

## **What factors influence healthcare professionals to refer children and families to paediatric psychology?**

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### **Abstract**

#### **Objectives**

This study aimed to investigate factors influencing referral of children with physical illness to paediatric psychology. Due to high rates of mental health problems within this population, studies have shown that referral to paediatric psychology should be increased. However, few studies have examined factors shaping healthcare professionals' referral behaviour.

#### **Methods**

The current study used the theory of planned behaviour to develop a questionnaire which explores factors influencing the referral of children and families to paediatric psychology. Psychometric properties of the questionnaire were examined.

#### **Results**

The questionnaire was found to have good reliability and validity. The main constructs of the theory of planned behaviour were useful in predicting intention to refer to paediatric psychology. Specific beliefs about referral were shown to influence intention to refer.

#### **Conclusions**

Findings suggest that individual attitudes and beliefs can impact healthcare professionals' referral behaviour, indicating that multidisciplinary interventions and inter-professional education relating to the psychological aspects of illness are required.

## Introduction

Rates of mental health difficulties are up to four times higher in children and adolescents with chronic physical illness and illness symptoms than children in the general population (Meltzer, Gatward, Goodman, & Ford, 2004; Piquart & Shen, 2011). Psychological therapies are effective for reducing mental and physical health problems within this population (Bennett, Shafran, Coughtry, Walker & Heyman, 2015; Fisher et al., 2014; Warner et al., 2011). However, carrying out interventions on co-morbid mental health problems in isolation is not always effective, sometimes only reducing either physical or mental health difficulties (Chalder, Deary, Husain & Walwyn, 2010; Hains, Davies, Behrens, 1997; Mcgrady & Hood, 2013; Van der Veeck, Derkx, Benninga, Boer, & de Haan, 2013). According to Naylor et al. (2012), more substantial clinical and cost effectiveness may be obtained through integration of physical and mental health treatments, instead of adding mental health interventions to existing physical care protocols. Integrated treatment can increase communication between healthcare professionals, leading to improved patient outcomes (Zwarenstein, Goldman & Reeves, 2009; Strasser et al., 2005). In addition to clinical benefits, adult literature relating to the integration of physical and mental health illustrates cost-effectiveness (e.g. Howard, Dupont, Haselden, Lynch, & Wills, 2010). Despite this, UK health care services are often not structured to support an integrated response to physical and mental healthcare needs (Naylor et al., 2012).

Paediatric psychology aims to integrate physical and mental healthcare through including psychological approaches in medical settings (Kazak et al., 2007; Kessler et al., 2005). However, research studies have shown limited interaction with and referral to psychological services within paediatric settings. Glazebrook, Hollis, Heussler, Goodman, and Coates (2003) demonstrated that in a UK paediatric outpatient hospital setting, paediatricians identified just a quarter of cases where emotional and behavioural difficulties

were indicated. Furthermore, paediatricians said they would refer just 14 percent of children to an on-site mental health service, although 21 percent were identified as having psychological difficulties. Wagner and Smith (2007) tracked referral patterns to an on-site psychology service in a paediatric epilepsy clinic. Referral rates were significantly lower than the prevalence of mental health difficulties in children with epilepsy. Authors emphasised the necessity of facilitating increased psychology referrals within the paediatric population.

While factors facilitating and hindering referral behaviours are currently under-researched, several authors have hypothesised that attitudes, prejudice and beliefs between different professional groups have the potential to improve or dilute integration of separate health disciplines (Beacham, Herbst, Steitweiser, Scheu & Sieber, 2012; Parsell and Bligh, 1999). Indeed, studies have found associations between mental health referral rates and referrer characteristics, attitudes and beliefs (e.g. Hugo Kendrick, Reid, & Lacey, 2000; Kainz, 2002). Green Johnston, Cabrini, Fornai, & Kendrick, (2008) found that much of the variance in GP referral rates to eating disorder services was based on GP attitudes and subjective norms.

The theory of planned behaviour (TPB; Ajzen, 1988, 1991) is an appropriate means of understanding factors predicting behavioural intention in healthcare professionals (Godin, Bélanger-Gravel, Eccles and Grimshaw (2008). TPB proposes an individual's intentional behaviour can be predicted based on direct measures including attitudes, subjective norms and perceived behavioural control, all of which are influenced by indirect measures - beliefs. Behavioural beliefs create a positive or negative attitude toward a behaviour; normative beliefs produce subjective norm (perceived social obligation); and control beliefs lead to perceived behavioural control. Together, these constructs result in a behavioural intention, which people usually carry out (Ajzen, 2002).

Despite the relevance of the TPB to predicting the behaviour of healthcare professionals in terms of referrals to paediatric psychology services, no measure currently exists to assess the key direct and indirect TPB constructs. Paediatric psychology, as a discipline, specifically aims to integrate physical and mental healthcare through incorporating psychological principles within the medical multi-disciplinary team (e.g. Griffin & Christie, 2008) therefore for the purposes of this study, we looked specifically at paediatric psychology input rather than all mental health professionals whilst acknowledging that there are other disciplines that can and do contribute towards supporting emotional wellbeing as part of the MDT .

### **Study Aims**

This study aimed to:

- (i) Identify specific beliefs relating to paediatric healthcare professionals' referral of children and families to psychology, through analysis of qualitative data.
- (ii) Assess whether TPB constructs can be used to predict healthcare professionals' intention to refer to paediatric psychology. This will be investigated through developing a TPB questionnaire and assessing reliability and validity.

### **Methods**

A two stage sequential exploratory design applying qualitative followed by quantitative methods was used to create a cross-sectional online questionnaire (Francis et al., 2004).

The study received full approval from a university ethics panel and from site specific NHS research and development departments.

### **Participants**

For the questionnaire development, eligible participants (n = 99) included consultant medical doctors working within medical teams with access to paediatric psychology. Recruitment was carried out through convenience sampling from two London hospital sites. All eligible participants were contacted with a set of open-ended questions and twenty-five per cent (n = 23) responded.

Following creation of an online questionnaire through collection and analysis of the qualitative data, 868 healthcare professionals from two London hospital sites were contacted by email and provided access to the online questionnaire. Any healthcare professional who could initiate a referral and who was working within a team which had access to paediatric psychology was eligible, but those working within a paediatric psychology team were excluded. Tabachnick and Fidell (2007, p. 123) advise calculating sample size requirements for regression analyses:  $n > 50 + 8m$  (m = number of predictor variables). Therefore 75 participants were required for analyses with three predictor variables ( $50 + 8(3) = 74$ ). Eleven per cent of those contacted (n = 93) returned the questionnaire. Following questionnaire completion, participants were asked if they agreed to be contacted to fill in the questionnaire for a second time. Twenty-eight participants agreed, and were emailed a link to the questionnaire four weeks later. Twelve participants (43 percent) returned the questionnaire for a second time.

Response rates are often lower in medical professionals compared with other populations, due to demanding work schedules (Flanigan, McFarlane & Cook, 2008) therefore email was used and the questionnaire was kept brief to maximise response rate (Cummings, Savitz & Conrad, 2001).

## **Procedure**

The questionnaire was developed using Ajzen's (2002) model of TPB which includes both direct and indirect predictors of behavioural intention. Each direct and indirect measure (statement) was presented on a 7-point Likert scale.

Twelve questionnaire items which aimed to directly measure predictors of referring to paediatric psychology were developed. Direct attitude was measured using three pairs of semantic descriptors (e.g. "useful/worthless") which were attached to the sentence stem, "Overall, I think referring to paediatric psychology is...". Three items relating to others' views were used to measure direct subjective norm. Direct perceived behavioural control was examined using three items such as: "Whether I refer children/families to paediatric psychology is within my control". Three items were designed to measure intention to refer, for example, "I expect to refer children/families to paediatric psychology".

Indirect (belief-based) measures were developed through contacting participants via email with an online link to a set of open-ended questions, which were extrapolated from Francis et al., 2004. This set of belief-eliciting questions was accessed through Qualtrics online survey software.

### **Data Analysis**

Responses to the belief-eliciting questions were downloaded to Microsoft Word. Deductive content analysis, a method of analysing written data (Cole, 1988), was employed to code data according to TPB constructs, and themes were ranked from most to least frequently occurring. This method of analysis was chosen as it allows data to be coded according to a pre-existing model, in this case, TPB.

The data were analysed within the three main categories; behavioural, normative and control beliefs (see Appendix 1 for more detailed outline of content analysis). Within these categories, 12 sub-categories were ranked according to their frequency (see Table 1). Where data fitted more than one category, it was coded within all relevant categories.

Table 1

*Categories and Sub-categories from Content Analysis*

<u>Category</u>	<u>Sub-category</u>	<u>No. of participants</u>
Behavioural Beliefs		
1a	Holistic care	21
1b	Stigma	21
1c	Type of service	17
1d	Family support	11
Normative Beliefs		
2a	Family (dis)approval	18
2b	Colleague/profession (dis)approval	14
2c	Budget holder/Managerial (dis)approval	5
2d	Support groups/charities (dis)approval	2
Control beliefs		
3a	Waiting lists and psychology availability	16
3b	Referral Process	12
3c	Healthcare Professional Time	9
3d	Cost/Resources	6

According to Francis et al. (2004) including 75 percent of themes should give adequate coverage of commonly held beliefs within a population. Therefore in order to develop a suitably brief questionnaire, the least frequently cited sub-category within each category was removed, resulting in a final total of nine themes (three for each construct).

Subsequently, themes were transformed into statements. For each behavioural belief statement, a corresponding statement was developed which aimed to evaluate the outcome of that belief. Similarly, for each normative belief statement there is a corresponding statement assessing motivation to comply with the normative belief and for each control belief there is a statement about the power of the control belief. Therefore, 18 items representing indirect measures were developed, making a total of 30 direct and indirect items.

The questionnaire was piloted with six healthcare professionals (four nurses, one doctor and one social worker). Minor changes were suggested and incorporated.

Following participant completion of the questionnaire (n=93), data were downloaded to IBM SPSS Statistics Data Editor, Version 22 and screened for missing data, of which there were none.

**Composite variables.** Negatively worded variables were reversed. The following composite variables were computed; direct attitude, indirect attitude, direct subjective norm, indirect subjective norm, direct perceived behavioural control, indirect perceived behavioural control and behavioural intention.

**Reliability.** Internal consistency analyses were completed for the direct composite subscales, as well as the intention subscale. It is not appropriate to assess the internal consistency of indirect subscales as individuals often have both positive and negative beliefs about the same behaviour (Francis et al., 2004). Therefore test-retest reliability analyses were carried out for all indirect composite variables, but not direct measures, as attitude is less likely to remain stable over a number of weeks (Francis et al., 2004; Pallant, 2007).

**Validity.** In order to test the concurrent validity of indirect composite measures, a series of bivariate correlations were carried out between direct and indirect measures of the same construct. It was planned that construct validity of the measure would be assessed based on Ajzen's (2002) TPB model using a series of cross sectional linear regression analyses. It



was hypothesised that indirect measures would predict direct measures of the same construct and that direct measures would predict intention to refer to paediatric psychology.

**Specific beliefs influencing intention.** In order to determine which specific beliefs had the greatest influence over intention to refer, specific beliefs were entered into a series of linear regressions, using intention as the outcome variable.

**Statistical assumptions for regression analyses.** Preliminary analyses and data inspection suggested that while the assumption of normality was met for four composite variables, it was not met for direct attitude, direct perceived behavioural control or intention. A square root transformation of the data normalised the intention distribution only. The transformed intention variable was used in all subsequent analyses. It was not possible to carry out regression analyses using the direct measures as outcome variables due to violation of the assumption of normality and inability to transform the data to create a normal distribution.

Further analysis of the data showed no violation of statistical assumptions. The presence of outliers was assessed and these were generally acceptable, however, one case was removed for one analysis due to a Mahalanobis distance which exceeded the critical value by  $>20$  (Pallant, 2007).

## **Results**

### **Participant Characteristics**

Participants included several different disciplines and ages ranged from 24 to 65 years. See Table 2 for participant characteristics.

Table 2

*Participant Characteristics (n = 93)*

<u>Demographic</u>	<u>Category</u>	<u>Frequency (%)</u>
Professional Role	Consultant Doctor	30 (32%)
	Doctor	11 (12%)
	Nurse	25 (27%)
	Therapist (Occupational, Physio)	22 (24%)
	Social Worker	2 (2%)
	Other (Play therapists, Audiologist)	3 (3%)
Gender	Female	70 (75%)
	Male	21 (23%)
	Prefer not to state	2 (2%)
Age range	24-35 years	23 (25%)
	36-45 years	34 (37%)
	46-55 years	25 (27%)
	56-65 years	11 (12%)
Number of years qualified	Under 5 years	2 (2%)
	5-10 years	17 (18%)
	11-20 years	35 (38%)
	Over 20 years	39 (42%)

## Reliability

Reliability was assessed using internal consistency for direct measures and test-re-test reliability for indirect measures.

**Internal consistency.** Internal consistency was assessed using Cronbach's Alpha and mean inter-item correlation values. Each subscale was made up of three items. Where scales have fewer than 10 items, it is common to find low Cronbach's alpha values ( $< 0.7$ ). According to Briggs and Cheek (1986), in these cases, it may be more appropriate to report mean inter-item correlation. Direct subjective norm was one such case. All subscales demonstrated acceptable reliability using these conventions (see Table 3).

Table 3

*Subscale Internal Consistency: Direct Measures (n = 93)*

<u>Composite variable (Subscale)</u>	<u>No. of items</u>	<u>Cronbach's Alpha*</u>	<u>Mean inter-item correlation**</u>
Direct Attitude	3	.74	n/a
Direct Subjective Norm	3	.47	.21
Direct Perceived Behavioural Control	3	.70	n/a
Intention	3	.75	n/a

\* Cronbach's alpha value of .7 or above indicates an acceptable level of reliability (Devellis (2003)

\*\* Mean inter-item correlation values between .2 and .4 indicate acceptable reliability (Briggs & Cheek, 1986).

**Test-retest reliability.** Twelve participants completed the questionnaire for a second time. For indirect composite variables, temporal stability was assessed using Pearson's  $r$ . Cohen (1988) suggests the following conventions to measure the strength of the relationship between two variables; small ( $r = 0.1$  to  $.29$ ), medium ( $r = 0.3$  -  $.49$ ), large ( $r = 0.5$  -  $1.0$ ).

Each of the subscales at Time 1 demonstrated a medium or large correlation with the same subscale at Time 2 (see Table 4). However, perhaps due to the small sample size ( $n = 12$ ), only indirect perceived behavioural control reached statistical significance. The significance of Pearson's  $r$  is strongly influenced by sample size (Pallant, 2007).

Table 4

*Subscale Test-Retest Reliability: Indirect Measures ( $n = 12$ )*

<u>Composite variable (Subscale)</u>	<u>Pearson's <math>r</math></u>
Indirect Attitude	.39
Indirect Subjective Norm	.52
Indirect Perceived Behavioural Control	.79*

\* Correlation is significant at the .05 level (two tailed)

\*\*Correlation is significant at the .01 level (two tailed)

## Validity

Validity was assessed using concurrent validity for the indirect measures and construct validity for the direct measures.

**Concurrent validity.** According to TPB, if indirect measures are valid, they should correlate with direct measures of the same construct (Francis et al., 2004). All direct subscales were significantly and positively correlated with indirect subscales of the same construct using conventions recommended by Cohen (1988; see Table 5).

Table 5

*The Relationship between Direct and Indirect Subscales of the Same Construct (n = 93)*

<u>Direct-Indirect Subscale</u>	<u>Pearson's r</u>
Attitude	0.23*
Subjective Norm	0.41**
Perceived Behavioural Control	0.32**

\* Correlation is significant at the .05 level (two tailed)

\*\*Correlation is significant at the .01 level (two tailed)

**Construct validity.** Three cross-sectional linear regression analyses were used to assess the ability of direct measures to predict intention to refer to paediatric psychology. Direct attitude significantly predicted intention, accounting for 7 percent of the variance,  $F(1, 91) = 6.91, p = 0.01$ . Direct subjective norm significantly predicted intention, accounting for 22 percent of the variance,  $F(1, 91) = 26.27, p < 0.0001$ . Finally, direct perceived behavioural control significantly predicted intention, accounting for 7 percent of the variance,  $F(1, 91) = 6.31, p = 0.01$ . The standardised beta values represent the number of standard deviations that scores in the outcome variable (intention) would change if there was a one standard deviation unit change in the predictor variable.

Table 6

*Individual Linear Regression Analyses: Direct Measures Predicting Intention (n = 93)*

<u>Predictor</u>	<u>R<sup>2</sup></u>	<u>β</u>	<u>Mean</u>	<u>Standard Deviation</u>
Direct Attitude	.07*	-.27*	6.57	.59
Direct Subjective Norm	.22**	-.47**	5.14	.96
Direct Perceived Behavioural Control	.07*	-.26*	5.87	1.16

\* Significant at the .05 level

\*\*Significant at the .01 level

A cross-sectional multiple linear regression analysis was carried out in order to assess how much shared and individual variance in the outcome could be explained by the direct measures. Direct attitude, subjective norm and perceived behavioural control were entered as predictor variables and intention was the outcome variable. Together, direct measures significantly predicted intention to refer to paediatric psychology, accounting for 24 percent of the variance,  $F(3, 89) = 9.4, p < 0.001$ . When the contribution shared by the predictor variables was removed, only direct subjective norm made a significant unique contribution to the outcome, uniquely accounting for 14 percent of the variance in intention to refer to paediatric psychology ( $p < 0.0001$ ; see Table 7).

Table 7

*Multiple Linear Regression: Direct Measures Predicting Intention (n = 93)*

<u>Predictors</u>	<u>R<sup>2</sup></u>	<u>β</u>
All Direct Measures	.24**	n/a
Direct Attitude	.012	-.12
Direct Subjective Norm	.14**	-.42**
Direct Perceived Control	.002	-.05

\* Significant at the .05 level

\*\*Significant at the .01 level

### **Specific beliefs influencing intention**

Three cross-sectional multiple linear regression analyses were carried out in order to assess which beliefs influenced intention to refer to paediatric psychology.

The three behavioural beliefs were entered as predictor variables; intention was the outcome variable. Together, behavioural beliefs did not significantly predict intention to refer to paediatric psychology, accounting for 6.7 percent of the variance,  $F(3, 88) = 2.10, p = 0.106$ . On inspection of individual behavioural beliefs, only beliefs about holistic care made a significant contribution to the outcome, uniquely accounting for 6.5 percent of the variance in intention ( $p = .015$ ).

The three normative beliefs were entered as predictor variables and intention was the outcome variable. Together, normative beliefs significantly predicted intention to refer to paediatric psychology, accounting for 14 percent of the variance,  $F(3, 89) = 4.73, p = 0.004$ . On inspection of individual beliefs, only beliefs about families made a significant contribution to the outcome, uniquely accounting for 4 percent of the variance in intention ( $p = 0.015$ ), although beliefs about colleagues approached significance ( $p = 0.067$ ), uniquely accounting for 3 percent of the variance in intention.

The three control beliefs were entered as predictor variables and intention was the outcome variable. Together, control beliefs did not significantly predict intention to refer, accounting for 1.1 percent of the variance,  $F(3, 89) = 0.34, p = 0.80$ . Additionally, none of the individual control beliefs made a significant contribution to the outcome.

Table 8

*Multiple Linear Regression Analyses: Beliefs Predicting Intention (n = 93)*

<u>Predictors</u>	<u>R<sup>2</sup></u>	<u>β</u>	<u>Mean</u>	<u>Standard Deviation</u>
All	.067	n/a		
Behavioural Beliefs				
Behavioural Belief 1 (Holistic)	.065*	-.26*	16.43	3.72
Behavioural Belief 2 (Stigma)	.0009	-.030	-.47	7.6
Behavioural Belief 3 (Service Type)	.004	.064	-.02	3.06
All	.14**	n/a		
Normative Beliefs				
Normative Belief 1 (Budget Holders)	.012	-.11	-.89	5.40
Normative Belief 2 (Families)	.04*	-.23*	6.9	7.35
Normative Belief 3 (Colleagues)	.03	-.19	10.12	6.9
All	.011	n/a		
Control Beliefs				
Control Belief 1 (HCP Time)	.002	-.044	-.32	5.04
Control Belief 2 (Referral Process)	.01	.12	-2.2	6.7
Control Belief 3 (Waitlist)	.00005	.008	-1.27	8.41

\* Significant at the .05 level

\*\*Significant at the .01 level



## **Discussion**

This study had the following aims; to identify healthcare professionals' beliefs relating to the referral of young people to paediatric psychology and to assess whether TPB constructs can be used to predict healthcare professionals' intention to refer to paediatric psychology. This was investigated through developing and investigating the reliability and validity of a TPB questionnaire.

The questionnaire demonstrated good reliability. Internal consistency was acceptable for all direct subscales. Test-retest reliability was also acceptable; all indirect subscales at Time 1 illustrated a medium or large correlation with the same subscale at Time 2. The indirect and direct measures showed concurrent and construct validity.

### **Direct Measures**

In relation to direct TPB constructs, only direct subjective norm made a significant unique contribution to intention to refer to psychology, indicating that others' beliefs and behaviours are the strongest predictor of healthcare professionals' intention to refer. Similarly, Green et al., (2008) found that much of the variance in general practitioner (GP) referral rates to specialist eating disorder services was based on GP subjective norms, however, attitude was also a unique predictor of referral in their study. This may be because, according to Godin et al. (2008), the efficacy of TPB's predictive value can vary according to context, behaviour and characteristics of the population performing the behaviour.

### **Indirect Measures**

Decision making about referral to psychology was shaped by a wide range of beliefs, demonstrated through content analysis of qualitative data obtained from consultant doctors.

In relation to behavioural beliefs, the type of psychology service received by the child and family post-referral, the opportunity for family support, and mental health stigma were frequently cited in the qualitative data as factors relating to decision to refer. However, belief

about the advantages of holistic care was the only behavioural belief significantly predicting intention to refer. Indeed, the majority of participants described that psychology provided a holistic approach to care, explaining that a psychology referral provided scope for inter-disciplinary ‘information sharing’ and a ‘view of the child as a whole’ (see Appendix 1 for content analysis of qualitative material). The benefits of holistic care such as increased job satisfaction and improved outcomes have been consistently demonstrated for both healthcare professionals and patients within a variety of settings (Zwarenstein, et al., 2009). According to van Knippenberg, De Dreu and Homan (2004), advantages for inter-professional teams are established through the joining up of knowledge which was previously separate. This ‘cognitive heterogeneity’ (Mitchell, Parker, Giles, & Whilte, 2009. p7) permits the construction of solutions to problems which are more innovative and inclusive (DeDreu & West, 2001).

With regard to normative beliefs, the approval of families, colleagues, budget holders and third sector organisations were cited in the qualitative data. Together, normative beliefs significantly predicted intention to refer. The views of colleagues were described as significant, with some participants describing approval of ‘all colleagues’ while others described that ‘some physicians feel that no intervention will change a family from their longstanding viewpoint or beliefs’. Healthcare professionals’ perception of their colleagues’ (others within their profession) referral behaviour accounted for three percent of the variance in intention to refer and the unique contribution of this belief approached statistical significance. Similarly, Green et al. (2008) found that GPs’ referral to mental health services was related to their perception of other GPs’ mental health referral behaviour. Indeed according to the model of similarity-attraction, members of the in-group trust and mirror each other’s actions (Tajfel, 1982). Healthcare professionals’ intention to refer was also predicted by family approval of the referral. Many participants described families ‘crying out’ for

psychology, while others describe ‘parental resistance’ to a referral. Research shows that patient interest in and approval of referral are important factors in healthcare professionals’ decision to refer to mental health services (Nandy, Chalmers-Watson, Gantley & Underwood, 2001). Encouragingly, this finding shows the growing role of patient involvement in decision making about mental health services (Stavrou et al., 2009). Future research would benefit from gaining knowledge about families’ evolving views on mental health and the usefulness of paediatric psychology throughout their medical journey, using a longitudinal methodology (e.g. the ALSPAC study, Fraser et al., 2012).

In relation to control beliefs, practical constraints including healthcare professional availability, cost, waiting lists and ‘long referral processes’ were cited within the qualitative data as control beliefs relating to referral. Some participants described ‘lack of financial resources’ for psychology, while others noted that it is difficult to ‘commit the time’ for joint meetings. These perceived barriers may limit integration of paediatric psychology through consultation and liaison within paediatric settings. However, none of these control beliefs were found to influence intention to refer, indicating that although there are perceived barriers over which healthcare professionals have variable control, these do not influence referral decisions. Similarly, Green et al., (2008) found that control beliefs did not appear to influence decision to refer to mental health services. We found perceived behavioural control was high, suggesting that healthcare professionals feel able to refer to psychology. This may be at odds with services in other countries, where due to insurance, patients have to initiate contact with psychology services following a referral (Kainz, 2002).

### **Limitations and Implications**

These results should be considered in light of several limitations. Firstly, since this is an exploratory study with no established effect sizes, it was not possible to perform *a priori*

power calculations for sample size. However the study sample size was sufficient to carry out linear regression analyses using several predictor variables (Tabachnick & Fidell, 2007).

The questionnaire was completed by 11% of eligible participants. This percentage is lower compared to response rates from email-based surveys (e.g. 36 percent; Sheehan, 2001) and may indicate some response bias. However this is also unsurprising, given that healthcare professionals have significantly lower questionnaire response rates than the general population, due to demanding work schedules and frequently being approached by researchers (Flanigan et al., 2008). Returned questionnaires had no missing data, suggesting a willingness to answer questions relating to referral behaviour.

Thirdly, for those beliefs which significantly predicted intention to refer, it is unknown whether the size of the effect is clinically significant. That is, whether changes in these beliefs would impact actual referral rates. Future research with an estimate of actual referral behaviour (rather than intention) may be able to better interpret the clinical relevance of the effect sizes, and therefore whether it would be worthwhile to intervene on these beliefs.

Furthermore, referral is just one means of integrating psychology into paediatric health settings. Hinton and Kirk (2016) suggest a reluctance to refer to or be referred to paediatric psychology on the part of both healthcare professionals and families, particularly in the case of medically unexplained symptoms. In a study by Furness et al., 2009, exploring hospital staff's perceptions of medically unexplained symptoms in children, it was illustrated that hospital staff regarded the referral process to psychology, or the transition between physical and psychological care as one of the most difficult stages of the treatment process. Future research should explore the process of and the effects of other avenues for incorporating psychology within the MDT, which would not necessarily require this perceived transition between physical and psychological care. These may include the effect of including psychologists in MDT meetings, joint-working of cases between physical

healthcare professionals and paediatric psychologists, and patient care delivered by non-mental healthcare professionals when psychological consultation is readily available via psychologists embedded in the MDT. For example, Griffin and Christie (2008) discuss the impact of explicitly connecting physical health and psychological wellbeing through overtly exploring the effects of physical health on emotional wellbeing with families and MDT members, and embedding psychology as a routine and natural part of the MDT. Connecting mind and body in this way can improve the treatment experiences of children and families and enhance physical and mental health outcomes (Griffin & Christie, 2008; Kazak, 2005). A collaborative approach which embeds psychology within the MDT from the beginning of the process, may also enable families to access specific psychological interventions more readily. Indeed, in a systematic review of the literature Reardon et al. (2017) found that families view supportive healthcare professionals as a facilitator to accessing mental health support for their child.

Finally, for practical reasons, the population used to develop the questionnaire were consultant doctors, whereas the population who filled in the questionnaire were any healthcare professional. It is unknown whether the beliefs differed between these populations. Future research should aim to elicit beliefs from a wide range of healthcare professionals. With these caveats in mind, some inferences can be made in relation to clinical intervention. Findings from the current study suggest that those healthcare professionals who value information-sharing and holistic care are more likely to intend to refer to paediatric psychology. Indeed, according to Mitchell et al. (2009, p. 7) successful ‘cognitive heterogeneity’ can increase integration of individuals from different healthcare professions, whereas misunderstanding between professions can lead to conflict between MDT members. There is unsurprising circularity in the finding that child health professionals with beliefs in holistic care and information-sharing are more likely to refer to psychology. However, this

finding highlights the significance of encouraging information sharing and holistic care, and the importance of policy which enables healthcare professionals to carry out these behaviours.

In a Cochrane review, Reeves, Perrier, Goldman, Freeth and Zwarenstein. (2013) found that inter-disciplinary education can increase information sharing between disciplines and integration of different healthcare professions. Research has demonstrated that healthcare professionals would welcome more input and teaching from psychologists, to increase biopsychosocial perspectives (Grenier, Chomienne, Gaboury, Ritchie, & Hogg, 2008; Douglas & Benson, 2015). Psychology led MDT workshops which focus on the biopsychosocial model of healthcare (Engel, 1977) may be useful in order to increase cognitive heterogeneity, information-sharing and thus referral to paediatric psychology.

Such workshops could include systemic models of discussion, which have been shown to increase information sharing within professional systems (Wynne, 1986). Douglas and Benson (2015) interviewed healthcare professionals about psychology led meetings within a paediatric setting. Participants reported that these meetings helped to maintain focus on holistic care and improved their likelihood of identifying psychological issues.

Furthermore, qualitative findings from the current study suggest that healthcare professionals' intention to refer is based on their beliefs about families' ideas and knowledge about psychology. Psychology led workshops could focus on different ways in which healthcare professionals could engage families to think about psychology referrals. Workshops could also focus on other beliefs identified within this study, such as stigma, depending on service context. Further research piloting such liaison, teaching and consultation projects would be beneficial in terms of evaluating usefulness and determining potential barriers and facilitators, for example, healthcare professional's time and availability. Lastly, although the healthcare professional is significant in the integration of physical and

mental health, a top down, public-policy led emphasis on the importance of psychological support for young people in paediatric settings is also necessary. Indeed, the importance of integration of physical and mental health services continues to move up the policy agenda (e.g. Murdoch & Kendall, 2016). Future policy should ensure sufficient resources are allocated to enable the provision of mental healthcare professionals in physical health settings which requires joint mental and physical health commissioning.

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