holistic and Complementary Approach

Extremely Important

All professional groups can learn from one another and timely, thorough information sharing can enhance care and education and avoid duplication of effort (or the assumption that another service is addressing a particular need).

Holistic care requires multidisciplinary collaboration to ensure that the child is supported across the board.

For support to be effective it needs to be addressing all the needs and complementary of what else is in place and you can only ensure this through working together.

Importance of shared goals and outcomes between child, family and all involved professionals.

Different professionals will see things from different perspectives and working together can help to address issues that might be impacting the young person.

It is also important for professionals to see the child's development holistically so understanding all of their needs and the other support they are getting is crucial

Working together to consider the impact it may have on all areas of the child/young person's life will be integral to ensure child is best supported and safe moving forwards.

Information from different sources is integrated so that a holistic picture can be gained to inform practice.

Due to the complexity of the TBI impact on the child's and family's life, various professionals needs to work together and make sure all aspects are covered

No one expert has all the answers or can capture the child's experience fully

TBI is complex and requires a co-ordinated response so that the child gets a package of support which makes sense and is manageable.

Ensures consistency of approach

A holistic approach is crucial to support recovery.

To gain a holistic understanding of the young person within the context of their TBI

To ensure a consistent, holistic approach

TBI is likely to impact several aspects of the child's life - to effectively assess and support them we need to work together to develop an understanding of the whole child and family

Important that staff work together as this will ensure that they are not unnecessarily repeating anything (e.g. Assessments) and have a better idea of who is there to support the child and what the nature of their involvement is.

Professionals may feel deskilled when encountering TBI for the first time and may require the input and support of colleagues in other services to upskill and empower them so that they can perform their own unique role to the best of their ability.

Working as a team together to meet the child's needs

Multiple areas of development to support in order to enhance recovery.

Some professionals will be more important at diff stages of recovery and in long term.

Professionals working together is essential to providing a positive, joined up service to children and families. Essential for safe working practices.

To provide a holistic package of care that all areas of need are covered

Needs fluctuate and therefore long-term health goals involves many agencies reducing as needs stabilise but 1 agency min to monitor child and family

TBI is a complex condition that requires MDT approach, hence need for all team members to work together to get optimum care of child.

Need to have a consistent and clear plan of care

A holistic and systemic approach is crucial to supporting the child and family and considering the impact on all aspects of their development and on the family.

A multi-disciplinary approach is needed to support the child across all domains of their life and not just focused on one area e.g. Health

Ensuring a holistic approach is taken so the child's needs are met

Each professional has a particular role to play but a holistic approach is required to ensure the person has the best chance of recovery to fulfil their potential or improve or learn new skills

Very Important

To ensure a joined-up approach.

Support is complementary.

A holistic approach is needed to ensure the child's life is the best it can be.

Communicating and Sharing of Information

Extremely Important

So, everyone will need to communicate share info

Vital that there is good communication between professionals for the best outcome

Everyone holds different information and will be involved for differing periods of time.

Don't have to keep explaining their story

To share information and expertise

Pockets of information that aren't shared can lead to other professionals not responding correctly when difficulties arise that can at best reduce support opportunities and at worse could create further problems.

Close collaboration would enable information sharing, united approach.

The most complete picture of their young person's strengths and needs.

To share good practice. To share what is working well for the child across different contexts.

Professionals may feel deskilled when encountering TBI for the first time and may require the input and support of colleagues in other services to upskill and empower them so that they can perform their own unique role to the best of their ability.

So, everyone will need to communicate share info and work together

Collaboration would enable information sharing, united approach

So, everyone has the same information, to problem solve together

All professional groups can learn from one another and timely, thorough information sharing can enhance care and education and avoid duplication of effort (or the assumption that another service is addressing a particular need).

This is a well-recognised aspect of support for children and families after TBI. Important not to let them 'fall through the cracks'

It's important to understand other professionals' perspectives to understand the full picture and be able to help most and see how your role fits in

Without sharing knowledge and experience from various professional backgrounds something could be missed and the child may not have all the support available to make the best recovery possible or the support they will need moving forwards to ensure that they are well supported at home and within education settings.

Each professional's efficiency in supporting the child and their family will be contingent on sharing information about the nature of the harm the child endured, the impact on their

behaviour, speech, movement, mood, personality, etc., and how best to support them to improve.

Very Important

A multidisciplinary approach is needed to ensure a joined-up approach

Working together of these professionals may allow for more stream-lined plans

To ensure there is an accurate and shared understanding of the child and family

To ensure that support is complementary and provided by the most effective party.

Efficient and Effective Support

Extremely Important

To ensure resources are used efficiently

Professionals working together is vital to ensure families receive the best and most appropriate support

To ensure a joined-up approach.

To ensure the best provision is put in place, monitored and reviewed for the child.

Without working together, the child and family will experience repetition of services in some areas and other gaps in provision missed that they may not know about or expect to be available.

Avoid duplication of effort (or the assumption that another service is addressing a particular need).

Working together to consider the impact it may have on all areas of the child/young person's life will be integral to ensure child is best supported and safe moving forwards.

To avoid duplication and ensure that young person and family are not 'over assessed'.

To ensure the most complete picture of their young person's strengths and needs.

Essential to improve outcomes for child/young person

TBI is complex and requires a co-ordinated response so that the child gets a package of support which makes sense and is manageable.

Avoids repetition, ensures consistency of approach

Collaborative care to progress with child developments.

Also, to prevent a duplication. Working together will create a better coordinated support system for the child

Ensure that they receive the correct support at the time that they need it.

It is important for professionals to be aware of each other's roles, so that work is not duplicated and nothing is missed out.

Having common support strategies and language will help the child feel supported on all fronts.

Very Important

Ensure the young person and their family and school setting are being effectively supported

More efficient involvement of each service

Provided by the most effective party.

To make things efficient for the family.

It depends on the extent and impact of the brain injury. However, for a significant injury or one with significant impact, a multidisciplinary approach is needed to ensure a joined-up approach

To ensure the young person and their family and school setting are being effectively supported

Working together of these professionals may allow for more stream-lined plans, more efficient involvement of each service, and potentially a time saver for parents and schools particularly to receive information in one place rather than from various sources

Also, to make things efficient for the family

Legislative and Ethical Framework

Extremely Important

Don't have to keep explaining their story

Prevent the child/families having to retell their 'story' multiple times.

So, children and families only need to tell their story once

Ensure that young person and family are not 'over assessed'

Ensure that they are not unnecessarily repeating anything

Avoids repetition

It is also important for the family that we work together so that they don't have to keep explaining their story and so they are supported through the process of managing a range of professionals they may previously have never encountered.

Exposing a child to multiple assessments and professionals would be unhelpful and intrusive

So, the family does not have to keep giving the same information multiple times, so it is not the family's responsibility to coordinate between multiple professionals

Children and their families who have already had a life-changing, frightening experience should not have to repeat the same information ad nauseam and feel that they are fighting battles on numerous fronts to get the support that they need.

Essential for safe working practices.

So that the family do not consistently need to repeat themselves and can feel truly supported by a whole team

Under legislation working together to safeguard children. Safeguarding is everyone's responsibility and services should be drawing on their specialisms and knowledge to explore what support they can offer and put in place for the young person.

Also, to prevent a duplication.

To prevent the child or family from being asked the same questions multiple time by different professionals, hence having to re-live the trauma or what they have experienced.

Appendix T: Professionals' Quotations for Barriers and Facilitating Factors of Multi-Disciplinary Working

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Communication and Information Sharing	
Barriers	**Facilitating Factors**
A lack of communication.	Ongoing communication and dialogue.
Thinking someone else is responsible for that area.	Open communication systems
Lack of communication e.g. Not knowing who is currently involved and how to contact them	Shared terminology
Lack of shared systems	I think it helps a lot when professionals are already used to working together e.g., have existing meeting spaces/MDTs set up for joint discussions in relation to adolescents - existing experience working together means that there is a better understanding of each other's roles (who does and can do what?) And more shared language/ways of thinking between different professions.
Partial records and reports shared	
Different language or professional terminology,	
Lack of pathways for communication between services.	
Knowing that the injury has happened e.g. If some professionals work in isolation and aren't making those connections (this is a hypothetical as I think most professionals are good at linking in others).	Regular meetings and consultations.
Databases are not shared. Poor sharing of information between health, education and social care (sometimes).	Evidence/'paper trail' of involvement and suggestions sent to all participants.
Inefficient systems for joint working and information sharing	A shared way of communicating e.g. A plan, such as an EHCP, which outlines the child's needs, difficulties and list of professionals involvement. This should be accessible to all relevant professionals.
Families may also be concerned about impact if sharing personal medical information with schools.	
Sometimes information is not shared as people are worried about GDPR breaches.	
Lack of shared systems	Regular communication as a professional group with each other and holding one another accountable to agreed actions
Not knowing who else is involved	
Partial records and reports shared	
Poor communication due to insufficient professional time, overwhelming pressure on the separate services, incompatible systems and processes	Coordination of communication with family- letters and reports which reference one another, arranging appointments in a supportive, joint way

for sharing information, inadequate funding, cumbersome bureaucracy.	Clear purpose of meetings, inviting the right people, sharing information between meetings if needed
A lack of pathways for communication between services.	Someone is driving maintenance of channels of communication.
Lack of common note keeping and poor communication	Ongoing communication and dialogue.
Poor communication- not being able to contact other members ie not having phone numbers or named care workers	Open channels of communication and good relationships between agencies.
Joined up or shared communication	Information sharing
Lack of information sharing, working in silo, services not being aware of the roles of other professionals.	Explanation of services through leaflets, websites and accessible formats - roles who does what and why
Communication issues	Flexible, frequent communication over email / phone / in person; facilitating requests to share info and join meetings
Sharing of information	Sharing information between meetings if needed
Poor communication	Good communication and all actually informed of progress
May not have clear roles so one professional thinks that another is doing it and vice versa.	Good communication between professionals
Lack of time and systems that allow better Inter professional communication	Clear documentation and communication eternal professionals
Problems in having time for good communication.	Communication and openness to others opinions
Assume lack of communication	Frequent and effective communication
Sharing information	Options to use virtual platforms
They are likely to be recording information on separate systems, meaning professionals cannot bring themselves up to date easily with latest developments.	A shared understanding of what each professional is involved for and having a lead professional who can act as a single point of contact
Communicating can be tricky depending on healthcare practitioner shifts / education schedules, etc.	

Systems and Resourcing	
Barriers	**Facilitating factors**
Lack of funding	Systems that promote collaboration and MDT working across health education and social care
Professionals not having the time to follow children over the long term	Protected time
Time is probably a big one - can be tricky to get all involved professionals together.	A practical basic thing now is video calls - more time efficient and professionals from all over can join.
geography- child and hospital professionals might be in a different place to education and local services (as is likely in rural areas or where specialist hospital is some distance away).	Opportunities to meet/work together
Lack of time to dedicate to communicating with other professionals	Good relationships between agencies.
Practical difficulties e.g. not being geographically close to professionals	Time to meet.
Different agencies, different funding streams, different office bases.	Blocked diaries Clear protocols
Existing pressures / workload	Multi-agency face to face meetings
Limited networking opportunities - unlikely to be attending the same sort of events etc	In today's context, video call meetings could help with time constraint as it reduces travel time.
Underfunded services Conflicting diaries	Working closely with those professionals already (e.g. Eps and school staff), understanding their roles, having time together
Availability of time to meet together.	Having lighter caseloads
Not being able to coordinate time, having large caseloads	I think it helps a lot when professionals are already used to working together e.g., have existing meeting spaces/MDTs set up for joint discussions in relation to adolescents - existing experience working together means that there is a better understanding of each other's roles (who does and can do what?) And more shared language/ways of thinking between different professions.
practical barriers feel quite significant - when there are so many professionals involved, how can time and space be found for all to meet together? there seems a need to have a representative from each professional group to make this more manageable. is there a risk that waiting for 'time' to meet could hinder the young person if other decisions are not made in the mean time?	
Time restraints / school budgets / limited resources.	

inefficient systems for joint working	Prioritisation by management
lack of time and stretched services, staff shortages	Good structures and systems in place to support liaison and joint working
Time to coordinate case work meetings.	Appropriate systems in place and clear pathway of involvement
Time and willingness	I guess remote working can help with the organisation of multi-professional meetings.
Lack of opportunities for joint working or for joint meetings.	Professionals who know each other,
time pressures on staff - linking up with other professionals can take extra time. Remote working means fewer incidental conversations.	Having the time to keep in touch and attend meetings.
Capacity for thinking and planning, e.g. just have time to do my bit and submit it rather than engage in timely joint meetings	Multi-agency meetings where professionals can come together to share information and plan together.
Traded model of service delivery, so need to negotiate with school how many meetings you have with other professionals.	Patience - making contact with other professionals can be time consuming
Traded time for EPs means you would only be as involved as your paid for time allows which can be unsatisfactory and limiting the support for the child and family	The school/hospital has a co-ordinator
difficulty aligning schedules for meetings, different work systems	A contracted meeting with clear expectations and actions for different people agreed
Not enough time to liaise / attend meetings	Sufficient provision info services across all sectors of support
Time and diary commitments, as well as not always having a named lead professional who can coordinate everyone.	Good systems in place as to how information is shared/referral processes etc.
inadequate funding, cumbersome bureaucracy.	Time for MDT working, single record systems
'time'! Having worked in the NHS before I became an EP I know that it is almost always the case that nobody has a caseload that allows them to work proactively and to collaborate, though they may very much wish to.	Need for more services
	Increased clinical capacity
	Team around the child meetings or similar professional meetings scheduled on regular bases.
Time, work and resource pressure between the roles, all professionals are	

generally understaffed and over worked.

Lack of capacity e.g. time pressures, high caseloads.

Poor communication due to insufficient professional time, overwhelming pressure on the separate services, incompatible systems and processes for sharing information, inadequate funding, cumbersome bureaucracy.

nobody has a caseload that allows them to work proactively and to collaborate, though they may very much wish to.

Lack of continuity in many of these professions.

Lack of funds to support many of non-acute interventions and modes of support.

Lack of funding meaning that different areas have different services/lack of staff/resources.

Lack of time and systems that allow better Inter professional communication

problems in having time for good communication.

Lack clinical capacity

Not having access to each other's systems

Budgets

Staff turnaround / pressures

They are likely to be recording information on separate systems, meaning professionals cannot bring themselves up to date easily with latest developments.

Availability of Resources and professionals that are experts in the field

Everyone is overstretched - especially with ongoing government cuts - and incredibly busy.

Knowledge and Understanding of Staff	
Barriers	**Facilitating factors**
Incorrect assumptions about what a child can or can't do	I have worked with children who have case managers involved (via insurance pay-outs) and this has been so helpful in ensuring a coordinated response and making sure there is a professional team around the child. It has made a huge difference to the child and it is such as shame that this is only available to some children.
Lumping children with brain injuries into one group.	
Lack of knowledge about other professionals involved and their skills. Lack of knowledge about TBI	
Lack of awareness of brain injury	
Lack of education	
Lack of understanding or listening	
Lack of understanding of others roles and whose responsibility is whose. Lack of understanding about ABI.	The school/hospital has a co-ordinator
Lack of understanding about their role. Not knowing which professionals are involved.	A professional taking the lead in regards to coordinating the other relevant professionals. My experience leads me to understand that this would be the role of the relevant social care professional as their processes necessitate holding meetings to coordinate professionals and support networks for the family and young person.
Lack of understanding	
Lack of understanding of TBI and Misunderstanding of different roles	
Not understanding other professionals' roles	
Lack of knowledge within certain fields/areas	A key person responsible for coordinating regular meetings and ensuring information is shared
The idea of 'expert' or being consciously incompetent.	
Lack of mutual understanding of terminology. Different tools used for assessment that are not understood by each other.	Having a lead professional who can bring agencies together Having committed members of staff in the school community
A misconception that it is only a medical condition that can be treated within a few months	Well-planned and well-attended TAF meetings.
Lack of understanding of brain injury	Someone who co-ordinates the support, professionals who respond and make time to talk to each other
Limited understanding	
Not knowing who else is involved	
Lack of contact/knowledge of these children	Having a named lead professional
Clear knowledge of roles	Someone taking the lead role in the professional team

Lack of awareness of brain injury Lack of education Lack of understanding of TBI and fear of feeling professionally incompetent. Lack of knowledge within certain fields/areas Knowledge and understanding Lack of knowledge Appropriate education and training / knowledge Standard services and systems (i.e. Education) being expected to cope with complex and tricky situations Professionals are not aware of the others roles and limitation. Often from a social care perspective, professionals feel that social care are responsible and can provide more services and support that they can. This comes down to understanding the laws in which services work in and not communicating with services before the service user about what can be offered by who. Lack of understanding or training about the importance of this Confusion about the role of various professionals. Often professionals do not know who is in the professional network.	around the child to monitor whether actions are followed through Someone is driving maintenance of channels of communication. Having a main point of contact for someone within each service, who knows the young person. Good understanding of everyone's roles. Working closely with those professionals already (e.g. eps and school staff), understanding their roles, having time together, having lighter caseloads I think it helps a lot when professionals are already used to working together e.g., have existing meeting spaces/MDTs set up for joint discussions in relation to adolescents - existing experience working together means that there is a better understanding of each other's roles Having a named lead professional and proactive parents. A shared understanding of what each professional is involved for and having a lead professional who can act as a single point of contact. It is also helpful to have one professional 'leading', who takes responsibility for compiling relevant information from the other professionals involved. CPD delivered across different professional settings by other professionals

Professional Relationships and Ability to Work towards Common Goals	
Barriers	**Facilitating factors**
Distrust of other roles	Understanding each other's roles
Varied quality of specific training/understanding/experience, different terminology, and different views of how the TBI impacts the child at home versus at school	Good understanding of everyone's roles. Good training on ABI and possible impacts.
Difficulties around professional identity and boundaries and the potential for conflict here e.g., whose role is this? Who is responsible? Who is best placed to hold this role? Is there a risk of two professionals overlapping in their roles or stepping on the toes of others? Are there too many professionals involved?	I think it helps a lot when professionals are already used to working together e.g., have existing meeting spaces/MDTs set up for joint discussions in relation to adolescents - existing experience working together means that there is a better understanding of each other's roles (who does and can do what?) And more shared language/ways of thinking between different professions.
Making recommendations which other professionals are expected to carry out, different languages, assumptions about what each other will do.	A contracted meeting with clear expectations and actions for different people agreed
Professionals seeing their role as so tightly defined that (which it may well be by their employers) that they find it difficult to work collaboratively.	Regular communication as a professional group with each other and holding one another accountable to agreed actions
Role confusion- thinking someone else is responsible for that area.	Understanding each other's role and respecting their expertise; sharing ideas
Lack of understanding about their role	Clear objectives for collaborative work are important (with functional outcomes that are meaningful for the child)
not knowing which professionals are involved	Professionals working together to use shared language and gain mutual understanding of approaches to assessment.
A lack of understanding or distrust of other roles	A shared way of communicating e.g. A plan, such as an EHCP, which outlines the child's needs,
Misunderstanding of different roles	
Different views of how the TBI impacts the child at home versus at school	
Not understanding other professionals' roles	
Difficulties around professional identity and boundaries and the potential for conflict here e.g., whose role is this? Who is responsible? Who is best placed to hold this role? Is there a risk	

of two professionals overlapping in their roles or stepping on the toes of others? Are there too many professionals involved?	difficulties and list of professionals' involvement. This should be accessible to all relevant professionals.
Lack of mutual understanding of terminology. Different tools used for assessment that are not understood by each other.	Clear objectives for collaborative work are important (with functional outcomes that are meaningful for the child).
Lack of understanding of each other's roles	Multi-agency meetings where professionals can come together to share information and plan together.
Understanding of others roles	Meetings etc would be helpful
Fixed views about one another's roles.	Having a central person coordinating care
Unwillingness from individuals to collaborate	Good understanding of other professionals' roles. Multidisciplinary meetings involving the family so care plans can be explored together.
Making recommendations which other professionals are expected to carry out,	Time for MDT working
Clear knowledge of roles	Regular MDT meetings
Professional pride/hubris - those who perceive themselves, or are perceived as being in a higher status professional role, failing to value the contributions of colleagues in other services/professions.	Often co-located multi-disciplinary teams help with lines of communication and shared goals/approach
Professionals seeing their role as so tightly defined that (which it may well be by their employers) that they find it difficult to work collaboratively.	Practitioners should be working together having open discussions rather than ordering other services and assuming it is someone else responsibility.
May not have clear roles so one professional thinks that another is doing it and vice versa.	As a social worker my experience is that social care are often given the reasonability to affect change when this is all services responsibility.
Professionals are no aware of the others roles and limitation. Often from a social care perspective, professionals feel that social care are responsible and can provide more services and support that they can. This comes down to understanding the laws in which services work in and not communicating with services before the service user about what can be offered by who.	Social work professionals will encourage these joint networks
People not wanting to go outside of their knowledge base or comfort zone	Joint meetings about individual child
	A plan that involves everyone

	Common goal of supporting the child and their parents Relevant information sharing holistic response Regular, structured MDT meetings to discuss the case, with minutes being sent out to everyone involved. Integrated working. Specialist teams. Team around the child meetings or similar professional meetings scheduled on regular bases.

Appendix U: Professionals' Quotations for Roles Shared by All Professions

Appendix U: Professionals' Quotations for Roles Shared by All Professions

Broad Categories

Monitoring and Assessment	
Health	**EP**
Assessing and having an overall understanding of the impact of the brain injury on the child's functioning	Working with the child and gaining their views and ideas.
Monitoring child's health and progress,	Assessments and formulation
Assessment	Assess and identify cognitive/emotional/social/physical impact of TBI on the child's education
Monitoring long term rehabilitation	
Assessment of the impact of the injury (physic, cognitive etc).	May assess young person as part of EHC needs assessment to ensure support needed is a requirement and long term
Assessments that lead to diagnoses/ support	Assessment of functioning in different areas, including informal assessment via observation and consultation. Monitoring (in collaboration with education professionals) of any changes in young person's presentation and functioning.
Regular check-ups and monitoring progress.	
Again, to monitor and evaluate programmes bespoke to the child and their individual needs.	Assessing how trauma has impacted learning
Identifying/assessing the areas the young person may require additional support in during their recovery process	This can be done through various assessments and consultation with family, school and the young person.
Monitoring health and neural differences as child continues the rehabilitation.	Carry out an updated assessment of the child's strengths and needs
Assessing need and advising on intervention to support this	Observation and/or assessment where requested
Accurate assessment of functioning in different areas: cognition; speech, language and communication; motor, bodily. Generating hypotheses based on imaging of the brain (where possible). Assessment of emotional and behavioural impacts (primary and secondary)	Assessing the impact of their TBI on all aspects of their functioning
	Using psychological assessment tools if appropriate to gather information.
Diagnosing and responding to the child's medical needs	Supporting with the monitoring of interventions.
To undertake assessments	To help explore the child's existing strengths and areas of difficulties (related to their learning and access to education).
Assessing physiological and psychological functioning and planning and monitoring the impact of intervention	Track and monitor progress

To assess treat and advise Assessing the child's needs Assessment of brain injury and reviewing progress / change Monitoring symptoms Track the child over time to monitor for changes in the help they might need, Assessing and having an overall understanding of the impact of the brain injury on the child's functioning Assessments of function to identify interventions Provide and refer to diagnostic testing Assess their medical/ health needs and provide appropriate intervention to support their recovery.	Supporting other professionals in identifying the impact of the TBI on the young person's access to education in areas of communication, understanding, attention and processing, social interaction, wellbeing, considering impact of change on wellbeing and sense of self. This may take the form of assessment or consultations with school/family to identify need and consider what provision might be needed to support the young person within education in particularly. May focus on identifying young person's existing strengths and identifying ways to utilise these in supporting progress in other areas. Consider the impact of injury on all areas of learning and offer holistic advice to school (e.g. Physical sensory, communication, interaction, peers, SEMH, cognition etc) Assessing need and coming up with recommendations in collaboration with school Monitoring for best outcomes Assessment of functioning in different areas, including informal assessment via observation and consultation. Monitoring (in collaboration with education professionals) of any changes in young person's presentation and functioning. Assessing how trauma has impacted learning Identifying, understanding and meeting the needs of children with TBI. Understanding the wider impact and the physical, emotional and systemic effect it has had in the child's life in the short-term and long-term future. To support schools to work to meet need, including use of consultation and assessment where appropriate Reviewing/monitoring progress with school staff and family through consultation Observation and/or assessment where requested and ep can contribute additional information (e.g. Dynamic assessment,

	approaches to learning as one example) where requested, EHC needs assessment processes
	Assessing the impact of their TBI on all aspects of their functioning
	Tracking over time to update this assessment
	Assessment of a child/family to help them understand the way the TBI affects them individually, and to work towards solutions to help a child recover and continue with their development.
	To assess the child and develop an individual plan for support
	Assess level of need
	Assessing the child to gain an understanding of any difficulties that they have
	To assess child's educational needs and impact on their cognitive and learning needs and additional support/ adjustments needed.
	Psychological assessment
	To provide an assessment about the child's learning needs

Social Care	Education
Assess how TBI impacts child and family at home and support them	Monitoring and assessing how the child is doing educationally, socially and emotionally
Assessment of family's needs and subsequently of the young person's needs as they move towards adulthood.	Ensuring the child is still making progress
Understanding the needs of the child in terms of their functionality in the community and supporting reintegration.	Monitoring the child's learning via baseline and regular assessments, for example through the use of the 'assess, plan, do, review' cycle.
Assessing for additional support	Being able to monitor CYP in case of changes to condition that might need flagging up to home/health professionals.
Assess needs and provide appropriate support with regards to care needs as required.	Identify strengths and needs of children with a TBI
Complete assessments and referrals to support this family to access these services.	Closely monitoring for any changes in presentation, positive or negative.
Consideration of assessment under the children act (s.17 child in need) with a view to longer term preparation for adulthood and potential transition into adult services.	Implement, monitor and review interventions to support them in the educational provision
	Monitor progress.
	Ongoing monitoring to change tasks/environment as the child changes.
	Reviewing academic progress
	Safeguarding and monitoring if CYP safety in school
	Tracking progress and adjusting the support as the child changes over time
	Assessing, understanding and supporting the children in an educational setting
	To assess the child's cognitive and social functioning and provide support in school
	Assess the child’s needs and any adjustments which may be needed to support their education - to be reflected in support plan
	To assess their intellectual ability pre-trauma and following trauma and setting achievable attainable educational goals

Recovery and rehabilitation	
Health	**EP**
Rehabilitation, mediation, assessment	Inform long term community rehab goals from cognition and learning and SEMH perspectives especially
Monitoring long term rehabilitation	To support with how the brain injury is impacting on the pupil's education
Some of the professionals involvement may end but many will continue in line with the child's presenting needs and on-going rehabilitation.	Support them in recovery, depending on their role
Caring for the young person in the immediate and long-term recovery process from a traumatic brain injury	To support the child and family in new ways they've likely not worked in before
Monitoring health and neural differences as child continues the rehabilitation.	Helping them cope with any disability
Treatment recovery and support for CYP	Provide coping strategies for both child and family.
Support them in recovery,	Supporting the child and family with the psychological impact
Monitor and support the medical recovery	
Providing rehab plans	
Supporting the young person with their recovery	
Ensuring that in the short term that the child's medical needs are met for survival and minimising the impact of the injury.	
Implementation of therapy to address the impact across all areas - physical, SALT, cognitive etc.	
Keeping the child physically healthy and safe and providing advice with rehabilitation.	
Thinking about how the trauma may affect physical and psychological functioning, sharing this with family and other systems. Providing psychological support/physical support/rehabilitation	
Support them in recovery, depending on their role	
Creating and delivering interventions for recovery	
Supporting the young person with their recovery, both physically and mentally.	
To provide rehabilitation for them in terms of OT input for activities of daily living,	

physiotherapy for movement and balance therapy	
Support the young person to achieve a level of age appropriate independence and hopefully for them to be able to adapt the injury and the changes in their life.	
To ensure the child has access to appropriate rehabilitation based on their needs	
To provide immediate medical intervention following the traumatic brain injury and the most suitable rehabilitation once the child has been medically stabilised.	
To assist the child with their recovery.	
To monitor and review progress and provide a realistic picture of recovery	

Social Care	Education
Assessing what additional resources and support might be required at home when the child is discharged	Education professionals are likely to take on the bulk of the student's long-term recovery once they are discharged. They will support the process of reintegration to school, ensure that support (physical, SALT, learning, social interactions etc) is in place. They may be responsible for helping the young person take medication, keep them safe when eating, help them navigate the physical environment. They may need to apply for an EHC needs assessment.
Supporting the child and family to manage any needs arising from the injury, particularly outside of school	Formulate a plan to support the child in their rehabilitation.
Putting plans in place to support provision needed for young person at home	Ensuring that the right provision is in place for that young person and their individual needs, in order to support their recovery.
Supporting families with adaptations to their home	Support child to return to school after TBI
Support them in recovery, depending on their role	Helping child with transition back to school.
Supporting home adaptations if needed	Getting to know the child's needs before they return to school, making appropriate preparations and adjustments,
Recovery and inclusive social settings	Ensuring that the right provision is in place for that young person and their individual needs, in order to support their recovery.
Practical care packages	Support with aspects of health
To ensure the child has access to appropriate rehabilitation based on their needs. To ensure the child has access to any appropriate aids to support the child to maximise their skills and achieve their outcomes.	To support the child and the family to return / stay in school by tailoring learning and access according to medical and emotional needs.
To ensure that the child has the correct package of care at home, with additional support for the family	
Recovery and rehabilitation	
Adaptations and support to live with family	
Sourcing appropriate resources to aid recovery and to support family and care givers.	

Support of family and child within the system	
Health	**EPs**
Provide support to the family who may also be traumatised. Educating parents Educate the carers about potential treatment options Provide advice and support to parents and other professionals e.g. School To support child and parents moving forwards. Providing a safe space. Keeping the child physically healthy and safe Promote the voice of the child as well as the parents within the planning and decision processes. Helping the young person understand their medical condition in the physical sense Support the young person and their family to understand the impact of the traumatic brain injury and what support there is for the young person to live their best life. Starting the journey of supporting the child to process what has happened to them and any difficulties/changes as a result. Clinical psychologist can help the young person's emotional and psychological wellbeing. Therapeutic support for child and/or family unit To ensure the child has access to talking therapies where appropriate to look at skills and coping mechanisms. I consider it especially important that health professionals involved over the medium/long term are willing to listen to the child and those around them who know them well and be aware of how their lives are impacted outside a clinic environment.	Working with families/ working systemically to provide support and signpost community services which may benefit the child, Assessment or consultations with school/family to identify need and consider what provision might be needed to support the young person within education in particularly Promote the voice of the child as well as the parents within the planning and decision processes. Support school primarily, but also the family, to ensure the environment and learning tasks are appropriate to the child, including support for monitoring and adapting to changes in behaviour or learning. Provide coping strategies for both child and family. Supporting the child and family with the psychological impact Similar to social care/ the social worker to explore services to support and signpost. To support child and parents moving forwards. Advocating for the child. May support in identifying and sharing young person’s voice and experiences with others involved Gaining and representing the young person's views. Facilitate child/family voice. Views of the child and advocating their views in support Advocating for the child's views to be heard, Advocating for them in the educational environment Advocating for them in the educational environment and understanding the range

	of impacts that their TBI have had on them personally.
	Finding ways to elicit the child's views and perception of their own needs, which need to be weighted alongside professional views
	To communicate the general needs of the child, and what will help the child to the professional network.
	Working with the child and gaining their views and ideas.
	To support with how the brain injury is impacting on the pupil’s education
	They may work directly with the child to listen and explore the child's 'voice'
	May focus on identifying young person’s existing strengths and identifying ways to utilise these in supporting progress in other areas.
	Individual casework, assessing need
	This would also involve working directly with the child where possible.
	Our role as being to work with the adults to support the child, rather than on-going direct work.
	They may work directly with the child to listen and explore the child's 'voice' and support the child and their families to take an active role in their support plan.
	Individual casework
	Helping them cope with any disability
	Support for social, emotional and mental health needs.
	Considering the impact of their injury on their emotional well-being,
	Supporting psychological well-being and impact on education and managing in educational environment.
	Help with potential consequences of TBI e.g. PTSD, behavioural changes.

To ensure the child has access to talking therapies where appropriate to look at skills and coping mechanisms.

To assist the child with the mental health difficulties they may experience after the injury.

To assess their psychological state, including emotional, behaviour, esteem issues and how their view of the world may have changed. To promote resilience and storage ties to adapt to any changes within their life

To support the child with the emotional impact of their trauma and potential losses.

To facilitate and help young person maintain their peer relationships.

Supporting their social inclusion and communication with peers

Social Care	Education
Supporting parents with access to care arrangements and housing arrangements	Feeding information to family
Supporting family to understand and manage the changes to their family life. Signposting to other support.	These professionals will no doubt also support the family through relationships and interactions (offering support when appropriate).
May work directly with the families to ensure there is clear communication and joint action plans between the key people involved with the child.	Inclusion within school community, ensuring staff, parents and children understand (at some level) ABI through training or otherwise and can show understanding and empathy. Extra support for parents from school staff.
Supporting the child and family to manage any needs arising from the injury	A key part of this role is likely to be regular communication with the young person's family,
To support the overall well-being of the family system e.g. parents and siblings, in adjusting to the new needs within the family.	To work with the other professionals and family
Signposting resources, educating them and supporting with disability living allowance and other relevant forms	Promote the voice of the child as well as the parents within the planning and decision processes.
To support the young person and their family in managing, understanding, responding to any changes in the home environment/context as a result of the TBI.	Extra support for parents from school staff.
To support parents/family to adapt and respond to any behavioural challenges, to give family a respite, whether that be someone to talk with (wider community support), or to arrange additional care support in the home.	Work with the family to communicate what's working well and areas the more support is needed.
Ensuring family are coping well with supporting child.	Communicating with families and other professionals to stay up-to-date
Ensuring support for the family and in the community is provided. Assessment of family's needs and subsequently of the young person's needs as they move towards adulthood.	Being proactive in seeking advice/ collaboration with the child, their family
Supporting the family to support the young person	Gaining and representing the young person's views.
Support around the impact on the family e.g. If extra caring is needed and this impacts a family member's ability to work.	Promote the voice of the child
Work to build a shared understanding within the family	They will likely need to support the student’s emotional wellbeing as they navigate their 'new normal'.
	Emotional regulation support if needed.
	Supporting child's potential SEMH needs upon return to school.
	Supporting any emotional or behavioural difficulties.
	To support the overall development and well-being of the child e.g. cognition and

Support the family to access help in the community as required. Perhaps including outreach with other families who have experienced similar situations.	learning, social development and emotional well-being.
Thinking about child in family context - housing, finances, adaptations to home, support to deliver care and other needs, supporting applications for grants or benefits	To help the child adjust to and maximise their functional abilities and to support their emotional resilience
Functioning of family unit and assessing for additional support (emotional, practical etc)	Providing emotional support
Supporting parents/carers/foster carers with parenting support for child with additional needs	The interventions should target their emotional wellbeing as well as academic attainment.
Linking the family in with relevant local services, supporting the family to parent a child who is different now	Monitoring emotional wellbeing and progress
Ensuring child and family are supported, have access to appropriate benefits.	To support their learning and emotional needs and bring them back to a functional baseline of the best they can be
Supporting the child and family to manage any needs arising from the injury, particularly outside of school.	Holistic support of emotional needs
Supporting the family, helping with the home environment	Support, encouragement, help them reach their potential. Often needs to be Individualised and requires patience.
Ensuring family are coping well with supporting child. Signposting to other services (if necessary) Monitoring impact of trauma on child's home environment and family relationships	Provide emotional health support as required
Co-ordination of the various support services for the young person, as well as emotional and practical support for the family in their day to day lives and relationships.	To monitor a child's education and ensure the child has emotional support.
Understanding the needs of the child and family and supporting them to meet these needs	Inclusion within school community
Depends on family's ability to cope and severity of injury to child, could include home visits to help family make changes to layout of home or implement programmes at home, providing respite breaks for parents if needed, coordinating or signposting support with / from other professionals	This could also include supporting the other children in the setting to understand the child's needs and adapting the environment to support their development.
	Support child to return to school after TBI and adapt teaching to meet needs
	Put in place in the education setting the support needed both for the general safety and wellbeing of the young person, as well as to support them to develop and progress in areas that may have been significantly affected.
	Informing other students and staff about the potential impact of the brain injury on student.
	Providing safe spaces and known areas child can go to if things become difficult. Ensuring all staff working with child are informed about possible side effects.

Assessing the child for any financial or practical benefits to which they may be entitled, linking the family in with relevant local services, supporting the family to parent a child who is different now, helping the child to access relevant leisure and child care activities. Supporting the young person and their family at home and within the community. Any extra care such as nursing care if needed Supporting child's family with respect to child's needs To help support the family with modifications needed for the home Help with benefits/financial support if eligible To support the family as a whole to be accessing any support available to them to manage the needs of the injured child and other family members. To link them to resources that will help them or make their life easier Signposting parents to where they can get support for the family within in the community e.g. Charities Provide advice and support to parents e.g. Support groups, advice on benefits, short breaks (if required). Give the family and young person the tools and services to support the family without the need of social care intervention moving forward To support child and parents moving forwards. To provide advice and signposting when the criteria or threshold for statutory services is not met. To ensure the child and their family have all the necessary support in place to enable them to manage the recovery as well as possible. To support the family to adjust to the impact of the trauma if it has had an effect on	Ensuring an inclusive ethos and environment within the school To take a child centred approach To offer as inclusive an experience of education as is possible. Supporting integration and inclusion in school, Create an inclusive environment Supporting social inclusion To create an inclusive environment for the child Inclusion within school community Supporting the child's social inclusion Ensuring an inclusive ethos and environment within the school Offer an as inclusive experience of education as is possible. Including the child in education with their peers Supporting integration and inclusion in school Create an inclusive environment, offer tailored support to a CYP Removing barriers to participation in all aspects of education wherever possible. Adaptions and building individualised support package with fluctuations in support as required to provide inclusive learning environment. Adapting the environment and learning at each stage of recovery to allow the child to participate as much as is appropriate. From simple activities at home or in rehab through to hopefully full return to education eventually. Also, to facilitate some social inclusion. Support their ability to return to school/ engage in learning

family dynamics where families are struggling to cope.

To ensure the child has access to any appropriate aids to support the child to maximise their skills and achieve their outcomes.

To support to equip the child with the skills they will need moving forward.

Ensuring they remain at the centre of all care planning

Helping the child to feel included in their community

To advocate for the child

Promote the voice of the child

Ensuring child's needs are being addressed

Support their needs and monitor their social and emotional wellbeing

Ensuring that the child's needs are met, that they have good emotional wellbeing and they are able to be an active member of their community.

Address the emotional and practical strains it may place on family relationships as well as the young person's self-concept

To help the child process what has happened

Ensuring that the child's needs are met, that they have good emotional wellbeing and they are able to be an active member of their community.

To ensure child has access to talking therapies to look at skills and coping mechanisms.

Multi-disciplinary working and training	
Health	**EPs**
Implementing recommendations from other professionals	Supporting the school in implementing recommendations by health professionals, and considering how best to support the child's educational, social and emotional development.
Liaising with non-medical professionals	
To work collaboratively with other professionals to support the health of the child	Translating medical information into education language
Sharing of expertise	
Good communication with school and parents	Be involved in MDT meetings with relevant professionals especially at transition points
Identifying the appropriate professionals/methods to provide this support.	To work collaboratively with other professionals to consider, identify and address learning needs of the child, working with the school and family to support these needs.
Providing other professionals with health specific information/supports. Ensuring family and key staff are aware of possible impact of traumatic brain injuries. Offering report/advice towards the EHCP (if requested)	I would like to be part of a multi-agency approach at an earlier time. Would see our role as being to work with the adults to support the child, rather than on-going direct work.
Share info in an accessible way with other professionals, the family and the CYP. Their role is also to explain what the impact of the brain injury likely will be on the child's cognition and behaviour.	Facilitating collaboration between parents and school and other professionals. Gaining the views of important people around the child
Lead professionals coordinating professionals and services	Communication with other professionals, family, the young person.
Communicating with other professionals and family	To support other professionals working with the child.
Giving advice to other professionals and family	May act as collator and transparent communicator of information from other sources into one
Giving guidance to family and school re how the child can be supported.	Supporting to facilitate conversations between home and school around child's needs.
Collaboration with other professionals	
Identifying the appropriate professionals/methods to provide this support.	To work with others to consider the impact on the pupils' learning and wellbeing - consultation to put appropriate support in place.
Communicate all of this to the young person and those central to their everyday care (e.g., home and school).	Educational psychology professionals firstly support the school, family and other professionals to gain a better understanding
Treatment recovery and support for CYP, advice to home and school.	

Understand a full and holistic picture of their needs and try to get others to try and see this too Provide a clear medical view of the brain injury and it's impact and to share this in an accessible way with other professionals, the family and the CYP. Advising others about how the needs can be met Lead professionals coordinating professionals and services Liaise with other professionals to ensure a holistic package of support They may well seek professional opinions from other areas too. Giving advice to other professionals and family about supporting recovery, adapting to the change in circumstances and clearly explaining functional impacts, while managing expectations tactfully Referring on to other specialities and therapists to aid recovery, both within healthcare and social care. Communicating with educational support teams First responders in TBI and in educating wider services Share expertise regarding things to do to aid recovery MDT approach Working with wider professionals to facilitate return to education and social activities To liaise with schools and social workers (if there is one) to explain the child's needs and recovery care plan. Training others and sharing expertise about brain injury Ensuring key staff are aware of possible impact of traumatic brain injuries.	of the young person's cognitive and emotional strengths and difficulties to inform their interventions, support and review process. Attending and holding TAC meetings Acting as a link between school, family and other professionals. Bringing together the systems around a child (family, school, professionals) and using psychology to build a shared understanding of the child's strengths/difficulties, and to agree priority needs and how they will be supported and monitored. To gather information from multiple sources (health/education/family/child) to assimilate this Bringing a psychological perspective to multi professional meetings Communication with other professionals, family, the young person. To support other professionals working with the child. Supporting to facilitate conversations between home and school around child's needs To gather information from multiple sources (health/education/family/child) to assimilate this Acting as a link between school, family and other professionals. Close liaison with family and other professionals to ensure a holistic package of support Liaising with all other professionals and working alongside parents/teachers to understand and formulate an appropriate support package for the child in school. This would also involve working directly with the child where possible. Liaising with other educational, health and social care professionals Form part of the care team around the child

	Shared with professionals and family members to ensure that the child has the support that they need to progress with their learning in a way that suits their needs.
	Taking a holistic perspective on the child's needs
	Holistic assessment of the child's needs
	I believe my job is to understand every barrier as thoroughly as possible, and highlight the child's strengths and successes, so that this can be shared with everyone around the child.
	Helping the transition to school considering the child holistically
	Understand a full and holistic picture of their needs and try to get others to try and see this too
	Taking a holistic perspective on the child's needs
	Educating school systems on the impact of brain injury
	Helping school staff to think about all the ways in which the child will need support.
	Training to increase understanding.
	Helping education staff understand what is going on for the young person, particularly emotional and psychological aspect.
	Providing inset to schools on the possible impacts of TBI
	Systemic work with schools to support understanding of supporting children with a traumatic brain injury
	Gaining better understanding of ABI/TBI via training and opportunities for experience.
	Training school staff about the effects of brain injury
	They can also educate staff informally or formally about the impact of the TBI on the young person and help them consider how to ensure their social and emotional needs are not overlooked.

	Provide psychoeducation for those who need it (e.g. Teachers) Training on educational approaches for children with TBI and SEND Offer advice for supporting education professionals, support knowledge of education professionals
Social Care	**Education**
To work collaboratively with other professionals to ensure that the child is engaging in society, fostering interests and hobbies, connecting them to possible support groups, ensuring they receive the support needed (financial, housing etc). Liaising between professionals. Collaboration with other professionals. To bridge the support between home, school and between different professionals. They may work directly with the families to ensure there is clear communication and joint action plans between the key people involved with the child. Also involving parents and wider network and clarifying their needs within this. Co-ordination of the various support services for the young person Chairing TAC and TAF meetings or similar Liaising with the healthcare professionals, they should support the family with additional care/respite care if needed as well as supporting them with necessary adaptations for the home/school environment. Working with other professionals. Working with family and other important people. Understand a full and holistic picture of their needs and try to get others to try and see this too Support the child and family and school to creative a supportive network around the child to enable learning	Implementing recommendations from other professionals Feeding information to family and other professionals. Liaising with other professionals to understand changing needs over time Staff should be part of multi-agency meetings before the return to school to ascertain needs. Referrals to appropriate professionals. To signpost to relevant professionals / services e.g. educational psychology. A key part of this role is likely to be regular communication with the young person's family, and key professionals to make sure they are up to date with where the young person is at and what they need. Work collaboratively with other professionals to view/support the child holistically Implementing strategies recommended by health and other professionals. To act on advice from professionals to meet needs Coming to an understanding of the child's needs through liaising with professionals Implementing programmes as advised by other professionals Working with other professionals to share information and implement useful interventions. Working alongside medical/health professionals to formulate a plan

Support the family and school with accessing the right support from the right place	Being proactive in seeking advice/ collaboration with the child, their family and other professionals.
MDT approach	To act on advice from professionals
To co-ordinate between the other professionals involved.	Regular communication with the young person's family, and key professionals to make sure they are up to date with where the young person is at and what they need.
This should be a holistic approach, looking at the services and people in place and their roles within the family unit for this child.	Understand a full and holistic picture of their needs and try to get others to try and see this too
The main services to focus on would be health and education (depending on the young person's age and wishes) to explore support	Working alongside medical/health professionals to formulate a plan to support the child in their rehabilitation.
Try and get people to work together to help	Taking responsibility for learning more about TBI as it relates to the pupil and being proactive in seeking advice/ collaboration with the child, their family and other professionals.
Liaise with other professionals	Ensuring the child has access to appropriate professionals and all are within a multi-disciplinary team.
They may also ensure they are engaging in CPD so they are knowledgeable in how to support these CYP.	To liaise with health colleagues - physios, GP, school nurse, home care team, etc - to understand the child's needs and recovery care plan.
	Educating themselves about the impact of injury on a child holistically
	Ensuring staff, parents and children understand (at some level) ABI through training
	Making sure they are aware to the best of their abilities what impact a young person's brain injury may have on different areas of their everyday life (Access to learning, social and functional communication, self-care skills, physical abilities)
	Supporting whole school community to understand the help the child.
	Informing other students and staff about the potential impact of the brain injury on student.
	Ensuring all staff working with child are informed about possible side effects.

	To take a child centred approach and then ensure they have a good understanding of the child's brain injury and the impact it has on their education and wellbeing. Supporting whole school community to understand the help the child.

Appendix V: Quotations for Health Professionals' Roles and Responsibilities

Appendix V: Quotations for Health Professionals' Roles and Responsibilities

Health Professionals' Unique Categories
Medical support
Monitoring child's health and progress
Consider medical treatments needed and work to improve the child's life.
Ensuring that in the short term that the child's medical needs are met for survival and minimising the impact of the injury.
Identify and provide medical intervention
Diagnosing and responding to the child's medical needs
Provide a clear medical view of the brain injury and its impact
Manage health needs resulting from the injury
Determining treatment
Stabilising child medically
Consider medical treatments needed
To offer medical advice and support to the child and their family
Identify and provide medical intervention
Medical factors and occupational therapy for day to day living.
Manage health needs resulting from the injury, including mental health needs.
Monitor and support the medical recovery, including all aspects of physical and mental well-being, in the community as well as an acute setting.
Advising on treatments e.g. medication or exercises
Prescribing and monitoring medication where appropriate
Providing medication, providing rehab plans
Providing advice for interventions (or delivering them directly)
Providing the best possible intervention and support to assist recovery in whichever areas of function have been affected, while seeing and getting to know the child as an individual.
Diagnosing and treating immediate and subsequent medical problems
Ensuring a child's health needs are met appropriately so that they can continue to grow and develop
Support, treat medical problems/complications
Initially medical stability and management,

This will be to get better and also provide them with the medical support requires, physically, mentally, emotionally and through medication.

To help the child recover physically and mentally

To ensure that the child's health needs are cared for the rest of the child's life.

Physical Support

Consider medical treatments needed and work to improve the child's life. This is both physical and mental/ emotional health.

Assessment of the impact of the injury

To support with the physical effects of the brain injury

To work on physical health and deliver physiological therapies e.g. speech and language, or physio

Supporting the physical needs of the child, testing, screening and monitoring their improvements over time, providing physical therapy plans, working 1:1 with the child to support their physical recovery and development

Occupational therapy for day to day living.

Helping the young person understand their medical condition in the physical sense

Regular check-ups to monitor physical and mental health

Thinking about how the trauma may affect physical and psychological functioning, sharing this with family and other systems. Providing psychological support/physical support/rehabilitation

Consider all the other medical conditions alongside the brain injury to minimise physical illness hindering their recovery

Improving mobility

The physical implications and a full programme to development healthy and full mobility again

To support the physical, emotional, psychological, and social response to their trauma

Appendix W: Quotations for Education Professionals' Roles and Responsibilities

Appendix W: Quotations for Education Professionals' Roles and Responsibilities

Education Professionals' Unique Categories
In class support
Helping child with transition back to school.
Making sure they are safe during the school day
Monitoring and assessing how the child is doing educationally
Supporting academic inclusion and progress through appropriate support and differentiation
Adapting work accordingly
Ensuring the child is still making progress
Providing a wide and varied curriculum
Differentiation of work for the child's specific needs
To support the overall development and well-being of the child e.g. Cognition and learning,
To tailor the educational material to their level of understanding after the injury
Monitoring the child's learning via baseline and regular assessments, for example through the use of the 'assess, plan, do, review' cycle.
Differentiating appropriately to support the learning of pupils, providing addition support, making adjustments
Implement, monitor and review interventions to support them in the educational provision.
Providing additional support and differentiation that enables the child to access the curriculum and enjoy learning.
Differentiating work in the classroom
Assessing, understanding and supporting the children in an educational setting
Removing barriers to participation in all aspects of education
Monitoring and assessing how the child is doing educationally, socially and emotionally
Adapt curriculum if needed whilst having high aspirations for the child
Safe space for child and trusted adult if needed. Exam adjustments if needed. Consideration of any environmental adjustments
To support with how the brain injury is impacting on the pupil's education
To support a child who has experienced a traumatic brain injury to access an education and feel comfortable/supported in an educational setting.

To support the overall development and well-being of the child e.g. Cognition and learning, social development and emotional well-being.

To identify needs within their class / school

Adapt teaching to meet needs

To be understanding towards the young person and to tailor the educational material to their level of understanding after the injury

Put in place in the education setting the support needed both for the general safety and wellbeing of the young person, as well as to support them to develop and progress in areas that may have been significantly affected.

Differentiation and making reasonable adjustments

Delivering in-school interventions

Understanding potential areas of difficulty to plan support

Identifying and supporting learning and functionality needs in school

Making adaptions to learning opportunities as necessary.

The interventions should target their emotional wellbeing as well as academic attainment.

Professionals should also ensure they are providing targeted support to account for the child's difficulties

Differentiating tasks appropriately

Providing additional support and interventions as needed for education / social-emotional skills,

Seeking to develop ambitious but realistic expectations for their pupil.

Ensuring that the right provision is in place for that young person and their individual needs, in order to support their recovery.

To support their learning and emotional needs and bring them back to a functional baseline of the best they can be

Enabling them to reach their educational potential with appropriate support/adaptations in place.

Adaptions and building individualised support package with fluctuations in support as required to provide inclusive learning environment

Supporting recovery in language, physical, memory, emotional and learning abilities

Explore options to support them to access education such as EHCP

Understand the child's individual learning needs and help them learn and reach their potential

Support with education whether this is formal adjusted where required education or support with talking, recognising shapes pictures etc.

Ensure the right support is in place for those affected by said injury

To adapt lessons to the child ensuring that information and teaching is provided at a level they can understand, provided at a pace that they are able to understand it so the child does not feel overwhelmed or pressured
To provide a supportive learning environment where the individual needs of that child are taken into consideration, including the potential need for increased breaks and learning via alternative means if there are significant difficulties with concentration.

Appendix X: Quotations for Social Care Professionals' Roles and Responsibilities

Appendix X: Quotations for Social Care Professionals' Roles and Responsibilities

Social Care Professionals' Unique Categories
Activities Outside of Home/School
Seeking out relevant opportunities e.g. Groups or activities for children with ABI.
Helping the young person reconnect with their community.
Arranging short breaks or care for YP
Helping the child to access relevant leisure and child care activities.
Ensure that the child is engaging in society, fostering interests and hobbies, connecting them to possible support groups, ensuring they receive the support needed (financial, housing etc).
To support the young person more directly in developing/re-developing their independence, particularly within the wider community
Support access to the community
Facilitating access to the best possible quality of life and range of experiences, either through direct work with the young person, or through practical and emotional support for those around them. Again, this would ideally be driven by a curiosity about, and understanding of, the individual's unique needs and experiences.
To support the child with social activities such as accessing groups and respite
To support the child to access appropriate facilities such as community whether this is with other children with TBI or mainstream community.
To assist with reintegration back into social norms as their injury will allow
At Home Care
Assessing what additional resources and support might be required at home when the child is discharged.
Assess how TBI impacts child and family at home and support them
Supporting families with adaptations to their home,
To support the young person and their family in managing, understanding, responding to any changes in the home environment/context as a result of the TBI.
Putting plans in place to support provision needed for young person at home
Monitoring impact of trauma on child's home environment and family relationships

Assessing need at home e.g. Whether family need support to manage behaviour, respite, care tasks, and offering support
Supporting the young person and their family at home and within the community.
Assessing need at home e.g. whether family need support to manage behaviour, respite, care tasks, and offering support
Adaptations and support to live with family
To support with practicalities of having to care for a child with additional needs.

Safeguarding
Assessing any possible risks as these children could be vulnerable.
Safeguarding.
To ensure safeguarding
Safeguarding the child
Safeguarding -monitoring and promoting safeguarding of child and family
Assessing any possible risks as these children could be vulnerable.
Explore the safeguarding concerns for this child.
If the brain trauma is non-accidental, to undertake child protection intervention, etc.

Appendix Y: Quotations for Educational Psychologists' Roles and Responsibilities

Appendix Y: Quotations for Educational Psychologists' Roles and Responsibilities

EPs' Unique Categories
Advice and guidance to schools
Supporting the school to provide targeted support to the child.
Support school to deliver suitable provision to meet needs
Supporting schools with differentiating and adapting the curriculum
Supporting adults through supervision and interventions such as solution circles, writing statutory advice
Supporting other professionals in identifying the impact of the TBI on the young person's access to education in areas of communication, understanding, attention and processing, social interaction, wellbeing, considering impact of change on wellbeing and sense of self.
May have more consultative or supervisory role for school staff learning to manage and respond to changes.
Offer holistic advice to school (e.g. Physical sensory, communication, interaction, peers, SEMH, cognition etc)
Coming up with recommendations in collaboration with school
To support educational settings to plan and deliver support and monitoring for best outcomes.
Suggesting adjustments and recommendations to support learning, therapy e.g. CBT for young person.
Consider the strategies and interventions which may support them and also provide support (e.g. Training or supervision) to the adults around the child.
Support schools to work to meet need, including use of consultation and assessment where appropriate
Helping school to identify and plan around needs.
Support school primarily, but also the family, to ensure the environment and learning tasks are appropriate to the child, including support for monitoring and adapting to changes in behaviour or learning.
Helping school to make sense of complex reports from other professionals and integrate this with APDR along with parent and child's voice.
Supporting the school in implementing recommendations by health professionals,

Translating medical information into education language
Helping school staff to think about all the ways in which the child will need support.
Providing recommendations on educational adjustments
Offer supervision to key workers/school staff if needed
Assisting school with the assess, plan, do, review cycle and evidence. Offering report/advice towards the EHC (if requested).
To support educational settings to plan and deliver support
Supporting school staff to adapt general guidance to specific context
Using previous assessments and information and apply to school context
Translating medical professionals' advice to be understood by school and family
Support for any educational difficulties
Supporting education to understand adaptations that may need to be made.
Support schools in seeing how to adapt to child needs so inclusive school
Signpost school to training needs of staff
Educate those working with that child of the best ways to be supporting them.
Exploring the EHCP, and SEN of the young person to support them to access education
Support for their learning
To support the child with their cognitive and language recovery and development

Appendix Z: Content Analysis of Knowledge Domains for TBI Survey

Appendix Z: Content Analysis of Knowledge Domains for TBI Survey

Specific Themes	Total Items	CM-TBI	Questions from HIKS	Questions from IC-KTBIQ	
Rehabilitation	3	19		48, 49	
Memory (All 3 Measures)	8	13	35, 36, 46	52, 58, 72, 73	
Physical/Sensory Perceptual	12	32	37, 39, 41, 42	59, 62, 63, 64, 65, 70, 71	
Concentration	3		45	60, 69	
Recovery	11	12, 14, 15, 16, 17, 18, 28		50, 53, 66, 67	
Behavioural and Emotional	13	20, 21, 22, 23, 24, 25	33, 38, 44	54, 55, 56, 57	
Communication	6	31	34, 43	51, 61, 68	
Brain Damage	3	29, 30		47	
	3	26, 27	40		**Total**
total	**62**	21	14	27	**97**

Number of Themes	Broader Themes (Combining Specific Themes)	Number of Questions
1	Cognition and Learning (Memory, Concentration, Executive Function, Communication)	20
2	Behavioural and Emotional	13
3	Recovery and Rehabilitation	17
4	Physical	12
	Total	**62**

Appendix AA: Ethics Committee Application Form and Approval Letter

Appendix AA: Ethics Committee Application Form and Approval Letter

Ethics Application Form for Non-Invasive Research on Healthy Adults

When preparing your ethics application, please take care to ensure that it reads well and is free from typographical and other errors. While this might seem a bit pedantic, it is worth bearing in mind that the ethics application form is an official document that may, in exceptional circumstances, need to be produced and scrutinized by others. A useful way of thinking about this might be to imagine what might happen if the document was being scrutinized by someone with a complaint about your study: is there anything in it that seems unprofessional or a bit sloppy, or that could be used, inadvertently or otherwise, to harm your reputation, or the reputation of the department or university?

SECTION A	APPLICATION DETAILS

A1 **Project details**

Project title: Working with Children with An Acquired Brain Injury (ABI): The Perceptions and Attributions of Education, Health and Social Care Professionals

Date of submission: July 2023
Proposed start date: September 2021
Proposed end date: September 2023

A2 **Principal researcher**

Full name:	Sandra Dunsmuir
Position held:	Director, Educational Psychology Group, Professor of Educational and Child Psychology
Research Department:	Department of Clinical, Educational and Health Psychology

The principal researcher must read and sign (electronic signature or scanned pdf with signature are acceptable) the following declaration. Please tick the box next to each of the statements below to acknowledge you have read them and provided all required information.

▪ I will ensure that changes in approved research protocols are reported promptly and are not initiated without approval by the Departmental Ethics Committee, except when necessary to eliminate apparent immediate hazards to the participant.	x
▪ I have completed a risk assessment for this programme of research and hereby confirm that the risk assessment document will be discussed with any researcher/student involved in this programme of research (currently or in the future). I will ensure that all researchers/students sign the risk	x

assessment form following this discussion. **Risk assessment form included in Appendix F.**	
▪ I have completed the Information Governance training provided by ISG	x
▪ I have obtained approval from the UCL Data Protection Officer stating that this research project is compliant with the General Data Protection Regulation. My Data Protection Registration Number is: _____ **Z6364106/2021/08/33 _____**	x
▪ I have included examples of the Information Sheet and Consent Form for the proposed research. It will be made clear to the participants that they can withdraw from the study at any time without any reason. If they withdraw I will ask them whether they want to withdraw their data. However, they need to be aware that this will not be possible after July 2022 as the data will have been anonymised and collated.	x
▪ I will ensure that all adverse or unforeseen problems arising from the research project are reported in a timely fashion to the UCL Research Ethics Committee.	x
▪ I will undertake to provide notification when the study is complete and if it fails to start or is abandoned.	x
▪ I have met with and advised students on the ethical aspects of this project/programme of research.	x
▪ I am satisfied that the proposed research complies with current professional, departmental and university guidelines.	x
▪ I consent to this application (and related documents) being shared as an example of good practice (please delete as appropriate): YES, I am happy to have this posted on the divisional intranet. .	x

Signature: Sandra Dunsmuir **Date:** **15/09/2021**

A3

Contact details

Principal Researcher

Full name:	Sandra Dunsmuir
Position held:	Director, Educational Psychology Group, Professor of Educational and Child Psychology
Research Department:	Department of Clinical, Educational and Health Psychology
Email: s.dunsmuir@ucl.ac.uk	Telephone: 020 7679 5307

Additional applicant 1

Full name:	Claire Kenny
Position held:	Student on the Doctorate in Educational and Child Psychology
Research Department:	Department of Clinical, Educational and Health Psychology

Email:	claire.kenny.20@ucl.ac.uk	Telephone:	07973831142
Course code:	DDYPSYSECP06	DBS Number:	001705354622

A4 **Approval from the Departmental Ethics Committee**

Declaration by the Research Department Ethics Chair:

I have reviewed this project and I approve it. ☐

The project is registered with the UCL Data Protection Officer and a formal signed risk assessment form has been completed.

Allocated Departmental Project ID Number for the approved application:

Name of the Research Department Ethics Chair (type in): Date

SECTION B **PROJECT DETAILS**

B1

Summary of Research

It is particularly important to provide sufficient detail of the research protocol and the measures that will be used, to enable evaluation of the application on ethical grounds. It is also important to clearly demonstrate that the proposed measures are 'innocuous' and fall within PaLS Ethics remit.

Please provide a brief summary of the project/programme of research including

- **Background**
- **Aims**
- **Participants and recruitment**
- **Procedure (including whether face-to-face or online study)**
- **Measures**
- **Examples of measures (tests, questionnaires, interviews etc.) as per RD guidelines**

NB When providing examples of each measure you plan to use, please select the most emotive/distressing examples so that the Ethics Chair can judge the potential for causing any distress.

Background

Acquired brain injury (ABI) is the leading cause of disability in children (Forsyth & Kirkham, 2012) and has the highest prevalence of all neurodevelopmental disorders (Hughes et al., 2012). Those who have sustained an ABI frequently experience a range of neuropsychological difficulties (Oddy et al., 2017; Ross, 2011). Whilst assessment post-injury can inform the nature of these difficulties, it cannot predict the real-life impact on a child, in school or at home, as environmental, social and parental factors can all have an effect (Woods et al., 2011).

Research shows a child's social, emotional and academic success can be impeded by an ABI, which, in turn, can increase their risk of school exclusion (Oddy et al., 2017). Children may also develop behavioural problems, which can impact on their school performance (Hawley, 2003) and can lead to criminal offending behaviour (UKABIF, 2018). Despite the high prevalence and potential long-term impact of an ABI, there is little awareness of the extent of the difficulties within the education sector and poor inter-disciplinary collaboration between education, health and social care (UKABIF, 2018), leading children with an ABI to persist with social, emotional, behavioural and academic difficulties and not receive the support they need.

Due to the high prevalence of ABI, and the potentially damaging and long-term impact of this type of injury, it is important that all professionals who work with children with an ABI understand how to support the diverse needs of this population. Despite this, a recent report suggested that ABI training is not routinely provided to all professionals leading to a lack of awareness and understanding of the needs of this population (Linden et al., 2013). This has led some to argue that ABI should be a distinct category within the SEND Code of Practice (Department for Education and Department for Health (DfE & DH, 2014) due to its high prevalence and the severity of the impact it can have on children's lives. Raising the profile of ABI, as well as

providing further ABI-related training, is especially important as the consequences of ABI can be invisible or misdiagnosed, which can lead to misinterpretation of a child's difficulties.

This study will make a distinct contribution to the research literature on ABI as it will assess the knowledge and understanding of ABI across three different sectors: education, health and social care, and provide a deeper understanding of the perceived roles and responsibilities of these professionals. It is also unique in that it will assess the attributions these professionals make about children with an ABI and use all of this information to define training needs across the three sectors. Health and social care professionals have been included, alongside education professionals, due to the importance of these three sectors working collaboratively to support any child with a special educational need (DfE & DH, 2014). It is also integral to include them because each of these sectors are likely to be involved, in some capacity, with children with an ABI, either as a result of the brain injury or as a result of the physical, cognitive or behavioural changes resulting from the injury and so, by including all of them in this research, a holistic approach can be developed.

Aims

This thesis aims to assess education, health and social care professionals' current knowledge, understanding and attributions of children with an ABI so that gaps and issues can be identified, which could inform professional practice. This is important as, if professionals are inadequately informed of the nature of difficulties following an ABI, it may lead to the child being misunderstood and, if left unsupported, it could leave them vulnerable to social and school exclusion. Moreover, as there are large numbers of children with an ABI within the youth justice system (Clasby et al., 2020), it is important that an ABI is identified and the consequences of it are managed at an early stage to attempt to reduce this impact.

In addition, this research will contribute to one of the key recommendations from the All-Party Parliamentary Group on ABI (UKABIF, 2018), which is for all education professionals to receive relevant training on ABI. This study will aim to discover what training should include and how it could be differentiated by setting, role and the experience level of these professionals, and will extend this research to also include health and social care professionals. Health and social care professionals have been included, alongside education professionals, due to the importance of the collaborative work between these professionals and because each of these sectors are likely to be involved, in some capacity, with children with an ABI, at some point.

This research will also aim to explore how the attributions made by education, health and social care professionals could impact their understanding of ABI and the support they provide to children. Attribution Theory facilitates the understanding of another person's behaviour through attributing feelings, beliefs and intentions to them (Weiner, 1985). Research shows that attributions by education professionals are typically based on their experiences of working with children with additional needs as well as their own attitudes and emotional responses (Medway, 1979). It is common for there to be misconceptions about children with an ABI as individuals can misattribute the child's actions due to a lack of any visible markers of the injury, and the tendency for comparisons to be made with same-age peers rather than the person's performance pre-injury (McClure, 2011). This may

impact professionals' impressions of this cohort and lead to a failure among professionals to recognise that changes in behaviour may be a result of the injury. This, in turn, may impact whether effective interventions are put in place and affect the success of these children both in and out of school. This further demonstrates the importance of finding out professionals' current level of knowledge and their attributions to ensure any gaps in knowledge are filled and children with an ABI are effectively supported to achieve their potential.

Participants and recruitment

Education, health and social care professionals from a variety of settings will be sought to participate in this study. The research will be advertised through the use of a recruitment poster (see Appendix D for the draft poster). EPnet, secondary forums, health and social care forums and social media will be some of the mediums explored for recruitment. Social media outlets which will be utilised are: Facebook (e.g. Community Care Facebook page), Twitter (e.g. TEP @edpsychresearch) and LinkedIn. Educational, health and social care professionals will also be contacted through my work at Haringey EPS and the PEP at this service has written a letter confirming her approval (see Appendix E). Potential participants will be emailed the recruitment poster alongside a message communicating the specific professions the research is targeting (see Table 1 below for specifics) . Participants will be screened against inclusion/exclusion criteria (outlined later in form) and those that meet the relevant criteria will be contacted for involvement. If they have changed their mind, their data will be deleted at this stage. All aspects of the research are voluntary.

Participants will vary in age, ethnicity, gender and years of experience. They should currently work with children aged 11-18 and do not need to have experience of working with children with an ABI. In order to consider experience of ABI as a confounding variable, participants will be asked if they have experience of ABI as part of the survey.

Opportunity sampling will be used and participants will be recruited through direct contact with recommended schools, LA EPs and through local and national online adverts. Any participants who wish to contribute to the survey will be invited to do so up until a set deadline, which participants will be made aware of.

This study will have a mixed methods design and both aspects of the study will be opt-in. For the survey, all interested participants, who meet the inclusion/exclusion criteria, will have the opportunity to partake in the research. For the semi-structured interview, participants will be chosen at random from those who have agreed to participate as fewer participants are required. Between 15-20 participants, who have agreed to take part in the semi-structured interview, will complete this part of the study. An equal number of participants from each sector will be recruited to enable comparison between sectors.

Participants' rights will be ensured throughout including their right to withdraw, right to access their information and right for their data to be removed from the dataset. It will be made clear to the participants that they can withdraw from the study at any time without any reason. If they withdraw I will ask them whether they want to withdraw their data. However, they need to be aware that this will not be possible after July 2022 as the data will have been anonymised and collated. The survey will be online and,

if participants are taking part in the semi-structured interview, they will be attending online in order to ensure their safety. In order to support their well-being and dignity, in the unlikely event that this study causes psychological stress, anxiety, humiliation or pain, a multi-layered support pathway has been devised. This means that, if one of the participants experiences any stress, anxiety, humiliation or pain, perhaps due to past experiences of ABI, they will be directed in the first instance to their own support system whether they choose family, friends, their union or colleagues. If they do not have this support system, would prefer not to speak to them about it or have explored this avenue but need further support, they can contact the lead researcher, which is myself, and I will investigate other support organisations around them or provide the necessary support myself, whichever the participant and I deem most appropriate.

As the research will be non-invasive and involve healthy adults, the project is deemed 'low risk'. It is also low risk as it does not involve research on vulnerable groups and/or sensitive topics; involve special category data such as that which reveals political opinions, religious or philosophical beliefs, trade union membership, data concerning the physical or mental health of a person, data concerning sex life or sexual orientation, or genetic or biometric data. This research also does not involve groups where permission of a "gatekeeper" is normally required for initial access to members, for example, native peoples or indigenous communities.

Research does not involve any intrusive interventions and participants will not encounter interventions, which may cause them to reveal information which causes concern, during their everyday lives.

There is no element of deception and participants are asked to provide their full and informed consent before the study is carried out and can choose to withdraw from the study at any time without any reason. If they withdraw they will be asked whether they want to withdraw their data. However, they need to be aware that this will not be possible after July 2022 as the data will have been anonymised and collated.

Procedure (including whether face-to-face or online study)
Once initial interest has been gleaned, a participant information sheet and an informed consent form (see Appendix C) will be distributed to these individuals. Once written informed consent has been received via secure email, the website link to the survey will be distributed and participants will be given two weeks for completion. Reminders will be sent out to all participants, via email, at the end of the first week and 48 hours before the deadline.

At the end of the survey, there will be an option for participants to indicate whether they agree to take part in a semi-structured interview. Between 15-20 participants, who have agreed to take part in the semi-structured interview, will complete this part of the study. This number was decided upon due to the desire to have equal number of participants from health, social care and education and Braun and Clarke's (2013) research indicating that this is a suitable amount for a large PHD project which has thematic analysis as only a part of the whole project. In order to ensure an equal number of participants from education, health and social care backgrounds, the participants will be grouped by profession and then randomly allocating to the semi-structured interview task. The videos/vignettes will be presented by the researcher and written copies

provided in print for participants to refer to. Each question from the semi-structured interview will be read by the researcher and participants' responses will also be recorded in writing and by audio recording equipment for transcription after the interview.

Measures

An online survey, created by the researcher, based on a modified version of the Common Misperceptions about TBI Questionnaire (Gouvier et al., 1988), will be circulated to all participants. The survey will aim to derive data on where the gaps in knowledge on ABI are in general and specifically in relation to social relationships, memory, attention and executive functioning difficulties. It will also aim to assess if there are differences in knowledge due to the participants' role, years in service or work setting.

The survey will include questions about the participant's role, years in service and work setting, along with other socio-demographic factors so that analysis of results can take this data into consideration. In the survey, participants will be asked to rate statements about the experiences of children with an ABI using a Likert scale (see Appendix A for the draft survey). The survey will contain an equal number of statements about the social relationships, memory, attention and executive functioning difficulties that children with an ABI can experience as well as false statements, which are unrelated to this topic. Statements will be verified by specialists working with children with an ABI prior to being distributed to check for accuracy. It will also be piloted with a group of education, health and social care professionals and revised accordingly before the start of the study to ensure the clarity of the questions. Once the survey has been distributed and completed, the number of correct responses will then be calculated through totalling the number of correct answers on each survey in order to assess where gaps in knowledge lie. This will be done overall and for each of the domains above to assess if there is a specific area where further training is required. In order to assess any differences due to setting, role or years in service, three independent group ANOVAs will be calculated.

In Phase 2, a semi-structured interview, created by the researcher, will be carried out with the selected professionals. Between 15-20 participants, who have volunteered to take part in the semi-structured interview, after completing the Phase 1 survey, will complete this part of the study. In order to ensure an equal number of participants from education, health and social care backgrounds, the participants will be grouped by profession and then randomly allocating to the semi-structured interview task. The semi-structured interview will explore the attributions they have about children with an ABI outlined in a set of vignettes/videos. The number of vignettes/videos will be determined by the length of the vignettes and the quality of videos found (an example vignette and semi-structured interview is shown in Appendix B). To ensure the credibility of the vignettes, they will be shown to specialists who work with children with an ABI so that can verify that their contents are realistic. Please note that the questions shown in Appendix B are in the early stages of development and extensive research will be carried out to ensure the rigour of these questions and they will be piloted with a group of education, health and social care professionals to ensure clarity of questioning and revised accordingly before the start of the study.

In terms of analysis, a thematic analysis will be carried out on the semi-structured interviews to identify themes behind the attributions participating

professionals make about children with an ABI and the support they provide. This will be corroborated by a peer debriefing analysis to check the credibility of the themes derived. This will involve sharing the data with a peer, giving them an overview of the whole study and a copy of the thematic map and having an open transparent discussion about the themes and terminology used. In addition, a follow-up interview will also be conducted with each participant after the initial data analysis, to read, review, and validate the common themes.

Examples of measures

An example survey for Phase 1 of the study and example semi-structured interview for Phase 2 have been added at the end for reference purposes (see Appendix A and B). As mentioned earlier, it is important to note that these are in the early stages of development and are purely illustrative at this stage. Further extensive research will be carried out to ensure the rigour of the questions given to participants and pilots will be carried out on both the survey and semi-structured interview to further ensure the questions are understandable and their meaning is consistent both within and between professionals.

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B2 **Will the results be disseminated outside the standard academic outlets? Yes No**
If you answered 'yes', please specify: [x] [ ]

We aim to publish this research in a journal and present the ideas from this research at conferences. As the participants are likely to come from Haringey, it will also be important for this information to be disseminated to education, health and social care professionals within the Local Authority including educational psychologists. The participants may also decide they want the research presented within their work settings in order to improve knowledge of ABI. The research may also be adapted into training for relevant professionals. Charities who support children with an ABI may also be interested in hearing about this research so this may be a further avenue where the information from this study could be disseminated.

B3 **Please outline any ethical issues that might arise from the proposed study and explain how they will be addressed.**

All paper-based data will be stored in a locked cabinet and pseudonymized so that participants and settings cannot be identified without use of a key which the researcher will hold securely and keep separate from the main data file. All electronically held data will be stored securely on the N: drive on the UCL secure system and on an encrypted laptop. All correspondence will also be stored on an encrypted laptop and secure emails will be used for participants to send in their consent forms.

Written consent will be obtained from participants and an explanation will be given regarding their right to withdraw. It is important that there is transparency in the explanation of this research to participants so that they are clear on what they are agreeing to. As a result, a participation information sheet will be given to potential participants before they consent and they will have an opportunity to ask any questions at this point.

There is no expectation that deception will be needed as part of this study, however, if anything is withheld from participants, they will be given a debriefing as soon as it is reasonably possible.

In terms of safeguarding, set protocols for such disclosures will be followed, as required.

The professionals may be under increased pressure due to the current COVID-19 pandemic and so it is important that the researcher minimises any additional stress during the study by providing rest breaks, extended deadlines and considers anything else that is requested on a case by case basis.

Participants can opt-in to receive the study's findings and this will be in written form with questions directed to Claire Kenny at the email address on the bottom of the Participant Information sheet.

SECTION C PARTICIPANT DETAILS

C1

Participants to be studied

An a priori power analysis was conducted using G*Power3 (Faul, Erdfelder, Lang & Buchner, 2007) to assess the number of participants required for the quantitative aspect of the study. A one-way independent group ANOVA was used, with a large effect size (f=0.40) and an alpha of 0.05 to calculate the required sample size. Results showed that minimum sample of 66 participants is required to achieve a power of 0.8 with three groups. A sufficient, and equal, number of educational, health and social care professionals will be recruited to the study to ensure that the cross-professional participant comparisons are statistically viable.

Number of volunteers:	Approx. 196 (3 x 66)
Upper age limit:	70
Lower age limit:	18

C2

Payment

Will payment or any other incentive (e.g. a gift voucher or free services) be made to any research participant?

Yes ☐ **No** ☒ **X**

C3

Recruitment

(i) Describe how potential participants will be identified, approached and recruited:

Please see Appendix D for recruitment poster and Table 1 for participant roles in each sector.

The poster will be disseminated through EPnet, secondary forums, health and social care forums and social media. Social media outlets which will be explored are: Facebook (e.g. Community Care Facebook page), Twitter (e.g. TEP @edpsychresearch) and LinkedIn. Educational, health and social care contacts will also be explored through my work at Haringey EPS. They will be emailed the recruitment poster. Participants will be screened against the inclusion/exclusion criteria below and those that meet the relevant criteria will be contacted for involvement. If they have changed their mind their data will be deleted at this stage. All aspects of the research are voluntary.

Inclusion criteria
They are a teacher, SENCo, TA, EP or a member of the pastoral team in a school/college
They are a clinical or health psychologist, neurologist or GP
They are a social worker, youth worker, Early Help worker or work in the Disabled Children's Team
They are currently work with children aged 11-18 in the UK

Exclusion criteria
They are not in any of the roles outlined above
Do not work with children aged 11-18
Do not work in the UK

Table 1: Participants' roles in each sector

Educational	Health	Social Care
Teachers	Clinical psychologists	Social Workers
Pastoral Team	Health psychologists	Youth workers
SENCOs	Neurologists	Early Help
TAs	GPs	Workers
Educational psychologists		Disabled
(EP)*		Children's Team

*This role, although educational in nature, will be classed as distinct at the analysis stage so that the role of the EP in supporting school's knowledge and understanding of ABI can be analysed separately.

C4 **Will the participants participate on a fully voluntary basis?** **Yes** [X] **No** [ ]

Will UCL students be involved as participants in the research project? **Yes** [ ] **No** [X]

C5 **Deception**

Will any form of deception be used that raises ethical issues? If so, please explain.

There is no expectation that deception will be needed as part of this study, however, if anything is withheld from participants, they will be given a debriefing as soon as it is reasonably possible.

C6 **Will you provide a full debriefing to the participants?**
Yes x No

If 'No', please explain why below.

C7 **Information Sheets and Consent Forms**

You must attach the final information sheet and consent form for your participants with this application. This will already have received approval from the Data Protection Team. Templates are available on the PaLS intranet (please note that these changed at the end of 2017, so as to be compliant with new Data Protection regulations [GDPR]). The information sheet needs to contain sufficient detail to enable informed consent. However, the information must be provided in **lay language** and should look different from the summary of research provided in section B1.

The template information and consent forms should give you an idea of the level of detail required. NOTE THAT MAILING AND E-MAIL ADDRESS SHOULD BOTH BE INCLUDED IN RESEARCHER CONTACT DETAILS. All information sheets and consent forms should include a) Institutional headed paper, b) information regarding the RD Ethics Chair who approved your study, c) project ethics ID. N.B. Where consent will be obtained online, the information sheet and consent form should be accurate to reflect that.

When applying for an ethics approval for a broader research programme, you should provide an example information sheet and consent form for a representative study/experiment. You do not need to provide further examples, unless future studies/experiments substantially depart from the proposed programme of research

See Appendix C for information sheet and consent form

If your research includes analysis of secondary data, please complete Section D.

D1 **Access to data**

If you are using data or information held by third party, please explain how you will obtain this. You should confirm that the information has been obtained in accordance with the General Data Protection Regulation 2018.
NOT APPLICABLE

D2 **Accessing pre-collected data**

Does your study involve the use of previously collected data?
No ☐ - There is no need to complete the rest of this section.
Yes ☐ - Complete all parts of this Section. **Note**: If you ticked any boxes with an asterisk (*),ensure further details are provided above in Section B3: Ethical Issues.

D3 **Name of dataset/s:**

D4 **Owner of dataset/s (if applicable):**

D5	**Is the data in the public domain? Yes ☐** **No ☐** **If not, do you have the owner's permission/license? Yes ☐** **No* ☐**

D6	**Is the data anonymised? Yes ☐ No ☐** **If not:** **Do you plan to anonymise the data? Yes ☐ No* ☐** **Do you plan to use individual level data? Yes* ☐ No ☐** **Will you be linking data to individuals? Yes* ☐ No ☐**

D7	**Is the data sensitive? Yes* ☐ No ☐**

D8	**Will you be conducting analysis within the remit it was originally collected for?** **Yes ☐ No* ☐**

D9	**If not, was consent gained from participants for subsequent/future analysis?** **Yes ☐ No* ☐**

Ethics Application Form: Appendix A: Example Survey - adapted from Common Misperceptions about TBI Questionnaire (Gouvier et al., 1988)

This survey aims to understand your current knowledge and understanding of ABI.

Please answer all questions.

Name:	
Age:	
Gender:	
Ethnicity:	
EAL:	
Occupation:	
Years in Role:	
Setting:	
Highest qualification achieved:	
Do you have any experience of brain injury (personal or professional)?	Yes / No
If yes, please provide details:	

Please indicate whether you agree or disagree with the following statements by putting an x in the box.

	Strongly Agree	Agree	Not sure	Disagree	Strongly Disagree
1. A head injury can cause brain damage even if the person is not knocked unconscious					

2. It is obvious that someone has brain damage because they look and act different					
3. It is possible that a person's personality will change after a brain injury					
4. Problems with irritability and difficulties controlling anger are common in people with an ABI					
5. Brain injuries may cause the person to feel depressed, sad, and hopeless.					
6. People in a coma are usually not aware of what is happening around them.					
7. Once a person recovering from brain injury feels "back to normal", the recovery process is complete.					
8. How quickly a person recovers depends mainly on how hard they work at recovering					
9. A person with an ABI may have trouble remembering past					

events before the injury, but not learning new things.					
10. People who have survived a brain injury can forget who they are and not recognise others, but be normal in every other way.					
11. Problems with speech, coordination, or walking can be due to brain damage.					
12. Most people with brain damage are not fully aware of its effect on their behaviour.					
13. A little brain damage doesn't matter much, since people only use a part of their brains anyway					
14. Emotional problems after head injury are usually not related to brain damage.					
15. Sometimes a second blow to the head can help a person remember things that were forgotten.					
16. People with amnesia for events before the injury usually have					

trouble learning new things too.					
17. People usually have more trouble remembering things that happen after an injury than remembering things from before.					
18. It is good advice to rest and remain inactive during recovery.					
19. “No pain-no gain” is good advice for a recovering patient.					
20. Complete recovery from a severe head injury is not possible, no matter how badly the person wants to recover.					

Ethics Application Form: Appendix B: Example Vignette adapted (Crothers, Linden & Kennedy, 2006) and Attribution Questionnaire (adapted from Whittingham et al., 2012) for Semi-Structured Interview

In the following questionnaire we are interested in your opinion about the causes of the difficulties the children are experiencing. Simply give your own opinion to the best of your ability and, if you are unsure, make the most accurate response possible.

Vignette A

John was an average ability 9-year-old boy who was socially engaging and needed little support in Primary school. He loved playing football with his friends, playing on his PlayStation 2 and watching The Simpson's. He had a strong support system around him in his family and was close to his siblings. When John started secondary school, he started experiencing problems paying attention and wasn't as good at remembering things as he used to be. He couldn't read or write as quickly and got upset more easily, especially when he couldn't keep up with his friends. John was frequently tired and wasn't allowed to play football at lunchtime. Instead he had to walk around with a teaching assistant. Some classmates thought John had become moody and was often very quiet. His parents also felt he was not as sociable or academically capable as he had demonstrated before and he had become clumsier and messier at home.

On your own, please take five minutes to consider which of these are most likely factors contributing to John's difficulties.

	Strongly agree	Agree	Disagree	Strongly disagree
Learning difficulties				
Lots of school demands				
Being in a large class				
Brain damage				
Low self-esteem				
Parental attitude				
Family problems				

Repeated school failure				
Poor family academic level				
Lack of classroom rules				
Lack of parental interest				

Researcher's questions (these would be guide questions to facilitate a conversation with the participant on their attributions about a child with an ABI and further questions may be asked to seek clarification).

1. What do you perceive to be the main cause of the difficulties John is demonstrating?
2. What do you think will happen to John's difficulties over time?
3. Who do you feel is responsible for John's change in behaviour?
4. Where do you think John experiences these difficulties?
5. In your opinion do you think John's difficulties are solely experienced in the scenario outlined or do you think it may occur in other environments? If so, where?
6. How much control do you think John has over his emotions? What makes you think this?
7. How much control do you think John has over his attention in class?
8. What do you think could be leading to John forgetting things in lessons and having trouble with retention?
9. Why do you think John is not performing as well in lessons?
10. What impact do you think education professionals could have on John?
11. What impact do you think health professionals could have on John?
12. What impact do you think social care professionals could have on John?

Ethics Application Form: Appendix C: Participant Information Sheet

UCL EDUCATIONAL PSYCHOLOGY GROUP
RESEARCH DEPARTMENT OF CLINICAL, EDUCATIONAL & HEALTH PSYCHOLOGY

Participant Information Sheet for Education, Health and Social Care Professionals

UCL Research Ethics Committee Approval ID Number: pending

YOU WILL BE GIVEN A COPY OF THIS INFORMATION SHEET

Title of Study:

Working with Children with an Acquired Brain Injury (ABI): The Perceptions and Attributions of Education, Health and Social Care Professionals

Department:

Department of Clinical, Educational and Health Psychology

Name and Contact Details of the Principal Researcher:

Sandra Dunsmuir, Director, Educational Psychology Group, and Professor of Educational and Child Psychology.

Name and Contact Details of the other Researchers:

Claire Kenny, claire.kenny.20@ucl.ac.uk

I would like to invite you to take part in this research study. Before you decide to take part, it is important that you understand why this research is being conducted and what your involvement would be if you participate. Please take your time to read through the following information carefully. If you have any remaining questions afterwards, please do not hesitate to contact Claire Kenny using the details at the end of this summary sheet.

What is the purpose of this research?

This study aims to assess education, health and social care professionals' current knowledge and understanding of acquired brain injury (ABI) and how they would support children with those needs. The purpose of doing this is to assess any potential gaps in knowledge so that relevant training can be devised that is appropriate to the relevant setting, role and level of experience.

Why have I been invited to take part?

All education, health and social care professionals, who work in the professions outlined in Table 1, and who also currently live in the UK and work with children aged 11-18 in the UK, are welcome to take part in this research. Participants will also need access to the internet to take part.

Table 1: Participants' roles in each sector

Educational	Health	Social Care
Teachers	Clinical psychologists	Social Workers
Pastoral Team	Health psychologists	Youth workers
SENCOs	Neurologists	Early Help Workers
TAs	GPs	Disabled Children's
Educational psychologists (EP)		Team

What will happen if I decide to take part?

If you agree to be in this study, phase 1 is the completion of an online questionnaire related to your knowledge and attitudes about ABI. Phase 2 is a semi-structured interview related to case studies of children with an ABI. Both aspects of the study are voluntary. You need to have taken part in phase 1 in order to participate in phase 2. As only 15-20 participants from the survey will take part in the semi-structured interview, and it is important that an equal number are selected from education, health and social care professions, a random selection of participants who have agreed to take part in the semi-structured interview, will be allocated to the interview element of the research. This may mean that you are not selected to take part in the semi-structured interview even if you have agreed to in Phase 1.

Do I have to take part?

You do not need to take part in this study. Nor do you need to decide straight away. Participation will be open to all appropriate participants until March 2022. Taking part is completely voluntary and, if you do decide to participate, you are free to withdraw at any time without any reason. If you decide to withdraw you will be asked whether or not you want to withdraw your data. Please be aware that this will not be possible after July 2022 as the data will have been anonymised and collated.

Will I be recorded and how will the recorded media be used?

Audio recordings will only take place if you participate in the semi-structured interview part of the research in phase 2. The audio

recordings made during this research will only be used for analysis. No other use will be made of them without your written permission, and no one outside of the project will be allowed access to the original recordings.

Are there any benefits or disadvantages to taking part?
This study will ask you questions about you, your knowledge and experience of ABI and your suggestions for how to support children with an ABI. Some questions may make you remember emotional events or lead to feelings of distress. If this occurs, please contact Claire Kenny using the details at the end of this participant information sheet for support.
Please note that there are no monetary or other reimbursements for taking part in this study. By taking part you will help facilitate a better understanding of the knowledge and experience of education, health and social care professionals in relation to ABI with the aim of providing more relevant ABI training to these professionals in the future, to improve the outcomes for children with an ABI. I would be happy to disseminate my findings and provide relevant training if requested.

What if something goes wrong?
If you wish to make a complaint, please raise this in the first instance with Sandra Dunsmuir, Director, Educational Psychology Group and Professor of Educational and Child Psychology. If you feel your complaint has not been handled to your satisfaction, please contact the Chair of the UCL Research Ethics Committee – ethics@ucl.ac.uk

Will my taking part in the study and the data I provide be kept confidential?
Your data and all the information you provide will be kept confidential and will be pseudonymised. Your survey responses will be stored securely on password-protected files held on the UCL network and the researchers are the only people who will have access to these files. They may be shared to responsible UCL colleagues for the purpose of this study but will be pseudonymised so that you are unidentifiable. All correspondence will also be sent through secure emails.

Are there any limits to confidentiality?
Please note that assurances on confidentiality will be strictly adhered to unless there are compelling and legitimate reasons for this to be breached. If this was the case we would inform you of any decisions that might limit your confidentiality.

Will deception be used as part of this study?
Research designs often require that the full intent of the study not be explained prior to participation. Although we have described the general nature of the tasks that you will be asked to perform, the full intent of the study will not be explained to you until after the completion of the study.

What will happen to the result of this study?
The results will be used towards a thesis report for a Doctorate in Education and Child Psychology and may also be published in journals and spoken about at conferences. You will not be identifiable in any report or publication.
How will my personal information be used and protected?

This is the described below and is the 'Local Data Protection Privacy Notice'.
The controller for this project will be University College London (UCL). The UCL Data Protection Officer provides oversight of UCL activities involving the processing of personal data, and can be contacted at: data-protection@ucl.ac.uk

This 'local' privacy notice sets out the information that applies to this particular study. Further information on how UCL uses participant information can be found in our 'general' privacy notice:

For participants in health and care research studies, click here

For participants in research studies, click here

The information that is required to be provided to participants under data protection legislation (GDPR and DPA 2018) is provided across both the 'local' and 'general' privacy notices.

The categories of personal data used will be as follows:
Name

Address
Age
Gender
Ethnicity
EAL
Occupation
Years in Role
Setting
Highest qualification achieved
Do you have any experience of brain injury (personal or professional)?
If yes, please provide details:

The lawful basis that will be used to process your personal data are: 'Public task' for personal data and 'Research purposes' for special category data.

Your personal data will be processed so long as it is required for the research project. If we are able to anonymise or pseudonymise the personal data you provide we will undertake this, and will endeavour to minimise the processing of personal data wherever possible.

If you are concerned about how your personal data is being processed, or if you would like to contact us about your rights, please contact UCL in the first instance at: data-protection@ucl.ac.uk

Contacts and Questions about the Research Study:
The primary researcher is Claire Kenny. If you have any questions, please contact her at claire.kenny.20@ucl.ac.uk.

Thank you for reading this information sheet and for considering to take part in this research study.

Ethics Application Form: Consent Form

UCL EDUCATIONAL PSYCHOLOGY GROUP
RESEARCH DEPARTMENT OF CLINICAL, EDUCATIONAL & HEALTH PSYCHOLOGY

CONSENT FORM FOR EDUCATIONAL, HEALTH AND SOCIAL CARE PROFESSIONALS IN RESEARCH STUDIES

Please complete this form after you have read the Information Sheet and/or listened to an explanation about the research.

Title of Study: Working with Children with an Acquired Brain Injury (ABI): The Perceptions and Attributions of Education, Health and Social Care Professionals
Department: Department of Clinical, Educational and Health Psychology
Name and Contact Details of the Principal Researcher: Sandra Dunsmuir, Director, Educational Psychology Group, and Professor of Educational and Child Psychology.
Name and Contact Details of the other Researchers: Claire Kenny, claire.kenny.20@ucl.ac.uk
Name and Contact Details of the UCL Data Protection Officer: data-protection@ucl.ac.uk
This study has been approved by the UCL Research Ethics Committee:
Project ID number: 21369/001

Thank you for considering taking part in this research. The person organising the research must explain the project to you before you agree to take part. If you have any questions arising from the Information Sheet or explanation already given to you, please ask the researcher before you decide whether to join in. You will be given a copy of this Consent Form to keep and refer to at any time.

I confirm that I understand that by ticking/initialling each box below I am consenting to this element of the study. I understand that it will be assumed that unticked/initialled boxes means that I DO NOT consent to that part of the study. I understand that by not giving consent for any one element that I may be deemed ineligible for the study.

		Tick Box
1.	I confirm that I have read and understood the Information Sheet for the above study. I have had an opportunity to consider the information and what will be expected of me. I have also had the opportunity to ask questions which have been answered to my satisfaction and would like to take part in (please select one or more of the following): - a survey - a semi-structured interview	 Yes/No Yes/No

	NB: you must have taken part in the survey to be eligible to be involved in the semi-structured interview	
2.	I understand that I will be able to withdraw my data up to the beginning of July 2022	
3.	I consent to participate in the study. I understand that my personal information will be used for the purposes explained to me. I understand that according to data protection legislation, 'public task' will be the lawful basis for processing, and 'research purposes' will be the lawful basis for processing special category data.	
4.	**Use of the information for this project only** I understand that all personal information will remain confidential and that all efforts will be made to ensure I cannot be identified. I understand that my data gathered in this study will be stored anonymously and securely and any correspondence will be via secure email. It will not be possible to identify me in any publications.	
5.	I understand that my information may be subject to review by responsible individuals from the University for monitoring and audit purposes.	
6.	I understand that my participation is voluntary and that I am free to withdraw at any time without any reason. If I withdraw I will be asked whether or not I want to withdraw my data. I understand that if I decide to withdraw before July 2022, any personal data I have provided up to that point will be deleted unless I agree otherwise. This will not be possible after July 2022 as the data will have been anonymised and collated.	
7.	I understand the potential risks of participating and the support that will be available to me should I become distressed during the course of the research.	
8.	I understand the direct and indirect benefits of participating.	
9.	I understand that the data will not be made available to any commercial organisations but is solely the responsibility of the researcher(s) undertaking this study.	
10.	I understand that I will not benefit financially from this study or from any possible outcome it may result in in the future	
11.	I agree that my pseudonymized research data may be used by others for future research and that no one will be able to identify me when this data is shared.	
12.	I understand that the information I have submitted will be published as a report and I wish to receive a copy of it.	Yes/No
13.	I consent to my interview being audio recorded and understand that the recordings will be destroyed by 31-7-2023, which is the completion date for the report. NB: If you do not want your participation audio-recorded you cannot take part in the study	
14.	I hereby confirm that I understand the inclusion criteria as detailed in the Information Sheet and explained to me by the researcher.	
15.	I hereby confirm that: (c) I understand the exclusion criteria as detailed in the Information Sheet and explained to me by the researcher; and (d) I do not fall under the exclusion criteria.	

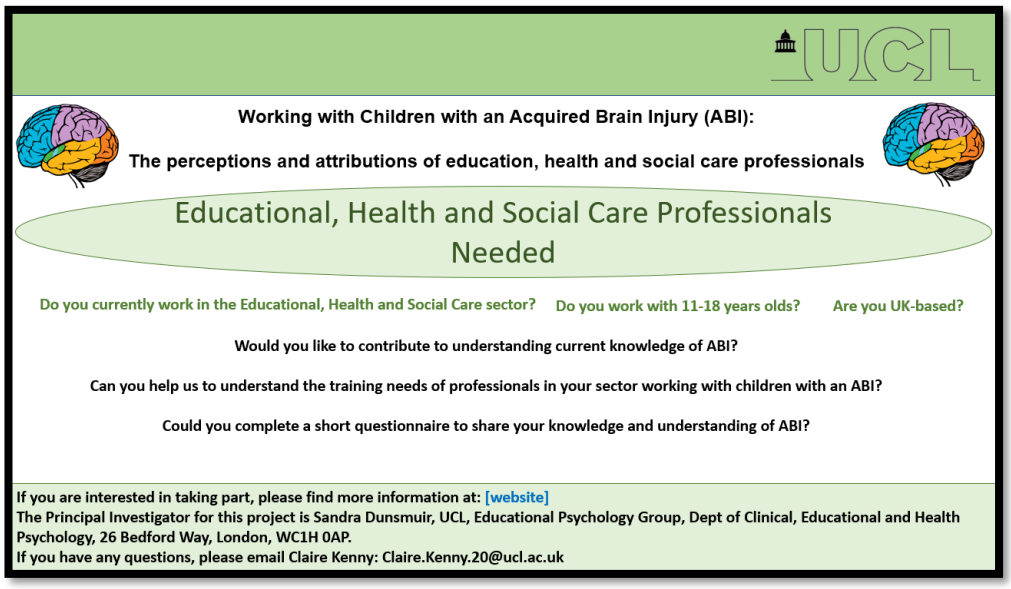
16.	I have informed the researcher of any other research in which I am currently involved or have been involved in during the past 12 months.	
17.	I am aware of who I should contact if I wish to lodge a complaint.	
18.	I voluntarily agree to take part in this study.	
19.	**Use of information for this project and beyond** I would be happy for the data I provide to be archived at UCL. I understand that other authenticated researchers will have access to my pseudonymized data.	

If you would like your contact details to be retained so that you can be contacted in the future by UCL researchers who would like to invite you to participate in follow up studies to this project, or in future studies of a similar nature, please tick the appropriate box below.

	Yes, I would be happy to be contacted in this way	
	No, I would not like to be contacted	

_____	_____	_____
Name of participant	Date	Signature
_____	_____	_____
Name of witness (If applicable)	Date	Signature
_____	_____	_____
Researcher	Date	Signature

Ethics Application Form: Appendix D: Recruitment Poster



Ethics Application Form: Appendix E: Permission letter

30th July 2021

Dear Claire,

Thank you for your letter requesting permission for you to undertake your thesis project "**Working with Children with An Acquired Brain Injury (ABI): The Perceptions and Attributions of Education, Health and Social Care Professionals".**

We discussed your project at a recent Educational Psychology Service management meeting. Subject to Ethical Approval by UCL's Ethics Committee and to agreement from participating schools. children and their families, we are happy to support you in undertaking your work in [redacted]

Please keep me updated about how your work is proceeding and discuss any potential ethical issues with me as they arise so that we can ensure that we are managing the work within the context of [redacted] EPS effectively and are providing you with appropriate support.

Yours sincerely,

[redacted]

Principal Educational Psychologist
Educational Psychology Service

Ethics Application Form: Appendix F: Risk Assessment Form

UCL DIVISION OF PSYCHOLOGY AND LANGUAGE SCIENCES

RISK ASSESSMENT
GUIDANCE

Please note that you should conduct risk assessment for every project or programme of research. You will need to submit a signed copy of this form with the ethics application.

The PI of the project should go through the entire risk assessment with every researcher or student who takes part in the project.

Every researcher and student involved in the project will need to sign a copy of the form that the PI retains. If exceptions apply to specific individuals working on the project, these need to be noted to the form and signed off by both the PI and the individual in question.

If a new person joins the project, the PI needs to guide them through the risk assessment and they will need to sign the copy of the form that the PI retains. Ethics will need to be notified of a new person, but do not need an additional risk assessment documentation.

The responsibility for ensuring appropriate risk

assessment practice lies within the PI of the lab.

DIVISION OF PSYCHOLOGY AND LANGUAGE SCIENCES RISK ASSESSMENT CHECKLIST CONTENTS

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1. PLANNING STAGES OF RESEARCH PROJECT

1.1 ESSENTIAL SAFETY PROCEDURES

- Follow UCL safety procedures
- Follow Departmental safety guidelines where applicable
- Follow UCL procedures on Laboratory work, Biohazards etc. where applicable
- Contact Departmental Safety Officer (DSO) for guidelines on Departmental laboratory environments where applicable
- Inform Supervisor/Line Manager of any changes in an experimenter's ability to undertake tasks, e.g. illness or pregnancy, so that risk assessments can be reviewed. Report any accidents/incidents that cause injury or damage to property or any dangerous occurrences to their Supervisor/Line Manager

- Each employee/student is responsible for remaining aware of the Health and Safety at Work Act (1974) http://www.hse.gov.uk/legislation/hswa.htm and their duties and requirements under the Management of Health and Safety at Work Regulations (1999).

- Become familiar with any existing emergency procedures (e.g. fire, accident, violence) for the specific building where research/activity is being conducted, including
  - Telephone number to ring in emergency (this may not be 999)
  - Designated First Aider on site

- Consult BPS Code of Ethics and Conduct for further information: *http://www.bps.org.uk/sites/default/files/documents/code_of_ethics_and_conduct.pdf*

1.2 TRAINING AND INDIVIDUAL NEEDS OF RESEARCHER REGARDING TRAINING AND HEALTH & SAFETY

Providing training on the methods and equipment that will be used in a research project can help researchers manage difficult situations, (e.g. a participant becoming aggressive or agitated) and will ensure that any necessary equipment is used correctly. Training needs will depend upon both the nature of the project and the skills of the individual researcher.

The health risks may also vary for individual researchers on the same project and should be addressed accordingly (e.g. provide support for any vulnerabilities or pre-existing health conditions, including disability and pregnancy).

Please indicate any measures you will implement to control any risks: --- - Carefully consider any physical demands and whether the researcher is suited to these

☐Provide training on interviewing/assessment techniques/test procedures

☐Provide training on specialist methodological procedures

☐Provide training for specialist equipment

☐Check whether immunisations up-to-date as appropriate

☐Organise first-aid training to help deal with health risks

☐Consider precautions needed relevant to researcher's vulnerabilities (e.g. carry asthma inhaler, limit need to climb stairs, etc)

☒Other (please describe):

It is not expected that there will be any risks to health as a result of this study. However, I will assess and manage health risks on a case by case basis if they arise.

1.3 DATA PROTECTION

As a centre of knowledge and training, UCL focuses on exploiting information. Next to people, information is UCL's most important asset. The information we use exists in many forms: printed or written on paper, stored electronically, transmitted by post or using electronic means, shown on films, or spoken in conversation. Regardless of the form it takes, or means by which it is shared or stored, information should always be protected appropriately. The General Data Protection Regulation (GDPR) is the legislation under which personal data is protected.

Researchers and students involved in research projects should complete the UCL GDPR online training course: https://www.ucl.ac.uk/legal-services/ucl-general-data-protection-regulation-gdpr/gdpr-online-training

Please indicate if you have completed the GDPR online training course:

☒ I have completed and passed the UCL GDPR online training course

GDPR places strict regulations on the processing of data in non-EU countries. If you will be processing data from a non-EU country, both the researcher and the PI should ensure to read the guidance on processing personal data overseas, observed here: https://www.ucl.ac.uk/pals/sites/pals/files/pals_guidance_studentsprocessingpersonaldataoverseas.docx.pdf .

☐ I (the researcher) have read the guidance on processing personal data overseas, and will comply with it.

NOT APPLICABLE

I (the PI) have read the guidance on processing personal data overseas, and will comply with it.

2. OFF-SITE VISITS

Please complete this Section if you will be conducting off-site visits at any stage during your research project. If you are not intending to make off-site visits, go straight to Section 3.

2.1 PREPARATION AND TRAVELLING

Off-site visits can carry a number of risks, for example being in an isolated or dangerous setting, mugging or attack, and a lack of support in a difficult encounter.

Please indicate any measures you will implement to control any risks:

☒Evaluate whether an off-site visit is appropriate and necessary
☒Where there is little or no information regarding the participant, try to arrange the first meeting on-site
☒Check car insurance and roadworthiness of car if driving
☒Aim to not conduct off-site visits outside normal working hours, but have a plan of action if this is unavoidable
☒Aim to carry out visit in daylight where possible
☒Ensure no off-site visit is conducted alone, unless a supervisor has agreed that the visit presents minimal risk
☒Ensure experimenter is aware of any relevant background information on the individual/family.
☒Plan routes and transport well in advance, and carry maps/timetables as appropriate
☒Wear appropriate clothing and footwear
☒Avoid carrying confidential materials where possible
☐Ensure that appropriate CRB clearance is in place if experimenter will be working alone with children or vulnerable adults NOT APPLICABLE
☒Always carry your UCL ID card
☒Avoid carrying large amounts of cash, valuables and jewellery
☒Be vigilant in areas that could present safety risks, e.g. mugging
☒Consider strategies that may reduce such risks (such as travelling in taxis, disguising laptops in non-laptop style bags)
☒Carry a mobile phone to call for help in the case of an emergency
☒Leave an expected schedule (i.e. the names and addresses of visits) as well as your expected time of return with a colleague/family member/friend
☒Have an agreed plan of action with them if you do not return when expected ☐Other (please describe):

2.2 CONDUCT DURING AND ON RETURN FROM VISIT

Seeing a participant off-site can present risks such as physical or verbal abuse or harassment. Being vigilant both when going to and from the site and during the visit can reduce risk. Do not hesitate to terminate the visit if concerned about safety.

Ensuring safe return from an off-site visit can be done by informing family, friends or colleagues, who should be prepared if necessary to act if the researcher does not return or make contact when expected

Please indicate any measures you will implement to control any risks:

☒Aim to park in a public/well-lit area
☒Carry a charged mobile phone and call for help if necessary
☒Make a mental note of routes in and out of the premises to aid a quick entry and exit if safety concerns arise
☒Minimise presence of potential weapons (such as sharp or heavy objects) or hazards of clothing and jewellery (e.g. scarves, earrings) that could lead to the researcher being harmed
☒Permit participant to terminate session at any time without being required to justify it
☒Plan an early exit strategy (such as a call to/from the office) in case of safety concerns
☒Terminate session if participant's behaviour gives any cause for concern
☒Ensure a designated person knows where you are and when you are expected to return
☒Call/notify the designated person to let them know when the visit is over and they are home safely
☒Have a plan of action if you do not return when expected (e.g. they call the police)
☒Report any concerns as soon as possible in writing to supervisor/manager
☐Other (please describe):

_____
_____
_____
_____
_____

3. ON-SITE APPOINTMENTS

3.1 ARRANGING APPOINTMENTS

Anticipating potential difficulties when preparing for appointments can reduce interpersonal risks such as violence or aggressive behaviour.
NB: Safety procedures should be in place to safeguard any appointments outside normal working hours.

Please indicate any measures you will implement to control any risks:

☒Set appointments with participants to fall within the building's normal opening hours (usually Mon-Fri, 9am-6pm)
☒If appointments with participants are scheduled to fall outside normal opening hours, then 2 experimenters will be present at all times, the researcher's supervisor/manager will be notified of and give approval to the out-of-hours testing, and Security will be informed of the planned testing, including the names and scheduled times of participants and the room number where testing will take place
☒Ensure adequate facilities and arrangements are in place for any participants with disabilities (e.g. restricted mobility, poor vision, hearing)
☒Send participant an appointment letter stating the date and time of their visit, and the name of the researcher running it – this could be shown on demand
☒Keep a diary of appointments for participants visiting UCL premises
☒Arrange to see participant in pairs if there are any concerns (e.g. if the participant is deemed to present risks, the lab is isolated etc.)
☒Plan appropriate back-up procedures (e.g. observation window in place, door open, colleague making regular checks, a code word or phrase to indicate risk, or use of personal alarm system)
☐Other (please Describe):

_____
_____
_____
_____
_____
___

3.2 LAYOUT & EQUIPMENT

The layout of a room can carry certain risks, for example leading the participant to become anxious, agitated or aggressive – particularly if intrusive equipment (e.g. TMS; eye-tracking equipment) is involved. Setting up equipment properly will reduce risks of fault and potential injury (e.g. radiation).

Please indicate any measures you will implement to control any risks:

☐Consider optimal layout of physical environment to reduce potential participant anxiety (e.g. ensure chairs of equal height, ensure adequate distance between people)

☒Arrange furniture so that access to an escape route is made available to both researcher and participant

☒Minimise presence of potential weapons (such as sharp or heavy objects) or hazards of clothing and jewellery (e.g. scarves, earrings) that could lead to the researcher being harmed.

☐Equipment will only be used according to the manufacturer's instructions NOT APPLICABLE

☐Equipment will be regularly maintained, and is transported and secured safely NOT APPLICABLE

☐Researchers will follow local safety procedures for working in laboratory environments, to reduce risk of harm, for example due to radiation NOT APPLICABLE

☒Other (please describe):

Any off-site visits will take place in the work setting of the participant or in the LA offices and so will be well-populated and only during working hours. Where this is not possible, the meeting will take place online.

3.3 MEETING PARTICIPANTS

The way in which participants are greeted and put at ease can have an impact on the success of the visit, and reduce risks such as distress or aggression.

Please indicate any measures you will implement to control any risks:

☒Ensure that researcher's clothing is professional and does not cause offence or attract unwanted attention

☒Ensure that participants are expected in reception areas and anticipate early arrivals

☒Ensure professional boundaries at all times. This will include discouraging inappropriate behaviour and personal questions

(such as requests from participants for experimenter's personal information).

☒Ensure that appointments take place on time to reduce potential anxiety or agitation caused by having to wait

☒Keep participant's contact details available to follow up if they are late, to ensure they are not lost

☐Other (please describe)

_____
_____
_____
_____
_____
__

3.4 DURING AND AFTER INTERVIEW/ASSESSMENT/TEST PROCEDURE

The physical layout of the environment may present a number of risks, for example being in an isolated room or out of earshot or view, carrying out procedures that raise anxiety etc.

Please indicate any measures you will implement to control any risks:

☒Ensure that planned back-up procedures are in place (see 3.1)

☒Permit participant to terminate session at any time without being required to justify it

☒Plan an early exit strategy (such as a call to/from the office) in case of safety concerns

☒Terminate session if participant's behaviour gives any cause for concern (e.g. appears agitated, markedly withdrawn, under the influence of alcohol or drugs)

☐After the session, escort participants to the exit or arrange for someone else to do so to reduce the risk of them being left in the building without authorization NOT APPLICABLE

☒Confirm to colleague after session is finished

☒Report any concerns raised as soon as possible in writing to supervisor/manager

☐Other (please describe):

_____
_____
_____
_____

3.5 PERSONAL DISTRESS

Various features of an appointment, for example a complex task, discussing a difficult subject, or challenging participant behaviour can cause distress for both participant and researcher.

Please indicate any measures you will implement to control any risks:

☒Participants should be fully debriefed, including an information sheet about the research, and have an opportunity to ask questions

☒All incidents or "near misses" should be reported to the supervisor

☒A strategy to monitor incidents should be developed, and control measures put in place accordingly

☒If researchers experience any personal distress as a result of an appointment with a participant, they should discuss the incident with their supervisor and receive appropriate support

☐Other (please describe):

_____

_____

_____

4
DECLAR
ATION

The work to which this Risk Assessments pertains will be reassessed whenever there is a significant change **and at least annually**. Those participating in the work have read the assessment and signed the Declaration

Tick **ONE** of the following statements:

☐I / We the undersigned have assessed the activity and possible risks and declare that there is no significant risk

☒I / We the undersigned have assessed the activity and associated risks and declare that all foreseeable risks have been identified above and will be controlled by the method(s) listed

☐I / We the undersigned have assessed the activity and associated risks and declare that, in addition to the risks identified and to be controlled by the method(s) listed above, have also identified the following risks and methods for dealing with them:

NAME OF SUPERVISOR / PI: ……Sandra Dunsmuir……. SIGNATURE OF SUPERVISOR / PI: ……

DATE: ……16-9-2021……

……

NAME OF RESEARCHER: ……Claire Kenny

…… SIGNATURE OF RESEARCHER: ……

……..…

DATE: ……20-7-2021……

……

Every researcher and student involved in the project will need to sign a copy of the form that the PI retains. If exceptions apply to specific individuals working on the project, these need to be noted to the form and signed off by both the PI and the individual in question.
If a new person joins the project, the PI needs to guide them through the risk assessment and they will need to sign the copy of the form that the PI retains. Ethics will need to be notified of a new person, but will not need additional risk assessment documentation.
The responsibility for ensuring appropriate risk assessment practice lies within the
PI of the lab. [Updated: October 2018]

Subject: Application for ethical approval CEHP/EP/2021/0009

Dear Claire

I am writing to let you know that we have now approved your ethics application for your online study, entitled "Working with Children with An Acquired Brain Injury (ABI): The Perceptions and Attributions of Education, Health and Social Care Professionals".

The approval reference number is CEHP/EP/2021/0009. I have attached a copy of your application form.

I will keep the approved forms on file, and a copy has been lodged with the UCL Research Ethics Committee. Please notify us of any intended amendments, in line with guidance on the PaLS Intranet.

Good luck with your research!

Best wishes,

Susan

Dr Susan Birch
Educational Psychology Group
Research Department of Clinical, Educational and Health Psychology
University College London
26 Bedford Way
London WC1H 0AP
Tel: 0207 679 5307

Appendix BB: Supporting Quotations for Proposition 1

Appendix BB: Supporting Quotations for Proposition 1

Part A: No Presenting Difficulties

Milo: Quotations to Support External Causal Attributions

External Causal Attributions	Quotations supporting External Causal Attributions
Extra-curricular activities	*"the sorts of things he likes doing playing football … I imagine that those kind of experiences …have influenced him"*
	"I guess .. there was a bit around his activities and his interests and things. Things he likes as well, which seemed to be a kind of important part of him."
Home environment	*"He says his family have been a huge support, so I suspect they've had quite a big influence on who he's become and how he interacts with others and how he behaves"*
	"what's going on at home and the parent and what they're relationships are like is probably a significant part of how they present"
School	*"he felt like his teachers appreciated him and the way he presented in class suggests that, you know, their relationship with him has contributed to the way he presents"*
	"And so I wonder how much of like that 'kind' and 'trying hard' … has come from what he's heard about himself from other people whether that be professionals"
Social circle	*"Because I think his family and his friends have also been a significant influence"*
	"I think certainly at that age, around 10, friends are such a huge influence"

Aya: Quotations to Support External Causal Attributions

External Causal Attributions	Quotations Supporting External Causal Attributions
Extra-curricular activities	*"I think if she had potentially not as many opportunities and didn't have good relationships at home, perhaps she would present differently"*
	"it's the external activities she's involved with, she volunteers and fundraisers for charity"
Home environment	*"I think if you're that kind of person you tend to be that kind of person because you've been brought up in a kind environment."*
	"I guess it's her family background that's made her the way that she is."
School	*"Clearly she has quite an altruistic outlook on life in the way that she wants to help people but perhaps this has also been supported and encouraged by those around her, be that people in school or her family"*
	"I think probably her aspirations and how well she's doing in the different areas will have been cultivated by key [school staff] in her life."
Social circle	*"Has a friendship group, so again positive resilience"*
	"she also has friends, which are really important at this age"
	"I think there's a lot of social … capital there for her to sort of fall back on."

Milo: Quotations to Support Internal Causal Attributions

Internal Causal Attributions	Quotations Supporting Internal Causal Attributions
Personal characteristics	*"…so personality type, you've got the temperament that people can be kind of born with. I guess when they're grown up, it starts to develop, whether or not, you're an anxious child, whether you're a confident child"*
	"He also seems to have a calm disposition whether this is due to his personality, genetics"
Genetics	*"They were born with the genetic predisposition and maybe kind of to be, like, confident and to be kind of social."*
	"I do think it's his natural disposition. If those characteristics are genetic, then they may be also quite comfortable in themselves and you know fairly happy."

Aya: Quotations to Support Internal Causal Attributions

Internal Causal Attributions	Quotations Supporting Internal Causal Attributions
Personal characteristics	*"She's doing things that she's chosen to do that are important to her, and it sounds like by doing those things, it's making her happy"*
	"A big part of her identity, her identity, is helping others and that's something she obviously really values."
Innate academic ability	*"Her academic ability and her cognitive abilities because she's getting high results so I think there's the influence of her brain, which seems to have a high capacity"*
	"I would think that she's found school quite, quite easy… I think sometimes some people have just got it built in"

Milo: **Quotations to Support Nature Versus Nurture Attributions**

Nature Versus Nurture Attributions	Quotations Supporting Nature Versus Nurture Attributions
nature versus nurture	*"I think some of those things would be innate to him. Being calm. Now I'm reconsidering, probably are more cultivated through his experience and his environments."*
	"he obviously has quite a lot of lovely nurture because his family's massively supportive and sister, but I still think there's an innate amount of nature in someone that makes them be the person they are"

NB: No attributions related to nature versus nurture for Aya in Part A

Part B: Change in Presentation

Milo: Quotations to Support TBI Attributions

TBI Attributions	Quotations Supporting TBI Attributions
TBI attributions	*"I'm not too sure if the messier maybe I'm wondering if there's been some sort of physical injury that is sustained maybe to his head. Has he had an accident that has caused a level of brain damage and that has then resulted in these changes. He said he can't move as quickly, so that suggests there's been some sort of physical impairment there as well, which would suggest to me that there's been some sort of accident, some trauma, to some extent."*
	"It sounds like there's been a change in his brain somewhere, not just a change in his personality or his attitude"

Aya: Quotations to Support TBI Attributions

TBI Attributions	Quotations Supporting TBI Attributions
TBI attributions	*"she's had some sort of brain trauma"*
	"I probably automatically wouldn't necessarily go to acquired brain injury"
	"it doesn't sound like traumatic brain injury, but it might be."
	"It wouldn't be a head injury, it wouldn't be something that would jump to mind as much."
	"Interestingly, if it was Milo, I think I would have been more likely to say some sort of physical change [like a brain injury]. But with Aya that wasn't what I was thinking"

Milo: Quotations to Support Additional External Attributions

Additional External Attributions	Quotations Supporting Additional External Attributions
Unforeseen Circumstances	*"So my mind would probably go more to 'What has happened to potentially to him?' In that regard, that might account for the difficulties and the changes that we're seeing now"*
	"It could be that there's been a significant event, a loss in his life."
Risk of Exploitation	*"maybe risk of exploitation, although he wouldn't necessarily present as a typical young person, that would be approached for something like that."*

Aya: Quotations to Support Additional External Attributions

Additional External Attributions	Quotations Supporting Additional External Attributions
Substance Abuse	*"started drinking or drugs or anything like that, which may have affected it"*
	"I would have said … exposure to drugs and alcohol."
Grooming/Sexual Exploitation	*"Grooming by gangs. You know, sexual grooming by gangs"*
	"I do wonder about like just because of the sexual stuff over it's grooming or not, or some sort of sexual abuse, maybe."
Unforeseen Circumstances	*"maybe she's witnessed something, some potentially traumatic event has triggered this behaviour"*
	"looking for like a single event that would have caused like quite a significant change, rather than something over a period of time"

Milo: Quotations to Support Additional Internal Attributions

Additional Internal Attributions	Quotations Supporting Additional Internal Attributions
Adolescence	*"I would probably attribute that to hormones."* *"he's going through puberty now, so that would have be having a big impact"*
Medical Issue or Illness	*"There seems to be like a big change around his motivation and that energy. I'm just wondering if like, if there's been something health related, that's kind of impacted that or if his kind of motivation lost would make things more difficult."* *"It could be viral, I've actually worked with a child with a viral infection similar to meningitis, so it could be a viral infection."*
Mental Health	*"he's physically different from previously which might be as a result, of feeling down or mental health issues"* *"I would presume that they would explore a bit of mental health in there as well and whether or not there's also some kind of other traits going on and the fact you can't concentrate. Less sociable, but that could all be tied in with the fact that he is a bit more depressed."*
A Cognitive Change	*"The actual act of reading and writing just suggest that there's been some sort of regression in his ability"* *"I'm like, there's a lot of cognitive red flags here"*
Change in Self-Perception	*"five years of his life with that football team that's part of your family. So that's like losing a massive part of his identity. And that's gonna impact how he feels."*

	"He's … finding it harder to concentrate and manage and he is feeling … lower. By the sounds of it, he's also very aware of it, and I feel like that awareness it's kind of part of … that."
Learning Difficulty	*"I guess the first thing that kind of jumps to my mind is does he have additional needs like special educational needs"* *"Could it be that he now has some kind of learning disability or something that's kind of making things harder for him"*

Aya: Quotations to Support Existing Internal Causal Attributions

Internal Causal Attributions	**Quotations Supporting Internal Causal Attributions**
Personal characteristics	*"She's doing things that she's chosen to do that are important to her, and it sounds like by doing those things, it's making her happy"* *"A big part of her identity, her identity, is helping others and that's something she obviously really values."*
Innate academic ability	*"Her academic ability and her cognitive abilities because she's getting high results so I think there's the influence of her brain, which seems to have a high capacity"* *"I would think that she's found school quite, quite easy… I think sometimes some people have just got it built in"*

Aya: Quotations to Support Additional Internal Attributions

Additional Internal Attributions	Quotations Supporting Additional Internal Attributions
Mental Health	*"it could be anxiety."*
	"What difficult emotions is she trying to process that's coming out as angry behaviour"
Adolescence	*"some of it's due to hormones like being angry that I think that's normal, wanting to take risks"*
	"It could be puberty."
Learning Difficulty	*"it could be some kind of cognitive impairment"*
Medical Issue or Illness	*"whether it's something more, you know something medical that's happened"*
	"I think I would be looking for maybe some kind of medical explanation."
Neurodevelopmental Difference	*"You would be questioning something like ADHD"*
	"could be some sort of.. more neurological than sort of physical."

Aya: Quotations to Support Nature Versus Nurture Attributions

Nature Versus Nurture Attributions	Quotations Supporting Nature Versus Nurture Attributions
Nature Versus Nurture	*"It's a whole nature versus nurture thing"*
	"I think it's mostly to do with the environment. But potentially, personality could still play a part."
	"We don't really know fully about nature versus nurture."

NB: No attributions related to nature versus nurture for Milo in Part B

Part C: Change in Presentation due to TBI

Milo: Quotations to Support TBI Attributions

TBI Attributions	Quotations Supporting TBI Attributions
TBI Attributions	*"I would have thought the brain injury was the most significant."*
	"Everything that's happened has happened since the traumatic brain injury and we know that it can affect somebody's work, their working memory, their mood and their ability to do things physically as well"
	"He's unlikely to have changed so significantly in the space of two years without the brain injury."
	"It's probably mostly to do with the traumatic brain injury."
	"it's his brain, so it is far more than anything this rather than environmental."

Aya: Quotations to Support TBI Attribution

Additional External Attributions	Quotations Supporting Additional External Attributions
TBI Attribution	*"Her brain is dominating her personality and her physical skills and cognitive skills, her moods and emotions, and also the risk taking that she seems to have gone from being very sort of self-controlled and not taking risks to taking huge physical risks through sex with a few boys."*
	"before she was so regulated and now she's so dysregulated, and the difference is the TBI."
	"She didn't behave like this before the brain injury. I think that's been the causal factor."

Appendix CC: Supporting Quotations for Proposition 2

Appendix CC: Supporting Quotations for Proposition 2

Part A: No Presenting Difficulties

Milo

Milo: Quotations to Support External Attributions

External Causal Factors	Quotations Supporting External Attributions
Home environment	*"I think that his circumstances, …his family, that might not change too much"*
	"It's like you would expect that to be his trajectory because there's no reason there's no … family … reasons … that come through that would suggest that might change."
School	*"I think that children are constantly responding to what's going on and the different learning experiences that they're having and you know what experiences are they going through."*
	"It's slightly different I think when they come to secondary schools so I think there would be variations"
Social circle	*"you would expect that to be his trajectory because there's no reason there's … friendship reasons …that would suggest that might change."*
	"I think that his friendship … that might not change too much."
Unforeseen Circumstances	*"unless there is a particular sort of incident students do tend to present similarly throughout their sort of their childhood."*
	"it could change depending on future circumstances"

Milo: Quotations to Support Internal Attributions

Internal Causal Factors	Quotations Supporting Internal Attributions
Personal characteristics	*"It's like you would expect that to be his trajectory because there's no … personality traits that come through that would suggest that might change."*
	"Elements of his personality may change."
	"There are kids that don't respond that way, and they are consistently good because that's … the students .. identity and how they see themselves"
Adolescence	*"However, a lot go up and down, even if they have no changes in their sort of family or friendships circumstances purely just because of hormones, I would say."*
	"As a 10-year-old child, that's very much evolving…they haven't gone through puberty yet…I think that we continue to grow and change throughout our lives."

Milo: Quotations to Support Nature Versus Nurture Attributions

Nature Versus Nurture Attributions	Quotations Supporting Nature Versus Nurture Attributions
Nature Versus Nurture	*"Because I think the core values and skills and traits that he's got would likely continue along a similar trajectory and obviously like because of the core people that are…have cultivated those things. Those are likely to stay the same"*
	"I think life experiences shape us as well as the relationships we have, as well as our personality. And as a 10-year-old child, that's very much evolving."

Aya

Aya: Quotations to Support External Attributions

External Attributions	Quotations Supporting External Attributions
School	*"if you're moved or something else, you know, you don't do well in your exams or if she got moved down and then that might change your presentation"*
	"do A-levels and, presumably like double two different sciences and maths or something like that then it it's harder and you might present differently."
Unforeseen Circumstances	*"Well, there's nothing to say that it's going to change but then that anything can happen, anything can happen."*
	"So unless something massive happened to her, I would expect her to stay the same."

Aya: Quotations to Support Internal Attributions

Internal Attributions	Quotations Supporting Internal Attributions
Personal characteristics	*"There's no evidence that it would change. She seems to be on a sort of a positive trajectory from there."*
	"I don't think she presents as variable herself"
	"I think it's her personal traits, maybe if she was under different circumstances, she might still be like this."

Part B: Change in Presentation

Milo

Milo: Quotations to Support Additional External Attributions

Additional External Attributions	Quotations Supporting Additional External Attributions
Social Circle	*"loads of social changes, and I think that things are very fluid and with the right help, things could definitely change to more positive presentation if supported."*
Support from Others	*"with the right support there's the capacity to change and perhaps I don't know if he has the capacity to be like he was before, but to be able to regain some of that, so I would like to believe that."*
	"it sounds like he's got a safe and secure base so, perhaps with the right support, he might improve."
State of Flux	*"I think if there's been a change, there's a reason for the change. Maybe there's a reason we can bring it back."*
	"I'm seeing a Milo that is variable to how he was before and so therefore I would assume Milo has the potential to go back to how it was before or a variation on that"

Milo: Quotations to Support Additional Internal Attributions

Additional Internal Attributions	Quotations Supporting Additional Internal Attributions
Adolescence	*"Loads of hormonal changes, loads of social changes, and I think that things are very fluid and with the right help, things could definitely change to more positive presentation if supported."*

Mental Health	*"It doesn't seem stable. He's feeling really down. Friends call him moody. He's quiet, he's withdrawn."*

Aya

Aya: Quotations to Support Additional External Attributions

Additional External Attributions	Quotations Supporting Additional External Attributions
Home Environment	*"this might as well just be a phase that she's going through…perhaps pushing back against some of the family, parents."*
Social Circle	*"Risky behaviour like that could lead to even riskier behaviour. Whether she's being groomed by a gang or something."*
	"So now she's got more negative influences from a lot of different places, and I think that, with the change to those things, she may change again."
Support from Others	*"I think that there's potential with the right support for her to improve things but also the potential for it to get worse if those supportive people keep withdrawing"*
	"Depends on the kind of whether she gets support and the type of support that impact how she responds."
State of Flux	*"she's going to go through a lot of transitions, so it doesn't necessarily mean that it will stay that way."*
	"she's going to have quite a lot of life events to go through that may change as she gets older."

Aya: Quotations to Support Additional Internal Attributions

Additional Internal Attributions	Quotations Supporting Additional Internal Attributions
Changes in Identity	*"the sense of who she was as a person appears to have changed."*
	"the way she feels inside herself has changed."
Feelings of Anger	*"She talks about it as rages and she's destroyed furniture suggesting that she's really not [stable]."*
	"think she's pretty unstable by her rages and anger, and she's losing a job."
Transition	*"I think it's unlikely that who she is right now is who shall be in 10 years' time."*
	"this might as well just be a phase that she's going through"

Part C: Change in Presentation due to TBI

Milo

Milo: Quotations to Support TBI Attributions

TBI Attributions	Quotations Supporting TBI Attributions
TBI attributions	*"So I think that variable bit seems to be a pattern with TBI."*
	"if he hadn't had a traumatic brain injury, he probably would have continued down the path of where he was when he was ten years old being active, being calm, getting on in school"
	"He's unstable now, but I think a brain injury is fraught with difficulty and its instability and change over time."

Aya

Aya: Quotations to Support TBI Attributions

TBI Attributions	Quotations Supporting TBI Attributions
TBI attributions	*"Because I know people can have permanent personality changes as a result of brain injuries. It might be that she's never gonna go back to being how she was before."*
	"some elements of the traumatic brain injury likely to always cause her difficulty and whilst we can kind of mitigate against those, there may be difficulties that she experiences for a good deal of time into the future"
	"The impact of a brain injury, probably in itself isn't stable like that might…could get better or worse."
	"potential to recover from her brain injury."

Appendix DD: Supporting Quotations for Proposition 3

Appendix DD: Supporting Quotations for Proposition 3

Part A: No Presenting Difficulties

Milo

Milo: Quotations to Support Internal Attributions

Internal Attributions	Quotations Supporting Internal Attributions
Behaviour as communication	*"You know, behaviour is a communication tool. It's not necessarily that they're choosing to be like that, so perhaps their behaviour is a message rather than something they've decided to do in that moment. I think it's more of a response than a choice."*
Self-control	*"He's making an effort to do things, that's not necessarily coming totally naturally. So I think he probably is in control."*
	"he seems like someone who is able to control his behaviour"
Personality traits	*"if you describe yourself as a calm person, I think normally you are in control of that, at least to a certain extent"*
	"It's just the way he says he was well mannered, calm, kind, lots of fun to be around. That all sounds like someone who's quite well regulated"

Milo: Quotations to Support External Attributions

External Attributions	Quotations Supporting External Attributions
Home environment	*"his family are supportive of him"*
	"I think he's got positive relationships [at home] and I think they kind of make the basis of being able to self-regulate"
School	*"he's doing a range of activities, teachers. He thinks teachers appreciate him trying hard. So yeah, he seems the evidence strongly suggests he is regulating himself"*
	"It's statements like 'he's trying hard in lessons' and I think teachers appreciated him ... I think those kind of statements show that, yeah, that generally, that would be the case."
Support from others	*"In terms of emotional regulation, he is still going to need some guidance around that because he's still in the stages of it, fairly early development."*

Aya

Aya: Quotations to Support Internal Attributions

Internal Attributions	Quotations Supporting Internal Attributions
Self-control	*"She comes across as very competent in regulating herself in a whole range of different situations and settings as well"*
	"people have to be relatively able to kind of regulate their own emotions to be able to then support others"
	"think in order to achieve you need to be able to regulate your kind of behaviour and your emotions. In order to be successful she will have needed to have self-control"

Aya: Quotations to Support External Attributions

External Attributions	Quotations Supporting External Attributions
Home Environment	*"all of that support behind her … especially from her family. I think she stands every chance of been able to [regulate]."*
School	*"Because she's actually succeeding at school, she demonstrates that she is able to [regulate]"*
	"pressure might all of a sudden become too much for her and she has a breakdown"
Unforeseen Circumstances	*"Hard to know because she doesn't seem to have ever had any adversity or found any frustrations"*
	"Unless she then had an adverse experience, which may well flip it on its head"

Part B: Change in Presentation

Milo

Milo: Quotations to Support Additional External Attributions

Additional External Attributions	Quotations Supporting Additional External Attributions
Unforeseen Circumstances	*"I guess I'd be thinking that he's responding to this new circumstance and that that might be kind of more of an intuitive unconscious response"*
Support From Others	*"He sounds like he's going to need adult support and empathy and acceptance in order to build the strategies up that he needs to regulate"*
	"He would need support to [regulate] most definitely"

Milo: Quotations to Support Additional Internal Attributions

Additional Internal Attributions	Quotations Supporting Additional Internal Attributions
Adolescence	*"I don't think this presentation here shows a child who's able to regulate, and I think that's probably due to the whole restructure of the brain during puberty impacting him"*
Motivation levels	*"I don't think he would be able to do that because he lacks the motivation to do so."*
	"he's almost told us that he's finding it hard because he says he's lost motivation and he says that he can't be bothered to do anything about it"
Mental health	*"Kind of feeling a little bit more on that on that edge where you could just struggle a little bit more to manage difficult emotions"*
	"No, he's not in control. Because he's now probably got mental health issues on top of stuff now got a bit of depression, which means he's not in control."
Self-control	*"It sounds like he's trying rather than him saying I can't be bothered to concentrate so I think it's that he can't regulate"*
	"You get the vibe from this that he doesn't want to act like [he is] but he doesn't seem to be able to stop. So yeah, I do think he would struggle to regulate it."

Aya

Aya: Quotations to Support Additional External Attributions

Additional External Attributions	Quotations Supporting Additional External Attributions
Unforeseen Circumstances	*"I think there's too much going on for Aya to be able to regulate her own emotions and behaviour."*
	"Her ability to regulate her emotions has been impacted by whatever has happened or changed"
Social Circle	*"Well, just the way she's in her rages, and even in this she alludes to being quite annoyed with her friends."*
Home Environment	*"I don't think it sounds like she has the ability to regulate her behaviour because she feels different. She feels rejected, she knows she's changed."*

Aya: Quotations to Support Additional Internal Attributions

Additional Internal Attributions	Quotations Supporting Additional Internal Attributions
Self-Control	*"I think if she still had those skills of regulation, she would be trying to employ them or she might I guess you might be trying to ascertain the extent, but they might not be having the same impact that they had before."*
	"Things like she said, I don't know how to be what I used to be like. That she's not in control of regulating her behaviour."
	"I think that she's kind of like maybe someone who's finding it more difficult to control their behaviour and their own nature."
Anger	*"I think at the minute she's not in control, having rages, being angry, doing whatever she's doing to make her brother and sister feel afraid of her does not sound like she's in control at all, and so yeah, she seems out of control."*
	"She talks about it as rages and she's destroyed furniture suggesting that she's really not [in control]"
Self-Perception	*"I wonder how much like her growth mindset, it's stuck on actually, this is the way I am now and struggle to shift away from those difficult emotion."*
	"it's probably a combination of perhaps her finding her own and just developing identity"

Part C: Change in Presentation due to TBI

Milo

Milo: Quotations to Support TBI Attribution

TBI Attribution	Quotations Supporting TBI Attribution
TBI attribution	*"He would find he wouldn't have the brain connections to be able …to regulate himself."*
	"Because he's got brain injury. Doesn't mean he can't, but he will find it hard [to regulate]. He'll find it hard compared to when he found it very easy before."
	"if he's got a structural injury to his brain, you know, frontal lobe damage, whatever it is it impacts his physical neurological ability to regulate emotion. So even as hard as he tries until that all remodels he will really struggle."
	"I'm not clear that the brain injury is specifically impacting on his ability to regulate his behaviour. But I do think that any sort of significant injury is likely to have an emotional impact on him anyway. Because his life has changed, obviously, as a consequence of it."

Aya

Aya: Quotations to Support TBI Attribution

TBI Attribution	Quotations Supporting TBI Attribution
TBI attribution	*"before she was so regulated and now she's so dysregulated, and the difference is the TBI."*
	"the brain injury could cause her to do things that she has no control of"

Appendix EE: Supporting Quotations for Proposition 4

Appendix EE: Supporting Quotations for Proposition 4

Knowledge and Experience

Milo

Milo: Quotations to support Attributions related to Knowledge and Experience

Part of the Vignette	Knowledge and Experience Attributions
A	*"I would hope that my teaching experience for 10 years and my 20 years educational psychology experience would support him and my understanding of psychology and child development. And my application of psychological skills and my ability to develop rapport with children and parents, carers and school staff."*
	"The large proportion of the students I've worked with who present like that it's quite easy to support them"
	"Mainly due to my lack of experience in it. We don't really get involved in...if it was a medical situation, sure. But in, like social and educational stuff, we don't get involved in too much. So I wouldn't really know what I was doing."
B	*"I would find it difficult to support him. I think I think it would be difficult. I think all those things not being able to concentrate not remembering. Struggling to read and write, dropped from the football team, or that's like there's a lot going on there. Don't think it'll be easy for anybody."*
	"12 year old with mental health issues and obviously now social difficulties is hard to manage. I don't think that's an easy thing for anyone, even if that was the field you're in."
	"I think sometimes attitude I would find difficult, but that's probably that would be probably more on me than on the way this child is presenting probably from a personal level, I would find it harder to work with the teenager than a younger child"

C	*“We don't get a lot of training in that specific area. So that you know it's not as if teachers don't get specific training for specific issues, but not for that.”* *“I've never been told that somebody's had a like you said, like a brain trauma from falling or an injury like that, that I can think of.”* *“I think I wouldn't know what would be the correct techniques because of his brain injury”* *“I feel like I've got the experience and the knowledge of where to go for additional support with other professionals.”*

Aya

Aya: Quotations to Support Attributions Related to Knowledge and Experience

Part of the Vignette	Knowledge and Experience Attributions
A	*“Just cleared out loads of resources this morning, including like supporting able learners, it's just not something particularly since I've trained that we really do”* *“I think I could support her academically and I feel I've taught a lot of students who've achieved very highly”* *“the name Aya suggests a completely different cultural background to my own and I think I've not worked with a particularly diverse cultural mix, so it would be a case of me not necessarily feeling able to meet her cultural needs… so that might be something I'd feel out of my depth with.”*
B	*“I don't think I've had enough training or experience in how to support girls who are potentially having sort of unsafe sex beyond how you teach PSHE.”* *“I have previous experience of working with children who behave in a similar way, but I would need someone to kind of bounce ideas off before like meeting someone.”* *“I think I'd feel a little bit like I've no life experience that could relate to this in any way and very little professional experience in that field.”*

C	*“I just wouldn't feel as confident. I think I'm more confident in supporting children who've got cognitive impairment from a TBI than the emotional variability and the risk-taking behaviours I don't feel I know enough about that.”* *“So, I'm thinking about now I would know how to support her knowing that she's got a brain injury. Yeah, I don't know if I know. Personally, you know, enough about brain injury to know how to support her.”* *“I wouldn't know how to manage her behaviour even without this brain injury, the brain injury just makes it even more complex, and I couldn't do it justice for her.”*

Professional Influence and Defensiveness

Milo

Milo: Quotations to support Attributions related to Professional Influence and Defensiveness

Part of the Vignette	Influence Attributions	Defensiveness Attributions
A	*"I think probably the fact that he has this positive view of himself in school and that he felt like his teachers appreciated him and the way he presented in class suggests that, you know, their relationship with him has contributed to the way he presents"* *"It's like you've got that whole thing of it's the village that raises the child, so it's influences from everywhere that shape you to become what you are"*	*n/a*
B	*"There's always those external factors, so whichever professionals he is working with, including teachers, they're always gonna have some sort of influence."* *"Professionals would have had some impact and maybe, although clearly, he's deteriorated in some ways, perhaps not to the extent that he might have."* *"I think he might be difficult to engage in the process"*	*"I would feel uncomfortable to say it is them because the whole purpose of having any sort of professional intervention would be to improve the situation."* *"Professional input wouldn't cause this change, and that wouldn't be the cause"* *"you can have a really negative relationship that wasn't helping, so you can't completely rule that out, but it's much more likely to be an external factor"*

C	*“I think that other people will hold a mirror up to him and that will be kind of quite significant for him. So how they behave will impact on any sense of self!”* *“If professionals haven't been able to put the right support in that will have contributed either directly or accidentally”* *“It’s having an influence on his behaviour in terms of, like the way they're trying to support him.”*	*“Yeah, I'd be hoping they do have an impact, actually an improving things for him, be horrified if they didn't.”*

Aya

Aya: Quotations to Support Attributions Related to Professional Influence and Defensiveness

Part of the Vignette	Influence Attributions	Defensiveness Attributions
A	*"it's the way that they talk to you. It's the way that they come across in the classroom. It's how they handle conflict as well with you, but also with other people in the school. And because they are in a position of authority, that can really influence people. Yeah. And how they deal with you as a person as well, recognizing that there is a power imbalance there, but also recognizing that at the end of the day they do have another human being in front of them who is just as capable of having a change in their mood"* *"Because I think the way that she describes school already suggests that however she's been supported by education at, at the least, has helped her through whatever has gone on."* *"staff at school, have had a quite an impact on her and I'm wondering what's led to the sort of ambition to go to medical school where that could come from"*	*"I think it's unlikely that there'd be many professionals that would…that would rub her up the wrong way."*

B	*“she might be involved with sexual health services if she's come across a professional who perhaps shares some of their own personal values and views on the choices that she's making that might impact on how she feels about herself as well.”* *“I think that any work that professionals do is gonna have some impact there”* *“it sounds like professionals could support her to get back towards certainly towards a more positive life and presentation of herself”*	*“I'm not prepared to blame professionals for this situation, really. I think it's her.”* *“I'm feeling it's a bit more the family influence rather than the professionals”* *“It’s unlikely that something that's happened with professionals would have that severe an impact”*
C	*“I think the professionals could make a big difference, but the nature of the TBI could mean there are barriers that they can't overcome.”* *“you would like to think that given the right professionals involved, they would be able to have an influence and have an impact and support her.”* *“I still feel like I would struggle to make any influences”*	*“I don't think that her changing behaviour is due to professionals.”* *“I don't think they caused the change”*

Need for Multi-Disciplinary Working

Milo

Milo: Quotations to support Attributions related to Multi-Disciplinary Working

Part of the Vignette	Multi-Disciplinary Working Attributions
A	*n/a*
B	*"there are indications that he'd need broader support from other professionals. So I think I could try some things, but that would need to be part of a package of support."*
	"I think it would probably need a multidisciplinary approach."
	"I'd speak to him and speak to his parents. I'd just investigate and I'd probably speak to school, so I hope so."
C	*"I do think there might be challenges because there might be elements that aren't part of my expertise, but I think if you're working with other people, it should mean that you would be able to work with him."*
	"the parents may well have and the school might have information about how best to help to inform my therapeutic plan and the adaptations I might need to make within the process"

Aya

Aya: Quotations to Support Attributions Related to Multi-Disciplinary Working

Part of the Vignette	Multi-Disciplinary Working Attributions
A	*n/a*
B	*"CAMHS referrals, you know, even if I did manage to get the school to refer her on it, it's so many weeks of waiting that this could have escalated, this seems like quite an extreme situation that she needs support from several different angles that whole multi agency bit again, which often doesn't happen quick enough or at all."*
	"You'd use the multidisciplinary approach and together everyone could unpick it a bit."
	"Communication with anyone, whether that be a doctor, psychologist, teacher, just to actually try and find out what's caused all of this?"
C	*"If the teachers and the members of staff that are coming into contact with her even discussing together, because sometimes it's putting all those pieces together, well, she's presenting like this here and here there and then OK, now we get an…then you've got all the other professionals as well."*
	"I would hope there's in massive involvement from an MDT team there."
	"I feel like I need guidance from somebody who's got that expertise in brain injury."

Ideas Related to Support Strategies

Milo

Milo: Quotations to support Attributions Related to Support Strategies

Part of the Vignette	Attributions Related to Support Strategies
A	*"I guess it's not necessarily a 'skill' thing, but a 'need' thing like does he actually need external support?"*
	"There's nothing there that I'm thinking I need to use a particular strategy to be able to work with this child."
	"there's no red flags that would make me think he had any broader needs other than him sort of maybe needing a bit more support with his academic work, which I'd feel fairly competent in doing"
B	*"I can think of things that I would be discussing with school staff with his parents and with Milo to try and make things better."*
	"in terms of working with him in terms of gathering his voice a bit more like it sounds like he would be quite able to do that, so having a conversation with him"
	"I think he might need sort of quite specialist support. I think he'll need a range of different support."
C	*"there are things I could do as a teacher in the classroom to make things easier for Milo like repeating instructions and chunking tasks or giving written instructions or whatever"*
	"I feel like I have a lot of information available to me and I would know where to go for more."
	"Looking at his strengths is a good way of moving forward for him and using his perspective, you know, working with what he wants to do."

Aya

Aya: Quotations to Support Attributions Related to Support Strategies

Part of the Vignette	Support Strategies Attributions
A	*"I think I could support her academically and I feel I've taught a lot of students who've achieved very highly"*
	"Kind of gives a good indication of what she's like, so I don't think it would be difficult. She didn't seem like she would be difficult."
	"I'm really not sure what I would add"
	"there would need to probably be a bigger degree of sign up at the beginning for her to actually see the benefit and I guess want to come… it can sometimes take longer for the teenagers to trust the process"
B	*"professionals would come in in a kind of caring capacity"*
	"you don't have enough time to support the pastoral side of things because the focus is so much on their grades"
	"there is that capacity to support her with perhaps some of the emotions that she's working through."
C	*"in schools where they've got these super strict behaviour policies and you end up in some sort of isolation unit or whatever for a day."*
	"I think I'd be giving her the opportunity to talk and find some trust in someone. She needs them. She needs some more attachment, doesn't she? She needs somebody to step in and help her."
	"I could potentially find it difficult to support her presentation because it just depends on the information, you know what information I have about the brain injury"

Appendix FF: Information on Pre-Existing Surveys

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The Common Misconceptions about Traumatic Brain Injury Questionnaire (CM-TBI). This was initially a 25-item questionnaire designed by Gouvier et al. (1988) and was amended to include additional items by Pappadis et al. (2011) to create a 40-item questionnaire. Although this measure has been the standard measure of TBI knowledge since its inception, questions have been raised about the ambiguity of certain items and, as a result, it has been modified to attempt to compensate for this. One modification, and the version that was most closely adopted for this study, was produced by Linden et al. (2013). Linden et al. piloted Gouvier et al.'s original questionnaire with UK participants and conducted a factor analysis of the original instrument, which reduced Gouvier et al.'s original five factors into four. As a result, they suggested dropping 20 of the 40 items that did not load onto any of these four factors. Interestingly, many of the excluded items were those that previous studies suggested as ambiguous (Linden et al., 2013). The reason Linden's version of the CM-TBI was most closely adopted was because it is the only version of the instrument that has been adapted for use in the UK with educators of paediatric TBI sufferers and therefore was the most relevant to this study. They also piloted their initial amended version and adapted it accordingly and found it had strong internal consistency with a Cronbach's alpha of 0.75.

The Head Injury Knowledge Scale (HIKS). The items for this scale were developed by Ono et al. (2011) from the results of a pilot study, with a sample of uninjured and injured individuals with a TBI. The HIKS was designed to assess misconceptions about the impact of TBI. It assesses for misconceptions in physical, sensory-perceptual, cognitive and behavioural domains. A larger number of cognitive items were developed compared to other domains in order to assess different probable and improbable cognitive effects such as concentration, memory, language and executive function. The authors deemed this important due to the degree of misconception being highest for an item concerning memory in studies they had previously reviewed. The benefits of including this measure were that it focused on domains, which the CM-TBI did not. This enabled the researcher to assess participants' knowledge across more of the domains impacted by a brain injury. The original items were derived from empirical findings in the literature regarding common TBI sequelae, as well as typically preserved skills or improbable effects. However, it was reduced to 14 after piloting the questionnaire led to 4 being removed due to ambiguity. The HIKS contains two scales: Overgeneralisation and Minimisation. The Overgeneralisation items describe unlikely effects of TBI whilst the Minimisation items outline problems with cognition and behaviour, which were not specifically associated with TBI. Originally, participants were asked to indicate whether the changes referred to in each item were 'true' (often or

most of the time) or ‘false’ (never or rarely). This was adapted by Thomas and Jobse (2015) who used the descriptors: ‘never’, ‘rarely’, ‘often’ and ‘most of the time’. This was presented in a Likert Scale as opposed to the dichotomous (true/false) responses of the original measure. However, when the survey was piloted with these criteria for this study, respondents indicated that the time-based criteria did not fit with the statements of the HIKS and that a 5-point Likert scale similar to the CM-TBI survey was more appropriate. As a result, the same Likert scale was adopted as the CM-TBI for this aspect of the survey. This adaptation was also made as it enabled the degree of knowledge to be measured, which using true/false responses would not. Thomas and Jobse also found that by changing this scale, the internal consistency of the HIKS scales improved, with over-generalisation, $\alpha = .84$ and minimisation, $\alpha = .81$. These results were better than those reported by Ono et al. (2011), who reported overgeneralisation, $\alpha = .64$ and minimisation, $\alpha = .68$. It is thought that the use of the five-point scale instead of a dichotomous scale (True/False) may help to improve the internal consistency of the scale used in this study (Comrey, 1988).

Informal Carer's Knowledge of Traumatic Brain Injury Questionnaire (IC-KTBIQ). The items in this questionnaire were devised by Bamatraf et al. (2020) to assess the knowledge of TBI of informal carers such as healthcare specialists. The questionnaire covers the nature and consequences of a TBI, the rehabilitation process, and the role of the caregiver/healthcare worker, and contains additional items the other two measures did not consider hence it being included. It was amended from its original format as it was designed for use with Malaysian participants and so specific questions related to this geographical area were removed due to this study being UK-based. A ‘Yes/No/Don't Know’ response format was adopted so that genuine knowledge could be assessed without it being impacted by guesses when only ‘True’ and ‘False’ options are available (Pollux et al., 2016). There was no significant difference between the test and retest with a test–retest coefficient of 0.84, $p < .001$, thereby suggesting adequate test–retest reliability. The internal consistency reliability of the test is KR-20 = 0.70. Scores on or above 0.70 are considered acceptable (Allen, 2017). The internal consistency reliability and correlation coefficient were 0.70 and 0.84, respectively.