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Child and Adolescent Psychology***

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Psychology**

Doctoral Thesis

**Educational Psychologists and
Paediatric Neuropsychology: Expanding
the Frontiers of Educational Psychology
Practice**

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Student Declaration

I, Emilia Misheva, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis

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Abstract

Paediatric or child neuropsychology is a branch of psychology concerned with the study of brain-behaviour relationships in the context of the developing brain (Anderson et al., 2001). Typically, child neuropsychologists in the UK are qualified clinical or educational psychologists who have undergone specialist, post-qualification training and work with children diagnosed with neurological conditions in a range of settings. Despite a number of educational psychologists (EPs) working in neuropsychological settings, no empirical papers exploring the relationship between educational psychology and neuropsychology in the UK have been published to date. The aim of the present research therefore is to fill this gap in the knowledge base by firstly exploring the current attitudes towards and understanding of paediatric neuropsychology amongst EPs, as well as the applications of neuropsychology to everyday EP practice. Another objective of the research is to provide an account of the role and unique contribution of EPs working in specialist neuropsychological settings.

This research adopted a mixed-methods design and was carried out in two phases. Phase 1 consisted of a national survey (n=200), exploring the views of qualified and trainee EPs in the UK on the relationship between the two disciplines, as well as on the perceived use, relevance and applicability of neuropsychology to day-to-day EP practice. Phase 2 consisted of semi-structured interviews with 10 EPs and allied professionals based in two settings supporting children with neuropsychological conditions in the greater London area.

The research findings highlighted that while the majority of EPs perceive neuropsychology as relevant to their practice and report using neuropsychological principles in their work, less than a quarter of respondents reported having a good or high level of knowledge of the discipline. Similarly, while over 90% of EPs had worked on neuropsychological cases, the majority of respondents did not feel confident about their subject knowledge in those instances. Finally, the second phase of the research provided a detailed investigation of the specialist role of EPs in child neuropsychology settings, including factors motivating EPs to work in this field and the unique contribution of EPs to neuropsychology.

Impact statement

The present thesis has provided the first empirical examination of the relationship between educational psychology and neuropsychology in the UK and thus has significant implications for both educational psychology scholarship and practice. The research has improved our understanding of how EPs perceive and apply neuropsychology in their day-to-day practice, and has also highlighted that EPs have a very limited knowledge of clinical neuropsychology as a specialism available to them. This finding provides further insight into the possible reasons why EPs are currently severely underrepresented amongst registered neuropsychologists and constitute just 2% of all Clinical Neuropsychologists. The research presented in this thesis suggests that the lack of awareness of this specialism option for EPs may be the first step in a self-perpetuating cycle that leads to low EP representation in the field. Additionally, the thesis has provided the first exploration of the types of neuropsychological cases EPs encounter in their daily practice. Phase 1 in particular has highlighted that knowledge of neuropsychology theory and research has applications that go beyond EPs' role in specialist settings, considering that over 90% of EPs reported having worked on neuropsychological cases in their practice, but just 22% felt confident in their theoretical knowledge. This finding is of particular relevance to both initial EP training providers, as well as to EP service managers who are involved in the decision making process about training and professional development options offered to EPs.

Another significant contribution of the research is that it has illuminated the emerging role of EPs working in neuropsychological settings. The second phase of the research offered the first research-based account of what this specialist role entails, as well as an overview of the EP's unique contribution to neuropsychology from the perspective of individual EPs and their multidisciplinary team colleagues. Specifically, the research has highlighted that the skill set and expertise of EPs, and their knowledge of both the education system and child and adolescent development in particular, are highly valued by health professionals working in neuropsychological settings. The research has also drawn attention to and challenged a number of misconceptions

encountered by EPs working in neuropsychology about their role, such as the view that their work is restricted to administering cognitive assessments. Similarly, the research has highlighted a number of key concerns related to the current route to qualifying as a neuropsychologist, and specifically related to the cost, structure and support available. This specific finding is likely to be of particular interest to the British Psychological Society and the Division of Neuropsychology, who oversee the qualification process for clinical neuropsychologists.

Overall, this thesis has provided the first structured exploration of the relationship between educational psychology practice and clinical neuropsychology from the perspective of EPs, thus advancing our understanding of the evolving relationship between the two disciplines.

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Glossary of terms

Neuropsychology	The scientific study of brain-behaviour relationship (Baron, 2010)
Neuroscience	The scientific study of the structure and function of the nervous system (Merriam-Webster Medical Dictionary, 2018)
Neurology	A branch of medicine focused on studying the structure, function and disorders of the nervous system
Neuroconstructivism	A theoretical framework that views cognition as gradually emerging over developmental time through the interaction between biological factors and constraints, and environmental influences (Karmiloff-Smith, 2012)
Nativism	A theoretical framework that sees certain cognitive abilities as innate or evolutionary-predetermined
Modularity of mind	The view that the brain is innately modularised, with different, independent from each other modules responsible for different areas of cognitive function
Kennard principle	The view that the immature brain should be more able to recover from injury than the more developed brain (Bennet et al., 2013)

Introduction

Neuropsychology and educational psychology: an unexplored relationship

The relationship between educational psychology and neuropsychology in the UK is a largely unexamined one, with only a small number of academic texts having attempted to address this knowledge gap in the past 20 years. One such attempt was made in 2005, when the British Psychological Society published a special issue of its *Child and Educational Psychology* journal (Gibbs, 2005) that focused specifically on neuropsychology. While this publication was seen by some as an expression of the increasing awareness of the links between neuropsychology and education (Harrison & Hood, 2008), only three of the published papers focused specifically on the link between the two disciplines, and just one out of the 25 contributors was a practitioner EP, with the remaining authors being academics or clinical psychologists.

This tendency can also be observed in more recent academic texts, such as *Child Neuropsychology: Concepts, Theory, and Practice* (Reed & Warner-Rogers, 2009), where just one chapter was authored by an EP and focused on child neuropsychology and education. At the same time, education has been highlighted as a key focus area during the recovery of children with neurological conditions such as acquired brain injury (Slomine & Locascio, 2009), with EPs being amongst the key professionals involved in the ongoing support and monitoring of the educational needs of those children and young people (Ball & Howe, 2013).

The lack of representation of the educational psychology perspective in neuropsychological research and academic texts can be partially attributed to external factors, such as the proportionately higher number of clinical and academic psychologists working in neuropsychological settings or research (Specialist Register of Clinical Neuropsychologists, 2019); however, it is also important to consider the potential role of intra-professional factors that may have contributed to this imbalance. Historically, some academic commentators have associated the neuro-disciplines with overly medical and within-child models of thinking, and have questioned their

applicability to educational psychology practice (Mayer, 1998). Bruer (1997), for example, referred to attempts to relate cognitive neuroscience to education as “a bridge too far”. Similarly, Hood (2003) spoke about a “fear of being accused of exclusionary practice”, particularly in relation to the inclusion of neuropsychological content on initial EP training courses. From this perspective, EPs’ involvement and interest in neuropsychology-informed practice and research can be seen as having implications for their professional identity. More specifically, if EPs are encouraged to move away from individualistic, within-child models of working to more systemic ones (Noble & McGrath, 2008; Wilding & Griffey, 2015), an interest in neuropsychology may be seen by some as being incongruent with the core EP values and rejection of “within-child” models.

Hood (2003), however, argued that neuropsychology can enhance and complement EP practice and formulations, by offering a more detailed interpretation of how child brain development is linked to cognitive function, as well as how it is influenced and moderated by individual, environmental and systemic factors. She argued that this detailed information can then be used systemically, to enable the adults working with the child to make the necessary systemic and environmental adaptations, tailored to the child’s individual needs. Paediatric neuropsychology and its applications to educational psychology thus appear to be subject to debate, however this relationship has not yet been examined empirically and on a larger scale, with the most recent papers dating back to more than 20 years ago.

Similarly, little is known about the specialist role of EPs who work in neuropsychological settings such as brain injury or epilepsy services. One of the few publications looking at this specialist role is a book chapter written by an EP also practising as a neuropsychologist (Ashton, 2015) in the field of acquired brain injury. Ashton (2015) highlighted the key role of education in the child’s development following a brain injury and argued that EPs’ knowledge of the education system, pedagogical approaches and ability to work at different levels allows them to adopt the role of the “interpreter” between the fields of health and education. She also distinguished between clinical and educational neuropsychology, by highlighting the distinct skill sets and knowledge base CPs and EPs bring to neuropsychology. This distinction, however, is

not currently reflected in the qualification and registration process for neuropsychologists, who are all referred to as “Clinical Neuropsychologists”. This may be seen as another example of the lack of representation of the EP perspective in neuropsychology, where the distinct contributions of EPs and CPs are amalgamated.

Considering the lack of current, robust research examining the relationship between paediatric neuropsychology and educational psychology, the present thesis aims to provide an original contribution to the knowledge and evidence base and to serve as a foundation for future, more specialised research. More specifically, the present research aims to explore EPs’ views and understanding of paediatric neuropsychology as a specialist subject and practice area, and as a professional development option available to them. The research aims to provide a coherent account of the relationship between the two disciplines in its current form, from multiple perspectives, with a focus on both the perception of neuropsychology within the educational psychology profession, as well as on identifying what the practice of EPs specialising in child neuropsychology entails. Furthermore, the research will also consider the relationship between educational psychology and neuropsychology from a theoretical perspective, alongside the views of educational psychologists on the relevance and application of neuropsychological theory to their day-to-day practice.

Chapter 1. Background and literature review

1.1. Overview

In this chapter, an overview of the existing literature relevant to paediatric neuropsychology and educational psychology will be presented. While only a very limited number of papers looking specifically at the relationship between the disciplines have been published to date, the review takes a broader perspective, by initially focusing on key conceptual issues relevant to neuropsychology, such as the differences between neuropsychology and other neuro-disciplines, as well as between adult and child neuropsychology. This will then be followed by a critical overview of a range of perspectives on paediatric neuropsychology's relevance and potential applications to EPs' day-to-day practice and specialist neuropsychological work.

The literature review was completed between August 2018 and April 2019, using the research databases PsycInfo, Web of Science, Pubmed and UCL library catalogue. The following search terms were used: "*child neuropsychology*", "*paediatric neuropsychology*", "*education and neuropsychology*", "*educational psychologists paediatric neuropsychology*", "*educational psychologists child neuropsychology*", "*neuropsychology psychology*", "*school neuropsychology*". Due to the very small number of empirical papers published on the topic, a flexible approach to the search was adopted, where opinion pieces and book chapters were also included. The inclusion of non-empirical literature was deemed necessary as the present research project is the first one to examine this specific topic and it is therefore important that a unifying account of all existing literature is provided.

1.2. The emergence of paediatric neuropsychology as a separate academic and practice discipline

In order to explore neuropsychology's applications and relationship with educational psychology, it is necessary to firstly establish what is understood by the

term “neuropsychology” and how it differs from the other neuro-disciplines. Following this, the literature examining the differences between adult and paediatric neuropsychology will be considered and critically examined, thus providing an overview of paediatric neuropsychology in its wider context. This section also aims to serve as a foundation for the literature review linking neuropsychological theory to educational psychology in Section 3, by first providing a conceptual framework for neuropsychology as a distinct discipline.

1.2.1 Neuropsychology, Neuroscience or Neurology? Definitions and key differences between the neuro-disciplines

Neuropsychology is commonly defined as the academic and practice discipline concerned with the relationship between brain function and behaviour (Schoenberg & Scott, 2011; Baron, 2010), with direct applications to a range of conditions in both adults and children such as, amongst others, developmental conditions, acquired brain injury, epilepsy and dementia. Considering the broad definition and wide scope of neuropsychology as a subject and practice area, a number of related disciplines such as neurology and neuroscience may be perceived as having a similar focus and as overlapping with neuropsychology (Rose & Abi-Rached, 2013). As a result, the distinct contributions and differences between the main neuro-disciplines might not always be clear to practitioners in related fields. It is therefore important to explore and clarify how neuropsychology overlaps, relates to and differs from subject areas such as neuroscience and neurology.

While neuropsychology is a branch of psychology, neurology is a subspecialty of medicine primarily concerned with the study and treatment of conditions arising as a result of damage or injury to the central nervous system, spinal cord or nerves (World Health Organisation, 2018). Examples of neurological conditions include brain injuries, brain tumors, strokes, migraines, as well as congenital or degenerative disorders such as cerebral palsy, multiple sclerosis, Parkinson’s disease, dementia and Alzheimer’s disease (NHS England, 2018). Neurologists are physicians with specialist training in neurology who are involved in the assessment, diagnosis and treatment of conditions

such as the ones listed above and are typically based in medical settings (Goetz, 2007). Neuropsychologists, in comparison, are primarily psychologists with postdoctoral specialist training in neuropsychology who may be based in a range of settings not necessarily restricted to the medical field, such as charities, rehabilitation centres and educational settings (Reed & Warner-Rogers, 2009).

While there is an overlap between neuropsychology and neurology in terms of the conditions they would typically encounter in their practice, the assessment and intervention approaches undertaken by neurologists and neuropsychologists are likely to differ significantly, given their distinct professional backgrounds in medicine and psychology respectively. More specifically, neuropsychologists may often be involved in the assessment, monitoring and intervention planning for a range of *neurological* conditions in children and adults such as epilepsy, degenerative conditions, brain tumors and injuries (Lezak et al., 2012). However their contribution to the understanding of the individual's needs is distinct from that of neurologists in a number of ways.

Neurological assessment, for example, is likely to focus on examining a range of primarily physiological and perceptual markers, such as the individual's reflexes, motor function, coordination, awareness, balance, as well as a number of sensation and perception abilities (eyesight, sense of smell, hearing, taste, swallowing and sensation in various body parts, (Goetz, 2007)). Neurologists may also use brain imaging (MRIs, CT scans) to further inform their assessment and diagnosis (Daroff et al., 2015). Neuropsychological assessment, in contrast, will typically focus on the cognitive and behavioural manifestations of the condition (attention, memory, executive function, ability to solve complex problems), as well as on the possible emotional impact of the changes on the individual, through the use of psychometric assessment tools, as well as interviews and observational measures (Lezak et al., 2012). This, in turn, allows the neuropsychologist to obtain a profile of the individual's areas of strengths and difficulties, which will then inform their proposed interventions targeting the areas of difficulty (Reed & Warner-Rogers, 2009).

As such, neurological and neuropsychological approaches to assessment and intervention may identify distinct areas of need, as they focus on different aspects of brain and cognitive function. For example, an individual who has suffered a traumatic brain injury may present with a reduced attention span and executive function difficulties, as identified by a *neuropsychological* assessment, however their *neurological* assessment results may be unremarkable, with no identifiable difficulties with reflexes, general awareness or an impaired sense of smell or sight, for example. Similarly, a neurological assessment may identify that an individual has difficulties in an area such as balance, however the same individual may not have any identifiable neuropsychological difficulties. Thus, neurological and neuropsychological assessments and interventions have separate and distinct contributions and focus, and explore the presenting difficulties from two different angles, with the potential to identify different levels of need and remediation.

Finally, neuroscience, or the study of the function and structure of the nervous system and brain (Purves et al., 2018), informs yet is distinct from both neuropsychology and neurology. More specifically, neuroscience is an academic rather than a clinical practice area and it provides the theoretical foundations to disciplines such as neuropsychology. As outlined by Bear, Connors and Paradiso (2007), neuroscience has a number of sub-disciplines that study specific areas such as the link between brain and nervous system structure and cognitive function (cognitive neuroscience), the emergence of and changes occurring in the nervous system and brain over the course of development (developmental neuroscience) and how those processes relate to and affect the development of cognition over developmental time (developmental cognitive neuroscience). Developmental cognitive neuroscience in particular provides a theoretical basis for child neuropsychology, highlighting the key role of *developmental change* in children's neurological and cognitive development (Johnson & de Haan, 2015). The implication of this for child neuropsychology practice and the distinction between paediatric and adult neuropsychology will be explored further in the next section.

1.2.2 Paediatric neuropsychology and adult neuropsychology: Key differences and conceptual issues

In order to consider paediatric neuropsychology's relevance to educational psychology practice, it is important to firstly explore how child and adult neuropsychology differ in their theoretical and practical approach. This subsection will review the evidence base of relevance to this question and will consider the implications of those differences for practice, and specifically for the educational psychology assessment process.

“Child neuropsychology is the study of brain-behaviour relationships within the dynamic context of the developing brain”

Anderson et al. (2001, p. 3)

“The process of change is key to child neuropsychology. This differs from adult neuropsychology, where the focus of study is on damage to an already developed brain”

Reed and Warner-Rogers (2009)

Paediatric or child neuropsychology is a relatively young discipline in its own right, compared to the more established field of adult neuropsychology. Indeed, paediatric neuropsychology emerged as a separate field of study and practice informed by, yet independent from adult neuropsychology relatively recently, in the late 20th century (Benton, 2000). Prior to that, adult neuropsychological models were highly influential and were applied to both adult and child populations. Adult neuropsychology, however, is primarily concerned with the changes to brain structure and cognitive function as a result of an injury or a condition that affects an already consolidated system, which in most cases had developed typically prior to the onset of the injury or condition. This highlights the significant challenges to the application of conclusions and frameworks used within adult neuropsychology to *child* populations; the changes observed in the context of an already consolidated system cannot be readily

generalised and applied to the dynamic, constantly evolving context of the brain that is still developing in childhood.

The limits to the application of conclusions reached in the context of adult neuropsychology to child populations are particularly evident in the debate concerning whether domain-specific abilities are modularised independently (i.e. the view that abilities such as language, numerical reasoning and spatial orientation function independently from each other and that there are distinct modules in the brain to reflect this). For example, it is not uncommon for adult neuropsychology patients who have experienced brain injury to present with “deficits” in one specific area (e.g. language and reading), but to have seemingly intact abilities in other areas, such as face processing (Niogi et al., 2008; Young et al., 1993). This can be interpreted as evidence for the dissociation between these areas and as an indicator that, in this specific example, there are separate modules for language and face processing, completely independent from each other.

This had initially led some theorists in the field (commonly referred to as *nativists*) to suggest that the human brain is modularised from birth and that it is possible to talk about preserved and impaired modules in the case of developmental disorders and other similar conditions. For example, some theorists have claimed that in the case of Autistic Spectrum Conditions, the “theory of mind module” is impaired (Adams, 2011), presumably resulting in difficulties with social interaction and interpreting other people's emotional states. Research in the field of developmental cognitive neuroscience, however, has painted a more complex and nuanced picture of how cognitive function develops in children and how it is mapped and consolidated in the developing brain, thus highlighting key differences between adult and child neuropsychology.

Some researchers and theorists in the field have argued that the adult models provide a useful account of the “end-state” of development, however they are not suitable models for making sense of the “start-state” of development, as they fail to take into account the dynamic and complex process of developmental change and its impact on the developing brain and emergent cognitive functions (Karmiloff-Smith, 2009). More

specifically, while few theorists and researchers would adopt an entirely empiricist perspective where the human brain is seen as a “blank slate” at birth, a more dynamic, neuroconstructivist conceptualisation suggests that “(...) *the brain is a self-structuring, dynamically changing organ over developmental time as a function of multiple interactions at multiple levels*” (Karmiloff-Smith, 2009). Neuroconstructivism proposes that while some parts of the brain may have a bias towards processing certain types of input, different parts of the brain are not innately specialised to specific cognitive domains such as memory, language or reading (Westerman et al., 2007). Rather, it is suggested that, at birth, all areas of the brain are able to process a wide range and different types of information, however some areas are more relevant to the processing of specific types of input (Farran & Karmiloff-Smith, 2012).

From this perspective, the human brain is not static and modularised to begin with, albeit neuroconstructivists accept that there may be domain-relevant areas in the brain that are more suitable for processing certain types of input that become specialised gradually; rather, it is proposed that modularisation emerges over developmental time through a gradual process of specialisation, influenced by environmental input and stimulation (Westerman et al., 2007). Within this paradigm, the developing brain is seen as an interacting system where disturbance in one local area in the early stages of development can have a *cascading effect* on a range of cognitive domains at later stages (Karmiloff-Smith, 2009), thus emphasising the importance of practitioners adopting a developmental approach to assessment and intervention. This may involve attempts to trace the child’s developmental trajectory during the assessment process in order for the practitioner to be able to tailor any interventions more precisely, rather than come to a decision based on a “snapshot” of the child’s presentation at a single point in time, which may no longer provide an accurate account of the area the child’s present difficulties originated from (Thomas, 2003; Karmiloff-Smith, 2009).

Adult and child neuropsychology therefore emerge as related, yet distinct disciplines in terms of their underlying theoretical bases, as well as in terms of the assessment and intervention approaches that are best suited to them. While adult

neuropsychology is most often concerned with changes to an already consolidated and modularised system, child neuropsychology focuses broadly on how brain-behaviour relationships emerge and develop over time, with a strong emphasis on the importance of developmental trajectories (Reed and Warner-Rogers, 2009).

1.3. Neuropsychology: A specialist interest area or a part of the fundamental knowledge base for all Educational Psychologists?

The previous section has focused on examining the emergence of child neuropsychology as a distinct discipline and on its position in the wider context of the other neuro-disciplines and adult neuropsychology. The present section aims to expand on this, by critically examining the literature on the application of neuropsychology to educational psychology practice. More specifically, this section will focus on examining the evidence on whether neuropsychology can be seen as relevant to generic educational psychology casework, or if it constitutes primarily a special interest area, with limited applications to EP's day-to-day practice.

In the only paper published to date that explored the relationship between educational psychology and neuropsychology in a UK context, MacKay (2005) argued that the two subject areas have a "close and interdependent relationship", where "both draw from the academic foundations of mainstream psychology in its general and specialist applications, and the practice of each is informed by the approaches of the other".

MacKay (2005) argued that neuropsychology need not be seen simply as a "bolt-on", highly specialist area that may be of interest to *some* EPs, but as an essential component of the wider knowledge base relevant to all EPs' practice. Indeed, as EPs work with a range of presentations and conditions of varying complexity, where often a range of cognitive, environmental and neurodevelopmental factors may be at play

(British Psychological Society, 2018), it can be argued that a more holistic, neuropsychologically-informed approach may provide more richness and specificity to psychologists' formulations and interventions (Hood, 2003). A more detailed exploration of the literature relevant to how neuropsychology may be used to inform both EPs' day-to-day practice, as well as specialist work on neuropsychological cases, will be explored in more detail in the next subsections.

1.3.1 Neuropsychological theory as a fundamental part of Educational Psychologists' knowledge base

Neuropsychology as a potential paradigm for understanding neurodevelopmental conditions and multiple learning needs

Some academics have argued that the applications of neuropsychological theory and concepts to the practice of psychologists working in educational settings need not be restricted to occasional specialist casework involving conditions traditionally associated with neuropsychology, such as, amongst others, traumatic brain injury, brain tumors or the epilepsies (Miller, 2009). While EPs may occasionally encounter cases of this nature, particularly in the context of special provision settings and Educational and Health Care Plan assessments, neuropsychology's relevance to cases in Educational Psychologists' day-to-day practice needs to also be considered. Indeed, if paediatric neuropsychology is defined as "the study of brain-behaviour relationships within the dynamic context of the developing brain" (Anderson et al., 2001), it can arguably provide a useful conceptual framework for a range of presentations and conditions EPs work with on a daily basis. Examples of those can be learning-related difficulties and neurodevelopmental conditions, where knowledge of brain-behaviour relationships can add another layer of understanding of the child's needs.

Annaz, Karmiloff-Smith and Thomas (2008), for example, emphasised the importance of adopting a dynamic, developmental trajectory-focused approach to the study and assessment of needs of children with neurodevelopmental conditions of both

known origin (e.g. Down's syndrome, Williams syndrome) and of unknown or multivariate origin (Autistic Spectrum Conditions, dyslexia, dyspraxia). As EPs are likely to work with children presenting with difficulties of possible neurodevelopmental origin in their day-to-day practice such as the examples above (Educational Psychology, 2019), the more dynamic neuroconstructivist account of development can potentially provide them with a theoretical framework and an explanatory model of the complex presentations they may come across.

A specific example used by Farran and Karmiloff-Smith (2012) that illustrates why practitioners like EPs may wish to consider children's developmental trajectories, particularly in cases where a child may present with very pronounced difficulties in one area and with a seemingly "average" profile in others, is the case of children diagnosed with Williams Syndrome. Williams Syndrome is a genetic condition with a profile characterised by relatively strong language and social skills and more significant difficulties with visuospatial skills (Farran & Karmiloff-Smith, 2012). The seemingly uneven cognitive profile of children with Williams Syndrome has been used by some nativists as evidence of the existence of different modules, independent of one another (Gerrans, 2003), as an impairment in one module (e.g. the module involved in visuospatial processing) does not affect other modules (e.g. the module responsible for language or social skills). However, a number of studies carried out with this population demonstrated that even in areas of relative strength, children with Williams Syndrome used different mechanisms to typically developing children to achieve the same outcome (Paterson et al., 2006; Hammond et al., 2005; Scerif et al., 2005). This suggests that areas of perceived relative strength are not necessarily "spared"; rather, the individual may have found another way of compensating for their difficulties in other domains that have also been affected in more or less subtle ways.

Therefore, from a neuroconstructivist perspective, it appears unlikely that a person will present with difficulties in just one isolated area (i.e. reading) without any more or less subtle implications for other areas of cognition or functioning. Rather, the reading-related needs are likely to have originated from a difficulty on a more specific local level, such as visual processing, which may have subsequently had a *cascading*

effect on other areas throughout developmental time, where the reading difficulties may have emerged as the most pronounced manifestation of the local-level impairment. Some academics and researchers in the field have argued that it is therefore important that practitioners involved in the assessment and intervention process for children take into account their developmental trajectories in order to attempt to locate the underlying origin of the presenting difficulty (Karmiloff-Smith, 2009).

Additionally, Karmiloff-Smith argued that by grouping children in categories based on behavioural presentation alone, practitioners and researchers risk not taking into account the fact that those similar behavioural presentations might be the end result of different trajectories of atypical development that may also have had an effect on other areas of development, in less obvious ways. Thus, in the context of this paradigm, neuroconstructivists suggest that it is unlikely that atypical development would only affect one domain without more or less subtle implications for other areas. For example, Farran and Karmiloff-Smith (2012) argue that if an individual presents with what appears to be difficulty in the numeracy domain, with average scores in all other areas, this should not be interpreted as meaning that interventions should only target this domain. Instead, they argued that the practitioner would need to attempt to *“trace back to infancy the origins of the number deficit, which might not be in the number domain directly; it could be a deficit in the visual system in the scanning arrays of objects.”* They elaborated that a difficulty in scanning may in turn impact on the function of other areas that rely on scanning proficiency to varying degrees. This can result in what may appear to be average performance in those domains; however, subtle difficulties may in fact be present but might not be immediately obvious.

This dynamic conceptualisation of cognitive and neural development can be seen as having significant implications for assessment and intervention planning in the case of EPs, as it offers an alternative framework that challenges the often static view of developmental conditions. Similarly, this model may also provide a partial explanation as to why some conditions commonly encountered in EP practice co-occur at rates much higher than what would be expected by random chance. For example, dyslexia and dyspraxia have a co-morbidity rate of between 60-70% (O’Hare & Khalid, 2002;

Iversen et al, 2005; Viholainen et al, 2006), approximately 40-45% of children diagnosed with dyspraxia would also meet the diagnostic criteria for Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorder (ASD) or dyslexia (Kaplan et al., 2001, 2006) and some studies have discovered comorbidity rates of 20-60% between dyscalculia and dyslexia (Dirks, Spyer, van Lieshout, & de Sonnevile, 2008; Mayes & Calhoun, 2006).

Some researchers argue that it is therefore highly unlikely that the comorbidity between different neurodevelopmental conditions is just a coincidence. Gilger and Kaplan (2001), for example, suggested that developmental disorders are not necessarily the distinct, independent, “pure” conditions implied by diagnostic labels. They pointed out that, in fact, the evidence base suggests the opposite - “pure dyspraxia”, “pure” developmental language disorder (DLD), “pure ADHD” or examples of cases where just one area of cognitive functioning is affected are very rare. It is important to note, however, that Gilger and Kaplan (2001) did not question the existence of reading, coordination, social communication and attention difficulties or the very real impact they have on individuals’ lives. Rather, they argued that it might be more helpful for practitioners to conceptualise conditions of neurodevelopmental origin as a manifestation of an atypical pattern of development. The specific type of cognitive difficulty the individual presents with is in turn determined by the “timing, location and severity of the disruption in brain growth and development”, meaning that some conditions may have shared risk factors.

Developing a coherent formulation that fully captures the child’s needs from multiple perspectives is one of the fundamental aspects of the role of the Educational Psychologist (MacKay et al., 2016). As such, an understanding of the debates and alternative perspectives outlined above can arguably enhance EPs’ formulations, thus highlighting the potential relevance and application of paediatric neuropsychology to educational psychology practice. It is important, however, to highlight, that the relevance of neuropsychology to practice disciplines such as educational psychology has been discussed in the literature mainly by academic psychologists, rather than practicing EPs. This raises a number of questions around the practical applications of any views

and recommendations put forward in those papers. The present study aims to address this imbalance, by directly exploring the views of EPs on the topic and thus attempts to bridge the gap resulting from the predominantly academic focus of this debate.

1.3.2 Neuropsychology as a specialist practice area

Educational Psychologists' role and involvement in specialist neuropsychological casework

While the previous section has considered the possible wider applications and relevance of child neuropsychology theory to everyday EP practice, this section will explore the existing literature on the contribution and role of EPs in casework involving neuropsychological conditions. A significant proportion of children and young people with neurological conditions need ongoing monitoring and support with their changing emotional, social and educational needs (Walker & Wicks, 2012) and EPs are seen by some (Ball & Howe, 2013; Reilly & Fenton, 2013) as key stakeholders in the facilitation of this process. The added value and contribution EPs can make in those instances will be explored with a focus on two of the most commonly encountered neurological conditions in children - acquired brain injury and epilepsy.

Educational Psychologists' role in supporting children with acquired brain injury

Acquired brain injury is considered to be a leading cause of childhood disability, with potentially lifelong implications for the child's cognitive function, emotional wellbeing and academic learning (Forsyth & Kirkham, 2012). The term "acquired brain injury" refers to non-degenerative injuries or damage caused to the brain after birth (Headway, 2018; UKABIF, 2018), as opposed to congenital brain conditions such as microcephaly (small head circumference associated with smaller brain size) and some types of epilepsy that are present at birth. Acquired brain injuries can be divided into two broad categories - *traumatic brain injuries*, caused by damage to the brain as a result of an external force or injury due to falls, accidents or assaults (Headway, 2018) and

non-traumatic brain injuries, typically caused by internal events such as infections (meningitis, encephalitis), hypoxia (oxygen deficiency), brain tumors, strokes and non-injury caused brain haemorrhages (bleeding in or around the brain). The Glasgow Coma Scale is a tool commonly used to assess the severity of the injury on the basis of measuring consciousness through eye, verbal and motor response. Typically, a brain injury is likely to be classified as severe if the loss of consciousness lasted for over six hours, moderate where the individual was unconscious for between 15 minutes and two hours, and mild where the period of unconsciousness lasted for up to 15 minutes (Ball and Howe 2013). The severity of the injury typically correlates with the range and seriousness of the symptoms experienced by the individual (Anderson, Spencer-Smith & Wood, 2011).

The Kennard Principle of brain plasticity (Bennet et al., 2013) refers to the commonly-held belief that “younger is better” when it comes to the age at which brain injury occurs, as children’s brains can compensate for lost or impaired function in certain areas caused by brain injury better than adults. However, current research suggests that children are *not* in fact more likely to make quicker or better progress with their recovery following brain injury compared to adults (Anderson, Spencer-Smith & Wood, 2011). Some researchers have argued that due to the fact that, in the case of younger children, the injury occurs in the dynamic context of a system that is still developing, where “early injury may compromise the development of neural networks underlying later stages of cognitive development” (McClusker, 2015, as cited in Ball & Howe, 2013), the child will “gradually grow into their symptoms” over developmental time (Brooks et al., 2003). Indeed, research has suggested that younger children up to the age of eight who have experienced a traumatic brain injury have a wider range of long-term cognitive difficulties compared to older children and adults (Ball & Howe, 2013). More specifically, children under the age of 8 have been found to have lower performance on a range of tasks measuring wider intellectual and visuospatial functioning compared to those who sustained a brain injury as adolescents (Verger et al., 2000). Similarly, younger children have been found to have more significant difficulties with language and overall worse intellectual functioning prognosis compared

to adolescents (Fletcher et al., 1996). The implications of acquired brain injury occurring in childhood can therefore have profound implications for the child's cognitive, educational, behavioural and socio-emotional outcomes.

Walker and Wicks (2012) argue that acquired brain injuries are not the rare conditions that they are often perceived to be, with 1 in 500 children under 16 experiencing a traumatic brain injury every year, thus making it likely that many educational settings, both mainstream and specialist, would encounter students who have experienced a brain injury. A small number of studies in recent years have looked specifically at the role of the EP in supporting children with similar neurological conditions. Ball and Howe (2013), for example, looked specifically at the role of the Educational Psychologist in supporting children with brain injuries to reintegrate back to school. The study involved semi-structured interviews with a range of professionals working with children with acquired brain injury in two specialist settings.

A number of opportunities for involvement of EPs were identified, highlighting the unique role and contribution of EPs in the context of specialist neuropsychological cases. For example, the research identified that a specific contribution of EPs can make is to attend and contribute to initial discharge meetings, with the view of supporting the child's reintegration back to school where appropriate, as well as to help school staff make sense of the medical and neurological information outlined in reports and what it means in practical terms for the child's ability to engage in learning. Ball and Howe (2013) highlighted that "often it is the educational psychology service that remains involved with the child through their school life and therefore is a key agency to communicate information about the injury to future settings".

Similarly, as education is regarded as a fundamental part of the child's recovery (Slomine and Locascio, 2009), providing school staff with appropriate training and guidance in relation to the child's changing psychological and cognitive needs, rather than just their physical needs, was seen as fundamental to the child's successful reintegration and ongoing support they can access in their educational setting. EPs were seen as having a key role in providing training and support to school staff, with a

focus on highlighting the ongoing and changing needs of this population and reminding staff that the child's presentation may not be static or follow a linear path to recovery.

These two potential roles for EPs in specialist casework involving acquired brain injuries raised a number of questions of the training needs of Educational Psychologists themselves, as the initial EP training may not have equipped them with the knowledge and skills in this area required to support the children and staff in this context (Bozic & Morris, 2005). Indeed, Ball and Howe (2013) recommended, based on their research findings, that all initial training courses in Educational Psychology should have a module on brain injury and neuropsychological development, as well as that Educational Psychology Services should ensure that they have practitioners with some specialist knowledge in the areas of neuropsychology and brain injury. It is not, however, possible to establish whether these recommendations have been taken into consideration or implemented on a larger scale, as no subsequent research has examined this specific issue. Similarly, there is currently no centralised way of collecting data on how individual services address the needs of children with neurological and neuropsychological conditions such as acquired brain injury, thus highlighting the need for more research looking at this specific area of practice.

Finally, it is important to take into consideration the fact that research looking at the role of EPs in neuropsychological cases is still in its infancy, and the existing studies are typically small in scale. While this does not necessarily preclude the generalisability and validity of the findings, it is important to interpret them cautiously, with due consideration for their limitations. Ball and Howe's (2013) paper, for example, was based on interviews with eight participants from a range of professional backgrounds. While no detailed breakdown of the exact number of participants from each profession was included, the small, yet non-homogenous sample raises the possibility that the findings were more reflective of the individual practitioner's views, with limited scope for generalisation. Similarly, the interviews were conducted in two specialist settings, and given that provision and practices may vary from one service to another, this raises questions as to whether the study's conclusions and recommendations would be applicable on a larger scale, or if they are specific to the two specialist settings.

However, this does not suggest that Ball and Howe's findings are not informative of the potential role of EPs in cases of acquired brain injury, despite their limitations. The study arguably provides an account of some of the possible ways in which EPs can contribute to the care of children with acquired brain injury, and this initial account can subsequently serve as a foundation for larger scale research.

Educational Psychologists' role in supporting children with epilepsy

Similarly to childhood acquired brain injury, epilepsy is one of the most commonly encountered conditions of neurological origin in children. Indeed, epilepsy has consistently been found to be *the most common* chronic childhood neurological condition (Aaberg et al., 2017; Bell, Neligan & Sander, 2014; Reilly & Fenton, 2013), with prevalence rates of between 0.5 to 1% of the total child population, similar to the prevalence rates of Autistic Spectrum Conditions. This suggests that, on average, 1 out of 150 children will be diagnosed with epilepsy (Aaberg et al., 2017; Epilepsy Action, 2018), meaning that every primary school is likely to have at least one pupil diagnosed with the condition.

Epilepsy is characterised by a range of recurrent seizures caused by a disturbance in the electrical signals sent between neurons (Epilepsy Society, 2018a). The resulting atypical or excessive pattern of electrical activity can lead to different types of epileptic seizures that can affect the entire brain in the case of generalised seizures, or a specific area of the brain, in the case of focal seizures (Reilly & Fenton, 2013). Different types of seizures are characterised by different physical manifestations such as the person becoming unresponsive (absence seizures), jerking bodily movements (clonic seizures) or sudden onset of body muscle stiffness (tonic seizures). Epileptic seizures can be caused by genetic factors and predispositions and may emerge in early childhood, however they can also be caused by external factors such as infections like meningitis, or following a stroke or a head injury (Epilepsy Society, 2018b).

The extent to which epilepsy will affect individual children's social, emotional and educational functioning varies significantly (Jensen, 2011), depending on the type and severity of the condition and seizures. However, the association between epilepsy, education and learning-related difficulties is well-documented, with 20-30% of children with epilepsy having learning disabilities (Berg, 2011), 48% having a specific learning difficulty (Fastenau et al., 2008) and 35% of children with epilepsy in the UK having a statement of special educational needs, now known as Educational and Health Care Plan (Swiderske et al., 2011). Similarly, children with epilepsy are more likely to be diagnosed with Attention Deficit Hyperactivity disorder (ADHD), and the inattentive subtype specifically, with rates of 12% -21% (Swiderske et al., 2011). Those affected may therefore require ongoing support and adaptations in terms of their learning, physical and emotional needs and EPs can have a key role in the identification and coordinated response to those needs from a psychological perspective.

Reilly and Fenton (2013) looked specifically at the possible role and contribution of EPs in supporting children diagnosed with epilepsy. They identified a number of potential areas for EP involvement at both the individual and the systemic level. More specifically, a number of studies have highlighted the lack of knowledge of epilepsy and its possible implications for learning that teachers experience, meaning that they are often reliant on the child's parents for advice and information (Wodrich et al., 2011). Similarly, both parents and teachers may become overprotective of the child, resulting in lowered expectations in the case of teachers (Prpic et al., 2003), or keeping the child off school, in the case of parents (Wodrich & Cunningham, 2008). EPs may therefore have a key role in supporting teachers to develop their understanding of the specific type of epilepsy the child experiences, as well as their profile of strengths and difficulties and how those may manifest themselves in the classroom, as well as socially.

Similarly, Reilly and Fenton (2013) suggest that EPs, alongside medical professionals, can support education staff by helping them distinguish between the needs of the child that may be of medical origin, and those that may best respond to educational or psychological input. In the case of parents, the role of the EP may involve providing parents with support around managing behaviour and boundaries at

home, as well as with support around the parent's understanding of the child's cognitive and learning needs and how those may impact on their wider functioning. Reilly and Fenton (2013) point out, however, that in order to be able to do this, psychologists "will need a sound understanding of the variables that contribute to cognitive and behavioural issues in childhood epilepsy". This appears to mirror the points raised by Ball and Howe (2013) in relation to the role of EPs in cases of acquired brain injury, as outlined in the previous section, where the importance of developing EPs' understanding of neurological development and brain injury was a key recommendation.

While a number of studies have looked at the role and contribution of Educational Psychologists in cases involving specific neurological conditions, the current understanding of the broader role of EPs working in neuropsychological settings is very limited. Albeit informative about their respective topics, the existing empirical papers in this subject and practice areas are small in number and scale. While they have all indicated that there are a number of potential roles for EPs to contribute to cases of neurological nature, the evidence base has not yet developed sufficiently to provide further insights about these possible roles in practice. This highlights the need for further research in this area, with a focus on initially identifying general trends and practices in relation to EPs' work and involvement with a broad range of childhood neurological conditions.

The present research aims to address this gap by systematically exploring the views, attitudes and perceptions EPs hold about neuropsychology, including the perceived relevance and applications of neuropsychology theory and research on day-to-day EP practice. Additionally, the research will also attempt to fill the gap in the literature surrounding the role of EPs in specialist neuropsychological settings, by exploring what neuropsychology practice area entails for EPs, as well as their perceived unique contribution to the field and their views on the neuropsychology qualification process. The six research questions generated to address each of these topics will be presented in the next chapter.

Chapter 2. Research questions and methodological approach

2.1. Research questions

The literature review has identified significant gaps in the knowledge base surrounding the relationship between neuropsychology and educational psychology, as well as the broader understanding of the applications, relevance and use of neuropsychological theory in both everyday and specialist EP practice. Six main research questions were identified in order to address this gap systematically, from a variety of perspectives:

- 1) *What are the current attitudes towards and understanding of paediatric neuropsychology amongst Educational Psychologists?* This question aims to explore how neuropsychology is perceived by EPs including their understanding of what neuropsychology theory and practice entail, their prior experience of teaching in this area, particularly during their initial EP training, and their self-reported interest in the area.
- 2) *To what extent do Educational Psychologists perceive paediatric neuropsychology to be relevant to Educational Psychology practice?* This question will aim to build upon the findings of Question 1, by looking specifically at the perceived importance and relevance of Paediatric Neuropsychology theory and research to EP practice. More specifically, this question aims to explore whether EPs believe that neuropsychological theory can inform their practice. Similarly, this question will explore whether EPs encounter neuropsychological cases in their day-to-day practice.
- 3) *How does neuropsychology inform Educational Psychologists' day-to-day practice?* This question will explore specific ways in which EPs who believe that

neuropsychology theory is relevant to EP practice use and apply it in their daily practice.

- 4) *What is Educational Psychologists' specialist contribution to paediatric neuropsychology practice?* This question aims to explore the views of EPs considering training as a Paediatric Neuropsychologists or working in specialist neuropsychological settings on what they believe to be their unique contribution to the field, as opposed to Paediatric Neuropsychologists from other backgrounds, such as clinical psychology.
- 5) *What does paediatric neuropsychology practice entail for educational psychologists working in neuropsychological settings?* This questions will focus specifically on exploring the typical duties and responsibilities of EPs working in paediatric neuropsychology settings, including the types of casework they undertake and how this may differ depending on the setting they work in.
- 6) *What are the views of Educational Psychologists specialising in neuropsychology on the training route to becoming a Paediatric Neuropsychologist?* This question will examine the perception of the post-qualification training options for EPs working in Paediatric Neuropsychology, as well as the experiences of EPs who are currently undergoing the qualification.

2.2. Methodological approach

While the methodology for two phases of the research will be outlined in Chapters 3 and 4, this section aims to provide an overview of the broader approach and principles guiding the research.

2.2.1 Research approach and paradigm

The researcher adopted pragmatism as the main paradigm guiding the research. Pragmatism is a theoretical framework where the choice of methodology is guided primarily by the research questions (Bryman, 2004). As such, a pragmatic approach can

incorporate both interpretivist and positivist positions, depending on what is considered most suitable for the investigation of the specific research questions posed (Creswell, 2003). In line with this, a predominantly positivist, quantitative approach was considered most appropriate for answering the questions addressed by Phase 1 of the present research, and an interpretivist, qualitative approach was deemed better suited to the research questions addressed in Phase 2.

Consistent with the paradigm, an exploratory, sequential, mixed-methods design was employed in order to provide a detailed exploration of the attitudes, perceptions and practice of paediatric neuropsychology amongst EPs and of the relationship between the two disciplines, from a number of perspectives. Phase 1 of the research aimed to provide a generic overview of the perceptions, attitude towards and applications of neuropsychology to day-to-day and specialist EP practice. Phase 2, in comparison, focuses on building upon the findings of Phase 1 by exploring the emergent themes in more depth, through semi-structured interviews with EPs and allied healthcare professionals based in two neuropsychological settings.

2.2.2 Mixed methods design

The chosen research design was guided primarily by the nature of the research questions and the most suitable approach to gathering the data needed in order to answer the research questions in a comprehensive and systematic manner. A mixed methods design was considered most appropriate for the present research as the six research questions warranted a different approach and type of data.

Research questions 1, 2 and 3 were concerned with obtaining an overview of the views and experiences of EPs working in local authority EP services across the country, as well as those in private practice. As such, a larger scale, quantitative design with a mix of both closed and open-ended questions was considered most suitable, as this would allow for the identification of trends and patterns across a larger sample. As the present research constitutes the first empirical investigation of this topic, the inclusion of open-ended questions that allowed the respondents to elaborate on their responses was considered important. This allowed for the collection of richer, more nuanced data

and helped address some of the drawbacks associated with closed-ended questionnaires, such as lack of opportunities to understand the reasoning behind the chosen response. Similarly, as no prior research had investigated this research topic, it was necessary to obtain a broader, exploratory overview of a number of key topics related to the perception and use of neuropsychology by EPs.

In contrast, research questions 4, 5 and 6 were focused primarily on the role and experiences of EPs working in neuropsychological settings. A qualitative approach was deemed most appropriate as it would allow for the gathering of detailed data without the restrictions a questionnaire may impose. This was seen as particularly important considering that very little was known about this specialist role and restricting the participants' answers would not have allowed for a flexible exploration of the emergent topics, in the same way as a semi-structured interview would facilitate that process.

While the two different phases investigate distinct topics, the findings will be integrated in order to provide a coherent overview of the relationship between the two disciplines from several perspectives. This will allow for a broad, yet comprehensive picture of the educational psychology perspective on neuropsychology to be presented and analysed.

Chapter 3. Phase 1: National Survey

Chapter overview

Phase 1 of the research aimed to fill the gap in the literature identified in Chapter 1, by exploring the views Educational Psychologists hold about neuropsychology, as well as its perceived application to day-to-day EP practice. This chapter will provide a detailed overview of the methodology, procedure and findings of the first phase of the research.

3.1. Methodology

3.1.1 Survey development and design

The survey questions were developed with reference to Research Questions 1, 2 and 3, with a focus on exploring the perception of neuropsychology amongst trainee and qualified EPs in the UK (the survey questions can be found in Appendix 1). The research was granted ethical approval by the UCL Institute of Education Research Ethics Committee. A mix of open and close-ended questions was included. The provisional questions were firstly shared with qualified and trainee EPs from one London Educational Psychology Service and from the UCL Institute of Education. The researcher sought their feedback regarding the clarity of the questions, the extent to which any of them could be considered leading questions, as well as the extent to which the survey questions accurately reflected the research questions. No specific suggestions for amendments to the questions were made, apart from two typographical errors, which were corrected. Once the final version of the questionnaire was agreed, the survey was designed using Qualtrics, a secure online survey administration platform used for the purposes of online research by University College London.

The survey was initially piloted with seven participants who were all Trainee Educational Psychologists and had no prior knowledge of the questions. Their feedback was sought on the clarity of the questions, the extent to which the participants believed the response options captured their views accurately, as well as the ease of use of the online platform. As no issues that warranted further revision of the survey contents and design were identified from the pilot, the survey was launched and disseminated via an email sent to the EPNET mailing list (an online mailing list and forum for Educational Psychologists commonly used for discussion of professional issues).

The email contained information about the research, as well as a link to the survey (Appendix 4). The first page the prospective participants were shown after following the link contained a detailed information section, followed by a research participation consent section. The survey questions were then displayed to the participants in sections of up to five questions per page. There were several different potential exit points, depending on the participant's responses, and all participants were provided with an opportunity to add any comments after completing the survey.

3.1.2 Sample, distribution and regional representation

The survey was advertised and distributed via EPNET. Data were collected from an opportunity sample that consisted of qualified and trainee Educational Psychologists, between February and April 2019.

A total of 200 trainee and qualified EPs completed the survey. A number of steps were undertaken in order to ensure that the participant distribution across the country reflected that national distribution of EPs in the UK by region. All participants were asked to declare whether they were a qualified or trainee EP in the UK, and to indicate the geographical region they were based in, in order to ensure that the sample consisted of UK-based EPs/TEPs.

As no records detailing the number of EPs employed in each region of the country are publicly available, the researcher made a request under the Freedom of Information Act to the Health and Care Professions Council (HCPC) - the regulatory

body for practitioner psychologists, requesting this information. Once the national data were obtained, they were cross-referenced with the distribution of participants in the sample and four regions were found to be particularly underrepresented - Scotland, Norfolk, the South West and Northern Ireland. The researcher then approached the Educational Psychology Services in those geographical areas directly, asking for the survey to be shared with the EPs in the service, thus increasing the representation of these regions in the data from 6% to 11% in Scotland, from 2% to 5% in Northern Ireland and Norfolk, and from 4% to 6% in the South West.

A detailed breakdown of the sample characteristics, including current role, level of experience and geographical location can be found in Figures 3.1-5.

Figure 3.1. Role

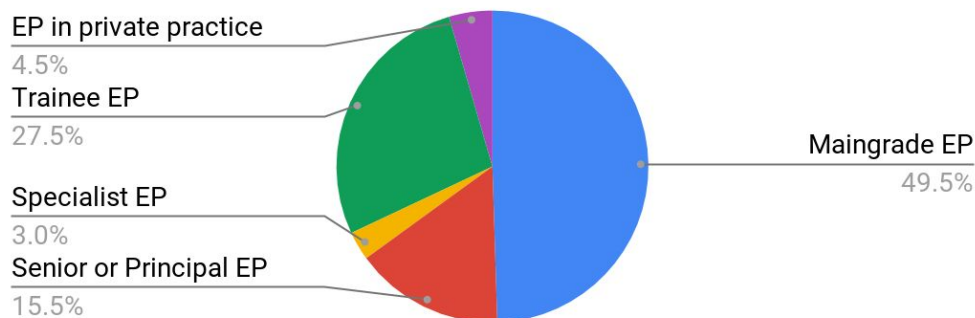


Figure 3.2. Experience level

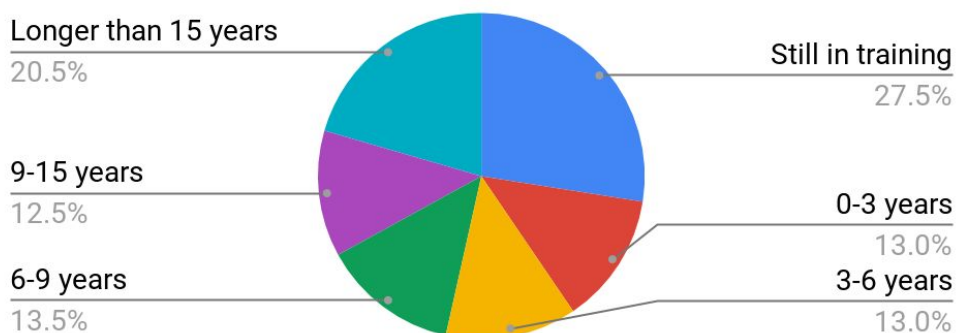


Figure 3.3. Participant location and distribution by region

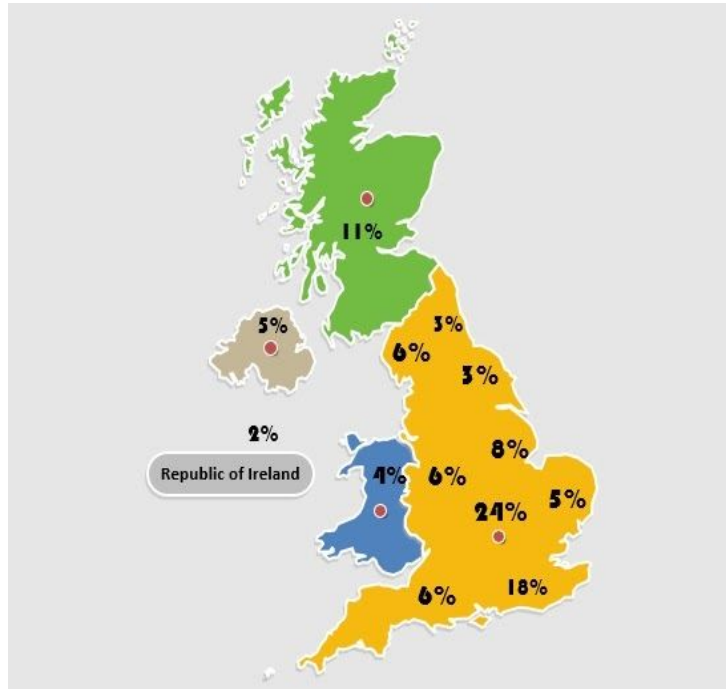
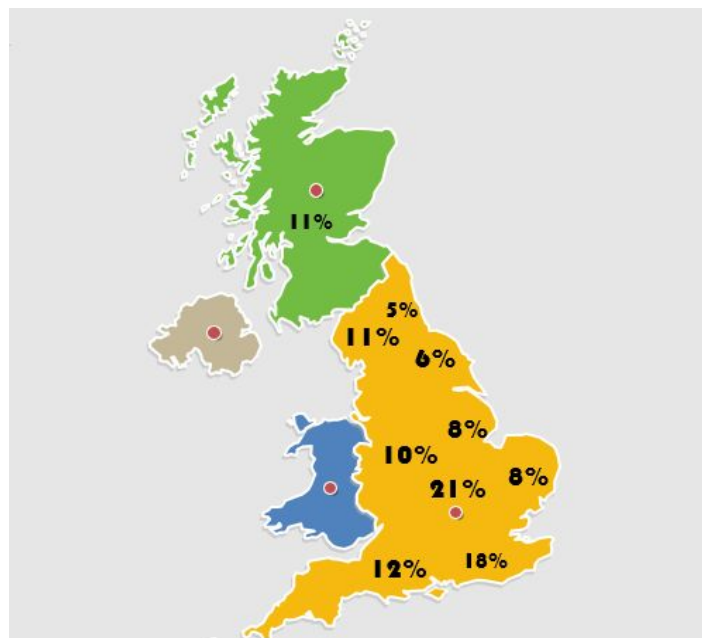


Figure 3.4. Educational Psychologists distribution by region
(data from HCPC, requested under the Freedom of Information Act)



3.1.3 Data analysis

The survey data were aggregated and analysed using the statistical software package R Version 3.6.1 (R Core Team, 2019). Unlike alternative statistical analysis applications like SPSS, R (especially used in combination with the document editor Markdown) allows for the creation of complete research reports generated directly from a raw data file and thus reproducible by anyone, in the spirit of open science and reproducible research practices. Descriptive statistics (count data) were generated from the response data for each multiple choice questions and will be reported in the section below.

As the survey included a number of open-ended questions, the responses to those questions were analysed in two distinct ways, depending on whether the data were quantifiable. More specifically, some of the open-ended questions (e.g. “Can you provide examples of types of neuropsychological conditions you have worked with to date?”) produced responses that could be quantified and analysed statistically (e.g. a list of names of different neuropsychological conditions the respondents had encountered that could be counted and categorised). In those instances, the researcher generated and reported the descriptive statistics from the data. The responses to other open-ended questions that did not generate quantifiable data (e.g. “How do you use or apply neuropsychology to your day-to-day practice, if at all?”) were recorded verbatim and analysed thematically for commonly occurring themes, using Braun and Clarke’s (2006) thematic analysis model. The process involved five main stages: the first stage involved familiarisation with the verbatim extracts through repeated reading and initial identification of patterns in the responses. The second and third stages involved generating codes and combining them into initial themes. During the fourth and fifth stages the researcher reviewed and refined the themes, and generated names for each theme. The final themes and accompanying data were then included in the final report alongside graphical representations of each thematic cluster.

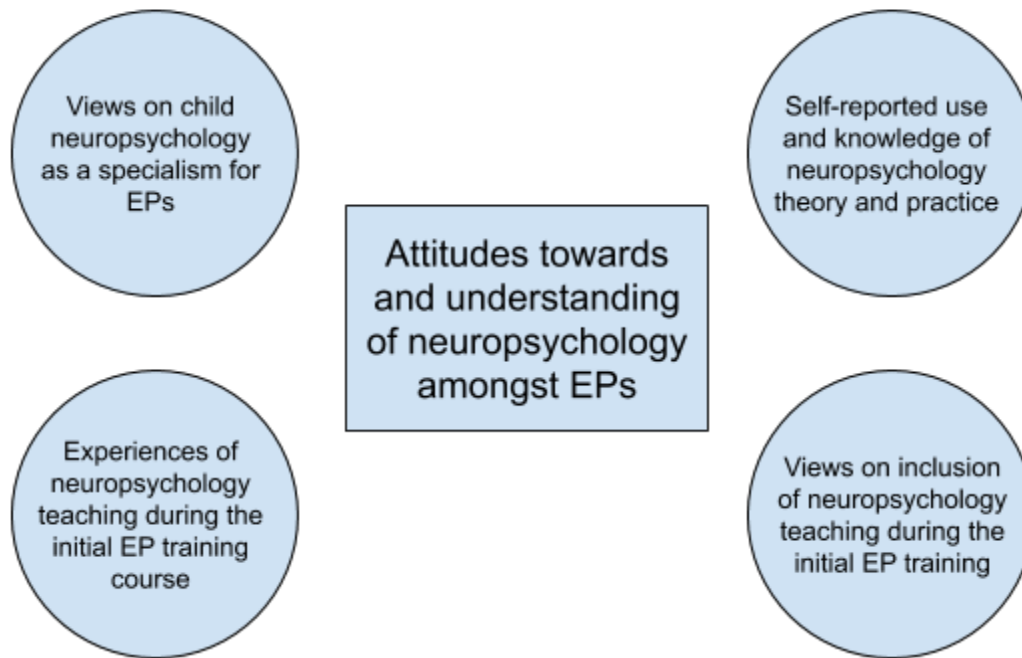
3.2. National Survey Findings

The National Survey generated rich and detailed data about the relevance and application of neuropsychology to educational psychology, as well as about the perceived relationship between the two disciplines. While the data were extracted from the survey responses, the findings will be outlined with reference to the original research questions and grouped into broader topics and subtopics of relevance to each specific research question.

3.2.1 Research Question 1: What are the current attitudes towards and understanding of paediatric neuropsychology amongst EPs?

Research Question 1 was explored from a number of perspectives in the National Survey. Specifically, this involved collecting data about the participants' self-reported knowledge of what child neuropsychology theory and practice entails; their views and experience of neuropsychology teaching during the initial EP training course and their knowledge and views on paediatric neuropsychology as a post-qualification professional development option for EPs (see graph below). The findings for each of these sub-themes will be outlined below and will then be considered together and summarised in the *Research Question 1: Findings Summary* section.

Figure 3.5. EP perceptions of neuropsychology



Theme 1. Self-reported use and knowledge of child neuropsychology theory and practice

The survey responses indicated that the majority of respondents (73%) used neuropsychological concepts in their day-to-day practice. However, a further analysis identified a discrepancy between the participants' reported use of neuropsychology and their self-reported knowledge of what neuropsychological theory and practice entail. More specifically, while 73% indicated that they refer to neuropsychological concepts in their practice, less than a quarter of participants felt that they had a good or high level of knowledge of neuropsychological theory or practice (Figures 3.6 and 3.7). Similarly, only 18% of participants indicated that they were familiar or very familiar with the distinction between neuroscience and neuropsychology (Figure 3.8).

Figure 3.6. Familiarity with neuropsychology theory

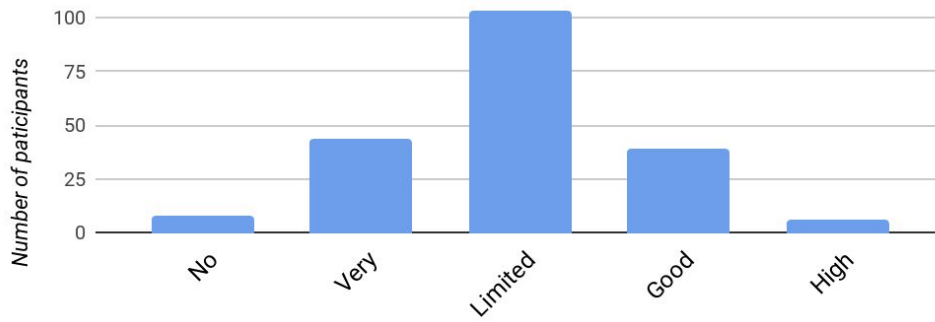


Figure 3.7. Knowledge of neuropsychology practice

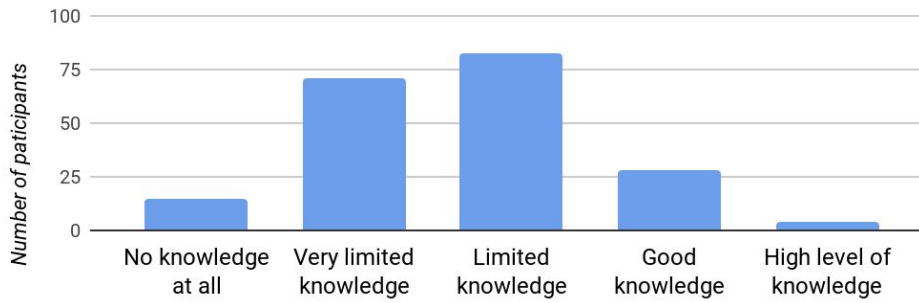
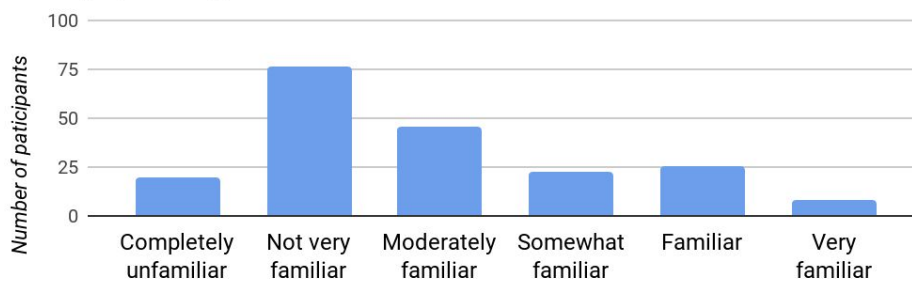


Figure 3.8. Familiarity with the differences between neuropsychology and neuroscience



Theme 2. Views on inclusion of neuropsychology teaching during the initial EP training

The majority of participants (73%) indicated that they had not had any neuropsychology focused teaching during their initial training as an EP. In contrast, 92% of respondents stated that they would have liked to have had input on neuropsychology:

“I hope (this research) will get doctoral training providers to consider incorporating this in the course (if they haven't already done so)”

“This needs to be a substantial element of EP training going forward.”

The reasons listed by participants were not restricted simply to a desire to learn more about an unfamiliar area; rather, the thematic analysis of the qualitative data indicated that most participants were able to identify a range of situations in their day-to-day practice when they would be able to apply neuropsychological knowledge (e.g. training provision, challenging “neuromyths”, complex casework).

Some participants highlighted the importance of EPs having an understanding of brain function and brain-behaviour relationships:

“As a psychologist, understanding the role of the brain and how this impacts is essential, I feel that there isn't enough focus on this as we are scared to be associated with anything too medical”

“It is essential to understand the relationship between what people think, feel and do, and what is happening in the brain. Making changes to one makes for changes to the other. (...)For example, there is a difference between building a cognitive and behavioural profile of an individual which is consistent with ASC, though other difficulties may be at the heart of the profile. Neuropsychological profiling in the future may provide EPs with the opportunity to distinguish between ASC and attachment disorders, discrete cognitive difficulties, FASD, etc. (...)It may be possible in the future to rule out certain pathways to respond before implementing time/effort/resource-costly interventions when we can rule out certain difficulties.”

“As we learn more and more about brain anatomy and functioning I would hope that we can bring greater understanding to neuro-environmental/genetic impact on behaviour and human development.”

Other responses highlighted gaps in the participant's current knowledge that they believed could be addressed if neuropsychology teaching had been included in the

initial training courses, particularly as they had encountered neuropsychological cases in their practice, but did not feel sufficiently confident in their knowledge:

“I have begun to encounter neuropsychology reports and assessments on placement and having some prior knowledge would help me interpret and use these.”

“I have also worked with CYP with conditions such as epilepsy during my training. I think I would feel more greatly empowered whilst working with such cases had I had the opportunity to study brain development and the impact of such conditions upon pupils and other stakeholders, during my training.”

“I think I would have felt more confident in approaching cases where this was relevant. Epilepsy has come up regularly, if not frequently.”

“I think it is important to be taught about neuropsychology as a) it is helpful for EP to understand and explain certain symptoms/behaviours especially when working with cases involving neurological conditions; b) it is relevant for developing efficient interventions.”

“I think it would be extremely useful to learn about the psychology of brain development and how an individual’s early and ongoing experiences can alter the development and aspects of the brain.”

Another sub-theme that was identified referred to the relevance and application of neuropsychology for comprehensive formulations, alongside the use of systemic and environmental theories and considerations:

“We take a very ecological approach to our work, but I think having more of a basis in the neuropsychological theories would be relevant.”

“I have learnt about child and adolescent brain development and I think an understanding of this impacts on our understanding of child development, and can help contribute to the picture and story we build up of the child within their system. I think an understanding of the development of the brain can also help us make sense of behaviours.”

“I would like to have known more about the developing brain and its relationship with emotional responses and behaviour. Much of what we concentrate on are the things people have some control over (the system the child is living within, the relationships, the social dynamics etc) and this is important but it would be useful to have known more about some important within child factors too.”

Other respondents reflected on how an improved knowledge of neuropsychology during the early stages of their career as EPs may have influenced the way they perceive paediatric neuropsychology as a career option:

“If I had learnt more about neuropsychology as a TEP paediatric neuropsychology might feel a bit more open to me as a possible career.”

Theme 3. Experiences of neuropsychology teaching during the initial EP training course

27% of participants reported that they had had neuropsychology-focused teaching during their initial training as EPs. The participants' experiences varied widely depending on the focus of the teaching and reported that the teaching sessions covered a broad range of topics, ranging from short single sessions covering a specific condition or an individual EP's experience of working in a neuropsychological setting, to more generic overview of brain development and specific assessment tools:

“An Educational Psychologist who also carried out further training into paediatric neuropsychology talked about their role in practice and a background of theory. This was only a 2 hour session and would have been helpful to have further additional input.”

“Fairly basic overview specifically how brain architecture impacted by experience”

“Specific assessment tools that give neuro-relevant information; basics of some topics such as executive functioning”

The responses suggested that the majority of the teaching was restricted to a single session that was largely focused on the facilitator's experience or interests, which may potentially result in very different experiences across different training providers.

Theme 4. Views on Paediatric Neuropsychology as a specialism open to Educational Psychologists

The majority of respondents indicated that they were not familiar with paediatric neuropsychology as a specialism area for EPs and had not considered training as a Paediatric Neuropsychologist (Figures 3.9 and 3.10):

Figure 3.9. Awareness of the training routes into Paediatric Neuropsychology available to EPs

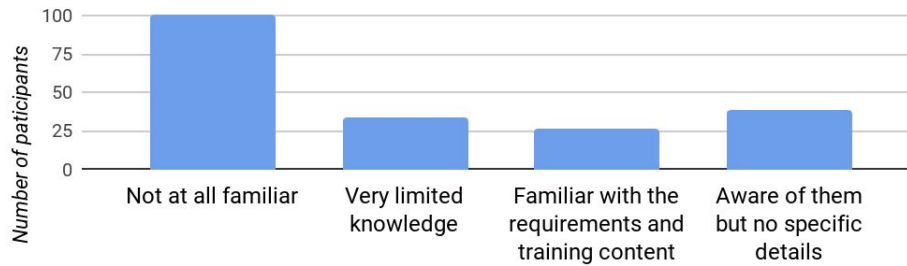
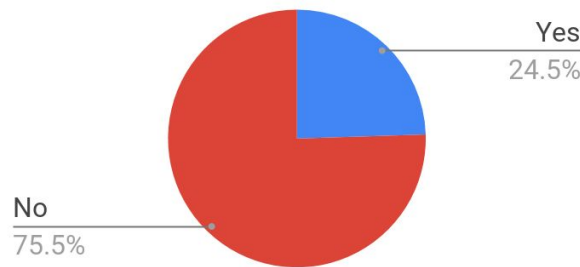


Figure 3.10. Have you considered training as a Paediatric Neuropsychologist?



More than half (53%) of those who had considered training were maingrade EPs, and only 12% were trainees. In contrast, out of those who had not considered training, 40% were maingrade EPs and a further 38% were trainees and 16% were senior or Principal EPs. Therefore, it appears that training as a paediatric neuropsychologist is not as popular during the very early stages of an EP’s career (i.e. during training) and towards the end of their career. 80% of respondents who indicated that they had not considered training as a neuropsychologist listed not knowing enough about the area or not knowing that training as a PN was an option available to EPs as their reason.

Participants who had considered completing further specialist training in neuropsychology listed a number of reasons for wishing to further their knowledge in this area. Specifically, some respondents wrote about a desire to add an extra dimension to their assessments and conceptualisation of the needs of the children they work with:

“It is impossible, and probably futile, to disentangle the brain from all of the other systems that affect child development; therefore, it makes sense to study it. Also, I find it endlessly fascinating and I am seeing more and more children whom I would like to have a better understanding of the neuropsychology and do a more in depth assessment.”

Other respondents listed their interests in the evolving field of the neuro-disciplines and the scientific elements of neuropsychology as a factor that had provoked their interest in the area:

“It’s fascinating. Research is advancing all the time. It’s scientific. Hypotheses are emerging and I like to be at the forefront of things.”

“Neuro fields and research are only going to have a greater impact on EP practice as time moves on. Neuro technologies are becoming increasingly advanced and I think it is useful to have an EP who will be able to mediate Neuro* work within the field of education. Education loves fads and fashions, sometimes at the expense of proven high quality interventions (take brain gym...)”*

Another factor listed by a number of respondents referred to an interest in brain-behaviour relationships and the links between brain processes and development:

“I was interested in furthering my knowledge with regard to brain-behaviour relationships and its application to children in schools”

“(I am) Interested in understanding how the brain develops, the influences on brain development, and the influence on behaviour”

Some respondents reported having a longstanding personal interest in neuropsychology and neuroscience that remained active after they completed their training as an EP:

“I have an academic background and particular interest in Neuropsychology and I believe that it is extremely relevant to Educational Psychology practice, therefore I wish to understand it better. I would also like to be able to increase the neuropsychological understanding of professionals (such as education staff) that we work with”

“Although aware that neuropsychology is distinct from neuroscience, I have a strong interest in neuroscience from doing an undergraduate module in Social Cognitive Neuroscience.”

“Always been interested since undergraduate study in biological psychology”

For other respondents, their interest in neuropsychology was sparked by personal factors, such as a colleague completing the paediatric neuropsychology course:

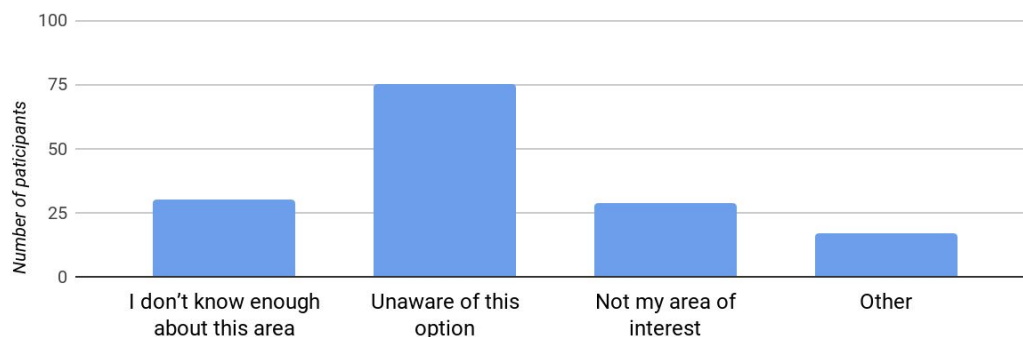
“A previous colleague of mine had completed the paediatric Neuropsychology course at UCL and has spoken passionately about the content and relevance to her practice. My

knowledge is limited at present but I do believe neuropsychology will significantly inform the future direction of being an EP. I have done some research into the course at UCL and other relevant CPD reading.

“Interest and personal experience of prematurity and its consequences, friend who has done the masters in paediatric neuropsychology”

In contrast, considering that only a quarter of all respondents had considered training in neuropsychology, it is important to explore the reasons why the remaining 75% had not considered that option. Lack of sufficient knowledge of this area emerged as the most significant factor, with 50% of the respondents stating that they were unaware of this option and a further 20% stating that they did not know enough about this area (Figure 3.11).

Figure 3.11. Why have you not considered training as a Paediatric Neuropsychologist?



The respondents whose answers did not fall within the suggested categories were provided with a text box so that they could respond in their own words. 11% of responses fell within that category and three main themes emerged as “other” reasons why the respondents had not considered paediatric neuropsychology training:

Current career stage, and particularly being close to retirement was listed by a number of respondents as a key factor making further training a less appealing option:

“(I am) close to retirement so not a route I would take a[t] this time of my life... if I still had my career ahead of me, I would be very interested.”

“I am nearing retirement, and do not wish to change careers at this stage, besides which, I love the work I currently do.”

Similarly, the time demands and cost associated with further training was highlighted as another barrier by some respondents:

“At the moment, the commitment of doing further extensive training would be difficult for me”

“My employer would not support this financially or give me time off work for studying”

Some participants also flagged up the lack of sufficient opportunities to apply neuropsychological knowledge in their current setting as another factor that made them less likely to consider training in neuropsychology:

“From discussions with EPs who have trained, I feel that the information and knowledge gained is very useful but that unless we can be seconded or work in a medical setting there is very limited relevance to our daily work at the current time”

“I’m not sure whether the area has enough practical relevance to help children (this is based on reports I have seen written by neuropsychologists - my knowledge in this area is limited)”

Research Question 1: Summary of findings

Research Question 1 was concerned with the current attitudes towards neuropsychology held by Educational Psychologists in the UK, as well as their familiarity and understanding of paediatric neuropsychology theory and practice. The National Survey findings paint a complex picture of the perception of neuropsychology by EPs and suggest that while neuropsychology is perceived as relevant to everyday EP practice by the majority of respondents, this is in sharp contrast to their self-reported knowledge of neuropsychology. More specifically, while over 70% of respondents stated that they refer to neuropsychological concepts in their everyday practice as EPs, less than 20% of them felt confident in their knowledge about the differences between neuroscience and neuropsychology and less than 25% stated they had a good or very good knowledge of neuropsychology theory. This, combined with the fact that the majority of participants had not had any neuropsychology-focused teaching during their initial training as EPs and were not aware that EPs could specialise in neuropsychology

raises important questions about the visibility of neuropsychology, as well as about the discrepancy between the EPs' openness to incorporating neuropsychology in their practice, and the lack of information and teaching in this area.

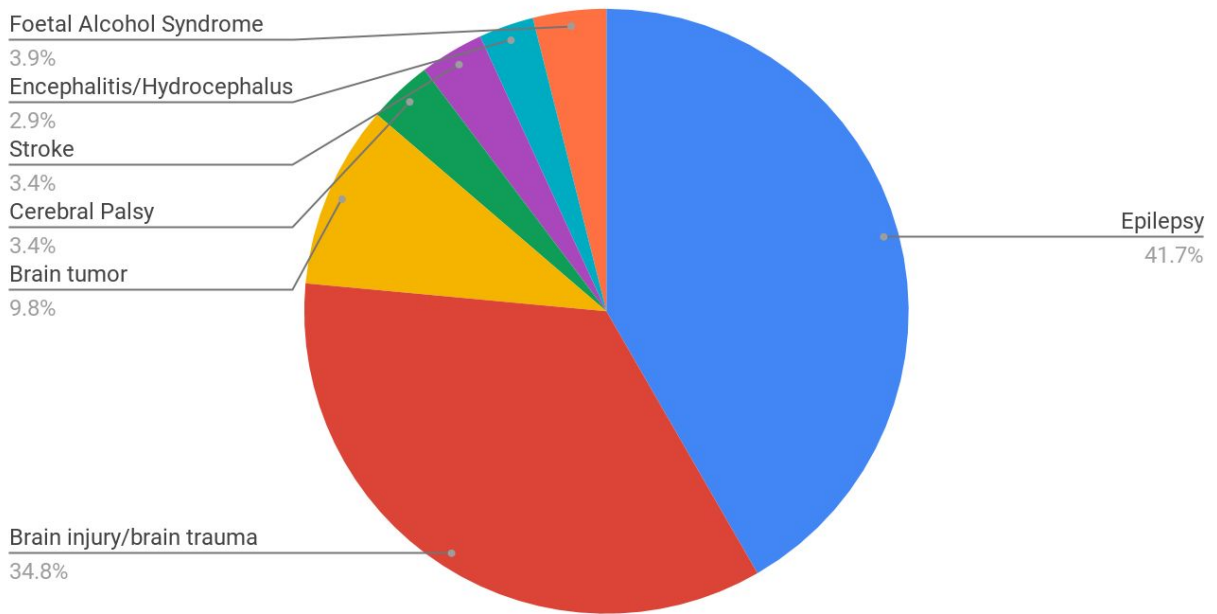
3.2.2 Research Question 2: To what extent do EPs perceive paediatric neuropsychology theory to be relevant to Educational Psychology practice?

The National Survey results indicated that 65% of all participants thought that neuropsychology was relevant or extremely relevant to everyday EP practice and 73% of all respondents indicated that they refer to neuropsychological concepts in their day-to-day practice. Similarly, 80% of respondents stated that they had worked on neuropsychological cases, with the figure rising to 90% amongst qualified EPs, yet only 22% of respondents stated that they felt confident about their theoretical knowledge when working on those cases. The sub-sample of participants who reported feeling "not at all confident" or "not confident" about their knowledge were evenly distributed in terms of their level of experience. This suggests that the participants' lack of confidence does not appear to be related to their experience levels (i.e. lower confidence levels amongst trainees or newly qualified EPs), but rather may be indicative of a broader lack of sufficient knowledge and understanding of this area, as already highlighted in the previous section.

The survey also provided data on the type of neuropsychological conditions EPs encounter in their practice, which is a topic that has not been investigated in the literature before and no data were available on this specific topic prior to the present research. Epilepsy and acquired brain injury emerged as the most commonly encountered conditions of neurological origin in EPs' everyday practice, followed by brain tumors, Foetal Alcohol Spectrum Disorders, as well as stroke, cerebral palsy and encephalitis (Figure 3.12). These data may be particularly beneficial to initial training providers, as well as educational psychology services considering the introduction of

neuropsychological training with direct relevance to EP's day-to-day practice, as it can arguably provide suggestions for key areas they may wish to focus on.

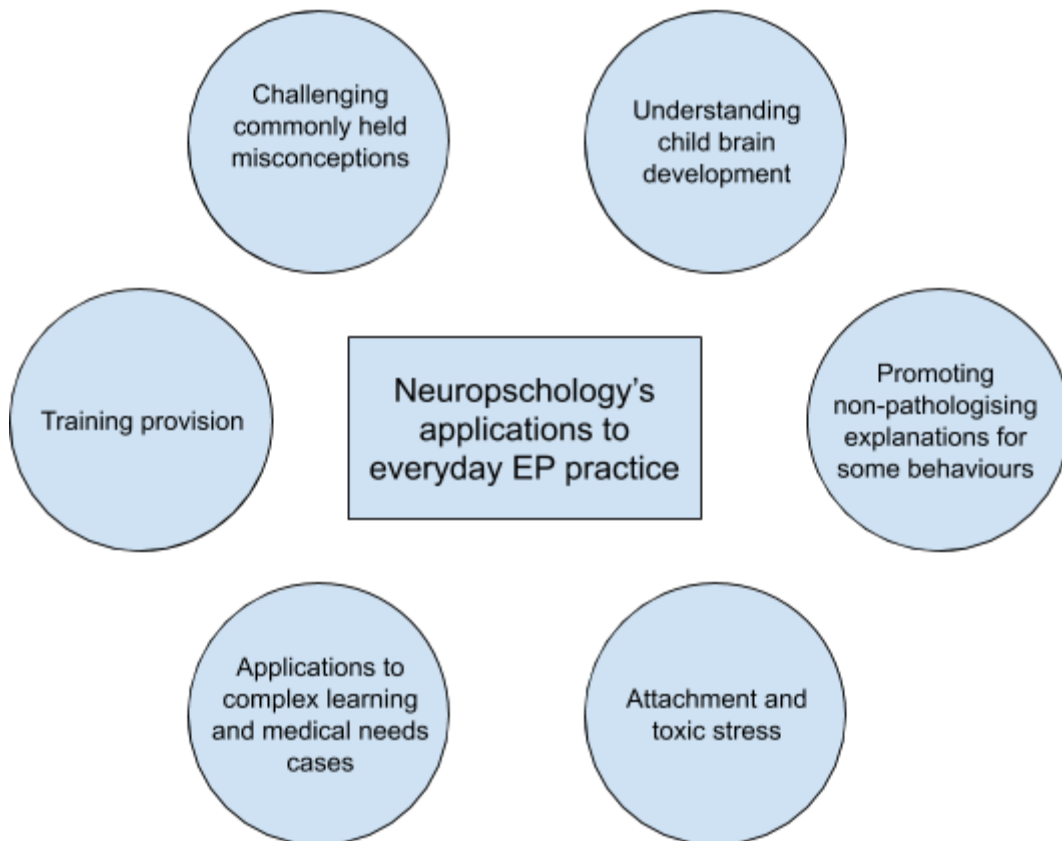
Figure 3.12. Can you provide examples of types of neuropsychological conditions you have worked with to date?



3.2.3 Research question 3: How does neuropsychology inform EPs' day-to-day practice?

All survey respondents who indicated that they used neuropsychological concepts in their practice were given the opportunity to elaborate further on the specific ways in which they use neuropsychology in their day-to-day practice. The participants' verbatim responses were analysed thematically and five main categories were identified:

Figure 3.13. Neuropsychology's applications to everyday EP practice



Theme 1: Understanding child brain development and neuroplasticity

Early life cognitive and brain development was highlighted as a key area where neuropsychological knowledge was perceived as relevant by the respondents, particularly in the context of consultation with schools and parents:

“I have made reference to concepts such as neuroplasticity and neuronal pruning over the course of development. The neurological changes resulting from literacy acquisition have been helpful in refuting predetermined views of dyslexia.”

“I will talk about creating new pathways in the brain, neuroplasticity and the fight or flight response”

Theme 2: Explaining and normalising certain behaviours and presentations

Some respondents indicated that they use neuropsychological concepts in their daily practice to help children, parents and school staff make sense of the presenting difficulties in a non-pathologising way. This sub-theme appears to challenge some of the views about neuropsychology outlined in the literature review in Chapter 1, where neuropsychology was seen as potentially promoting within-child and pathologising views of the child’s difficulties:

“I use it when writing reports and often to explain a child’s behaviour and how it might be benefiting them e.g. a child fidgeting and how this can help them to focus.”

“(I use it) to explain the physiological responses to anxiety/stress so that parents and school staff understand why children may sometimes behave in ways they perceive irrational or impulsive.”

“I use my understanding of neurodevelopment in children, especially teenagers, to normalise their behaviour, especially around sleep patterns”

Theme 3: Attachment and toxic stress

A significant proportion of respondents indicated that they refer to neuropsychological concepts in the context of cases involving attachment-related difficulties:

“I discuss the impact all our experiences have on brain development. Particularly I discuss attachment theory, social information processing and trauma-informed responses.”

“When considering the neuropsychological impact of trauma, stress and anxiety - both as a developmental perspective (e.g. influence of early life trauma on attachment styles) and as a current presentation - e.g. the impact of stress hormones on neurological functioning, such as ‘shutting down’ the language processing and complex cognitive processing areas of the neocortex during ‘panic’ mode, and how this affects what kind of responsive strategies should be used”

Theme 4: Complex learning and medical needs cases

Some respondents indicated that neuropsychology is a helpful reference point during the formulation process for complex cases, including cases where the child has a medical condition of neurological origin:

“I find referring to neuropsychology very useful in explaining complex concepts, e.g. stress cycle, attachment and trauma, learning processes”

“In cases of brain injury, or epilepsy, or other difficulties such as ADHD etc. There is substantial research with reference to Executive Functioning difficulties. I use hypotheses to problem solve, based on research evidence which includes Neuropsychological research.”

“As part of our course, we have a neuropsychology module which involves administering cognitive tests, I have also carried out statutory work with children who have had complex medical needs including brain injuries and brain development issues. Also, I think that when delivering training to staff, it is helpful to have an understanding of neuroscience and neuropsychology e.g. I just delivered training on memory and memory difficulties to staff in a primary school.”

Theme 5: Training provision

Training provision was highlighted as another area where the respondents referred to and incorporated neuropsychological concepts. Specifically, the respondents spoke about using their knowledge of neuropsychological theory when delivering training on attachment and trauma, cognitive and executive function development:

“In training - I make reference to interactions affecting pathways being created in the brain”

“Training and strategies to support the effects of executive functions deficits, attachment, developmental trauma effects”

“Training to nursery staff to explain the evidence illustrated by brain images of the impact of attachment”

Theme 6: Challenging commonly held misconceptions

Finally, some respondents reported that they use neuropsychology to challenge or clarify misconceptions held by staff about neuropsychological concepts:

“Often I find that teachers are the ones that mention neuropsychological concepts - often with very little understanding and misinterpretation. Much of my role then becomes about clarifying the concepts and often pointing out their limited scope for information intervention.”

3.5. Summary

The analysis of the National Survey responses identified a number of key findings, with significant implications for the understanding of the relationship between educational psychology and neuropsychology in the UK. The results highlighted that while over 70% of respondents use neuropsychological concepts and a further 65% believe that neuropsychology is relevant to day-to-day EP practice, only 20% reported having a good or high level of knowledge of child neuropsychology theory. Even more significantly, over 90% of qualified EP respondents indicated that they had worked with cases involving neuropsychological conditions, however only 22% stated that they were confident about their knowledge in those cases.

This appears to highlight the need for some neuropsychology-focused input during the initial stages of EP training, with over 90% of respondents stating that they would have liked to have received teaching on this topic during training. Similarly, the survey findings appear to challenge the belief held by some that neuropsychology promotes medicalised, within-child formulations, by providing initial evidence and examples of how EPs use neuropsychological concepts to challenge predetermined or deficit-focused views of the child's presentation. One possible reason for this discrepancy may lie in the fact that the debates surrounding the relevance of neuropsychology to education appear to often be led by academics or researchers in the field, rather than EPs. The focus of these discussion, as is the case in Bruer's (1997) paper, can therefore fall on the applications of neuroscience or neuropsychology

to broader educational topics such as improving classroom learning, where the direct links may be less clear, compared to the links between neuropsychology and developmental conditions EPs typically encounter in their practice. The National Survey results also provided further insight into the types of neuropsychological conditions EPs encounter in their everyday practice, as well as the main practice areas EPs currently use neuropsychological concepts.

While the National Survey aimed to provide a generic overview of the knowledge of and attitudes towards paediatric neuropsychology amongst EPs in the UK, the second phase of the research will focus on the role of EPs who have chosen to specialise in neuropsychology and currently work in neuropsychological settings. The combined findings of both phases will then be considered in Chapter 5, for a comprehensive overview of the relationship between the two disciplines, with reference to specific implications the research has for practice.

Chapter 4. Phase 2: Interviews

Chapter overview

The second phase of the research aimed to build upon the findings of Phase 1 by exploring the role of the EP working in neuropsychological settings. While Phase 1 provided a generic overview of the perception of neuropsychology amongst the wider EP population, the second phase focused on exploring the role of EPs working in specialist neuropsychological settings from multiple perspectives. More specifically, Phase 2 consisted of semi-structured interviews with Educational Psychologists working in neuropsychological settings and allied health professionals working alongside the Educational Psychologists in their respective settings. This chapter will begin by providing an outline of the methodological approach, participant pool, setting information and data analysis approach used in the second phase of the research, followed by a review of the semi-structured interview findings and their implications for professional practice.

4.1. Method

4.1.1 Participants

The sample consisted of 10 participants - four qualified Educational Psychologists and six allied professionals from a range of professional backgrounds who worked alongside the EPs in their respective settings. The allied professionals sample consisted of two occupational therapists, one speech and language therapist, one physiotherapist, one medical doctor and one clinical psychologist. The participant pool was recruited from two separate neuropsychological settings. The EPs interviewed all worked on a part-time basis, ranging from 2.5 to 4 days a week and had been working in their settings for periods ranging from 7 months to 9 years at the time of the interviews.

Setting 1

Setting One was an NHS Paediatric Neurorehabilitation Service in the southeast of England, providing assessment and rehabilitation services to children and young people with an acquired brain injury. The service was community-based and offered

interdisciplinary neuropsychological assessment, interventions and advice aimed at supporting the children and young people in their environments. The interdisciplinary team consisted of a range of professionals, including a neurologist, speech and language therapists, occupational therapists, social workers and an educational psychologist, who was also the first EP to be employed by the service. Three participants were interviewed at this setting - one EP and two allied healthcare professionals.

Setting 2

Setting Two was a charity in the home counties working with children and young people who had sustained an acquired brain injury. In contrast to Setting One, Setting Two provided in-house rehabilitation support for children and young people and employed five EPs. The psychology team consisted of both educational and clinical psychologists and was led by an EP. The team worked in close collaboration with occupational therapists, physiotherapists and social workers. Seven participants were interviewed at this setting - three EPs and four allied healthcare professionals. Two of the EPs interviewed were in the process of completing the Paediatric Neuropsychology qualification.

4.1.2 Procedure

The researcher approached a number of child neuropsychology settings in the health and charity sector in the London area with information about the research. For the purposes of the research, “child neuropsychology settings” was defined as a service that specialises in offering support to children and young people with neurological and neuropsychological conditions such as acquired brain injury and epilepsy, that also employs educational psychologists. The researcher provided additional information in the form of information sheets and consent forms to the settings that expressed an interest in taking part in the research. After the settings confirmed their willingness to take part in the research, arrangements were made for the researcher to visit the setting in order to carry out the interviews.

Upon arrival, the participants were given an information sheet and consent form to read and sign. One interview was carried out over the phone and in that instance, the researcher sent the documents in advance via email and the participant was asked to send the scanned signed consent form to the researcher prior to the interview. The interviews were recorded using a portable recording device and the data files were transferred to a double password-protected desktop computer within 12 hours of the interview. The original recordings were deleted from the portable device and no identifying information was included in the file names. Any personal identifiers in composite data files were removed at the earliest opportunity. Anonymised data records will be kept for 10 years on a double password-protected desktop computer.

4.1.3. Ethical considerations and data protection

The study was granted ethical approval by the UCL Institute of Education Ethics Committee (Appendix 5). All participants were required to give informed consent and were informed that their participation was entirely voluntary and they could withdraw from the study at any time, without having to give a reason.

While no apparent risks to participants associated with the research were identified and the research was not expected to cause any distress, the researcher noted that a potential ethical issue may arise from the fact that some participants may share information related to specific cases they have worked on in the context of their practice. All participants were required to sign a consent form, where they were asked to indicate that they understood the need to keep any information they decide to share confidential. If any confidential case-related information were shared in the context of the open-ended questions of the survey or in the interviews, the participants were informed that these specific segments would not be included in any resulting transcripts, analyses or reports.

The participants were informed in the consent form of the limits to confidentiality, in situations where it is disclosed that the participant or someone else might be at risk of

harm. If such a situation were to arise, the researcher would, in the first instance, contact and discuss the issue with her research supervisor in order for them to jointly agree on the most appropriate course of action.

Considering the very small number of EPs who work in child neuropsychology settings, as well as the limited number of such settings in the South East of England, the researcher will refer to all participants by their profession, without identifying which of the two settings they were based in. This decision was made in order to minimise the risk of accidental identification of participants, particularly in cases where the interviewee was the only representative of their profession in the setting.

4.1.4 Data analysis

The interview records were transcribed verbatim and the researcher adopted an orthographic approach to the transcription process. A number of qualitative data analysis approaches were considered by the researcher until a decision was made that Thematic Analysis (Braun & Clarke, 2017; 2006) would be the most suitable approach, in line with the research questions and aims. The rationale behind this decision will be presented below, with reference to other data analysis methods considered, followed by an outline of the different stages of the Thematic Analysis (TA) process.

TA is commonly referred to as “a method for identifying, analyzing, and interpreting patterns of meaning (‘themes’) within qualitative data” (Clarke & Braun (2017)). TA is compatible with a number of ontological and epistemological positions and thus has broad applications to a range of different research questions and methodological approaches. The six research questions in this thesis aimed to explore the role and unique contribution of EPs in neuropsychological settings from multiple perspectives, and to look for commonly occurring themes and patterns within the data. Thus, the aim of the research, and the second phase in particular, was not to conduct a detailed analysis of the meaning-making processes or construction of specific experiences linked to being an EP in neuropsychology by individual participants, which

would have made Interpretative Phenomenological Analysis (IPA) a more appropriate method of data analysis (Larkin et al., 2006). However, IPA was not deemed suitable for the present research, as the focus of the second phase was on identifying repeated patterns of meaning within the data, rather than on interpreting how individual participants construct meaning and make sense of their experiences.

In addition to IPA, the researcher explored Grounded Theory as another possible analytical approach. In the context of this framework, the main themes identified in the data are analysed, which then leads to the development of a theory related to the topic of investigation (Strauss & Corbin, 1990). Grounded Theory is therefore a suitable approach for areas of research that have not been investigated before and where the development of a theoretical model would be beneficial. While phase two of the research explored a number of questions that had not been discussed in the literature before, the aim of the research was to identify broad commonly occurring themes in the participants' accounts, rather than to develop a theoretical model based on those themes. As neither of these alternative models were fully compatible with the broader aims of the research, TA was adopted as data analysis model for phase two. The researcher also adopted a theoretical approach to the analysis, where the codes and themes were generated with the specific research questions in mind. Braun and Clarke's (2006) six stage approach to data analysis was followed, as outlined below:

Stage 1: Familiarisation with the data This initial stage involved re-reading of the interview transcripts and tentative suggestions of initial codes and potential common themes.

Stage 2: Manual coding The transcripts were reviewed for common features of relevance to the research questions and these were coded systematically, within and across the different data sets.

Stage 3: Identifying themes After the identification of the initial codes, the researcher adopted a “macro level” perspective and grouped the initial codes into corresponding themes.

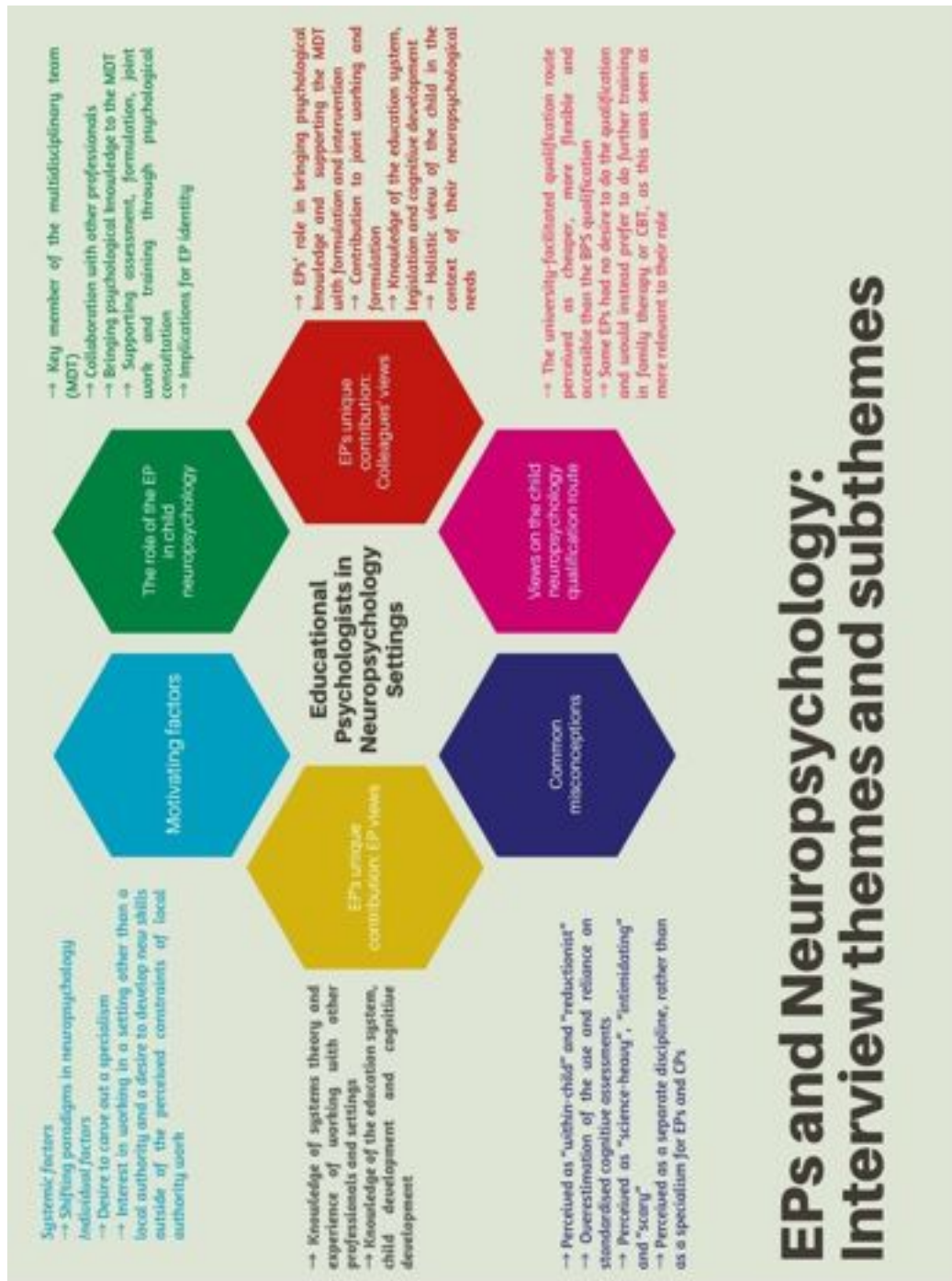
Stage 4: Review of potential themes The potential themes identified in Stage 3 were examined critically, with a focus on determining whether these constituted standalone themes, rather than codes, and whether the data from across the different transcripts indicated that these were recurring themes for all or most participants.

Stage 5: Theme definition and naming Once the researcher had confirmed the final selection of themes, these were named and defined in line with their specific focus and implications for the research questions.

Stage 6: Producing the report The information from the data analysis stage was reviewed again and collated into a written narrative and disseminated initially as a thesis chapter

4.2. Semi-structured interviews findings

The interviews with Educational Psychologists specialising in neuropsychology and professionals working alongside them in neuropsychological settings provided a detailed account of the role and contributions of EPs to this specialist practice area, from multiple perspectives. Six main themes were derived from the data and a number of sub-themes were identified for each theme. A detailed overview of the main themes and subthemes, as well as a summary graph, is presented below. In this chapter, the interview findings will be reported by outlining the six main themes, rather than exclusively with reference to the research questions. This decision was made due to the fact that two of the themes (“Motivating factors” and “Common misconceptions”) were not directly linked to Research Questions 4-6, yet they still provide important insight about the interviewee’s experiences and the broader topic of investigation. A detailed discussion and examination of the findings with reference to the research questions will be presented in the Discussion chapter.



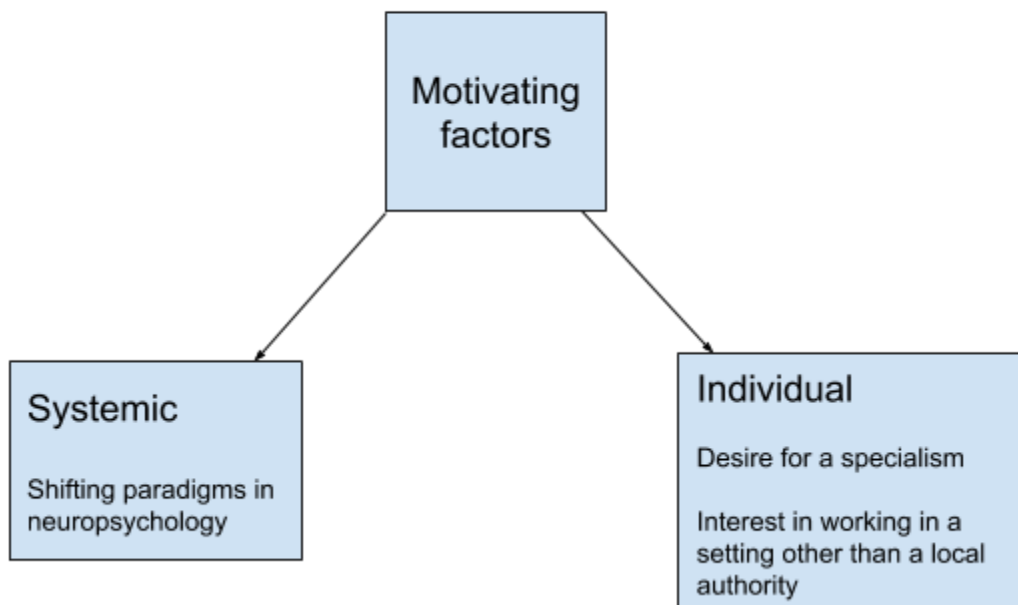
EPs and Neuropsychology: Interview themes and subthemes

Figure 4.1. Interview themes summary

4.2.1. Theme 1. Factors motivating EPs to work in neuropsychology

The National Survey findings (please refer to Chapter 3) indicated that neuropsychology is an area of which Educational Psychologists do not have a detailed level of knowledge, with the majority of participants stating that they were not aware of the training routes into neuropsychology open to EPs. The in-depth interviews with EPs working in neuropsychological settings therefore provided an insight into the reasons and motivating factors leading to their decision to specialise in neuropsychology. While there was a degree of variability in the participants' responses depending on their distinct career trajectories and motivating factors, a number of common themes were identified. Specifically, the participants' responses fell within two broad categories-systemic factors leading to the increased presence of EPs in child neuropsychological settings, and individual factors, referring to person-specific circumstances that had led to a career as an EP working in neuropsychology.

Figure 4.2. Factors motivating EPs to seek specialist roles



Systemic factors

Shifting paradigms in neuropsychology: increased recognition and appreciation of EPs' contribution to child neuropsychology

One systemic factor identified by the participants was the increased recognition of the role and contribution of EPs to child neuropsychology settings, particularly in light of the fact that the young person's cognitive development and education are a key focus of the rehabilitation process. Some participants reflected on the fact that, until recently, Educational Psychologists were not represented in neuropsychological settings, however there was now a growing appreciation of their contribution, thus recognising the need for EP involvement in this practice area:

"I think there's been a growing shift within neuropsychology generally. For a long time, I think educational psychologists essentially were kind of a new breed coming into neuropsychology and there was kind of this, "Oh, what is this - clinical neuropsychology, but yet, there's these educational psychologists!". And I think there's been a growing kind of appreciation of what educational psychologists can bring."

Educational Psychologist

Similarly, the participants also reflected on how the role of the EP and their unique contribution is seen by health professionals in their settings:

"When I talk with clinical colleagues, they will often say it's our knowledge of the school system, our ability to work with schools and teachers and families to be able to kind of think about a holistic intervention plan that's reasonable, feasible, realistic, and with young person's voice at the centre of it. Huge amount of the work that we will be doing will be thinking about schools as a future rehab setting, but thinking about the person's voice in that, the things that are really important to them. How can we get that voice heard? And I think that's something that we've possibly added to the service."

Educational Psychologist

The growing recognition of the importance of Educational Psychology input in child neuropsychology cases was also highlighted by the professionals working alongside the EPs, who reflected on the unique contribution Educational Psychologists make, compared to other professionals in the multidisciplinary team (MDT). Specifically, they reflected on the importance of having the opportunity to work alongside a professional who has an understanding of the education system, as well as:

“[T]he knowledge of how schools work, and what is possible in a school setting. What are the policies and the guidelines that they have to adhere to, and how, and the kind of language to use to try and get the right support for the kids has been invaluable. Because even as an OT, yes, I have worked a lot in community services and with schools as well. But this is just a step up, because they know the systems so well, and also what it means for kids to learn and how you measure the learning and what the schools should be putting in place”

Occupational Therapist

Individual factors

In addition to changes in the systemic landscape in neuropsychology, a number of individual factors were highlighted by the participants as having a key role in their decision to specialise in neuropsychology. While one participant reported having a pre-existing interest in brain-behaviour relationships, prior interest in neuropsychology *per se* did not emerge as a factor influencing the EPs’ decision to work in a neuropsychological settings. Instead, the key individual factors that influenced the participants’ decision to specialise in neuropsychology fell in two broad categories: a strong interest in developing a specialism and a desire to explore new, more creative ways of working in a setting other than a local authority.

Desire to have a specialism and job availability at the time of application

A desire to have a specialism was highlighted as a key individual factor leading to the participants’ decision to apply for a job in a neuropsychological setting. The participants reflected on the fact that, having worked in a “generic”, local authority-based Educational Psychologist role for a number of years, they were looking for opportunities to develop their skills further in a more specialist role. None of the participants reported looking for a role in neuropsychology specifically; rather, they were willing to explore a number of different avenues and the availability of an EP role in a neuropsychological setting at the time was a key factor that led them to explore this possibility further:

“I was working for a local authority education service at the moment as an Educational Psychologist. I’d been there for quite a number of years and was just sort of feeling a little tired of the generic role. I wanted to think of things, how could I specialise“

Educational Psychologist

“I had an alert for years ago on the NHS, and it just came through. And I thought, wow, I’d never heard of this team, and had a look at it a little bit more and thought that it would be a really good challenge. I’d always wanted to carve-out a type of area, like a specialism.”

Educational Psychologist

Most participants noted that they found out about the vacancy by chance or by having a pre-existing connection to the service, such as an ex-colleague or pre-qualification work experience in the same setting. The fact that the roles were not advertised on the website of the Association of Educational Psychologists where EPs would typically look for vacancies was raised by some of the participants as having implications for the visibility of these roles to EPs and some raised concerns that this may restrict the pool of potential applicants.

Interest in working in a setting other than a local authority and a desire to explore new ways of working

Another individual factor that influenced the participants' decision to apply for a role in a neuropsychological setting was their interest in developing new skills and ways of working outside of what was perceived as the more "traditional" local-authority based role of the EP:

"I think there was something about working in a setting other than a local authority. I'd kind of got to the point where I had fantastic relationships with my schools, worked really well with them, but I wanted to kind of explore doing something different. And so when the post came up here, that was an opportunity to develop my skills"

Educational Psychologist

Similarly, some participants reflected on the fact that working in a neuropsychological setting provided them with more flexibility and time to explore new ways of working that they had limited opportunities to do in a local authority EP setting:

"I think, historically, maybe not so much anymore, educational psychologists tend to be more local authority-based and that obviously comes with its own set of issues with the kind of bureaucracy and things like that. So here, for example, there's loads of intervention work, there's loads of assessment work, loads of parent support, so it's quite nice in that way. And also, we've got a massive benefit of just...time. Where the young people come for two to four months, and you might see them on a weekly basis, or twice weekly basis, over that time, you can just really develop that relationship and feel like you can see progress, whereas I found in local authority, where it's more consultation-based or you might do a one-off school visit, I found it sometimes quite hard that you never got as much of that follow-up."

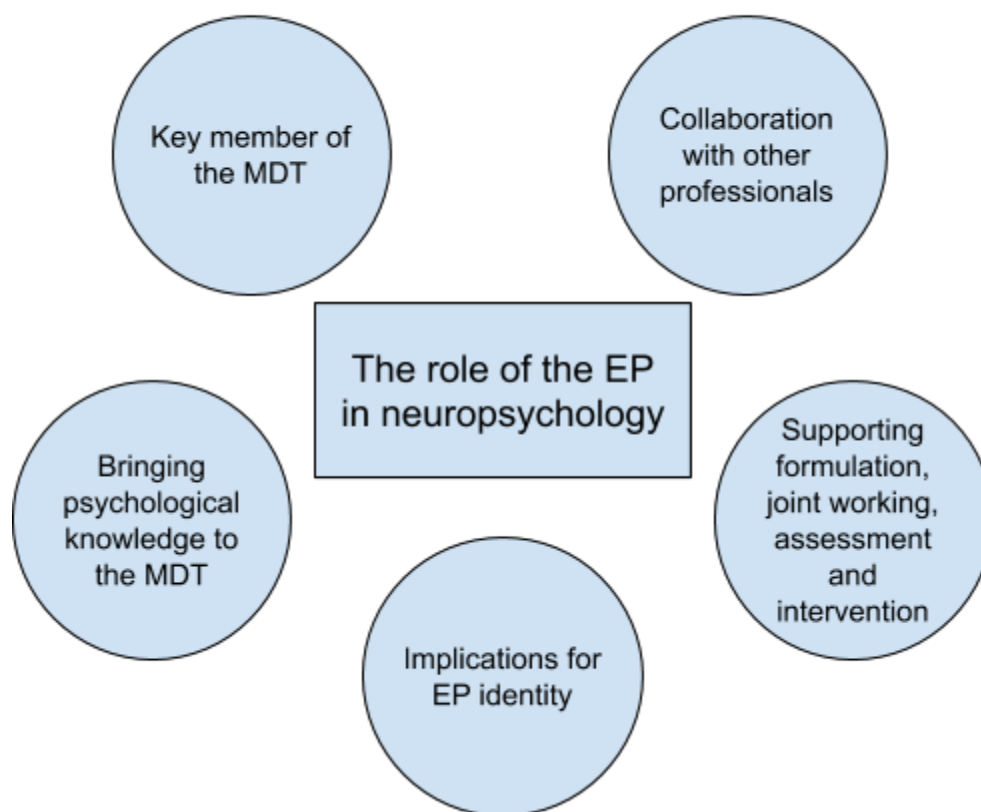
Educational Psychologist

Overall, three main factors contributing to Educational Psychologists' decision to pursue specialist roles in neuropsychology were identified. On a systemic level, the participants identified the increased recognition of EPs' skills and expertise amongst other professionals as one factor leading to the availability of more employment opportunities for EPs in neuropsychological settings. On an individual level, the desire to develop a specialism and to explore working in a setting other than a local authority emerged as the two leading factors that influenced the participants' decision to apply for roles in neuropsychological settings.

4.2.2. Theme 2. The role of the EP in neuropsychological settings

While the EPs who took part in the research had varying levels of experience and positions within their respective settings, ranging from a recently qualified EP to a head of service, a number of commonly occurring themes were identified. Specifically, all EPs worked as members of the wider multi or interdisciplinary team and spoke about their role in bringing psychological understanding to the team, as well as challenging misconceptions and bridging the gap between education and health settings. The key areas of involvement for EPs in neuropsychological settings emerged as the assessment of need, reintegration, transition, psychoeducation, training, parent support, research and joint formulation.

Figure 4.3. The role of the EP in neuropsychology



Multi-disciplinary collaboration as a key component of neuropsychological practice: the EP's role in facilitating the development of a shared understanding of the child's needs

All Educational Psychologists interviewed were based in multidisciplinary or interdisciplinary teams consisting of other educational and clinical psychologists, occupational therapists, speech and language therapists, physiotherapists, social workers and a medical doctor. The focus of their work was on supporting children with specific neurological conditions such as Acquired Brain Injury (ABI). While Setting 1 worked exclusively with outpatients, Setting 2 offered residential rehabilitation stays for the children and young people it supported. All EPs interviewed described their role as being firmly positioned in the wider multi or interdisciplinary team and focused around providing psychological advice to the team and the service users, as well as clarifying and supporting other professionals to make sense of the child's educational needs in

the wider legislative and educational context. The two case studies below offer the accounts of EPs working in a charity neurorehabilitation setting and NHS neurorehabilitation clinic, with a focus on their experiences of working jointly with other professionals in the context of a multidisciplinary team:

Case study 1: EP based in a charity brain injury neurorehabilitation setting

My role here is many things. So I guess one of the things, starting with the multidisciplinary team, is being part of the team. Having a shared perspective. So we start right at the beginning, helping the team formulate what's going on and having hypotheses about what's happening and getting shared understanding, but also keeping the multidisciplinary team in mind. So we often do (...) consultation for the team and joint working when it's appropriate as well. Specifically with the children and young people and their families, it's a number of things: so one of the main things is thinking about their cognition, obviously, following their brain injury, trying to get a sense of their developmental history and what they were like prior to their brain injury in terms of their education, how were they getting on in terms of their emotional well being, in terms of their family dynamics, their friends, etc., (...) but then also trying to get a picture of what's going on currently. And that's very much hypothesis-led.

So we, at the beginning, would do a case summary which looks at the brain injury from a brain-behaviour relationship perspective, and tries to make sense of what that brain injury might mean for cognition and behaviour and emotional wellbeing. So then, when they're here, we'll do hypothesis-led assessment with them; that might be through cognitive assessment, it might be through more dynamic assessment, it might be through observations, consultations (...). But the nice thing is, because they're here for such a long time, you get to do that in quite an in-depth way and test things out. So that's one of the luxuries of working here, definitely (...)

Then we do also get involved in emotional support for the young person. So if they've got a clinical kind of mental health need, it would tend to be the clinical psychologist. But if it's more about making sense of how things are for them after their brain injury, then we get very involved in that as well. We have been using narrative approach, so helping them to tie their life pre and post brain injury. (...) Because they've been in hospital often (...) it can feel like everything becomes about the brain injury, so trying to externalise it a bit, helping them reconnect with what is important to them, what their strengths are, how they're still that person, despite the brain injury, so we do lots of narrative work with with them (...).

Then there's a big psycho-education element around supporting the young person understand their brain injury, supporting parents to understand their child's brain injury. (...) We do a lot around positive behaviour management (...) we do a lot around drawing up behaviour support

plans with parents and the team with the young person, obviously, and reviewing those and kind of editing them as fit.

Despite the fact that the EPs were based in different settings, both case studies emphasise the collaborative, multi-agency nature of the initial formulation and assessment process in neuropsychological settings. Similarly to the account of the EP in Case Study 1, the EP in Case Study 2 reflected on the role of the educational psychologist in liaising with and supporting the child's educational setting, which emerged as a key focus of the neurorehabilitation process in both settings.

Case study 2: Educational Psychologist based in NHS neurorehabilitation clinic reflecting on what her collaboration with other interdisciplinary team members involves

Once we get the referral, and we've agreed that actually, yes, this is the type of young person that we would work with.(...)we'd have a look through all the paperwork and we may ask our neurologist to go through the scans and tell us what part of the brain is being affected. We might start initially hypothesizing about what might be going on, mapping out all those things that we already know. Our administrator will send out a screener questions to begin with. (...)Then what happens is (...), if there's difficulties around school, we will reach out to school and do a consultation and find out what's going on and how have they reintegrated back, listen to school's concerns, problem solve (...), support them to think about reintegration, transition, we might do (...) initial brain injury training. But it's just really about, thinking about how we can support schools, because usually they are at a loss, you know, when a child's had a car accident and significant brain injury they're a bit like, "I don't know what to do, not sure". And actually, it's just about reassuring them that these are the things that work with young people who've had a brain injury.

And then at some stage along that process, we usually invite them to come in with their family. So we'll take a full case history, from early development right until now, we'll find out the circumstances surrounding the injury, and somebody then will take the young person in the other room and do some assessments. And who does what first depends on the young person. (...) So usually most children see a speech and language therapist, a psychologist, who'll do a range of neuropsychological assessments, and our occupational therapists (...) And then we'll continue to formulate, we'll find out what the goals are - the family goals, individual goals, and then we'll come up with a plan in terms of what works for that individual child, individual family and then move forward with that.

Sharing psychological knowledge with the multidisciplinary team and challenging misconceptions

Using core EP skills (consultation, formulation and systemic working) to facilitate a psychological conceptualisation of the child's needs within the team, as well as challenging misconceptions, emerged as another key aspect of the EP role in neuropsychology. Specifically, the participants reflected on the fact that, considering the broad range of professional backgrounds in their teams, their knowledge of both psychology and education placed them in a strong position to both offer advice and deliver training in those areas:

“I think what I have brought really is an understanding about the systems that we work in, in terms of being EPs. I have done a lot of training with the team in terms of the code of practice, the language that we use, how best to work with professionals, consultations, skills around working with schools. I think in terms of what makes me different is those things around the whole school aspect and understanding those processes, and the academic type side of things, and thinking about child development and typical development, and what that would look like. (...) we wanted to think about ways that we could work together more effectively with education, because we're health. (...) I have done a lot of training around literacy and reading and maths and school-based interventions - this is another thing that I've been able to share that knowledge with the team.”

Educational Psychologist

Some participants identified another aspect to their role - using their knowledge of cognitive development and assessment as EPs to challenge misconceptions about concepts such as IQ or the use of full scale IQ scores:

“There's still that sort of understanding that IQ says this and they would meet the criteria for a learning disability. And, well, actually, you know, this young person's functionally, is actually much better than that. So challenging in terms of, in the EP world, we wouldn't use full scale IQ. We would talk about description of needs and think about how they function and the environment. So that, I suppose, that's quite a bit different.”

Educational Psychologist

Identity as an EP in multidisciplinary teams

Another sub-theme that was identified in the data focused around the EP identity in neuropsychological settings. Specifically, the participants reflected on how their identity as an EP had in fact strengthened since joining their services, as they were either the only EP or one of the few EPs working in their setting alongside professionals from various other backgrounds:

“I think when you work in neuropsych-type settings, you’re often much more multidisciplinary team-based. And I actually think some people think, “Oh, you’re going to lose your identity”. But actually, I think it helps because you establish what you do against what someone else does and where the overlap is and where the differences are. And then I actually think that helps in terms of understanding your unique contribution.”

Educational Psychologist

Some participants also reflected on the fact that they see neuropsychology as a specialism that adds to their role as an EP, rather than as a separate career path:

“People would tend to say, “I’m an educational psychologist, and then I’m a neuropsychologist” or “I’m a clinical psychologist, and then I’m a neuropsychologist”. And that is what I think - this is a kind of added part that you would then fit within all of your previous training, and it adds to it. But it couldn’t be without the rest, if you see what I mean. And I think people maybe see it a bit on its own. “

Educational Psychologist

The participants who worked alongside clinical psychologists identified a number of ways in which their practice was similar but also differed, so that they all had a distinct identity and focus of their work:

“In my previous role, I’d worked knowing that there are clinical psychologists out there but didn’t really know what their remit was. And of course working very closely, you start to see how, how we sort of almost morph into each other. But there are differences, similarities and differences. (...) The Ed Psychs, we do have a lot of experience and understanding of the educational world, of special educational needs in particular, of young people who

are only here for a very transitory period in their rehab. They're coming from school, they're going back into school, they're coming from nursery, they're going to school. (...)

Educational Psychologist

The same participant elaborated further on how the EPs' knowledge of education and working closely with schools settings, in combination with their knowledge of child development distinguishes them from CPs:

"We have an understanding of teaching, learning, we have an understanding of development of cognition, etc. We're quite comfortable in school settings. So we can sort of do support, do transition visits quite easily. I think that's where the clinical psychologists say, "Yeah, you get over that bit, because that's not our comfort zone"

Educational Psychologist

The clinical psychologist interviewed reflected on the fact that, while the roles of the educational and clinical psychologists in neuropsychology are similar, the clinical psychologists' work is more focused on supporting the young people and parents with mental health-related issues:

"I feel like our roles are...the only time where I feel like I can see there is a slight difference when it comes to whether someone we're working with or parent really does fit with a mental health presentation."

Clinical Psychologist

However, despite this distinction, some EPs noted that this does not mean that mental health-focused work would be "off-limits" for EPs, who remain involved in the provision of mental health and wellbeing-related support:

"And so if they've got clinical kind of mental health need, it would tend to be the clinical psychologist. But if it's more about making sense of how things are for them kind of after their brain injury, then we get very involved in that as well."

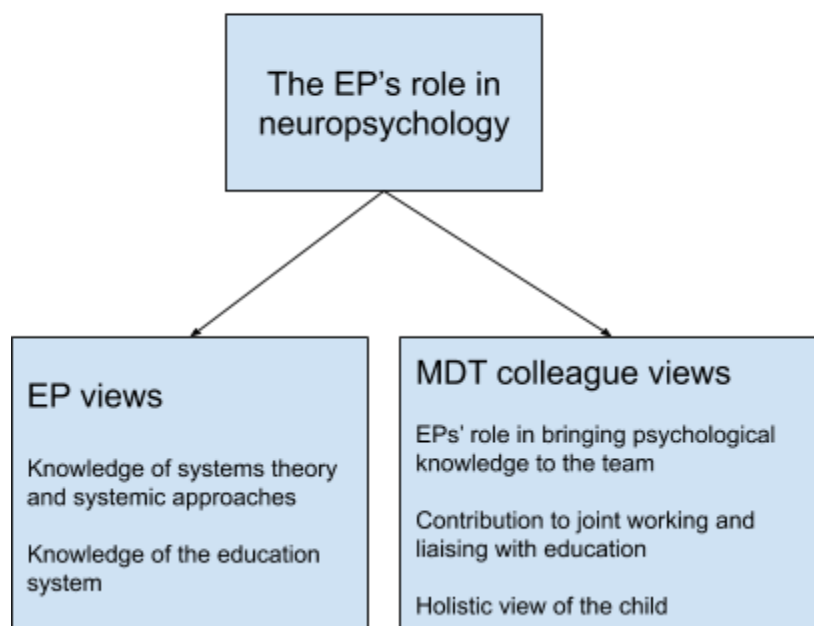
Educational Psychologist

4.2.3. Theme 3: The unique contribution of EPs to neuropsychology practice: Perspectives from EPs and multidisciplinary professionals

EP perspectives

The EPs interviewed reported a high level of skills transfer from their local authority-based EP role to their specialist role in neuropsychology, and highlighted the relevance and importance of EP input to child neuropsychology. The participants reflected on the EP's key role in bringing their knowledge of the education system to teams that largely consisted of health professionals with limited links to education. This was perceived as particularly important, as returning to education and supporting the child's educational reintegration was highlighted as one of the key focus areas of the rehabilitation process. Similarly, as the children and young people often required input from a number of professionals and agencies, the EPs' saw their skills and expertise in systemic thinking and working with other professionals as key to their role in neuropsychology.

Figure 4.4. The EP's role in neuropsychology: the views of EPs and MDT colleagues



Knowledge of systems theory and experience of working with other professionals and settings

Some of the participants reported that their ability to bring systemic thinking to the multi-agency team, alongside their understanding of the child's broader educational needs, represented their specialist contribution to child neuropsychology practice, compared to other members of the multidisciplinary team:

"I do think we're really trained to think quite systematically about how to approach kind of pieces of assessment tools and inform intervention. I think another massive thing with the paediatric neuropsychology population is, having some form of neuropsychological issue going on, whether it's an acquired brain injury or epilepsy, has a massive impact in terms of schooling, in terms of missed schooling, in terms of their cognitive function, in terms of how much of a sense of belonging they've got, if they feel quite different, you know, so many factors."

Educational Psychologist

The same participant went on to reflect on the benefits of having a detailed understanding and experience of working with educational settings as an EP working in neurorehabilitation:

"I think being education-based and having those good links with school and being able to think about how we support transition back to school or how we support a sense of belonging or a sense of identity within school or supporting the school's understanding, I think having that connection with school is really quite key in terms of supporting these young people at their base, where things can be coordinated. So I think the fact that we have good links to school and we're used to working with schools in a collaborative way, is another massive bonus to what we can bring."

Educational Psychologist

Similarly, some participants saw their ability to make psychology accessible to other professionals and ability to formulate as the main contribution of EPs to neuropsychological practice:

“I think educational psychologists are perfect for working in paediatric neuropsychology, because I think part of it is, big part of it is that kind of bio-psycho-social formulation - I think we're really well trained in formulation.”

Educational Psychologist

“I think it's our ability to make psychology accessible to others, that also has led the kind of increase of educational psychology here, in a way that has felt non-threatening. It's felt supportive and it has enabled people to think, do you know what, psychology isn't scary. And psychology can be useful, it can be helpful.”

Educational Psychologist

Knowledge of the education system, child development and cognitive development

The participants also reflected on how their knowledge of the educational system and child development was a key contribution they could make in the context of child neuropsychology practice:

“We do have a lot of experience and understanding of the educational world, of special educational needs in particular, of young people who are only here for a very transitory period in their rehab. They're coming from school, they're going back into school, they're coming from nursery, they're going to school. So we have that broader view of their previous experience, where they're going to. We have an understanding of teaching, learning, we have an understanding of development of cognition, etc. We're quite comfortable in school settings. So we can sort of do support, do transition visits quite easily.”

Educational Psychologist

“As Ed Psychs, I think we're really, really well-placed to work with these young people and to be supporting young people who've had neurological conditions- we see them all the time in schools.”

Educational Psychologist

Some participants also reflected on how their knowledge of the educational system and systemic working skills were valued by the rest of the team:

“They've been really welcoming and really interested in some of the things that I have to say, and my experiences that I have in terms of education, systems and processes, but also thinking about other ways of assessment.”

Multidisciplinary professionals perspectives on EPs' role and contribution to child neuropsychology practice

The allied healthcare professionals working alongside EPs in their respective settings provided further insight into the role and unique contribution of EPs to child neuropsychology. Overall, they all spoke at length about the benefits and importance of having an EP in the multidisciplinary team and the range of contributions EPs make to the service.

EPs role in supporting the multidisciplinary team with psychological thinking and interventions

Some multi-agency professionals saw the EPs as having a key role in supporting the team to think psychologically and in more depth about the often very complex needs of the children and young people supported by the service:

"The psychology team as a whole, so the educational psychologists and clinical psychologists, at the moment are very much leading our formulation meetings where we come together and talk about why, how the kids are presenting, some of the reasons for this and how, as a team, we're going to work with them to progress them to the goals that they want to achieve. (...)I think they are a really valuable member of the team, (...) they are able to get to the bottom of what the kids really need to be able to succeed in education. And more than that, they very much support us as a team to get the best out of the children"

Physiotherapist

Contribution to joint working and liaison between the health setting and the child's school

Some participants highlighted the role of the EP in facilitating effective communication and transition from the neurorehabilitation settings to the child's school.

Specifically, the professionals spoke about their collaboration with the EP in those instances:

“The work that I've done with educational psychologists has been a lot around returning to school or returning to the school setting. We've done school visits, seeing how schools set up providing that kind of brain injury education to the school, and giving them kind of helpful tips and strategies on how to work with the young person. I've done a couple of joint discharge planning meetings with EPs. Obviously it's quite helpful for there to be an educational psychologist in those, so someone that can feedback on how they've performed on different assessments and feedback where their skills lie or where their difficulties lie alongside our assessment. So it's very helpful and collaborative.”

Occupational Therapist

Knowledge of the education system

The role of the EP in bridging the gap between health and education was highlighted as another important contribution they made to their respective settings. Some participants reflected on the fact that they had limited understanding of the education sector, yet reintegration back to school was a key focus of the rehabilitation process and as such, EPs had an important role in facilitating that process:

“I find it extremely useful, because she knows a language I don't know, which is the language of education. I feel like she bridges the gap between schools and teachers and health professionals that maybe we can't do. (...) When we go and work together, we both bring something different to the table. So I'll say something, and then maybe she can translate it in a way that makes sense to the teachers. And I think that I can see maybe the training's changed over time cause obviously when I started working, Educational Psychologists were teachers as well and now they don't have to do that. So it feels more like I'm working with a psychologist now. Before, back in the day, it felt more like almost like a specialist teaching type of role.”

Speech and Language Therapist

Some professionals spoke about the specific knowledge of a range of educational processes that EPs had that other professionals in the team did not have:

“the knowledge of how schools work, and what is possible in a school setting. What are the policies and the guidelines that they have to adhere to, and how, and the kind of language to use to try and get the right support for the kids has been invaluable. Because even as an OT, yes, I have worked a lot in community services and with schools as well. But this is just a step up, because they know the systems so well, and also what it means for kids to learn and how you measure the learning and what the schools should be putting in place”

Occupational Therapist

Similarly, a clinical psychologist (CP) spoke about the differences in knowledge between EPs and CPs with reference to the education system, highlighting the unique contribution of EPs when compared to CPs:

“(EPs have) a knowledge of support systems that are out there, how things work, the legislation side of things, or the systemic stuff. I think, as a clinical psychologist, okay, well, this is how we should adapt things, but in terms of their knowledge base of the education system, the legislation that goes with that, funding, EHCP plans. all of that type of stuff (...), you can see that that is the boundary compared to a clinical psychologist’s knowledge. So I think particularly when it comes to recommendations and thinking about the person being discharged, you can see how knowledgeable educational psychologists are, in terms of how they communicate that across as well.”

Clinical Psychologist

Holistic view of the child in the context of their neuropsychological needs

Finally, the multi-agency team professionals highlighted the role of the EP in encouraging the team to see a holistic view of the child, where their neuropsychological needs are considered in the broader context of the child’s environment, educational needs and general wellbeing:

“being able to really see a holistic view of the child and what they are able to do and how to maximise what they’re seeing, to kind of put in the support and the environment and the structures to meet their needs.”

Physiotherapist

“I would say the assessments that they do very much hone in on the young person’s skills, where a speech therapist might look at how they do in certain reading assessments and their understanding of language in those assessments. Where, as OTs, we might look at

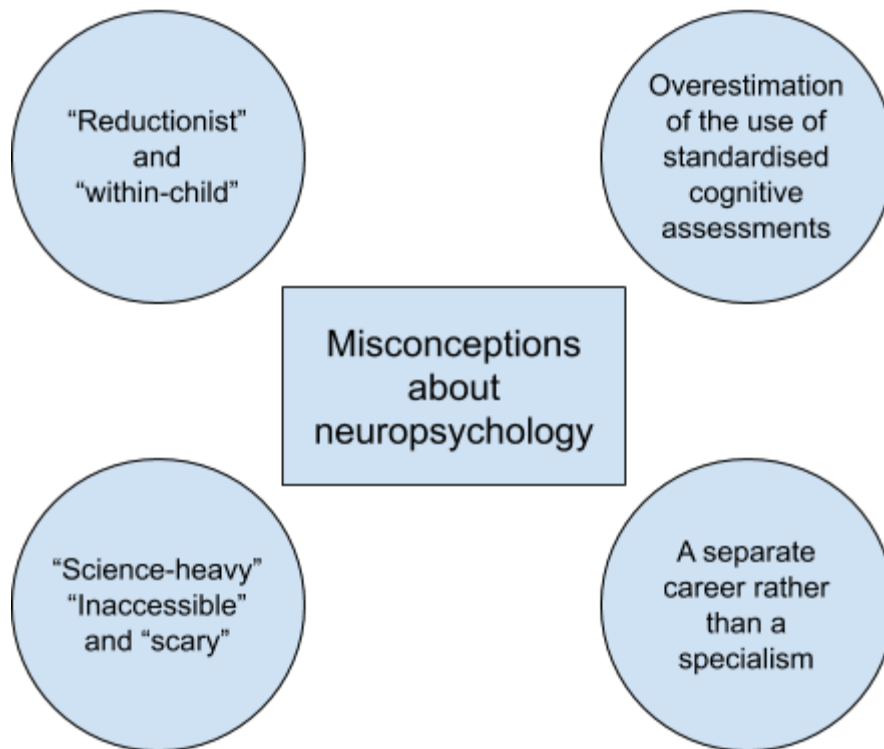
their handwriting. And I feel like the Ed Psych assessments really hone in on other skills that are really important for school that we don't completely capture (...) So somebody who really works kind of supporting them through this new education journey and helping them find a setting has been really important and I think valued, they really pull all of that together and have that holistic idea of the young people and school needs."

Occupational Therapist

4.2.4. Theme 4: Misconceptions about neuropsychology amongst Educational Psychologists encountered by EPs in neuropsychology

Another major theme identified from the participants' interviews concerned the perceived misconceptions about neuropsychology amongst EPs. The Educational Psychologists specialising in neuropsychology spoke about the misconceptions they had encountered from other EPs about both neuropsychology as a discipline, as well as about the role of EPs in neuropsychology.

Figure 4.5. Misconceptions about the EP role in neuropsychology



Perceptions of neuropsychology as “within-child” and “reductionist”

All EP participants spoke about what they saw as one of the main misconceptions about neuropsychology in the profession - specifically, that neuropsychology promotes a reductionist, within-person model of the child's difficulties:

“I think sometimes people worry that it's a bit reductionist, and everything comes down to, “the brain tells us to do this, so we do this”. But actually, the course and all my learning so far has really set it in a bio-psycho-social model. That actually, that is part of the picture, but not all of the picture. But why would you not want to know more about that chunk to help you inform the whole thing?”

Educational Psychologist

Some participants reflected on how their own misconceptions about neuropsychology had been challenged since they started working in neuropsychological settings:

“Now that I'm here, I think that some of my misconceptions about what would be going on actually have been really challenged because it's not all within child, actually, we do a lot of systemic interventions. Thinking about that, Bronfenbrenner - we do all of that. Sometimes we start from the outside in.”

Educational Psychologist

Another EP spoke about the importance of adopting a broader systemic approach when working with children with brain injuries in contrast to the reductionist views about the practice of neuropsychology she had encountered and had held herself:

“In terms of what I thought neuropsychology was, in terms of what we talked about in uni, I think that the reality of that is actually quite different. I think the perception was that it was all within-child, and it was the child's problem. And that you can go and find out what's wrong with this child. But actually I think in reality, people understand that it's way more complex than that. And especially for children with brain injuries. So yes, they might have had a brain injury, but actually, so many things that can happen environmentally that can support the child, they're way more important than delivering interventions about the child, thinking about the systems that are around that child and who is best to do that.”

Educational Psychologist

Overestimation of the use and reliance on standardised cognitive assessments in neuropsychology

Another key point raised in all interviews concerned the perception that neuropsychology practice is heavily reliant on the use of standardised cognitive assessments, with little scope for systemic thinking or more creative approaches to assessment and intervention:

“Probably the biggest misconception is that neuropsychology is about doing some kind of standardised assessment with a list of recommendations. Whereas I would argue that

neuropsychology is about having the understanding of the brain, thinking about what happens at different stages through development, how that informs your kind of formulation, and how you combine the links between what we know about the brain and the behaviours and all the other interactions that we see, to then support your psychological thinking. So I think that's possibly the biggest misconception, that people think it's about standardised testing and a lack of flexibility in that."

Educational Psychologist

Two other EPs reported similar experiences, where they found that EPs associated the role with an overreliance on cognitive assessments:

"I think that people think it's all about cognitive testing, that neuropsychologists don't necessarily think of other factors other than just the brain-behaviour relationship. And so I think sometimes people think it's a bit reductionist and that it doesn't sit very well within a social-constructionist stance, where the issue is the issue and not the person"

Educational Psychologist

"When I worked in a local authority, suddenly, when I got this job, people then kept coming to ask me questions about psychometric tests. So I was a bit like, why me?"

Educational Psychologist

Perception of neuropsychology as “science-heavy”, “inaccessible” and “scary”

Some participants spoke about neuropsychology’s “reputation” as a highly technical, complex and science-heavy discipline, which leads some EPs to perceive it as “inaccessible” and “scary”:

"I do think there's just loads of misconceptions, and maybe people are a bit scared of it, because it feels quite sciency, but also, it's just a lot of unknowns. And there's a lot of myths about neuro-kind of stuff around how much of your brain you use, for example, and things like that. So I think I that sometimes it feels a bit scary"

Educational Psychologist

“I think that does scare some people, you know, you just sort of think that it's difficult to understand perhaps”

Educational Psychologist

Perception of neuropsychology as a separate discipline and career, rather than as a specialism

Another misconception identified by the participants referred to the view that neuropsychology is a separate career, which fails to acknowledge that child neuropsychologists need to be qualified Educational Psychologists first and will thus bring all their prior experiences and skills to the practice of neuropsychology:

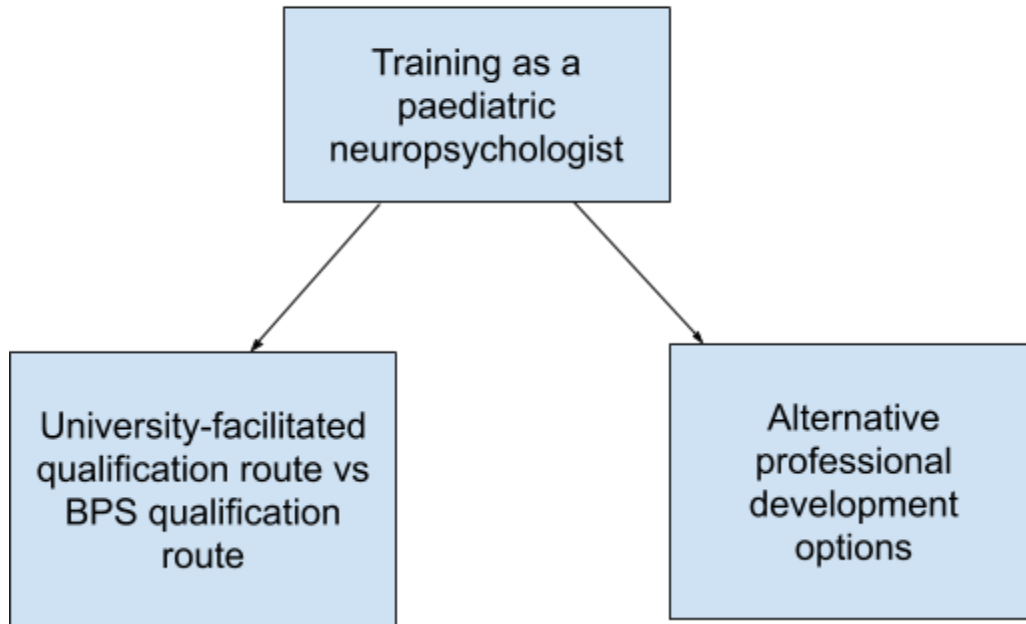
“People would tend to say, “I'm an educational psychologist, and then I'm a neuropsychologist” or “I'm a clinical psychologist, and then I'm a neuropsychologist”. And that is what I think - this is a kind of added part that you would then fit within all of your previous training, and it adds to it. But it couldn't be without the rest, if you see what I mean. And I think people maybe see it a bit on its own.”

Educational Psychologist

4.2.5. Theme 5: Views on training as a Paediatric Neuropsychologist

The participants interviewed as a part of the research all worked as EPs in neuropsychology, with two of them completing their additional training in order to qualify as paediatric neuropsychologists. All participants reflected on the different training routes; while some participants wanted to eventually qualify as paediatric neuropsychologists, others were not interested in pursuing the qualification route and instead identified other professional development options that would enhance their role in neuropsychology further.

Figure 4.6. Routes to qualifying as a clinical neuropsychologist



The university-facilitated route perceived as more affordable, flexible and accessible compared to the BPS-facilitated qualification

Two of the four EP participants were in the process of completing the qualification in paediatric neuropsychology, which would enable them to enter the BPS register of qualified neuropsychologists. The participants were both enrolled on the Bristol University course in paediatric neuropsychology, rather than pursuing the qualification (QiCN) via the BPS. The participants identified the reduced cost and additional support associated with being linked to a university as the main factors that influenced their decision to undertake the university-supported route to the qualification:

“It’s cheaper. It also feels a bit more accessible, there’s a lot more flexibility in it. And the conversations that I’ve had around QiCN, it doesn’t feel like perhaps there’s as much support. Whereas the Bristol course has set up kind of those, more of those peer support networks. There is a bit of a structure and a framework to it; it’s linked to a university.(...) I think the BPS is currently reviewing what will happen with QiCN. Because effectively QiCN is still meant to be the gold standard. But when the gold standard is a lot more expensive, and doesn’t necessarily provide the same things, it’s giving them something to think about”

Educational Psychologist

Some of the participants noted that, regardless of the preferred qualification route, a significant financial investment is required in order to cover the course and supervision cost and employer support was highlighted as an important factor:

“I’ve been very lucky. When I worked in local authority, they paid me to do the UCL course, I then halfway through the course cut down my hours with them, came here and they took on the funding for my second year there. And then the reason I’m doing the rest, of course, is because I was offered funding from here to do it. So I have been very lucky that I’ve been funded. They pay 80% and we’re expected to pay 20%. So financially, I have been supported, which I know, again, is quite lucky, compared to people who’ve just had to self-fund.”

Educational Psychologist

Alternative professional development options for EPs in neuropsychology

Some EPs felt they would rather undertake training in areas such as family therapy or cognitive behavioural therapy, as they felt that this would be more beneficial to their day-to-day role. One of the EPs reflected specifically on why she felt that undertaking the neuropsychology qualification was not a priority for her, in the context of her role:

“At the minute, it’s not something that I feel able to do. And that’s not to say that I won’t do it. But actually, in terms of what I see my development in this role is, I would rather do additional training in family therapy, or CBT which is a possibility here. There’s an opportunity for me to become ADOS-trained as well. And so that would be more interesting to me than doing a neuropsychology Master’s, I think at this point.”

Educational Psychologist

4.6. Summary

Overall, Phase 2 has provided the first overview of the role, unique contribution and factors motivating EPs to consider a role in neuropsychology. The research suggests that this role is varied and multi-faceted, and entails a significant element of collaboration with multidisciplinary team members, brings knowledge of both psychology

and education to predominantly healthcare-focused settings and bridges the gap between health and education. The EP's input was seen as highly relevant and important by the allied health professionals interviewed for the research, who spoke about the important added value EPs bring to the team with their systemic working skills, knowledge of both psychology and education, and the ability to consider a range of broader factors that may be impacting children's presentation. The research has also touched upon the theme of EP identity in neuropsychology, with the EPs reporting that their identity as an EP had strengthened in their specialist setting. Similarly, the research suggests that EPs see neuropsychology as a specialism, rather than as a separate career path.

Additionally, Phase 2 has provided further insight into the common misconceptions EPs specialising in neuropsychology encounter about their roles. Specifically, the participants spoke about and challenged the view that neuropsychology promotes within-child models of working and relies heavily on standardised assessments. All participants emphasised the fact that they are still EPs and are guided by the same principles in their work as when they were working in a local authority setting, however these were now applied to a specialist context. Finally, the interviews offered insight into the views of EPs about the current route to qualifying as a neuropsychologist, including key challenges and considerations EPs interested in further training may face. A detailed discussion of how these findings inform the research questions, as well as their broader implication, will be provided in the next chapter.

Chapter 5. Discussion

This final chapter aims to bring together the findings from Phases 1 and 2 and to create a coherent narrative around the current relationship between Educational Psychology and Neuropsychology in the UK. Considering the amount of data collected with reference to the six research questions, this chapter will be divided into two main parts. The first part will focus on how the findings from both phases answer the research questions and will explore in more depth the main emerging themes and critical issues of relevance to the research topic. The second part will present an overview of the research's implications for theory and practice, including recommendations and directions for future research.

5.1 What does this research reveal about the relationship between Neuropsychology and Educational Psychology in the UK?

The research's overall aim was to provide the first empirical exploration of the relationship between Educational Psychology and Neuropsychology in the UK, from the perspective of EPs working in both local authority services and those specialising in neuropsychology. This section will explore and interpret the key findings of the research, with reference to the six research questions.

Research question 1: What are the current attitudes towards and understanding of neuropsychology amongst EPs?

Self-reported knowledge and use of neuropsychology theory and practice

The research has provided the first investigation of how neuropsychology is perceived and applied by EPs in the UK and has thus advanced our understanding of the relationship between the two disciplines. The National Survey in particular has highlighted key trends and patterns related to the perception and use of neuropsychology by EPs, but has also highlighted some discrepancies. Specifically, the majority of the respondents to the National Survey reported that they used

neuropsychological concepts in their daily practice and saw neuropsychology as relevant to EP practice. However, while over 70% stated that they referred to neuropsychology in their work, the respondents' self-reported understanding of what neuropsychological theory and practice entail was significantly lower, with less than 25% reporting having a good or high level of knowledge. Even more significantly, just 18% of respondents said they were familiar or very familiar with the distinction between neuroscience and neuropsychology. This raises an important question regarding the use of neuropsychology concepts in EP practice - if the majority of EPs report that they are not confident about their knowledge and understanding of neuropsychology and cannot identify how neuropsychology is different from neuroscience, it is not clear whether they would be able to accurately identify neuropsychological concepts and distinguish them from neuroscientific concepts, for example. Thus, the findings suggest that while EPs see neuropsychology as relevant to EP practice, their actual knowledge of the field is limited. This aspect of the research has therefore provided additional context and nuance to MacKay (2005)'s analysis, as outlined in the literature review in Chapter 1. Specifically, the findings provide empirical support for his argument that neuropsychological concepts have direct application and relevance to EP practice and that neuropsychology is therefore not simply a "bolt-on" area in relation to educational psychology. The findings have also highlighted an important additional consideration - the comparatively low level of knowledge of neuropsychological theory and concepts amongst EPs, which can provide further insight into the possible barriers to the applications of neuropsychology to EP practice noted by MacKay (2005).

Views on the inclusion of neuropsychology during the initial EP training

The National Survey results indicated that less than a third of the sample had input in neuropsychology during their training as EPs. The majority of participants (92%) indicated that they would have liked to have had some input on neuropsychology during their initial training. The respondents listed a number of reasons that were not restricted to an interest in learning more about an unfamiliar area, and included examples such as a desire to incorporate knowledge of brain-behaviour relationships in formulations. Similarly, the results indicated that over 90% of the qualified EPs in the sample had

worked on cases involving neuropsychological conditions such as epilepsy and acquired brain injury, which was identified by some as a key reason why neuropsychology input during the initial EP training would be beneficial. However, it is important to consider the findings in the context of the discrepancy between the reported use and knowledge of neuropsychology theory highlighted in the previous section. More specifically, if EPs are unsure about the definition of neuropsychology, this raises questions as to whether they may have a specific, and potentially inaccurate, perception of what training in neuropsychology would or should entail.

The research also revealed that the content, depth and quality of neuropsychology-related teaching that has already been introduced on some initial training courses varies significantly. Most respondents noted that the teaching consisted of less than 5 hours of direct instruction and covered material ranging from an overview of neuropsychological principles, to discussions of assessment tools or discussions about the role of EPs in neuropsychology. This suggests that there is little consistency between different courses in terms of the content of the teaching, and therefore careful consideration needs to be given to the planning of these modules, as well as to the choice of facilitator in charge of developing and delivering the sessions. Specific recommendations based on the research for initial EP training courses who wish to introduce neuropsychology modules will be included in the section below.

Finally, these findings help contextualise and address gaps in the literature explored in Chapter 1. Specifically, the literature review identified that, given the broad scope of the role of the EP in supporting children with a range of conditions and difficulties (British Psychological Society, 2018), neuropsychology can enhance EPs' formulations and interventions (Hood, 2003) and thus has applications for everyday EP practice. The survey findings provided empirical support for this position by highlighting that EPs encounter neuropsychological cases in their practice where knowledge of neuropsychological principles is relevant and necessary. The findings also provided additional nuance to the gaps identified in the literature review by highlighting the role of

the current limited and varying in content and quality provision of neuropsychological teaching during initial EP training courses.

De-mystifying neuropsychology: Why is neuropsychology perceived as inaccessible and intimidating?

“Neuropsychology intimidates me so I wanted to overcome that. However, since learning more about it, I wonder whether I have sufficient scientific knowledge to enter training. I have no science A Levels and studied psychology at masters level. There was some neuropsychology content and it was this that made me feel intimidated! I wish I could learn more about it but I don’t think I have the skills and knowledge to engage at the required level.”

National Survey respondent

The perception of neuropsychology as a highly complex and difficult to access discipline that requires significant background knowledge of biology emerged as a recurring theme from both the National Survey responses, as well as the interviews with EPs working in specialist settings. This perception is also reflected in the academic literature, where the study of brain-behaviour relationships has been described by some as “remarkably compelling and at the same time incredibly overwhelming” (Hale & Fiorello, 2004). Hale and Fiorello (2004) also described disciplines concerned with brain-behaviour relationships as “difficult for professors to teach, students to learn, and practitioners to implement” and identified four key factors that may contribute to neuropsychology’s perception as a highly complex and inaccessible discipline.

1. **Complex medical or biological terminology** - academic textbooks and courses in neuropsychology can contain a significant amount of subject-specific jargon which can become a barrier to psychologists’ willingness or ability to meaningfully engage with the literature. This may also further consolidate neuropsychology’s “reputation” as a medical or biological, rather than a psychological sub-discipline.
2. **Depth of coverage** - Hale and Fiorello (2004) argued that neuropsychology texts include a large amount of information related to brain anatomy, neurochemistry

and the biology of brain function, which can be unnecessarily detailed and of little direct relevance to practice.

3. **Techniques used in neuropsychological research** - many neuropsychology research papers may include findings from neuroimaging techniques such as functional magnetic resonance imaging (fMRI) or positron emission tomography (PET). As psychologists may have limited understanding of these techniques, this may affect their confidence and ability to both fully understand and critically evaluate any studies that have used neuroimaging, and consequently result in reluctance to refer to original empirical research in neuropsychology.
4. **Application of neuropsychological thinking and principles to practice** - Hale and Fiorello (2004) argued that many neuropsychology courses may have an overwhelming focus on the biological and physiological basis or behaviour, with limited direct applications to the practice of psychologists working with children. Thus, they emphasised the importance of ensuring that neuropsychology courses for psychologists working in education are taught by practitioners with expertise in child neuropsychology.

The over-emphasis on biological concepts with limited direct application to practice is of relevance to another key point highlighted by the research - the distinction between neuroscience and neuropsychology. The National Survey results suggest that there appears to be widespread confusion and lack of clarity regarding the differences between the two disciplines, with the terms often being used interchangeably. However, understanding this distinction is important when considering the relationship between neuropsychology and educational psychology, as the existing confusion may be contributing further to neuropsychology's reputation as an inaccessible discipline. It is therefore important to consider how the two disciplines differ in terms of their focus and scope. Neuroscience is concerned with the study of structure and function of the brain and nervous system (Purves et al., 2018), and is primarily an academic, rather than a practice discipline. As such, neuroscientific literature may be focused on examining the biological, anatomical and chemical processes behind a range of functional cognitive and behavioural processes. While potentially useful for practitioners who wish to

deepen their understanding of the field, this information is not necessarily directly applicable to practice, but may further contribute to the view that knowledge of biology and medical terms is a prerequisite for understanding neuropsychology. Neuropsychology is a sub-discipline of psychology that examines brain-behaviour relationships; thus, understanding the structure of the nervous system on the cellular and neurochemical level is not a key focus of neuropsychology. Therefore, while the two disciplines are related, it is important that “neuroscience” and “neuropsychology” are not used as interchangeable terms, as this may further contribute to the existing confusion and perception of neuropsychology as a primarily biological discipline amongst some EPs.

In order to address those barriers and points of confusion, there are a number of steps and considerations that Educational Psychology Services and universities may wish to consider. Educational Psychology Services considering introducing professional development training in child neuropsychology, as well as universities offering courses or modules on neuropsychology, should consider carefully the course content. The data derived from the present research can inform these decisions in a number of ways. Firstly, the course content should be targeted rather than generic in nature, with a focus on understanding brain-behaviour relationships in the developing, as opposed to the adult brain. As outlined in the literature review in Chapter 1, this is a particularly important distinction for practitioners working with children, like EPs, as models about the function of the adult brain cannot be generalised and applied to the dynamic context of the developing brain (Reed & Warner-Rogers, 2009). This research has highlighted the most common neurological conditions EPs are likely to encounter in their practice, and the courses may therefore wish to introduce more in-depth teaching on these conditions (epilepsy, acquired brain injury, brain tumors, foetal alcohol spectrum disorders and cerebral palsy).

Additionally, course providers may wish to place the focus of the teaching on practice-related issues and minimise teaching on areas that are less relevant to direct practice, such as biological basis of brain function and neurochemistry. As highlighted in the literature, and specifically by Hale and Fiorello (2004), the inclusion of biological and

physiological concepts and terminology is of limited direct relevance and usefulness to the practice of practitioners like EPs, yet it is one of the main contributing factors to the “reputation” of neuropsychology as an inaccessible discipline that ultimately deters practitioners from engaging with neuropsychology teaching modules.

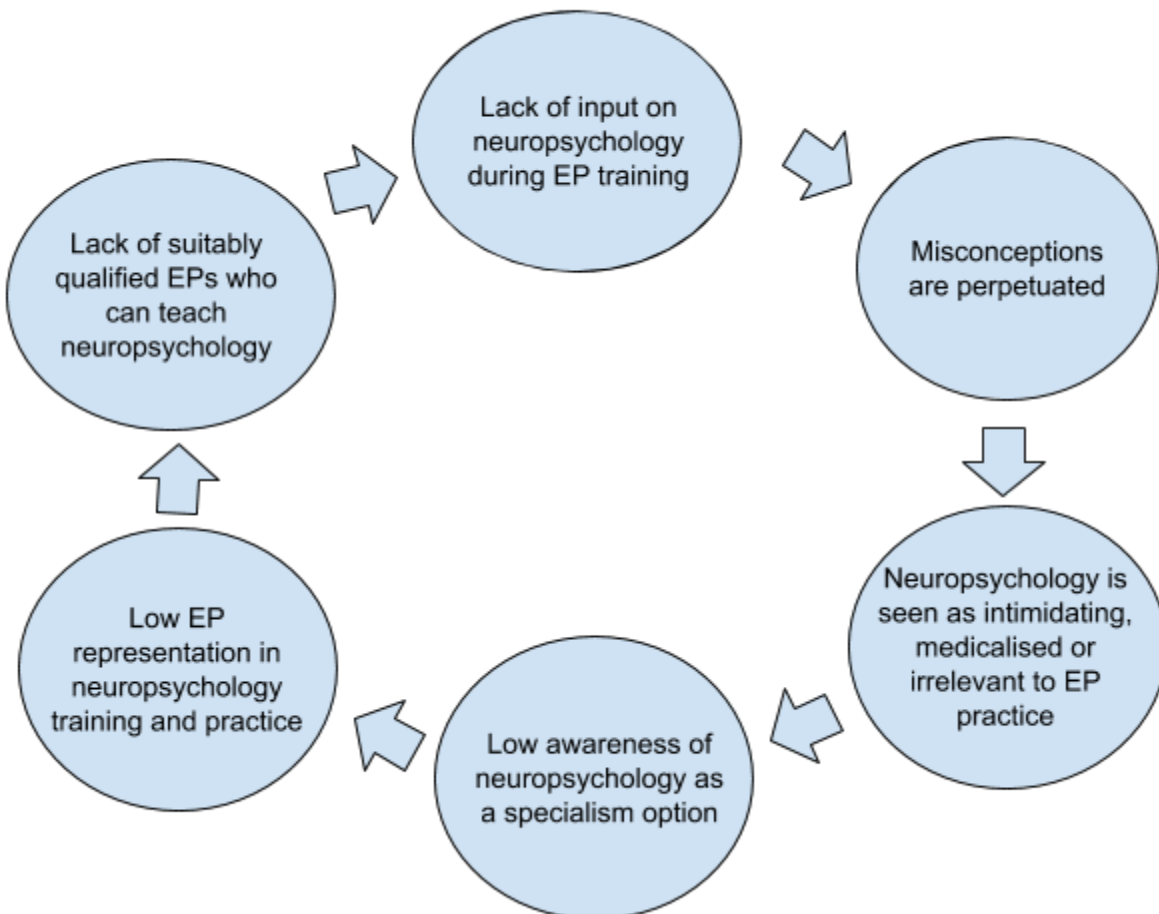
Views on child neuropsychology as a specialism option for EPs

The National Survey results indicated that the majority of EPs (70%) were not at all aware or had very limited knowledge of the fact that EPs could train as child neuropsychologist and the training routes available. Similarly, less than a quarter (24.5%) had considered training as a paediatric neuropsychologist. The majority of those who had not considered training listed being unaware of this option as the main reason why they had not considered training. It is therefore possible that neuropsychology training is not a visible professional development training option for EPs, considering that the majority of EPs had not had any neuropsychology-related training and most were unaware that this option existed. Training as a child neuropsychologist was more popular amongst maingrade EPs, who constituted 53% of the participants who had considered training, and was less popular amongst those at the very early stages of their career and amongst senior and principal EPs. A number of external factors that had negatively affected some participants’ ability to train were also highlighted, such as a lack of financial support by their employer or unwillingness to provide the appropriate study time, as well as being close to retirement age.

These findings highlight that, while the child neuropsychology training route is open to EPs, there are a number of barriers that restrict EPs’ access to this specialism and may partially explain their proportionately lower representation amongst neuropsychologists, compared to Clinical Psychologists. Lack of awareness of the existence of this training option and qualification route emerged as a key factor restricting EPs’ representation in the field. It is important to consider this in the context of the broader debates surrounding the perception of the neuro-disciplines as

medicalised or promoting reductionist, within-person perspectives, as outlined in the Introduction (pages 7-9). In this context, it is possible that some initial training courses may be reluctant to include neuropsychology teaching as this may be seen as promoting individualistic models of working that position the problem or difficulty within the child. However, another possible reason may be that the very limited number of EPs who have specialised in neuropsychology makes it challenging for training providers to find EPs with suitable experience and qualifications to teach. This, in turn, may result in a self-perpetuating cycle where lack of awareness of this specialism option leads to low representation of EPs in neuropsychology, as illustrated by Figure 5.1.

Figure 5.1. The cycle of low EP representation in neuropsychology



Research question 2: To what extent do Educational Psychologists perceive paediatric neuropsychology as relevant to Educational Psychology practice?

The National Survey provided additional insights regarding the perceived relevance of neuropsychology to educational psychology practice. The results indicated that 65% of respondents saw neuropsychology as relevant or extremely relevant to everyday EP practice, and 70% of respondents stated that they use neuropsychological concepts in their everyday practice. The survey also provided the first investigation of the types of neuropsychological cases EPs encounter in their practice. 90% of qualified EPs stated that they had worked on neuropsychological cases, with epilepsy and acquired brain injury being the most commonly encountered conditions (encountered by 42% and 35% of participants respectively), followed by brain tumors, Foetal Alcohol Spectrum disorders, stroke, cerebral palsy and encephalitis. However, just 22% of respondents indicated that they were confident about their neuropsychological knowledge when working on those cases.

These findings provide additional nuance to the findings related to Research Question 1 - specifically, while neuropsychology is perceived as relevant to everyday EP practice and the majority of respondents stated they used neuropsychological concepts in their work, the respondents consistently indicated that they are not confident about their level of knowledge of neuropsychological theory. This finding emerged both in relation to generic applications of neuropsychology to non-neuropsychological cases, as well as to neuropsychological cases EPs encounter in their practice. The significant gap between the EPs' use of neuropsychology and their reported knowledge raises questions about EPs' ability to apply knowledge of areas that they are not confident in. Research Question 3 aimed to illuminate this further, by exploring the ways in which EPs apply neuropsychological principles to their practice.

Research question 3: How does neuropsychology inform Educational Psychologists' day-to-day practice?

The literature review in Chapter 1 has highlighted the significant gap in the research with regards to the applications of neuropsychology to EPs' everyday practice. Specifically, while a small number of empirical papers exploring the role of EPs in supporting children with neurological conditions such as epilepsy and acquired brain injury have been published to date (e.g. Reilly & Fenton, 2013; Ball & Howe, 2013), no empirical papers have explored the broader topic of how neuropsychology informs EPs' day-to-day practice. Prior to the present research, the examination of this topic in the literature was restricted to two theoretical papers by Hood (2003) and MacKay (2005). The National Survey responses highlighted a number of key applications of neuropsychology to EPs' day-to-day practice, both in relation to direct casework with children and young people, as well on a broader systemic level. Most of the respondents who indicated that they used neuropsychology in their practice noted that they refer to neuropsychological concepts in direct work, including in discussions with school staff and parents. Three main areas where neuropsychology emerged as particularly relevant were highlighted by a number of respondents: attachment and toxic stress, complex medical and learning needs and understanding of early brain development. Some EPs' responses included references to neuroplasticity and the creation of new pathways in the brain during early development and in response to different experiences, including the adverse impact of developmental trauma.

Other EPs described how neuropsychological research informs their hypotheses and formulations in cases of epilepsy, brain injury or other conditions where the relationship between brain function and cognition is a particularly important factor. Similarly, the respondents also noted that they refer to neuropsychological concepts and research when delivering training or in discussions with school staff, where the EP may need to challenge wrongly held assumptions on topics related to brain function, including "neuromyths" - false, yet widespread claims about the brain and brain function (Horvath et al., 2018).

One key finding from the National Survey responses was that some EPs who use neuropsychological principles in their work reported using it to challenge deficit-focused models of thinking. More specifically, some EPs noted that they would refer to neuropsychological concepts to normalise or explain the child's behaviour in a non-pathologising manner, and would incorporate neuropsychology into their wider formulations. While further research is needed to provide a more detailed overview of the specific ways in which EPs apply neuropsychological research and theory to their practice, this finding offers an alternative perspective to the narrative that neuropsychology may result in or promote exclusionary practice. The findings suggest that EPs incorporate information related to brain-behaviour relationships into their existing hypotheses and formulations, rather than applying this knowledge on its own, with no reference to broader systemic factors.

Research question 4: What is Educational Psychologists' specialist contribution to paediatric neuropsychology practice?

The role of the EP in supporting children and young people with neuropsychological conditions is largely unexplored in the empirical literature, as highlighted by the review presented in Chapter 1. Indeed, while the role and contribution of EPs to this specialist casework has been considered theoretically by individual practitioners specialising in the field (e.g. Ashton, 2015), research-based examinations of this issue have remained scarce. Two notable exceptions to this are the papers published by Ball and Howe (2013) and Reilly and Fenton (2013), which respectively focused on the role of EPs in supporting children acquired brain injury and epilepsy. Both studies highlighted the important role EPs can play in supporting the child's reintegration back to school, but also highlighted the need for further research on the topic. The findings from the present study outlined in this section provide additional nuance and build upon the findings of the aforementioned papers by providing a broader exploration of the contribution of EPs to neuropsychological settings. Specifically, the interviews carried out with EPs working in neuropsychology settings

and healthcare professionals working alongside them provided a detailed account of the specialist contribution of EPs in a neuropsychological context, from multiple perspectives. The National Survey and interview findings highlighted a discrepancy in attitudes and perceptions between how EPs see neuropsychology and the EP's role in this field, and how their role is perceived by healthcare professionals working in neuropsychological settings. The National Survey findings suggested that some EPs are "scared to be associated with anything too medical" and have a very limited understanding of the specialist roles EPs can undertake in neuropsychological settings. The findings indicated that, on the whole, EPs are not aware that this is a specialism that is open to them or where their expertise is required. In contrast, the healthcare professionals interviewed for the research highly valued the EP's role and contribution to neuropsychology and all spoke about the importance of having an Educational Psychologist in their teams.

The specialist contribution of EPs to child neuropsychology was conceptualised differently by the EPs working in specialist settings and by the multi-disciplinary team members. More specifically, the EPs reflected on how the skills they used in their specialist role were in many respects similar to the "core" EP skills they used in their non-specialist roles, such as systemic thinking and appreciation of the impact of the environment on the child's presentation, as well as their knowledge of the education system. The healthcare professionals working alongside them highlighted the EP's role as being instrumental in bringing psychological knowledge to the team, as well as knowledge of the educational system. Some practitioners noted that the EPs would bridge the gap between health and education, which no other professional in the team had the skill set and required knowledge to do. For example, while both services had clinical, as well as educational psychologists in their teams, their roles were seen as similar, but distinct. The clinical psychologists were seen as having a key role in facilitating therapeutic interventions for service users with diagnosable mental health conditions, in addition to their broader responsibilities as a psychologist, whereas systemic working and knowledge was seen as the EP's specialist contribution.

This finding appears to challenge the idea that EPs working in neuropsychological settings engage in activities restricted to administering cognitive assessments and have limited scope for systemic work - a misconception encountered by all specialist EPs interviewed in Phase 2 of the research. Instead, the results highlighted the input of the EP is highly valued in neuropsychological settings because of the EPs' ability to liaise with a range of professionals and share psychological formulations with the team that take into account the wider systemic context within which the child is positioned. Thus, the EPs unique contribution to neuropsychological services can be seen as giving their psychology and education systems knowledge away in order to facilitate systemic thinking in healthcare settings.

Research question 5: What does paediatric neuropsychology practice entail for educational psychologists working in neuropsychological settings?

The role of the EP in neuropsychology emerged as multi-faceted and diverse, with the specific day-to-day responsibilities varying from one specialist setting to another. However, while there was a degree of variability in the nature of the EP's role depending on the context, the participants' accounts had a number of overlapping characteristics. Specifically, all EPs noted that they worked as part of a wider multi or inter-disciplinary team and would be actively involved or leading the assessment and formulation process. The EP also had a key role in offering training, therapeutic work and parent and school liaison. This is in line with Reilly and Fenton (2013) and Ball and Howe (2013)'s findings - both studies highlighted the broad role and contribution of the EP in cases of epilepsy and acquired brain injury, and emphasised the role of EPs in supporting parents, school staff and multi-disciplinary professionals, thus bridging the gap between health and education.

However, the research findings also suggested that the role of the EP in neuropsychology is poorly understood in the profession and the specialist EPs all spoke about a number of misconceptions they had encountered about their role. These ranged from beliefs held by other EPs that a specialist role in neuropsychology would be

primarily focused on the administration of standardised cognitive assessments, to views that such roles would promote “reductionist” and “within-child” models of working.

This is in sharp contrast to the view of the EPs working in neuropsychology who noted that, while different in many respects, their specialist role involved many of the same skills they used in their local authority roles, but applied in a different context. All EPs who were interviewed emphasised that they still worked as an educational psychologist and identified as one, and noted that their identity as an EP had in fact strengthened in the specialist service. The EPs, including those who were currently undergoing further training as neuropsychologists, noted that this does not take away their identity as an EP. They saw neuropsychology training as a specialism, rather than as an alternative role or a career change, which is in contrast to how neuropsychology was perceived by some National Survey respondents who saw it as a separate career route. In order to better understand and contextualise the high level of skill transfer between the local authority-based EP role and the role of the EP specialising in neuropsychology, it may be helpful to consider international perspectives on how the role of the EP and that of the neuropsychologist are similar and different.

The roles of the Educational Psychologist and Paediatric Neuropsychologist in the UK - more similar than first thought?

The role of the EP in the UK appears to be more closely associated with the role of the Paediatric Neuropsychologist in countries such as the US and France, as opposed to the role of the school psychologist. More specifically, The National Association of School Psychologists in the US describes school psychologists as “members of the school team” typically based in the school, who support the teachers’ ability to teach and students’ ability to learn, and are also responsible for managing behavior, monitoring student progress, collecting and interpreting classroom data and reducing inappropriate referrals to external agencies (National Association of School Psychologists, 2019). As such, the school psychologist role in the countries in question encompasses responsibilities typically associated with the role of the SENCO and school counsellors in the UK.

In contrast, the American Academy of Clinical Neuropsychology defines the role of paediatric neuropsychologists as one that incorporates identifying the child's profile of strengths and weaknesses from a cognitive, as well as academic perspective, as opposed to the role of school psychologists, who are likely to focus on the child's academic attainment:

“Pediatric neuropsychologists and school psychologists often use some of the same tests. However, school evaluations focus on deciding if a child has a problem with academic skills such as reading, spelling, or math. Pediatric neuropsychologists focus on understanding why a child is having problems in school or at home. This is done by examining academic skills but also examining all of the thinking skills needed to perform well in and outside of school – skills like memory, attention, and problem-solving.”

American Academy of Clinical Neuropsychology, 2019

From this perspective, it can be argued that the role of the EP in the UK is broader and more specialist than its equivalents in other countries, and UK-trained EPs are already familiar with and use some of the skills, assessment tools and approaches relevant to paediatric neuropsychology practice, as highlighted by a number of participants in the interviews. This offers one possible explanation as to why Educational Psychologists in the UK who practice in neuropsychological settings reported high levels of skill transfer from their day-to-day role as a local authority EP to a more specialist neuropsychological setting. It is important, however, to highlight the fact that the EPs interviewed in the context of the present study all reflected on the fact that while they were familiar and able to use certain assessment tools and techniques (cognitive assessments, systemic working), particularly compared to colleagues from other disciplines in their respective neuropsychological settings, they did still need to develop the ability to interpret their findings from a neuropsychological perspective:

“There's nothing in there particularly that I couldn't do as an EP working in a local authority. (...)Probably the biggest difference is that, yes, an EP can do all those assessments, but do they know how to interpret them? Can they make that link between the brain biology and mechanisms and the behaviour that we're seeing? And I think that, you know, prior to coming here, I could do that on a basic level. I could say that (...) this child has

difficulties around executive function and I might do some assessment around executive function to back that up (...) and I could maybe give some strategies for that. But I couldn't probably do anything beyond that."

Educational Psychologist

Thus, while it is not suggested that the roles of the EP and the neuropsychologist in the UK are identical, it appears that there is a significant overlap and a shared foundation between the two disciplines, which is not necessarily the case in other countries. The present research has also highlighted that neuropsychology is seen as a specialism, rather than a separate career path by EPs working in neuropsychological settings, and that these practitioners retain a strong identity as EPs.

Research question 6: What are the views of Educational Psychologists specialising in neuropsychology on the training route to becoming a Paediatric Neuropsychologist?

The routes to qualifying as a Clinical Neuropsychologist

In order to consider the research findings in their broader context, it is important to firstly outline the route to qualifying as a neuropsychologist in the UK. It is also necessary to distinguish between clinical child/paediatric neuropsychologists and academic neuropsychologists. While the latter are academics who carry out research in child neuropsychology but do not practice as neuropsychologists, clinical child neuropsychologists are qualified clinical or educational psychologists who have undertaken further post-qualification training and supervised practice in paediatric neuropsychology.

Currently, in order for a clinical or educational psychologist to enter the British Psychological Society's (BPS) Specialist Register of Clinical Neuropsychologists and to be eligible for full membership of the Division of Neuropsychology, a candidate will need to demonstrate competence in three main "dimensions" - knowledge, research and

supervised practice (British Psychological Society, 2017). The knowledge dimension refers to the candidate's ability to demonstrate their understanding of a range of theories, research and their application to practice (e.g. neuropsychological development in children, assessment approaches, professional practice issues). The research dimension assesses the candidate's ability to conduct clinical neuropsychology-relevant research. Candidates who have completed a doctoral level qualification in clinical or educational psychology on a relevant topic can apply for an exemption from this requirement. Finally, the supervised practice component refers to the completion of two year full-time or full-time equivalent clinical practice supervised by a qualified Clinical Neuropsychologist who is on the BPS Specialist Register of Clinical Neuropsychologists. The candidate is assessed via an oral examination and their clinical case portfolio.

At present, there are two main routes to qualifying as a clinical neuropsychologist and entering the Specialist Register of Clinical Neuropsychologists. The first one is the BPS-facilitated Qualification in Clinical Neuropsychology (QiCN), where all candidates are expected to study and organise their supervision and practice arrangements independently, and undergo assessments or examinations related to the different dimensions via the QiCN. Another option available to candidates is to pursue some of the dimensions via a specialist university course accredited by the BPS. Examples of this include the Postgraduate Diploma/MSc in Clinical Paediatric Neuropsychology at University College London, where the successful completion of the Postgraduate Diploma fulfills the knowledge dimension requirements, and the completion of the full MSc - the knowledge and research dimensions. Similarly, Bristol University has introduced a Certificate in Clinical Neuropsychology Practice, which supports candidates with the development of the practical competencies required for entry to the Specialist Register of Clinical Neuropsychologists.

It is important to note that the title "neuropsychologist" is not a protected title in the same way the titles "clinical psychologist" and "educational psychologist" are. While entry to the BPS's Specialist Register of Clinical Neuropsychologists is restricted to practitioners who have satisfied all the dimensions outlined above, the BPS is not a

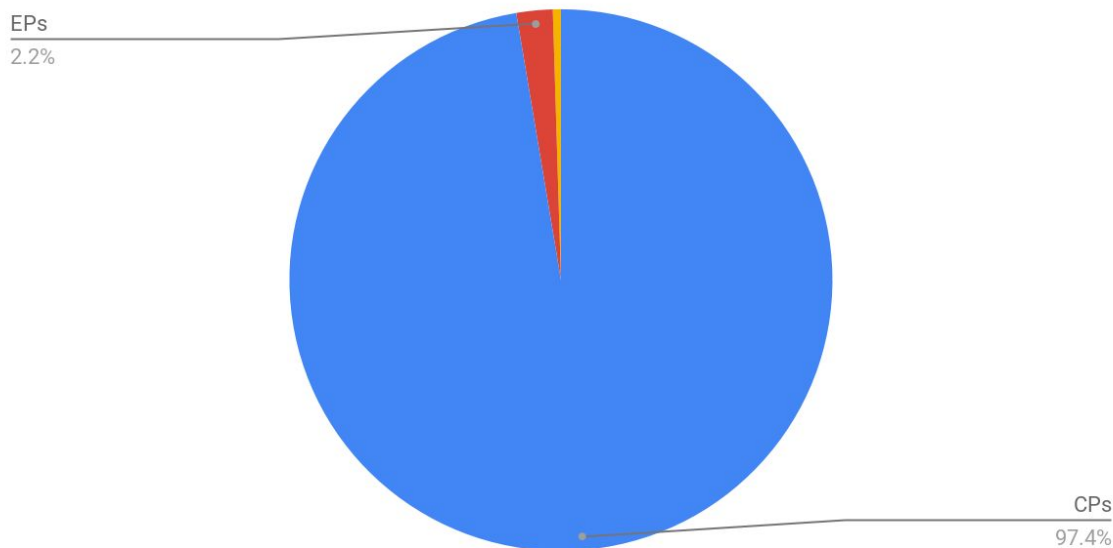
statutory regulatory body in the same way the Health and Care Professions Council (HCPC) is. Similarly, while it would be against the law for an individual who is not registered with the HCPC to use one of the practitioner psychologist protected titles, this would not currently be the case for the title “neuropsychologist”.

Are EPs underrepresented amongst Clinical Neuropsychologists?

As outlined in the section above, the training routes to becoming a clinical neuropsychologists and entering the British Psychological Society’s (BPS) Specialist Register of Clinical Neuropsychologists are only open to qualified Clinical and Educational Psychologists (CPs/EPs). However, there are currently no publicly available data specifying the distribution of EPs and CPs within that broader group of psychologists.

In order to ascertain the representation of EPs amongst registered Clinical Neuropsychologists, the researcher contacted the BPS under the Freedom of Information Act (2000). The BPS’ response stated that the Society held no information about the distribution of EPs and CPs on the Specialist Register of Clinical Neuropsychologists and were only able to provide the total number of psychologists on the register (418 practitioners). The researcher manually cross-referenced the individual psychologists on the BPS list with the HCPC registration records, in order to determine whether they were registered as a CP or an EP. The manual cross-referencing process indicated that 409 of the 418 psychologists on the Specialist Register were CPs, 2 psychologists had dual registration as CPs and EPs, but practiced as CPs, with the remaining 7 being EPs (Figure 5.2).

Figure 5.2 Breakdown of all registered Neuropsychologists by professional background

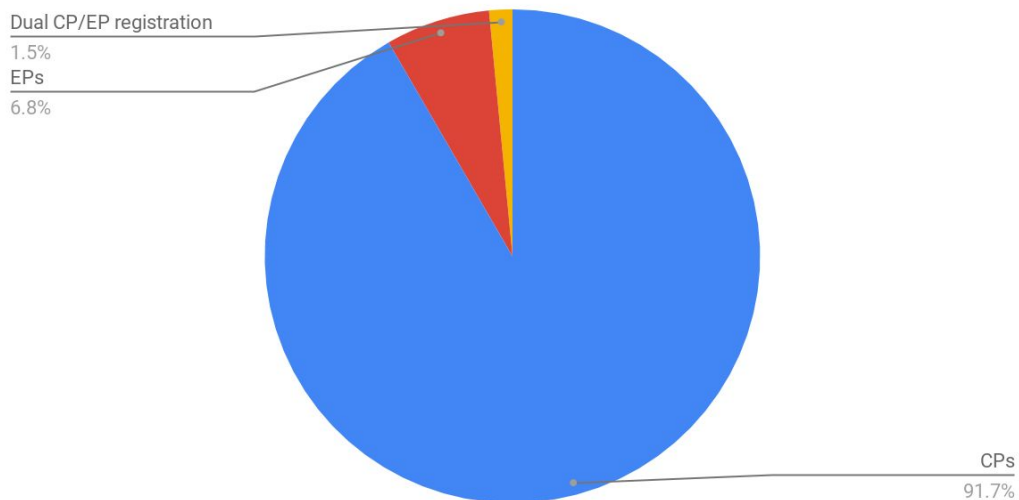


In order to determine the extent to which the distribution of EPs amongst the registered Clinical Neuropsychologist population reflects the total number and ratio of EPs to CPs nationally, the researcher submitted another request under the Freedom of Information Act to the HCPC, asking for the total number of EPs and CPs in the country. According to the HCPC's response, there currently are 4579 registered EPs and 13 381 registered CPs in the UK. Thus, as there are nearly three times as many CPs as there are EPs, it is expected that, proportionally, there will be a larger number of CPs on the Specialist Register of Clinical Neuropsychologists, where approximately 25% would be EPs and 75% would be CPs. However, as illustrated in Figure 5.2, EPs constitute just 2% of the total clinical neuropsychologist population and are thus severely underrepresented.

A further analysis was carried out with the Clinical Neuropsychologists who specialise in working with children and adolescents, rather than adults, as EPs would

not typically work exclusively with adult populations. Even within this subgroup, EPs constituted less than 7% and were thus substantially underrepresented compared to CPs (Figure 5.3).

Figure 5.3 Breakdown of Child and Adolescent Neuropsychologists by professional background



Implications of the interview findings

The interview findings have provided an insight into a range of factors that may contribute to the lower representation of EPs amongst registered clinical neuropsychologists. None of the EPs who took part in the research were qualified as clinical neuropsychologists and they are all employed as EPs. However, they had all considered further training as a clinical neuropsychologist and two of them were currently pursuing the practice dimension via an accredited university course, having completed the knowledge dimension via a university in the past. One EP noted that she was not interested in pursuing the qualification as she felt that further training in therapeutic work would be more beneficial to her specific role and setting. Another EP had considered this option as her employer was in a position to offer funding, but had ultimately decided against it due to being close to retirement age.

The financial commitment associated with the qualification and whether employers would be willing to offer funding support was raised as a significant factor in the EPs' decision whether to pursue the qualification or not. Some participants noted that the cost associated with undertaking the qualification is significant irrespective of the training route, with fees for a university facilitated course meeting the knowledge and research dimension alone being in excess of £10 000. Similarly, the participants noted that arranging clinical supervision by a qualified neuropsychologist can be another very significant expense, thus making self funding prohibitive for many potential candidates. Another consideration raised by the EPs pursuing the qualification was the level of support and structure offered during the completion of the qualification, with the independent BPS route being seen as offering less support and structure, but at the same time being more expensive than the university-facilitated options.

The interview data suggests that the current qualification process presents a number of barriers to prospective candidates. Firstly, the significant cost and lack of a clear funding model may deter EPs already working in neuropsychological settings from enrolling, unless they can secure funding from their employer. Another potential barrier highlighted in the interviews was the perceived lack of sufficient structure and support on the independent BPS qualification route, which made the university-facilitated options more appealing to the EPs interviewed. However, considering that standalone courses covering the three dimensions are offered by different universities, it is possible that this may lead to compartmentalisation of the qualification process, which may in turn appear overly complicated and thus deter potential candidates. Similarly, considering the widespread lack of awareness and confusion regarding the availability of neuropsychology as a specialism for EPs as identified in the National Survey, the qualification route in its current form may add further confusion for EPs who are considering this specialism option. These findings are likely to be of particular significance to the British Psychological Society and the Division of Neuropsychology, and specific implications and recommendations will be outlined in the next section.

5.2 Implications for practice and future research

This section will provide a summary of the research's contribution to practice and the existing knowledge base, as well as recommendations derived from the key findings. These will be followed by an exploration of the research's strengths and limitations, and recommendations for future research.

Key implications and recommendations

Prior to the present research, the relationship between educational psychology and neuropsychology had only been examined explicitly in two theoretical papers, dating back to 15 and 18 years ago (MacKay, 2005; Hood, 2003). While these publications provided an initial exploration of the relationship between the two disciplines and attempted to contextualise it and consider it from multiple perspectives, no attempts to investigate this topic empirically and in more depth have been made since. This research has addressed this gap by providing the first research-based examination of the relationship between neuropsychology and educational psychology in the UK, including the emerging specialist role of the EP working in neuropsychological settings. The National Survey has improved our understanding of how EPs perceive and apply neuropsychology to their practice and has provided the first examination of EPs' experience of working on neuropsychological cases in their daily practice. Similarly, the second phase of the research has provided further insight into the role of the EP specialising in neuropsychology, including an exploration of the unique contribution EPs make in neuropsychological settings from multiple perspectives. Additionally, the research has highlighted some potential barriers related to the current structure of the route to qualifying as a clinical neuropsychologist, which are likely to be of particular relevance to the British Psychological Society and the Division of Clinical Neuropsychology. Specific outcomes and recommendations for EPs, doctoral training providers and the BPS will be outlined below.

The research suggests that there is a significant gap between EPs' use of neuropsychological concepts in their practice and their knowledge and understanding of neuropsychological theories and practice. At the same time, the research has highlighted that the majority of qualified EPs (90% of respondents) encounter neuropsychological cases in their work, but less than a quarter feel confident about their knowledge in this area. This significant discrepancy has implications for both the professional development options available to EPs post qualification, as well as for initial EP training providers. Universities and EP services may therefore wish to introduce modules or professional development courses with a neuropsychology focus for trainees and staff, the focus of which is on the most commonly encountered neuropsychological conditions by EPs, as identified in the present research. The research also suggests that the teaching should preferably be delivered by practitioners who relate the teaching specifically to EP practice.

The research has also challenged some stereotypes about the role of the EP in neuropsychology. Specifically, both the National Survey responses and the specialist EPs' experiences suggested that neuropsychology practice is perceived by some as reductionist and overly reliant on psychometric assessments. This view was challenged by the accounts of EPs who reported using neuropsychology in their day-to-day practice to normalise certain behaviours and presentations in children, as well as by the accounts of EPs working in specialist neuropsychological settings. This finding is likely to be of particular relevance to EPs who are interested in neuropsychology, but may be unsure about the focus and scope of the role of the EP in this field.

Additionally, the research suggests that the current route to qualifying as a clinical neuropsychologist poses a number of obstacles for EPs specialising in neuropsychology, with some deciding not to pursue further training due to the significant financial and time commitments associated with the qualification. Specifically, the BPS-facilitated independent route to qualification was perceived as both more expensive and as providing less structure and support to candidates, compared to the university-facilitated courses covering specific dimensions of the qualifications. The British Psychological Society's Division of Neuropsychology may wish to take these

findings into account when reviewing the Qualification in Neuropsychology and particularly the BPS-facilitated independent route. Specifically, it is important to consider that EPs working in neuropsychology undertake the qualification in addition to their other professional duties and responsibilities, and the significant emphasis on self-directed work on the independent route may deter some potential candidates. It may therefore be beneficial for the BPS to explore introducing a structured training route that covers all three dimensions in collaboration with a university in order to avoid fragmentation and confusion of the different routes to qualification.

Finally, this research has highlighted that the level of awareness of neuropsychology as a specialism option amongst EPs is very low. At the same time, the findings from Phase 2 indicated that the role and input of the EP is highly valued in neuropsychology interdisciplinary teams. The BPS and initial EP training providers are likely to have a key role in raising awareness of the availability of this specialism option through the introduction of seminars and talks with EPs specialising in neuropsychology. The present research can be used as a starting point for this process by providing key information about the role of EPs in neuropsychological settings, common misconceptions, as well as the views of allied healthcare professionals on the EP's role and unique contribution.

Strengths, limitations and directions for future research

Strengths

The research presented the first empirical investigation of the relationship between educational psychology and neuropsychology in the UK. While previous papers on the topic were mainly theoretical or opinion pieces, the present research used a mixed methods design in order to explore the relationship between the two disciplines from several perspectives. As there were no prior data on the views, perceptions and applications of neuropsychology from the perspective of EPs, the first phase of the research filled that gap by conducting a national survey with EPs across the UK and Northern Ireland. A number of measures were put in place to ensure that the distribution of responses reflected the distribution of EPs across the different regions

of the country. Similarly, in order to minimise the effects of selection bias, the participant recruitment information highlighted the fact that the survey was aimed at all EPs, regardless of their level of interest or knowledge of neuropsychology.

The use of quantitative methods allowed for the collection of data from a large number of participants and for the identification of generic trends, which would not have been possible using an exclusively qualitative approach. In contrast, the use of qualitative methods in the second phase of the research allowed for a more detailed exploration of the experiences of EPs specialising in neuropsychology - a topic that had not been investigated before. Thus, the use of a mixed methods design allowed for a detailed exploration of an area vastly neglected in the literature, from a number of perspectives.

Limitations

A number of limitations need to be taken into account when considering the present research and its findings. Firstly, while a number of measures were put in place to ensure that the participant pool in the National Survey reflected the EP population nationally (please refer to Chapter 3 for the steps undertaken), selection bias may have affected the participants sample, as it is possible that the EPs who responded may have already had a pre-existing interest in neuropsychology. This, in turn, may have skewed the results and thus made them less generalisable to the entire EP population.

Another limitation of the current research lies in the exploratory nature of its design. The broad and wide in scope questions allowed for a significant amount of data to be collected, which resulted in the identification of a number of generic trends in the data. However, these generic trends were highlighted in relation to a large number of themes and subthemes and it was beyond the scope of the present research to investigate each of these themes in more depth. The next section will provide specific recommendations for future research, based on the generic themes that may require further investigation.

Additionally, it is important to note that the Phase 2 interviews were restricted to two neuropsychological settings, and thus the views expressed by the EPs and wider multi-disciplinary team professionals are likely to have been influenced at least partially by the specific contexts within which they were positioned. While the interviews were informative for this first investigation of the specialist role of EPs in neuropsychology, it is important that further, more in-depth research focused on specific hypotheses is carried out with this population in the future, in order to provide an even more detailed understanding of this specialist area of practice.

Directions for future research

The present research has provided a broad overview of a range of questions and themes relevant to educational psychology and neuropsychology. Future research may build upon the foundations laid by this thesis by focusing on specific themes that emerged from Phases 1 and 2, but have not been investigated in depth. For example, this research has identified the most common neuropsychological conditions EPs encounter in their practice, however little is known about the specific work EPs undertake with these populations and the possible gaps in EPs' knowledge that may need to be addressed. It would therefore be beneficial for future research to investigate this topic in more depth, in order to obtain a clearer understanding of the level of specialist knowledge EPs need when working on similar cases. Additionally, a number of respondents to the National Survey noted that they would like to enter neuropsychology training as a professional development option, but expressed concern that their service would be unable or unwilling to support them with funding or offer opportunities for applying their knowledge in practice. Thus, another topic that would benefit from further investigation is the role of local authority educational psychology services in supporting EPs who wish to train as neuropsychologists, and how their specialist knowledge is utilised by the service.

Finally, it would be beneficial for future research to focus specifically on the clinical neuropsychology qualification route, by gathering and comparing the views of psychologists undertaking the independent, BPS-facilitated route, and those enrolled on

university-facilitated course. The present research provided some indications that the university-facilitated route is perceived as offering more support and structure, and it would be beneficial to explore the advantages and disadvantages associated with each route in more detail, as this was beyond the scope of the present research.

Summary and conclusions

The research presented in this thesis has used a mixed methods design to investigate the relationship between neuropsychology and educational psychology in the UK, from a number of perspectives. The first phase of the research has improved our understanding of the perception and use of neuropsychology amongst EPs, and has highlighted a number of important trends. Specifically, the results indicated that a significant proportion of respondents (65%) saw neuropsychology as relevant to EP practice, and a further 70% reported using neuropsychological concepts and theory in practice, however just 20% of those reported having a good or very good understanding of neuropsychology theory and practice. Similarly, the National Survey findings demonstrated that the majority of EPs have had no training in neuropsychology during their initial training and are not aware that they could undertake additional specialist training in neuropsychology. This finding offers a potential explanation of the very low representation of EPs amongst neuropsychologists, at just 2%, compared to Clinical Psychologists. Similarly, another key finding of Phase 1 was that 90% of qualified EPs have worked on neuropsychological cases, but less than a quarter felt confident about their knowledge of the neuropsychological condition relevant to the case. The National Survey has also highlighted that the majority of EPs were not aware that EPs could work in specialist neuropsychological settings or could qualify as neuropsychologist, and many saw neuropsychology as an “intimidating” discipline.

The second phase of the research provided the first investigation of the specialist role of the EP working in neuropsychological settings. The interviews highlighted the high degree of skills transfer between local authority EP practice and neuropsychology practice, and have improved our understanding of the role and unique contribution EPs

make to child neuropsychology. The research has also challenged some misconceptions about neuropsychological practice, such as the view that it is overly focused on cognitive assessments, and has highlighted some challenges faced by EPs who are undergoing the qualification as clinical neuropsychologists.

It is hoped that, by providing an initial, broad investigation of the relationship between educational psychology in neuropsychology, including the specialist role of EPs in neuropsychological settings, this thesis has filled a gap in the literature and has paved the way for future research in this field.

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Appendices

Appendix 1: National Survey questions

Educational Psychologists and Paediatric Neuropsychology

▼ Block 1

Q1

Dear Participant,



My name is Emilia Misheva and I am a Trainee Educational Psychologist at the UCL Institute of Education. I am currently working on my doctoral research project, looking at the relationship between Educational Psychology and Paediatric Neuropsychology in the UK. I would like to find out more about the views of qualified and trainee Educational Psychologists practicing in the UK on a number of questions related to how they perceive Neuropsychology, as well as its relevance to Educational Psychology. **Please note that it is not expected that you have any prior specialist knowledge of Neuropsychology theory or practice, or experience of working in neuropsychological settings in order to take part in the research.** The survey should take no more than 10 minutes to complete. As no previous research has been carried out on this topic, your input will provide valuable insight into the relationship between Educational Psychology and Paediatric Neuropsychology and how the latter is perceived within the educational psychology profession.

The study has been granted ethical approval by the UCL Institute of Education Research Ethics Committee. Your participation is voluntary and you may withdraw at any time, without having to give a reason. Any personal details you provide as a part of the survey will be kept strictly confidential, will not be mentioned in any resulting reports or publications and will be deleted from data records as soon as possible. The anonymised data from the survey will only be used for the purposes of the research, but will be retained in anonymised form for up to ten years. By agreeing to take part in the survey you agree that any case-related information you decide to share is anonymised and confirm that you understand that if you share something that suggests that you or someone else might be at risk of harm, the researcher may need to disclose this to a relevant third party, such as a supervisor. For more information on UCL's privacy policy, please follow the links below: <https://www.ucl.ac.uk/legal-services/privacy/ucl-general-research-participant-privacy-notice>

Please do not hesitate to contact me or my academic supervisor, Prof. Andy Tolmie, on the email addresses below if you have any questions or require any additional information.

Best wishes,
Emilia Misheva, Trainee Educational Psychologist
Doctorate in Child, Adolescent and Educational Psychology | UCL Institute of Education
Email address: emilia.misheva.17@ucl.ac.uk Supervisor: Prof. Andy Tolmie; andrew.tolmie@ucl.ac.uk

I have read and understood the information above and agree to take part in the survey

I am:

- Trainee Educational Psychologist in the UK
- Maingrade Educational Psychologist in the UK
- Specialist Educational Psychologist in the UK
- Senior Educational Psychologist/Principal Educational Psychologist in the UK
- Other - please specify

I have been qualified for:

- Still in training
- 0-3 years
- 3-6 years
- 6-9 years
- 9-15 years
- Longer than 15 years

I am currently based in:

- London
 - South East
 - South West
 - East of England
 - East Midlands
 - West Midlands
 - Yorkshire
 - North East
 - North West
 - Northern Ireland
 - Scotland
 - Wales
 - Other - please specify
-

How relevant do you believe neuropsychology to be for everyday Educational Psychology practice?

- Not relevant at all
- Slightly relevant
- Moderately relevant
- Relevant
- Extremely relevant

Have you referred to or used neuropsychological concepts or theory in your day-to-day practice?

- Never
 - Rarely
 - Sometimes
 - Often
 - Always
-

How do you use or apply neuropsychology to your day-to-day practice, if at all?

How familiar are you with the distinction and differences between neuropsychology and neuroscience?

- Completely unfamiliar
- Not very familiar
- Moderately familiar
- Somewhat familiar
- Familiar
- Very familiar

Display This Question:

If Would you have liked to have had input on neuropsychology? I'm not sure Is Selected

Please elaborate why you are unsure about this

Have you worked on cases involving neuropsychological or neurological conditions (brain injury, epilepsy, brain tumors) at any point over the course of your training or post-qualification as an Educational Psychologist?

- Yes
- No

Display This Question:

If Have you worked on cases involving neuropsychological or neurological conditions (brain injury, e... Yes Is Selected

Can you provide examples of types of neuropsychological conditions you have worked with to date?

Display This Question:

If Have you worked on cases involving neuropsychological or neurological conditions (brain injury, e... Yes Is Selected

How confident were you in your knowledge and understanding of neuropsychological theory to support your work on those cases?

- Not at all confident
- Not confident
- Somewhat confident
- Confident
- Very confident
- Other - please specify

Are you currently enrolled on the postdoctoral qualification in paediatric neuropsychology?

- Yes
- No
- I am considering it as an option in the future or am in the process of applying

Display This Question:

If Are you currently enrolled on the postdoctoral qualification in paediatric neuropsychology? Yes Is Selected

Would you be interested in taking part in a face-to-face or telephone interview about your role and experiences related to neuropsychology and the qualification route to becoming a paediatric neuropsychologist?

- Yes
- No

Display This Question:

If Would you be interested in taking part in a face-to-face or telephone interview about your role a... Yes Is Selected

Please provide your name and an email address the researcher can use to contact you

Display This Question:

If Would you be interested in taking part in a face-to-face or telephone interview about your role a... Yes Is Selected

Interview contact consent

- I give my permission to be contacted on the email address provided by me for the purpose of arranging a telephone or face-to-face interview. I understand that my contact details will be kept strictly confidential and will only be used for the purposes specified above.

Display This Question:

If Are you currently enrolled on the postdoctoral qualification in paediatric neuropsychology? I am considering it as an option in the future or am in the process of applying Is Selected

Would you be interested in taking part in a face-to-face or telephone interview about your views on the relationship between neuropsychology and educational psychology, as well as the training route to becoming a paediatric neuropsychologist?

- Yes
- No

Display This Question:

If Would you be interested in taking part in a face-to-face or telephone interview about your views... Yes Is Selected

Please provide your name and an email address the researcher can use to contact you

Display This Question:

If Would you be interested in taking part in a face-to-face or telephone interview about your views... Yes Is Selected

Interview contact consent

- I give my permission to be contacted on the email address provided by me for the purpose of arranging a telephone or face-to-face interview. I understand that my contact details will be kept strictly confidential and will only be used for the purposes specified above.

Are you currently employed in a specialist neuropsychology team/service/setting or otherwise consider yourself to specialise in neuropsychology?

- Yes
- No EXIT SURVEY

Display This Question:

If Are you currently employed in a specialist neuropsychology team/service/setting or otherwise cons... No EXIT SURVEY Is Selected

Thank you for your participation in the survey. Do you have any comments or reflections that you would like to share regarding the survey?

Display This Question:

If Would you be willing to answer 5 more questions relating specifically to your role? No, thank you EXIT SURVEY Is Selected

Thank you for your participation in the survey. Do you have any comments or reflections that you would like to share regarding the survey?

Display This Question:

If Are you currently employed in a specialist neuropsychology team/service/setting or otherwise cons... Yes Is Selected

Would you be willing to answer 5 more questions relating specifically to your role?

- Yes
- No, thank you EXIT SURVEY

Display This Question:

If Would you be willing to answer 5 more questions relating specifically to your role? No, thank you EXIT SURVEY Is Selected

Thank you for your participation in the survey. Do you have any comments or reflections that you would like to share regarding the survey?

Display This Question:

If Would you be willing to answer 5 more questions relating specifically to your role? Yes Is Selected

I am

- Qualified Paediatric Neuropsychologist
- Educational Psychologist currently undergoing Paediatric Neuropsychology Training
- Educational Psychologist working in Paediatric Neuropsychology not currently undergoing the training route to qualification as a Paediatric Neuropsychologist
- Other - please specify

Display This Question:

If Would you be willing to answer 5 more questions relating specifically to your role? Yes Is Selected

The setting I currently work in would be best described as:

- Local authority specialist team with a neuropsychology focus
- Hospital/clinic
- Charity
- Private organisation/social enterprise
- Other - please specify

Display This Question:

If Would you be willing to answer 5 more questions relating specifically to your role? Yes Is Selected

Does your practice or setting specialise in working with a specific condition (e.g. epilepsy, brain injury) or do you work with a wide range of conditions?

- I work with a wide range of conditions
- My work focuses on a specific condition

Display This Question:

If Does your practice or setting specialise in working with a specific condition (e.g. epilepsy, bra... I work with a wide range of conditions Is Selected

Please specify examples of conditions you encounter in your practice

Display This Question:

If Would you be willing to answer 5 more questions relating specifically to your role? Yes Is Selected

Would you be interested in taking part in a face-to-face or telephone interview about your your views on the relationship between neuropsychology and educational psychology, as well as about your specialist role and experiences to date?

- Yes
- If you have already provided your email address and indicated that you are willing to be interviewed earlier in the survey, click here to EXIT SURVEY
- No, thank you EXIT SURVEY

Display This Question:

If Would you be interested in taking part in a face-to-face or telephone interview about your your v... No, thank you EXIT SURVEY Is Selected

Thank you for your participation in the survey. Do you have any comments or reflections that you would like to share regarding the survey?

Display This Question:

If Would you be interested in taking part in a face-to-face or telephone interview about your your v... Yes Is Selected

Please provide your name and an email address the researcher can use to contact you

Display This Question:

If Would you be interested in taking part in a face-to-face or telephone interview about your your v... Yes Is Selected

Interview contact consent

- I give my permission to be contacted on the email address provided by me for the purpose of arranging a telephone or face-to-face interview. I understand that my contact details will be kept strictly confidential and will only be used for the purposes specified above EXIT SURVEY

Appendix 2: Participant Information Sheets

National Survey Participant Information and Consent Sheet (as displayed on screen)

Dear Participant,

My name is Emilia Misheva and I am a Trainee Educational Psychologist at the UCL Institute of Education. I am currently working on my doctoral research project, looking at the relationship between Educational Psychology and Paediatric Neuropsychology in the UK. I would like to find out more about the views of qualified and trainee Educational Psychologists practicing in the UK on a number of questions related to how they perceive Neuropsychology, as well as its relevance to Educational Psychology. **Please note that it is not expected that you have any prior specialist knowledge of Neuropsychology theory or practice, or experience of working in neuropsychological settings in order to take part in the research.** The survey should take no more than 10 minutes to complete. As no previous research has been carried out on this topic, your input will provide valuable insight into the relationship between Educational Psychology and Paediatric Neuropsychology and how the latter is perceived within the educational psychology profession.

The study has been granted ethical approval by the UCL Institute of Education Research Ethics Committee. Your participation is voluntary and you may withdraw at any time, without having to give a reason. Any personal details you provide as a part of the survey will be kept strictly confidential, will not be mentioned in any resulting reports or publications and will be deleted from data records as soon as possible. The anonymised data from the survey will only be used for the purposes of the research, but will be retained in anonymised form for up to ten years. By agreeing to take part in the survey you agree that any case-related information you decide to share is anonymised and confirm that you understand that if you share something that suggests that you or someone else might be at risk of harm, the researcher may need to disclose this to a relevant third party, such as a supervisor. For more information on UCL's privacy policy, please follow the links below:

<https://www.ucl.ac.uk/legal-services/privacy/ucl-general-research-participant-privacy-notice>

Please do not hesitate to contact me or my academic supervisor, Prof. Andy Tolmie, on the email addresses below if you have any questions or require any additional information.

Best wishes,

Emilia Misheva, Trainee Educational Psychologist

Doctorate in Child, Adolescent and Educational Psychology | UCL Institute of Education

Email address: emilia.misheva.17@ucl.ac.uk

Supervisor: Prof. Andy Tolmie; andrew.tolmie@ucl.ac.uk

I have read and understood the information above and agree to take part in the survey



Institute of Education

UCL IoE Doctorate in Educational, Child and Adolescent Psychology

**Educational Psychologists and Paediatric Neuropsychology: Expanding
the Frontiers of Educational Psychology Practice**

Participant Information Sheet - Educational Psychologists

Participant Information Sheet

Dear Participant,

My name is Emilia Misheva and I am a Trainee Educational Psychologist at the UCL Institute of Education. I am currently working on my doctoral research project, looking at the relationship between Educational Psychology and Paediatric Neuropsychology in the UK and, more specifically, at the role of Educational Psychologists working in neuropsychological settings. I would like to find out more about your views on a number of questions related to your role as an Educational Psychologist specialising or working in a neuropsychological setting, what your role entails and what attracted you to this practice area. In order to gather this information, I would like to carry out an interview with you where I am going to ask you a number of questions linked to the issues mentioned above. The interview will take place at your workplace, if appropriate, and will last approximately 30 minutes.

As no previous research has been carried out on this topic, your input will provide valuable insight into the role of Educational Psychologists working in neuropsychological settings, as well as on the relationship between Educational Psychology and Paediatric Neuropsychology.

The study has been granted ethical approval by the UCL Institute of Education Research Ethics Committee.

For more information on UCL's privacy policy, please follow the links below:

<https://www.ucl.ac.uk/legal-services/privacy/ucl-general-research-participant-privacy-notice>

Please do not hesitate to contact me or my supervisor on the email addresses below if you have any questions or require any additional information.

Best wishes,

Emilia Misheva, Trainee Educational Psychologist

Doctorate in Child, Adolescent and Educational Psychology | UCL Institute of Education

Email address: emilia.misheva.17@ucl.ac.uk Supervisor: Prof. Andy Tolmie; andrew.tolmie@ucl.ac.uk



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**Educational Psychologists and Paediatric Neuropsychology: Expanding
the Frontiers of Educational Psychology Practice**

Participant Information Sheet - Multidisciplinary team members

Dear Participant,

My name is Emilia Misheva and I am a Trainee Educational Psychologist at the UCL Institute of Education. I am currently working on my doctoral research project, looking at the relationship between Educational Psychology and Paediatric Neuropsychology in the UK and, more specifically, at the role of Educational Psychologists working in neuropsychological settings. I would like to find out more about your views and experiences of collaborating with Educational Psychologists in the context of your practice. In order to gather this information, I would like to carry out an interview with you where I am going to ask you a number of questions linked to the issues mentioned above. The interviews will take place at your workplace, if appropriate, and will last approximately 30 minutes.

As no previous research has been carried out on this topic, your input will provide valuable insight into the role of Educational Psychologists working in neuropsychological settings.

The study has been granted ethical approval by the UCL Institute of Education Research Ethics Committee.

For more information on UCL's privacy policy, please follow the links below:

<https://www.ucl.ac.uk/legal-services/privacy/ucl-general-research-participant-privacy-notice>

Please do not hesitate to contact me or my supervisor on the email addresses below if you have any questions or require any additional information.

Best wishes,

Emilia Misheva, Trainee Educational Psychologist

Doctorate in Child, Adolescent and Educational Psychology | UCL Institute of Education

Email address: emilia.misheva.17@ucl.ac.uk Supervisor: Prof. Andy Tolmie; andrew.tolmie@ucl.ac.uk

Appendix 3: Participant Consent Form



UCL IoE Doctorate in Educational, Child and Adolescent Psychology

Educational Psychologists and Paediatric Neuropsychology: Expanding the Frontiers of Educational Psychology Practice

Consent form

Please fill out and sign this consent form if you wish to take part in this research

		Please circle	
I have read the information sheet and understand what the research is about		Yes	No
I understand that my participation is voluntary and I may withdraw from the interview at any time, without having to give a reason		Yes	No
I understand that I can email Emilia Misheva to ask questions about the research at: emilia.misheva.17@ucl.ac.uk		Yes	No
I understand that my personal details such as my name will be kept strictly confidential and will not be mentioned in any resulting reports or publications		Yes	No
I understand that if I say something that suggests that I or someone else might be at risk of harm, the interviewer may need to disclose this to a relevant third party, such as a supervisor		Yes	No
I understand that I must ensure any case-related information I decide to share during the interview is anonymised		Yes	No
Name			
Signature			
Date			

Appendix 4: National Survey Invitation Email (EPNET)

Dear all,

My name is Emilia Misheva and I am a Trainee Educational Psychologist at the UCL Institute of Education. I am currently working on my doctoral research project, looking at the relationship between Educational Psychology and Paediatric Neuropsychology in the UK.

If you are a qualified or trainee Educational Psychologist practising in the UK, I would like to find out more about your views on a number of questions related to how you perceive Neuropsychology, as well as its relevance to Educational Psychology. The survey should take no more than 10 minutes to complete. Should you wish to take part, the survey can be accessed via the link below:

Please note that it is not expected that you have any prior specialist knowledge of Neuropsychology theory or practice, or experience of working in neuropsychological settings in order to take part in the research. In order to obtain a representative sample, it is important that I hear from a range of EPs and trainees, both those who may have an interest or practice in neuropsychological settings and those who may not know much about neuropsychology or are unsure about it.

Best wishes,

Emilia

Emilia Misheva, Trainee Educational Psychologist

Doctorate in Educational, Child and Adolescent Psychology, UCL Institute of Education

Appendix 5: Ethical Approval Confirmation

Dear Emilia,

I am pleased to inform you that your research project '**Educational Psychologists and Paediatric Neuropsychology: Expanding the frontiers of Educational Psychology practice**' for the year 2 research project on the Doctorate in Professional Educational, Child and Adolescent Psychology, has been given ethical approval. If you have any further queries in this regard, please contact your supervisor.

Please note that if your proposed study and methodology changes markedly from what you have outlined in your ethics review application, you may need to complete and submit a new or revised application. Should this possibility arise, please discuss with your supervisor in the first instance before you proceed with a new/revised application.

Your ethical approval form has been logged and will be uploaded to the UCL IOE database.

Good luck with your data collection.

Kind regards,
Lee

Lee Rensimer

Programme Administrator

Doctorate in Professional Educational, Child and Adolescent Psychology

UCL Institute of Education

☎ +44 (0) 20 7612 6681 (internal: 06681)

✉ l.rensimer@ucl.ac.uk

Appendix 6: Phase 2 interview questions by group

Interview focus and questions

Phase 2 of the research will focus on research questions 4, 5 and 6. More specifically, the interview stage will aim to build upon the findings of Phase 1 by exploring in more detail the role and contribution of Educational Psychologists to Neuropsychology, from a number of perspectives.

Group 1: EPs currently working in neuropsychological settings

The semi-structured interviews with trainee and qualified EPs *considering* training in paediatric neuropsychology will focus on exploring the participants' motivation and interest in the field of neuropsychology, as well as their views on the relationship between the two disciplines. All participants will be asked the following questions:

- Why are you interested in neuropsychology?
- How do you apply psychology in your day-to-day practice as a trainee/qualified Educational Psychologist, if at all?
- What unique skills and perspectives do you think Educational Psychologists bring to paediatric neuropsychology?
- What does paediatric neuropsychology bring to day-to-day educational psychology practice, in your view?
- Has your interest in neuropsychology contributed to or changed your practice in any way?
- How is neuropsychology perceived within the profession, in your view?
- Have you considered training as a paediatric neuropsychologist? Why?
- What would you say are the main differences between a cognitive formulation and a neuropsychological formulation?

Qualified EPs currently undergoing training or specialising in Paediatric Neuropsychology will be asked an additional set of five questions, focusing specifically on their specialist role:

- What influenced your decision to specialise in neuropsychology?
- What type of setting do you currently work in and what does your role involve?
- What is/was your experience of undertaking the postdoctoral qualification in Paediatric Neuropsychology?
- Are there any misconceptions about neuropsychology that you have encountered since or before specialising?

Group 2: Allied healthcare professionals working alongside EPs in neuropsychological settings

The interviews with tutors on the only post-doctoral Paediatric Neuropsychology course in the country will focus on examining their view on the contribution of EPs to neuropsychology, as well as any perceived challenges and opportunities for EPs who choose to specialise in neuropsychology . All participants in this group will be asked the following questions:

- What do you perceive to be the specific contributions of Educational Psychologists to paediatric neuropsychology?
- What are the main challenges associated with the training and are some of them specific to Educational Psychologists?
- What opportunities does paediatric neuropsychology training offer to Educational Psychologists?

Educational Psychologists and Paediatric Neuropsychology: Expanding the Frontiers of Educational Psychology Practice

Research protocol

Researcher: Emilia Misheva, Trainee Educational Psychologist. Institute of Education, UCL
emilia.misheva.17@ucl.ac.uk

Supervisor: Prof Andy Tolmie, Institute of Education, UCL
andrew.tolmie@ucl.ac.uk

Project Background and Summary

Paediatric or child neuropsychology is a branch of psychology concerned with the study of brain-behaviour relationships in the context of the developing brain (Anderson et al., 2001). Typically, child neuropsychologists in the UK are qualified clinical or educational psychologists who have undergone specialist, post-qualification training and work with children diagnosed with neurological conditions in a range of settings. Despite a number of educational psychologists (EPs) working in neuropsychological settings, no empirical papers exploring the relationship between educational psychology and neuropsychology in the UK have been published to date. The aim of the present research therefore is to fill this gap in the research and knowledge base by exploring the current attitudes towards and understanding of paediatric neuropsychology amongst EPs, as well as to provide an exploration of the role and unique contribution of EPs working in neuropsychological settings, from a number of perspectives.

This research adopts a mixed-methods design and will be carried out in two phases. Phase 1 consisted of a national survey (n=200), exploring the views of qualified and trainee EPs in

the UK on the relationship between the two disciplines, as well as on the perceived use, relevance and applicability of neuropsychology to day-to-day EP practice. Phase 2 adopts a multiple case study approach and consists of semi-structured interviews with EPs and professionals from related disciplines working in a number of specialist neuropsychological settings. The aim of Phase 2 is to explore the role and unique contribution of EPs working in neuropsychological settings, from a number of perspectives.

Research Aims

The research aims to explore the views and understanding of Educational Psychologists of paediatric neuropsychology as a specialist subject and practice area, as well as a professional development option available to them. As no prior research has investigated this topic, the aim of the proposed research is also to fill a gap in the knowledge base surrounding Educational Psychologists' specialist work in paediatric neuropsychology settings. Furthermore, the research will also consider the relationship between Educational Psychology and Neuropsychology from a theoretical perspective and the views of Educational Psychologists on the relevance and application of neuropsychological theory to their day-to-day practice.

Design and methodology by research phase

Design

An exploratory, sequential, mixed-methods design will be employed in order to provide an in-depth exploration of the attitudes, perceptions and practice of paediatric neuropsychology amongst EPs and of the relationship between the two disciplines, in two phases. This will involve an online survey conducted via the EPNET (Phase 1) , followed by interviews with educational psychologists and allied professionals practicing within the field of pediatric neuropsychology (Phase 2), using a multiple case study approach for each setting.

Phase 1: Online national survey

Phase 1 of the research consists of a national survey exploring trainee and qualified EPs' understanding of and views on Paediatric Neuropsychology as a specialist knowledge and practice field.

Methodology

Sample and recruitment

The data will be collected from an opportunity sample that will consist of qualified and trainee Educational Psychologists. A link to the survey will also be posted on EPNET - an online community for Educational Psychologists commonly used for discussion of professional issues. The email will contain information about the researcher and the nature of survey, as well as a link leading to the survey.

Online survey design and procedure

The survey will be designed using Qualtrics. When the participants follow the link to the survey contained in the email, they will be asked to read an information page providing more details about the research. Following this, participants will be taken to a second page, where they will be asked to read a number of statements and to indicate that they understand them and give their consent to take part in the survey. The survey questions will then be displayed (up to five questions at a time) and when participants reach question 10, they will be given the option to exit the survey or, if their work in neuropsychological settings, to answer five additional questions.

Confidentiality and data storage

Any personal identifiers in composite data files will be removed at the earliest opportunity and all raw data will be destroyed. Pseudonymised data records will be kept for 10 years on a double password-protected desktop computer. The data collected will be used for the purposes of the present project and any resulting publications from it.

Phase 2: Semi-structured interviews with EPs and allied professionals working in paediatric neuropsychology settings

Sample and recruitment

The sample will consist of qualified Educational Psychologists working in neuropsychological settings and allied professionals from a range of professional backgrounds who work alongside EPs in their respective settings. The researcher will approach a number of child neuropsychology settings in the health and charity sector in the London area with information about the survey. If the setting has expressed an interest in taking part in the research, the researcher will provide additional information in the form of information sheets and consent forms and arrangements will be made for the researcher to visit the setting in question in order to carry out the interviews.

Procedure

Upon arrival, the participants will be given an information sheet and consent form to read and sign. If the interviews are carried out over the phone, they will be sent these documents in advance and will be asked to send the scanned signed consent form to the researcher prior to the interview. The researcher will then proceed to ask the participants a number of questions about their current role as EPs working in neuropsychology, or about their experiences of collaborating with EPs and their views on what the unique contribution of EPs is in the context of paediatric neuropsychology. The interviews' duration will be approximately 30 minutes for the Educational Psychologists, and 10 to 15 minutes for the allied professionals.

Confidentiality and data storage

The interviews will be recorded using a portable recording device and the data files will be transferred to a double password-protected desktop computer within 12 hours. The original recordings will be deleted from the portable device and no identifying information will be included in the file names. Pseudonyms will be used in the transcripts and in any resulting reports or publications. Any personal identifiers in composite data files will be removed at the earliest opportunity and all raw data will be destroyed. Pseudonymised data records will be kept for 10 years on a double password-protected desktop computer.

The data collected will be used for the purposes of the present project and any resulting publications from it.

Ethical considerations and confidentiality

The study was granted ethical approval by the UCL Institute of Education Research Ethics Committee. All participants will be required to give informed consent and will be informed that their participation is entirely voluntary and they can withdraw from the study at any time, without having to give a reason.

While no apparent risks to participants associated with the research were identified and the research is not expected to cause any distress, the researcher noted that a potential ethical issue may arise from the fact that some participants may share information related to specific cases they have worked on in the context of their practice. All participants will be required to sign a consent form, where they will be asked to indicate that they understand the need to keep any information they decide to share confidential. If any confidential case-related information were shared in the context of the open-ended questions of the survey or in the interviews, the specific segment will not be included in any resulting transcripts, analyses or reports.

The participants will be informed in the consent form of the limits to confidentiality, in situations where it is disclosed that the participant or someone else might be at risk of harm. If such a situation were to arise, the researcher will, in the first instance, contact and discuss the issue with her research supervisor in order for them to jointly agree on the most appropriate course of action.

Data Protection Privacy Notice

The data controller for this project will be University College London (UCL). The UCL Data Protection Office provides oversight of UCL activities involving the processing of personal data, and can be contacted at data-protection@ucl.ac.uk. UCL's Data Protection Officer can also be contacted at data-protection@ucl.ac.uk. Further information on how UCL uses participant information can be found here: www.ucl.ac.uk/legal-services/privacy/participants-health-and-care-research-privacy-notice

The legal basis that would be used to process the participants' personal data will be performance of a task in the public interest. The legal basis used to process special category personal data will be for scientific and historical research or statistical purposes/explicit consent. Participants' 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 participants provide we will undertake this, and will endeavour to minimise the processing of personal data wherever possible. If participants are concerned about how their personal data is being processed, or if they would like to contact us about their rights, they can contact UCL in the first instance at data-protection@ucl.ac.uk

Timescales

	Action
December 2018	Ethics form submission
January-March 2019	Launch of online national survey and data collection
March-May 2019	Analysis of findings of national survey and recruitment of interview participants
May-July 2019	Interviews
August-September 2019	Data transcription and analysis
September 2019 - April 2020	Research write-up