Neuropsychology: A Specialism or Fundamental Knowledge Base for Educational Psychologists? – A Case of Acquired Brain Injury

A Thesis Submitted to Cardiff University's School of Psychology in Partial Fulfilment of the Requirements for the Degree of Doctor of Educational Psychology

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Abstract

Education has been documented as the most influential system in the rehabilitation and recovery from Acquired Brain Injury (ABI) in childhood, providing an optimum environment to support rehabilitation goals (Bennett & Costello 2020). The Educational Psychologist (EP) has a unique set of skills and knowledge which well places them to work with ABI, supporting the return to education and providing support over time (Howe and Ball, 2013; Walker and Wicks, 2018). The existing research base exhibits a deficiency in effectively bridging neuropsychology and the role of the EP, particularly in the context of working with ABI and its implications for educational intervention (MacKay, 2005; Howe and Ball, 2013; Misheva, 2020).

Thus, following a pragmatic qualitative approach, this study sought to explore the perspectives of EPs specialising in ABI and neuropsychology. Specifically, the research aimed to uncover the factors EPs need to consider when working with ABI cases and training implications. Semi-structured interviews were conducted with six EPs within the UK. Employing a Reflexive Thematic Analysis (RTA) framework (Braun & Clarke, 2022), the interpretation of data resulted in the development of three overarching themes and seven subthemes. The analysis delineated systemic constraints and revealed unseen competence and lacking confidence among EPs, overshadowed by misconceptions and debates on positionality. EP training courses were underscored as a fundamental proponent for equipping EPs with the requisite knowledge, advocating for a core level of understanding in working with ABI cases. Subsequently, future research considerations are offered, and an acknowledgement of the study's strengths and limitations.

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List of Tables and Figures

List of Appendices

List of Abbreviations

ABI – Acquired Brain Injury

ADHD – Attention Deficit Hyperactivity Disorder

APA – American Psychiatric Association

APPG – All-Party Parliamentary Group

ASC – Autism Spectrum Condition

BEI – British Education Index

BPS – British Psychological Society

CBIT – Child Brain Injury Trust

CINAHL - Cumulated Index to Nursing and Allied Health Literature

CYP – Child or Young Person/ Children and Young People

DEdPsy – Doctorate in Educational Psychology

EP – Educational Psychologist/ Educational Psychology

EPNET – Educational Psychology Network

ERIC – Education Resources Information Centre

EThOS – E-Theses Online Service

HCPC – Health and Care Professions Council

IPA – Interpretative Phenomenological Analysis

LRQ – Literature Research Question

MDT – Multi-disciplinary Team

N-ABLES – National Acquired Brain Injury Learning and Education Syndicate

n-TBI – Non-Traumatic Brain Injury

NASEN – National Association of Special Educational Needs

NHS – National Health Service

NICE – National Institute for Health and Care Excellence

NRC&IM – National Research Council and *the Institute of Medicine*

OECD - Organisation for Economic Cooperation and Development

RQ – Research Question

RTA – Reflexive Thematic Analysis

SEN – Special Educational Needs

SENCo - Special Educational Needs Coordinator

SEND CoP - Special Educational Needs Code of Practice

SoPs – Standards of Proficiency

SP – School Psychologist/ School Psychology

TBI – Traumatic Brain Injury

UK – United Kingdom

UKABIF – United Kingdom Acquired Brain Injury Forum

US/ USA – United States of America

Thesis Summary

This thesis consists of three parts: a literature review, an empirical paper, and a critical appraisal, reflective account. It aims to explore the experiences and knowledge of Educational Psychologist's (EP's) who have developed specialist knowledge and expertise in working with Acquired Brain Injury (ABI) in Children and Young People (CYP). To investigate what these professionals consider important for EPs to reflect upon when working with ABI cases. Also, to address the rhetoric surrounding the inclusion of neuropsychology in EP training and practice.

Part One: Major Research Literature Review

Part One provides a narrative review of the literature. It provides the context of the research, introducing the concepts of ABI, and neuropsychology, and exploring the long-term sequelae associated with ABI. Myths and misconceptions are discussed followed by neuropsychology in schools, including educator knowledge, policy developments and best practice. Neuropsychological theory and the contribution of the EP when working with ABI are presented, outlining the influence of EP knowledge and perceived confidence. Conclusively, a rationale for the empirical study is provided, and Research Questions (RQs) are outlined.

Part Two: Major Research Empirical Study

Part Two presents an empirical research project. It presents a summary of the literature and provides the context and rationale for the research study. A detailed methodology is presented including the research design, paradigm, data collection procedures, and outlines pertinent ethical considerations. The analysis outlines the findings from a Reflexive Thematic Analysis (RTA) which are considered in relation to the existing literature and the RQs within the discussion section. The implications for EP practice and future research considerations are explored in addition to the relative strengths and limitations of the research study.

Part Three: Major Research Reflective Account

Part Three details a critical, reflective, and reflexive account of the research process, offering insight into the researcher's journey and development of the research practitioner. It defines the relative contributions of the research to the knowledge and understanding of ABI and applying neuropsychological principles to working with ABI in CYP. It also presents the research contribution to the literature and EP practice.

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Part One: Major Research Literature Review

Word Count: 10,684

1. Introduction

There is an overwhelming lack of awareness and understanding among education professionals about Acquired Brain Injury (ABI) and its impact on learning (United Kingdom Acquired Brain Injury Forum [UKABIF], 2018). Accordingly, the Educational Psychologist (EP) has been identified as a key stakeholder in the facilitation of support for Children and Young People (CYP) with ABI (Ball & Howe, 2013; Reilly & Fenton, 2013). EPs have the opportunity to bridge this provision inequity, and Misheva (2020) emphasises the added value and contribution EPs can make by facilitating the return to education, raising awareness, and upskilling the educational workforce. The current research landscape linking the EP role and ABI is limited (e.g., Brooks et al., 2003; Misheva, 2020). There is minimal research in the United States of America (USA) surrounding the role of the School Psychologist (SP) (Canto et al., 2014; Ball & Howe, 2013), and much of the research surrounding ABI is focused heavily on clinical rehabilitation followed by a return to school (Hammill et al., 2017; Bennett et al., 2022). However, in the majority of cases this research fails to include the EP role or profession. Misheva (2020) also highlighted an absence of empirical papers exploring how neuropsychology informs EPs day-to-day practice, MacKay (2005) being the most recent. If paediatric neuropsychology refers to "the study of brain-behaviour relationships within the context of the immature but rapidly developing brain and the implementation of the knowledge gained into clinical practice" (Anderson et al., 2017, p.12), Misheva (2020) argues that "it can arguably provide a useful conceptual framework for a range of presentations and conditions EPs work with" (p.24). Accordingly, a potentially valuable and informative domain of research is yet to be thoroughly explored regarding EP development and systemic change.

1.1. Structure of the Literature Review

The literature review adopts a narrative approach due to the limited but diverse nature of existing research on ABI and the EP role. A narrative review is based on individual interpretation and critique, to expand understanding (Green et al., 2006). Therefore, a narrative style is adopted to enable the flexible exploration of the current research into ABI and the EP role (Popay et al., 2006). Due to ABI being a multifaceted umbrella term where research has been generated from various academic and medical perspectives, this review focuses initially on the context of the research, introducing the concepts of neuropsychology and ABI, its relevance to EP practice, and the consequences of ABI. Next, prevalent myths and misconceptions are considered. Neuropsychology in schools is discussed, considering why ABI causes Special Educational Needs (SEN)/ ALN, educator knowledge, relevant policy, and best practices for EPs working with ABI. Afterwards, neuropsychological theory and the contribution of the EP for working with ABI in CYP are offered. Subsequently, EP knowledge and confidence when working with neuropsychological principles and ABI is reviewed, to conclude by outlining future considerations for research and the development of a rationale for the empirical research paper presented in Part 2.

This narrative review does not allow for, nor does it aim to provide, a thorough examination of the literature surrounding ABI. Rather, a broad, contextualising overview of ABI and its relevance to EPs.

1.2. The Literature Review Process

The narrative review process allowed for selecting specific search terms focusing on the literature Research Questions (LRQs) to develop an accurate scope of literature available on ABI and the educational implications.

The literature discussed within this review was obtained from the following databases for their coverage of social science, education, psychology, nursing, and neuropsychology disciplines: APA PsycInfo; ProQuest Dissertations and Theses Global (PQDGT); Scopus; Cumulated Index to Nursing and Allied Health Literature (CINAHL); ProQuest Education Collection; Education Resources Information Centre (ERIC); Education Database; British Education Index (BEI); Child Development and Adolescent Studies; PubMed; E-Theses Online Service (EThOS). Dissertations and doctoral theses were included to gain a comprehensive understanding of the current literature landscape due to the initial searches revealing limited literature surrounding ABI and the EP role. Supplementary material from the Overton database including unpublished research and government reports, alongside relevant books/ articles, were also included through snowballing and backward chaining methods to provide context within the grey literature and reduce publication bias (Wohlin, 2014). However, the researcher acknowledged that this information may not be as valid as peer-reviewed research in line with the widely recognised hierarchy of evidence pyramid (Hoffman et al., 2013).

The LRQ: what does the role of the EP look like when working with ABI? was broken down into individual concepts to create search terms for an initial systematic search across the mentioned databases. The search strategy included combining the subject mapping terms ‘brain injur* and ‘Neuropsychology’ with ‘Educational Psycholo*’. (See Appendix 1 for the in-depth search strategy). After the duplicates

were removed, the remaining papers were analysed for their systematic suitability (Appendix 2). due to the limited number of peer-reviewed papers, a systematic review was deemed inappropriate as there are not enough relevant published papers to synthesise and analyse. As a result, the LRQ was broadened to include all literature pertinent to neuropsychology, ABI and education, and school. This enabled a wider scope of neuropsychological principles and working with ABI in CYP. The keyword search terms were generated from the subject mapping terms from the prior search and were based on synonyms to gain a contextual view of the research landscape (See Table 1). This search strategy was used in each database between November 2022 and August 2023 (See Appendix 3).

Table 1. Table of search terms

Search Terms	
Subject mapping terms	**Key word search terms**
"Brain Injury" "Neuropsychology"	'Brain injur*', 'Neuro', 'Rehab*', 'Neurorehab*', 'Neuropsychology'
"Educational Psychology"	'Classroom*', 'Educat*', 'Pupil*', 'School*', 'Student*', 'Teacher*'

Note. The subject mapping terms were combined with AND, with key-word search terms combined with OR to narrow the number of results, increasing search specificity.

Key. (*) truncation character used to search for additional letters at the end of a word (e.g., educate or education).

1.3. Inclusion and Exclusion Criteria

ABI in the context of education and EP work is a relatively new field of research materialising in the early 2000s. Due to the narrative nature of the review, the literature was analysed on two levels (Title and Abstract screening followed by Full-text screening) for their relevance and the inclusion criteria were expansive (See Appendix 4).

2. Narrative Review: Context of the Research

2.1. What is Neuropsychology and ABI

In this section, the developing brain is introduced alongside key principles in neurodevelopment, namely peak periods of growth and sensitive periods. ABI and neuropsychology are presented followed by a summary of the consequences of ABI referencing severity and long-term sequelae.

2.1.1. The Developing Brain

Brain development is a lifelong process continuing beyond adolescence and beginning a few days after conception (National Research Council & Institute of Medicine [NRC&IM], 2000). The nervous system undergoes a period of rapid development during the first few years of life however processes that establish the structure and functioning of the brain continue well into adolescence (NRC&IM, 2000). Gogtay et al. (2004) demonstrate the mapping of grey matter in the brain over time and aid clarification that the human brain is not fully developed until an individual is in their mid-twenties (see Figure 1). The dual processes of neural differentiation and migration establish the functional role of neurons within the brain.

These processes represent an elaborate interplay between gene activity and the surrounding environments internally and externally (NRC&IM, 2000).

Brain development occurs in overlapping phases: firstly making the brain cells or neurons (neurogenesis), transporting the cells to where they need to be (migration), growth of the structures (axons and dendrites) needed for linking nerve cells (neuronal differentiation), the development of synapses also known as points of communication with other cells (synaptogenesis), refining these synapses through maturation and pruning (the brains removal of neurons and synapses no longer needed), and forming protective tissue (Myelin sheaths) surrounding the nerve cells which supports efficient communication of chemical and electrical signals in the brain (NRC&IM, 2000).

A newborn's brain contains around 100 billion cells which have only just begun developing connections that help to create an organised and integrated system (Ackerman, 1992). The maturation of neural networks in the brain is not rigidly predetermined; rather, they gradually evolve (NRC&IM, 2000). This process directly contrasts the prenatal period, during which cerebral development follows a sequential trajectory characterised by the growth and strengthening of connections, rendering it more susceptible to environmental influences (NRC&IM, 2000). An ABI postnatally has less impact on the structure of the brain yet might interfere with the ongoing elaboration and interconnections alongside functional systems within it (Anderson et al., 2001).

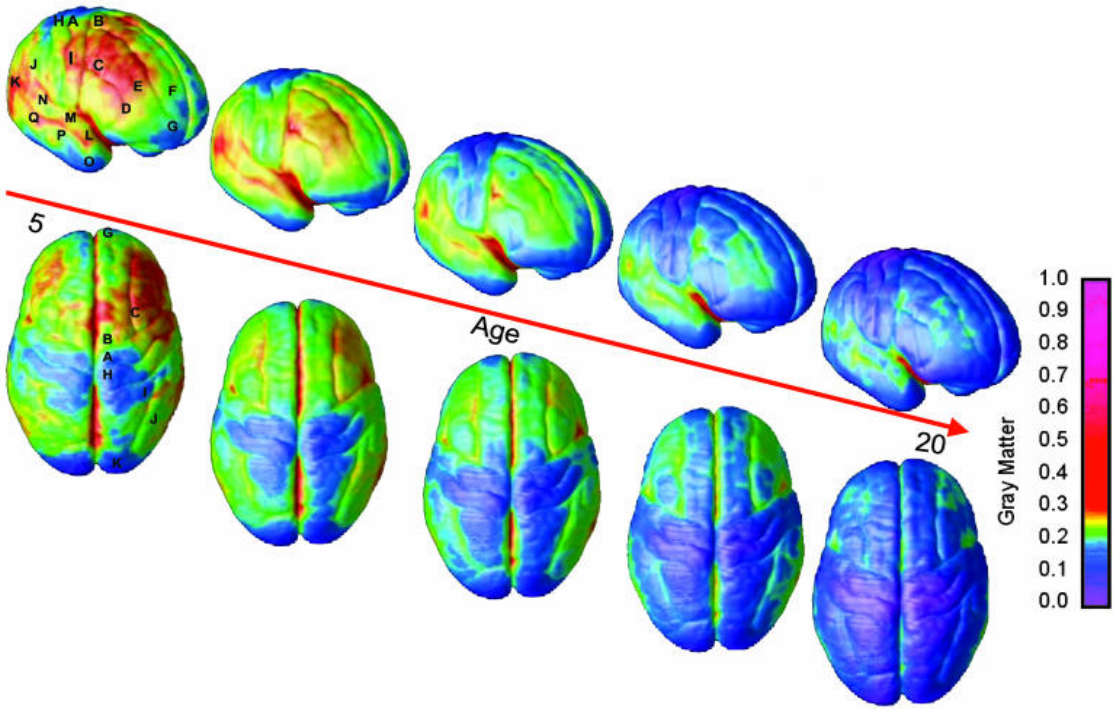


Figure 1. Right lateral and top views of the dynamic sequence of grey matter maturation. The National Academy of Sciences, 2004 – Gogtay et al. 2004.

2.1.1.1. Peak Periods of Growth.

Walker and Wicks (2018) highlight the ongoing development of the brain until the early adult years. Five peak periods of growth were identified (1-6, 7-10, 11-13, 14-17, 18-21). The brain's fastest rate of development is in infancy and early childhood, reaching 75% of its adult weight by approximately three years old and 90% by the age of six years old. However, the brain continues to grow and is not fully mature until early adulthood; some areas, in particular the pre-frontal cortex takes longer "to come on-line" (Walker and Wicks, 2018, p.10; Gotgay et al., 2004). No brain is exactly the same, and the developmental maturation of the brain depicts a uniquely human process, reflecting the complexity of developmental processes and mechanisms that evolve within the human brain (Walker and Wicks, 2018).

2.1.1.2. Sensitive Periods.

Experience-expectant learning processes have been identified to shape the development of cognitive processes (Gabard-Durnam & McLaughlin, 2020). Characterised by subtle changes in the brain's ability to be shaped by experiences, for these functions to develop, appropriate environmental input is required during a particular stage of development known as sensitive periods (Knuden, 2004; Zeanah et al., 2011). Gabard-Durnam and McLaughlin (2020) describe sensitive periods as "developmental windows of experience-expectant learning mechanisms" (p.121). They argue that sensitive periods reflect when the brain is equipped to neurobiologically encode particular environmental experiences. Characterised by increased plasticity in response to these experiences, this produces rapid and substantial changes to brain function (Gabard-Durnam & McLaughlin, 2020). Factors that actively repress plasticity (i.e., perineuronal nets and myelination) have been found to consolidate sensitive periods which protect the experience-modified circuitry and produce ensuring effects on brain function and behaviour by stabilising and protecting the experience driven circuitry from future adversity (Takesian & Hensch, 2013; Hensch, 2018; Nelson & Gabard-Durnam, 2020). Appropriate input tends to be readily available within a young person's environment during these periods however, Blakemore and Frith (2005) identify that interaction with other human beings is particularly important for infants, including the use of language and communication.

2.1.2. Neuropsychology

Neuropsychology is defined as the discipline and scientific study concerned with the brain-behaviour relationship (Baron, 2010). Anderson et al. (2001) offer the distinction to child neuropsychology depicting these brain-behaviour relationships

"within the dynamic context of the developing brain" (p.3). This is not to be confused with neuroscience, the study of the function and structure of the brain and nervous system (Szűcs & Goswami, 2007). Neuroscience is an academic discipline which offers theoretical foundations to other disciplines, including neuropsychology (Misheva, 2020). Furthermore, it is important to highlight the sub-disciplines of neuroscience that overlap but are particularly distinct from neuropsychology, namely developmental neuroscience (the emergence and changes which occur in the brain and nervous system across development) and developmental cognitive neuroscience (how neurological processes affect the development of cognition over time) (Bear et al., 2007). Nevertheless, developmental cognitive neuroscience offers a theoretical basis for neuropsychology, particularly highlighting the role of developmental change in a child or young person's development (Johnson & De Haan, 2015).

2.1.3. ABI

ABI is an umbrella term describing an injury to the brain occurring after birth and a period of normal development (Headway, 2018). An ABI can either be traumatic or non-traumatic by description (Goldman et al., 2022). Traumatic Brain Injuries (TBI) are those caused by trauma or an external force that damages the brain e.g., a fall or assault. Non-Traumatic Brain Injuries (n-TBI), on the other hand, may result from medical conditions such as encephalitis, stroke, brain tumour, and lack of oxygen (Goldman et al., 2022). The UKABIF (2018) asserts that ABI is a leading cause of disability and mortality in the UK. In congruence, Maas et al. (2022), representing the Lancet Neurology Commission, underscore TBI as a global public health problem and a leading cause of death and disability worldwide. The specific

prevalence of ABI, however, particularly in CYP, is difficult to quantify due to data collection discrepancies and inadequate reporting (Headway, 2018). Nonetheless, insights offered by The National Institute for Health and Care Excellence (NICE, 2014) specify that between 33-50% of documented ABI cases pertain to CYP under 15 years old.

Moreover, many individuals with ABI often experience misdiagnosis or lack thereof, compounded by the fact that most of the extant research is based on TBI cases observed from individuals presenting to emergency services or hospitals (National Health Service [NHS] Scotland, 2018). Consequently, most figures likely underestimate the overall prevalence of ABI, as such the incidence of ABI is likely higher than reported values (NHS Scotland, 2018).

Nevertheless, Headway (2023) compiled data on ABI-related hospital admissions in the UK, encompassing all age demographics. Data from 2019-2020 highlighted 356,699 ABI related hospital admissions or 534 admissions per 100,000 people. Since 2005, this accounts for a 12% increase in admissions. The data also highlights that there remains one admission to the hospital for a brain injury every 90 seconds, or 977 ABI admissions per day, and a head injury every three minutes (Headway, 2023). Alarmingly head injuries among females have continued to rise with a documented 28% increase in hospital admissions since 2005 (Headway, 2023). Additionally, UK-based studies have identified that the prevalence of TBI in the general population is significantly higher than neurodevelopmental conditions such as Autism Spectrum Condition (ASC) and Attention Deficit Hyperactivity Disorder (ADHD) at 24-31.6% versus 0.6-1.2% and 1.7-9% respectively (McKinley et al., 2008; McGuire et al., 1998).

2.1.3.1. Consequences of ABI.

CYP affected by ABI can present with a mixed set of difficulties, as each case is unique and inherently different (The National Association for Special Educational Needs [NASEN] and The Child Brain Injury Trust [CBIT], 2018). UKABIF (2018) asserts that ABI can have a multitude of neuropsychological influences across the four areas of need (Cognition and Learning, Communication and Interaction, Social, Emotional and Mental Health, Sensory and Physical) outlined in the Special Educational Needs Code of Practice (SEND CoP) (Department for Education, 2015).

These influences can include but are not limited to memory (e.g., Fletcher, 2006; Ahmed et al., 2017; Garcia, 2022), information Processing (e.g., Walker et al., 2009; Nasen & CBIT, 2018), attention (e.g., Catroppa et al., 2015; Brunkhorst-Kanaan et al., 2021; Asarnow et al., 2021) executive functioning (e.g., Salas, 2013; Keenan et al., 2021; Rempe et al., 2023), language (e.g., Haarbauer-Krupa et al., 2019; Buckeridge et al., 2020; Alighieri et al., 2021), behavioural changes (e.g., Li & Liu, 2013; Wilde et al., 2015; Dollman et al., 2017), emotional difficulties (e.g., Max et al., 2013; Nelson et al., 2019; Keenan et al., 2021), social functioning (e.g., Jantz & Coulter, 2007; Yeates et al., 2013; Ryan et al., 2016), fatigue (e.g., Wilkinson et al., 2018; Ezekiel et al., 2021; Hypher, 2023), sensory and perception (e.g., Anderson et al., 2012; Jonsson et al., 2013; Walker & Wicks, 2018), and sleep disturbances (e.g., Jantz et al., 2015; Theadom et al., 2015; Ymer et al., 2021) (See Appendix 5 for further details)

Research has also consistently identified that ABI affects the entire family system (Davies, 2020). Jantz et al. (2015) assert that “family homeostasis can be altered overnight” (p.218) and Renton (2023) conveyed that families report changes in familial relationships, psychological distress, social isolation, and enduring burden

attributed to feelings of grief and ambiguous loss. These changes can be explained via the Dual-Process Model of Grief (Schut, 1999) emphasising an oscillation between feelings of loss and rebuilding life after loss (See Appendix 5, Family Implications for more information about this model).

All of these areas can influence a young person's educational attainment and progress (Ewing-Cobbs and Bloom 2004; Mealings et al., 2021) with impaired attention, concentration, information processing, and memory consistently cited as the most common initial and persistent difficulties post-ABI (Wilde et al., 2015) (See Appendix 5 for further research and discussion of the long-term implications).

Moreover, there is a well-documented relationship between the severity of injury (including nature and type), with the severity and range of symptoms experienced post-injury (Semrud-clikeman, 2010; Wilde et al., 2015). This relationship is mediated by factors including pre-injury functioning, location of the injury, as well as post-injury support factors, such as familial and social support (Jim and Cole 2019; Anderson et al., 2021).

Development proceeds concurrently with rehabilitation, meaning that the effects might only become noticeable as the child or young person progresses through developmental stages. Consequently, there's a risk that essential skills which should naturally develop e.g., abstract thinking as a 15–17-year-old, may fail to do so (Wright, 2014). Thus, highlighting the differences between ABI in a CYP versus in an adult, as childhood ABI is considered within the context of developmental trajectories and the developing brain (Misheva, 2021).

Additionally, due to the vastly invisible nature of difficulties experienced post-ABI, barriers to education and learning have been readily identified in research over the past 20 years (e.g., James & Reynolds, 1994; Hibbard et al., 2006; O'Brien,

2020). This finding highlights the vitality of having professional involvement over time to support CYP in meeting their changing needs within the educational context (Misheva, 2021). Hence, linking to the potential value of EP input, working in partnership with key stakeholders to best support the CYPs changing needs, and utilising EP knowledge of psychological perspectives on child development, developmental trajectories, and education systems (British Psychological Society [BPS], 2023).

Furthermore, the topic of age and the impact of injury on the developing brain should be considered (Walker and Wicks, 2018). Researchers have explored the Kennard Principle, the view that the immature brain of a child should be more able to recover from an ABI than the more developed adult brain due to an increase in plasticity (Bennet et al., 2013). This phenomenon is explored further in the next section discussing some of the myths and misconceptions associated with ABI, and the EP's role in debunking these.

2.2. Myths and Misconceptions

In this section, the credibility of brain-based research, the Kennard Principle, and what ABI is not (misdiagnoses and misidentification) are discussed before exploring the misconceptions among professionals and outlining the EP role in debunking these.

2.2.1. Historical Awareness

The awareness and application of brain research to education was introduced by The Organisation for Economic Co-operation and Development (OECD) in 1999 by the Learning Sciences and Brain Research Project which aimed to improve understanding of cognitive neuroscience and its implications for learning and

education (OECD, nd). This introduction encouraged debate with applications to education and psychology (Dekker et al., 2012). On one side of the debate, Blakemore and Bunge (2012) argued for the fundamental importance of neuroscience in education, linking brain processes to learning and how neuroscience can enhance teaching and learning. The researchers assert that the brain is implicated in all aspects of learning and that its plasticity in response to newly acquired information cannot be ignored (Blakemore & Bunge, 2012). The other side of the debate expresses scepticism about applying neuroscience to education raising concerns about the insufficient attention to psychology and relevant theoretical concepts (see OECD, 2002; Bruer, 2006).

Torrijos-Muelas et al. (2021) document the persistence of neuromyths in education via systematic review confirming findings from the OECD (2002) and highlighting them as misconceptions generated by a misunderstanding of scientifically established facts. Howard-Jones (2014) examined factors that help myths persist and concluded that cultural condition (i.e., terminology and language) protection contributes to the gap between neuroscience and education. Also, that many neuromyths are based on distorted interpretations of otherwise scientific facts (Howard-Jones, 2014; Tokuhama-Espinosa, 2018). These myths are memorable and are appealing to the general public, educators, and other professionals alike which perpetuate the prevalence of these myths in society today (Misheva, 2021).

2.2.2. Brain-Based Research

Racine et al. (2005) introduced the term *neurorealism* to describe the way that individuals will attribute research accompanied by a brain image to be more scientifically credible. The uncritical assumption is made due to the presumed visual

proof of brain activity seen in such imagery (McGabe & Castel, 2008; Dekker et al., 2012; Popescu et al., 2016). However, it is easy to draw on incorrect or overly simplified conclusions about the brain and its function based on misinterpreted research, which is often showcased in the media (Misheva, 2020). The objectivity bias discussed here and the vague nature of scientific reporting feed into misconceptions about otherwise abstract brain functioning which can have a detrimental effect on CYP with ABI due to the prediction of long-term need, functioning, and support needs.

The increase in preference for evidence-based strategies has increased since the 1999 OCED project however, it appears that the research claiming to be brain-based has been falsely assumed to be evidence-based and has commercialised brain training approaches to enhance learning (Misheva, 2020). Therefore, educators may be more susceptible to accepting neuromyths and misconceptions as legitimate and credible because of their relation to the brain and neural networks (Bruer, 2006).

2.2.3. Kennard Principle and the Three-Year Myth

While the severity of injury has been linked with long-term outcomes, the timing of the brain injury has also become of significant interest and debate as a prognostic factor over the past 20 years (Anderson et al., 2005; Jim & Cole, 2020). Coined in the 1970s, the Kennard Principle is the view that neural plasticity is greatest in younger individuals therefore, younger brains are more likely to recover faster in the event of an ABI which leads to better long-term outcomes (Bennett et al., 2013). The principle persists today and continues to influence research despite research at the time challenging this notion (e.g., Murphy & Stewart, 1974; Kolb et

al., 1989; Elliott, 2020). Recent research continues to dispute the Kennard principle (e.g., Anderson et al., 2005, 2009; Fullerton et al., 2019), highlighting the strong interactional nature between the severity of the injury and the age at which the injury has occurred (Bennett et al., 2013). Furthermore, Anderson et al. (2014) highlighted an association between an ABI before the age of three years old and poorer outcomes across a range of cognitive and functional domains. Thus, it would be reasonable to assume the impact of an ABI before the age of three would have a substantial impact on a young person's development and specialisation of cortical networks, which in turn would influence the development of cognitive skills (Ashworth, 2013).

Despite these research developments, practitioners still appear to expect superior recovery in children over adults. For example, Duff and Stuck (2012) in a US national survey highlighted the prevalence of the Kennard Principle among speech and language professionals, a concerning notion when they are key professionals involved in ABI rehabilitation and can perpetuate false narratives. This finding raises probable concern regarding the prevalence of this myth among other professionals working with ABI, EPs being one of them. Nevertheless, Brooks et al. (2009) asked EPs to estimate the need for additional educational support in fictitious but clinically based case studies of ABI in CYP, differing only in reported age at the time of injury. The researchers concluded that EPs consistently reported the need for more support required for younger children and for a longer period which directly contrasts previous views of medical practitioners in favour of the Kennard Principle (i.e., Webb et al., 1996).

The Kennard Principle closely links with the three-year myth stipulating that all important brain development occurs before the age of three and that after this there

is a slow decline (Morgan, 2013). The myth began circulation in the USA in the late 90s through political interest, influencing the early years education curriculum and quickly becoming implemented in the United Kingdom's (UK) Early Learning Goals in 1999 (Blakemore & Frith, 2005). The proposition encouraged the achievement of optimal learning through the use of *hothousing* or intense study (Morgan, 2013). However, it is important to consider that most of the research behind this was grounded in three main findings in developmental neurobiology occurring from birth to three years old based almost solely on animal research: (1) in infancy there are dramatic increases in the number of connections between neurons, (2) there are critical periods when experience shapes the development of the brain, (3) enriched environments cause more connections to form (Morgan, 2013).

The notion of cognitive reserve has also been highlighted as adversely impacted by an ABI occurring at an earlier age (Dennis et al., 2007). Cognitive reserve explains the complex moderating variable whereby the same level of injury displays differing levels of impairment (Nunes & Nunes, 2021). Stern (2009) conceptualised the term as "the ability of the brain to cope with damage or insult by using pre-existing cognitive processes or compensatory mechanisms" (p.33). Hence, the younger an individual is at the age of injury thereby reduces cognitive reserve by preventing the acquisition of efficient cognitive strategies which may have otherwise been recruited to maintain function after an ABI (Dennis et al., 2007). Nevertheless, for young people who have acquired a brain injury through drowning, research has not found a significant contribution of age to the outcome (Quan et al., 2016). Conversely, Donders and Kim (2019) discovered that cognitive reserve had a moderating and somewhat protective effect on cognitive assessment scores

although, the severity of injury was predictive of lower visual-spatial abilities and processing speed.

2.2.4. What ABI is Not – Misidentification

Misidentification of ABI as another condition or disability is a common occurrence and can contribute to incomplete or inappropriate assessment and support services as a result (Ettell et al., 2016). Accordingly, the presentation and misidentification of ASC in ABI will be discussed. For the purpose of this discussion it is important to differentiate between some key terms. A neurological condition or disorder affects the central and peripheral nervous system which includes the brain, spinal cord and/or nerves throughout the body e.g., Parkinson's, Huntington's, or Epilepsy (World Health Organisation, 2016). A neurodevelopmental condition is known as a type of neurological condition, presumed to be present from birth or in the early developmental period which affects brain development and can cause impairments of functioning e.g., ASC, ADHD (Thapar et al., 2017). An ABI refers to an injury to the brain occurring after birth and a normal period of development (Headway, 2018). An ABI can however lead to neurological problems and physical damage to the nervous system (Walker & Wicks, 2018). Similarly, a neurological condition can cause an ABI for example due to lack of oxygen, stroke or progressive degenerative diseases (Jim et al., 2023). Nevertheless, neurodevelopmental conditions are not considered to cause an ABI, although individuals can be considered to have secondary or acquired ASC post-ABI (discussed below).

The rehabilitation process for an individual with ABI is often described as dynamic and requiring frequent monitoring over time and adjustment of support as appropriate to the individual's changing needs (Walker & Wicks, 2018). Some

sequelae following ABI are unlikely to appear until later on in the CYPs developmental timeline (McKinlay et al., 2016). Hence, underlying needs may go unaddressed due to misidentification or a lack of awareness of the sequelae of ABI in the developing brain (McKinlay et al., 2016). Therefore, although the under-identification of ABI has its downfalls, the misidentification does too (Ettell et al., 2016).

ABI is distinct from neurodevelopmental conditions such as ASC and ADHD (Jim et al., 2023). The current definition of ASC states that characteristics including aspects of social communication and restricted, repetitive behaviours must be present early in development (American Psychiatric Association [APA], 2021). The unique experience of an ABI directly contrasts with the neurodevelopmental profile of ASC (Jim et al., 2023). For instance, although CYP with ABI have a greater risk of social communication difficulties, these present post-injury (Greene et al., 2022). Singh et al. (2016) however, elucidated shared mechanisms between ABI and ASC based on pathophysiological changes in the brain (the change of physiological processes associated with disease or injury). The researcher acknowledged the changing nature of ABI yet concluded that interventions applicable to those with ASC may also benefit CYP with ABI e.g., Pivotal Response Therapy and Applied Behaviour Analysis for social functioning (Singh et al., 2016).

Jim et al. (2023) assert the importance of accurate developmental history taking for considering a possible diagnostic pathway toward ASC for CYP with ABI. Individuals with an ABI could be labelled as having secondary or acquired ASC due to drawn similarities between the conditions e.g., executive functioning and behavioural changes, which could enable them access to support readily available for those with ASC (Robinson et al., 2018). Nevertheless, due to the complex and

heterogeneous nature of ABI, the possibility of attributing secondary or acquired ASC can give rise to a misinterpretation of a CYP's needs and oversimplifying the complexity of an ABI (Jim et al., 2023). Jim et al. (2023), also report the lack of research pertaining to ASC within ABI and offer the consideration that injury location may be a more useful predictor of need. For example, injuries occurring within the frontal lobe have been evidenced to effect social communication skills, understanding, and executive functioning (Rosema et al., 2012).

Furthermore, the unpredictable nature of ABI highlights the value of identity development throughout neurorehabilitation following ABI (Jim et al., 2023). Identity development within the context of neurodevelopmental conditions such as ASC is likely to be a gradual process of acceptance and adjustment (Mesa & Hamilton, 2021). Whereas, with ABI this is often associated with a sudden or traumatic change therefore, the consideration of identity challenges will need to be co-constructed with the CYP and key adults supporting their unique situation (Segal, 2010; Glintborg, 2015). Jim et al. (2023) taking a holistic stance on formulation, presented three case studies of young people and their families whereby the consideration of ASC held life-long implications. The researchers stated, "We have learnt that an ASD diagnosis in the context of ABI has powerful consequences and is never straightforward" (Jim et al., 2023, p.267). The researchers highlighted the complex nature of ASC within ABI and suggested that each individual's unique circumstances must be kept in mind and psychoeducation for school staff was noted as key for dismantling the narrative of ASC associated with ABI presentation (Jim et al., 2023). Correspondingly, based within an ABI framework (Jim & Liddiard, 2019; Watson & Gracey, 2020), psychoeducation was noted to promote empathy, and understanding and assist with bespoke planning with school staff (Jim et al., 2023).

2.2.5. Misconceptions

Research has consistently identified that misconceptions about ABI are prevalent worldwide, not only within the public (Gouvier et al., 1988; Guilmette et al., 2004; Hux et al., 2006; Chapman & Hudson, 2010; Pappadis, 2011; Schellinger et al., 2018), but also among individuals themselves with an ABI (Pappadias et al., 2017) and family members (Springer et al., 1997) concerning the long-term recovery process. Misconceptions have also been evidenced among healthcare and rehabilitation professionals (Farmer and Johnson-Gerard, 1997; Swift & Wilson, 2001) including nurses (Ernst et al., 2009; Gurusamy et al., 2019) and Speech and Language Pathologists in the USA (Hux et al., 1996; Evans et al., 2009; Yuhasz, 2013) and Bradford (2015) claims that delivery of inaccurate information may be the reason for these misconceptions.

However, within education, misconceptions are commonly reported among educators in the USA (Ernst et al., 2016; Ettel et al., 2016; Kahn et al., 2018), Australia (McKinlay & Buck, 2019[1]), New Zealand (Case et al., 2017; McKinlay & Buck, 2019[2]), and the UK (Linden et al., 2013). Linden et al. (2013) systematically reported in a cross-sectional postal survey that, although teachers possess relatively general accurate information, misconceptions persist, especially regarding recovery and ongoing sequelae. Furthermore, misconceptions have been noted among school professionals (Walker & Wicks, 2018; Olabarrieta-Landa et al., 2023) including those training to be SEN professionals (Hux et al., 2013), and special educators (Howe & Ball, 2017; Chleboun et al., 2021).

Unfortunately, the education system continues to under-identify and support students with ABI (Glang et al., 2008; Hartman et al**.,** 2015[1]). Mischeva (2021) notes that this may be due to educational professionals' ability to digest neuroscientific

information and neuropsychological research in a meaningful way. Thus, demonstrating a gap in the accessibility of information and offering a plausible explanation for educators' reliance on secondary sources which may contain myths and misconceptions (Grospietsch & Mayer, 2019; Lethaby & Harries, 2016). However, MacDonnald et al. (2017) highlighted that despite training in neuroscience, many misconceptions persist among educators, the public, and those with neuroscientific exposure. Therefore, although increasing exposure to peer-reviewed research and discussion around misconceptions could further challenge these misconceptions this does not eliminate one's beliefs in these myths and misconceptions (MacDonnald et al., 2017).

2.2.5.1 The Educational Psychologist's Role.

It can be argued that EPs and the EP profession have a vital role in promoting ABI literate practitioners and dispelling misconceptions among the professionals they work with (Misheva, 2021). SPs in the USA have been identified as essential for identifying individuals who need additional support and play a role in the intervention for individuals affected by brain injury (Hooper, 2006; Glang et al., 2017). However, Hooper (2006) gathered Likert-scale survey data from 304 SPs finding that although SPs performed significantly better than the lay public on some measures, the rates of misconception were still high related to recovery (M = 40.8%) and injury mechanism (M = 37%). The number of years in practice and previous training had little effect on these findings. Nevertheless, 83.4% of participants endorsed a need for more professional development regarding ABI (Hooper, 2006).

Similarly, Glang et al. (2017) assessed 232 SPs knowledge and perception of competency related to working with TBI via an online quantitative survey. The average knowledge score was 62.7% and less than 60% of respondents rated

themselves as qualified to differentiate between students with TBI and other SEN or offer appropriate school-based interventions (Glang et al., 2017). However, SPs with more experience working with TBI cases rated their perceived ability higher which positively correlated with TBI knowledge. Nevertheless, the researchers concluded that effective training for SPs is needed for working with CYP with ABI (Glang et al., 2017).

EPs are evidentially not immune to believing in misconceptions and myths. Mischeva (2021) claims that it is therefore important for EPs to "examine their own beliefs and pre-conceptions about brain-based research, concepts and popular myths in order to be able to identify and challenge the misconceptions educators may have" (p.23). Despite misconceptions held within the profession, EPs with the right information and training can have a profound impact on the knowledge and level of misconceptions among others in the systems supporting young people (Carroll, 2011).

Furthermore, with the knowledge of child development and the developing brain, the EP is arguably a well-placed professional to be involved in dispelling misconceptions among other professionals and within schools (Misheva, 2021). Nevertheless, the EP must have up-to-date knowledge and awareness of the long-term impact of an ABI on CYP in the context of the developing brain to do this effectively.

2.3. Neuropsychology in schools: Supporting ABI

“When ABI is not recognised or is misunderstood, research shows that children are more likely to be excluded, disengaged, and underachieve” (The National Acquired Brain Injury in Learning and Education Syndicate [N-ABLES], 2020).

2.3.1. Why ABI Provokes SEN

Education is one of the most influential systems in the recovery and rehabilitation of brain injury as CYP spend a significant proportion of their lives in school (Slomine & Locascio, 2009; NASEN & CBIT, 2018). When returning to school, Renton (2023) claims that a CYP with an ABI is likely to be classified as having SEN as they often require educational provision additional to what is commonly provided. Walker and Wicks (2018) purport that the complexity of ABI results in “unusual profiles of learning skills” (p.26). Hence, although they may share similar characteristics with other CYP with learning difficulties, the differences are important to acknowledge as differing support strategies are often required (Walker & Wicks, 2018). See Walker and Wicks (2018) for a detailed explanation of why CYP experience differing SEN, including the maintenance of a pre-injury self-concept (Caplan et al., 2016; Roddy et al., 2020), discrepancies in ability levels (Bennett et al., 2023), and differences in learning acquisition as a result of ABI (CBIT, 2021).

2.3.2. Educator Knowledge

Howe and Ball (2017) argue that it is crucial for Special Educational Needs Coordinators (SENCos) working with CYP to be aware of the effects of a brain injury. Additionally, according to the 2018 All-Party Parliamentary Group (APPG) on ABI’s Time for Change report, all educational professionals should have a "minimum level of awareness and understanding about acquired brain injury and the educational requirements of children and young people with this condition" (UK Acquired Brain Injury Forum, 2018, p.7), as schools become the default rehabilitation environmentfor children after ABI (Bate et al., 2021). Despite the APPG report in

2018, how to support a child with a brain injury is not covered during teacher training or training for SEN and learning support roles (McKinlay et al., 2016).

Unfortunately, many educators fail to associate a CYP's ability with the disruption of underlying brain functions that affect learning potential due to the inherently hidden nature of difficulties attributed to ABI (Walker & Wicks, 2018; Vanderlind et al., 2022). Stevens et al. (2021) claim that educator knowledge can influence a CYPs academic and social success. The researcher documented teachers' and families' feelings of being unprepared to support CYP with ABI, particularly around school reintegration (Stevens et al., 2021). Educator knowledge and understanding have been repeatedly documented as an area of concern within the literature (e.g., Glang et al., 2008; Linden et al., 2013; Ettel et al., 2016; Kahn et al., 2018; Bate et al., 2021; Anderson et al., 2021; McCart et al., 2023) and Gracey et al. (2015) claim that subtle but highly significant difficulties may be more difficult to identify and understand for educators.

Hence, a lack of necessary training and knowledge needed among educators for adequate monitoring and long-term support for CYP with ABI has been raised (Bennett & Costello, 2020; Anderson et al., 2021; McCart et al., 2023), specifically the changing nature of ABI throughout development (Ball & Howe 2013; Hartman et al., 2015[1]; Wright, 2021). The lack of adequate training has also been highlighted as a contributing factor to the under-identification of children with ABI cross-culturally (e.g., Schutz et al., 2010; Ettel et al., 2016) confirming that this is not just a UK-wide issue.

Accordingly, N-ABLES (a group of psychologists who aim to increase awareness and understanding of ABI in education whilst creating ABI-focused research opportunities) has worked alongside educational professionals and

government officials to produce a collection of resources to assist educational professionals to identify, understand and support CYP with ABI in their classrooms, and address some of the challenges identified within the research (N-ABLES, 2021). McCart et al. (2023) offered that improving educator training could positively affect the relationship between home and school therefore, it is hoped that up-skilling educators will help to mitigate parental frustration in this respect.

2.3.3. Relevant Policy

An APPG on ABI was formed in 2017 to raise awareness of and seek improvements for people affected by ABI in the UK. The group aims to raise ABI-related issues across settings, give voice to those affected, and improve governmental support. Therefore, the APPG published the Time for Change Report (2018) which focused on the importance of ABI rehabilitation highlighting the undeniable value of the school setting (UKABIF, 2018).

The UKABIF (2018) reflected on ABI parliamentary discussion and governmental change since the Health Select Committee published the report *Head Injury: Rehabilitation* in 2001. The report contained over 20 recommendations, and over the last 17 years, one of the recommendations regarding neurorehabilitation has achieved substantiative implementation. There has been progress in two areas (acute assessment and allocation of responsibility for planning rehabilitation). Unfortunately, no progress has been made on the formation of a policy for long-term rehabilitation, NICE guidelines, or a national service framework, reported by the UKABIF (2018) as an unsatisfactory solution. The national guidelines from the NHS England, the Department of Health, and NICE have however made recommendations for improving the quality of care for those with ABI, yet without

service provision change these documents were labelled “redundant” (UKABIF, 2018, p.19).

Furthermore, ABI is also not included within the SEND CoP (Department for Education, 2015; N-ABLES, 2020) nor is it addressed in teacher training programmes (Bennett & Costello, 2020). Therefore, many educators may lack knowledge about ABI (see Section 2.3.2), and schools have been found to regularly experience a lack of preparedness and understanding (Linden et al., 2013; Ettel et al., 2016). The Time for Change report advocated for ABI to be included in the SEND CoP, and a House of Commons research briefing debate in February 2020 outlined for SEN provision to encompass the needs of CYP with ABI but this is yet to see any movement (Balogun et al., 2020). Consequently, Zirkel (2019) claims that legal recognition of the needs of CYP with ABI has been incomplete, especially compared to the breadth of professional literature documenting the ABI sequelae. The House of Commons research briefing debate also discussed Section s100 of the Children and Families Act (2014) (the duty to support pupils with medical conditions) and how Individual Healthcare Plans can be drawn up to support the needs of CYP with ABI. They also discussed Part 6 of the Equality Act (2010) reporting that schools must provide reasonable adjustments for disabled pupils, relating to supporting CYP with ABI (Balogun et al., 2020).

Bennett and Costello (2020) assert that where ABI is not identified or is misinterpreted, CYP are at increased risk of exclusion, disengagement, and failure to meet their potential. Chapter 1, Section 6 of the Equality Act (2010) states that an individual is disabled if they experience a "physical or mental impairment, and the impairment has a substantial and long-term adverse effect on their ability to do or carry out normal day to day activities" (p.16). Under this legislation, ABI should be

treated as a protected characteristic however, ABI is often deemed an *invisible disability* therefore it may be more difficult for those with mild brain injuries to prove this classification and receive appropriate support as advocated for in the February 2020 parliamentary debate (Balogun et al., 2020).

In December 2021, the UK government committed to the publication of an ABI strategy with the Department of Health and Social Care leading cross-government work to develop such strategy (UKABIF, 2023). From March to June 2022, a call for evidence was placed to inform the strategy development, constituting a request for ideas to build on (Department of Health and Social Care, 2022). The strategy was due to be finalised in summer 2023. The political rhetoric is slowly progressing, and it is hoped the development of an ABI strategy will help to improve awareness, knowledge and quality of practice with CYP affected by ABI.

2.3.4. Best Practice and the Return to Education

The transition back into school following ABI in CYP is complex (Hartman et al., 2015[2]) and CYP with ABI can have educational needs that are different from other CYP with additional needs (See 2.3.1) (Walker & Wicks, 2018). It is important to note that CYP with ABI often require unique and specific intervention programmes (Walker & Wicks, 2018). Therefore, early detection of and intervention related to the long-term sequelae of ABI are suggested to have significant advantages considering the impact on society (Renton, 2023). Accordingly, considering best practices and evidence-based recommendations is important in rehabilitation from an ABI in CYP, in particular the return to education.

Haarbauer-Krupa et al. (2017) assert that clinical-based services often end when a CYP has been medically discharged from the hospital. However, the CYP

may continue to experience and participate in long-term rehabilitation throughout their ongoing development (Hawley, 2004; Renton, 2023). Vanderlind et al. (2022) discovered via a narrative review of the literature on neuropsychology, psychiatry, and academic functioning that youth with ABI had consistently poorer academic outcomes and a higher level of educational support upon school re-entry. Nevertheless, the researcher found that ABI in CYP remains under-identified in school settings (Vanderlind et al., 2022).

The return to school has been identified as key for community re-integration and school support is said to facilitate and ensure a successful transition back into learning (Jimenez et al., 2023). Considering this, Bennett and Costello (2020) offer that school is arguably the primary source of rehabilitation following ABI in CYP and provides an optimum environment to support rehabilitation goals. By reviewing CYPs goals in community-based rehabilitation, the researchers demonstrated reintegration and a sense of belonging in school as a primary focus for education staff to consider (McCarron et al., 2019).

Evidence-based interventions and support are crucial to highlight best practice (Clasby et al., 2018). Best practices arising from the literature include student tracking (Ball & Howe, 2013) for at least the first two years post ABI, a supportive school environment (Stevens et al., 2021), educator training (Ball & Howe 2013; Dodd et al., 2019), and effective communication and coordination between hospital, home, and school (Hawley et al., 2004; Doherty & McClusker, 2005; Ball & Howe 2013; Hartman et al., 2015; Dodd et al., 2019; Wright, 2021; N-ABLES, 2021; McCart et al., 2023). Cross-culturally, interventions such as the *Teach ABI* module in Canada have proved useful for systemic awareness and support within schools (Saly, 2021). Furthermore, return to school models implemented in the USA and

Canada (Guttormsen, 2014; Anderson et al., 2021) based on relevant literature have found an increase in awareness and expertise through staff training and interdisciplinary collaboration (Guttormsen, 2014).

Utley et al. (2019) assert that since each CYP with an ABI is unique, no one intervention or program applies to all. However, adapting instruction or modifying the environment can enable CYP with an ABI to have greater opportunities for success in the classroom (Utley et al., 2019). Based on research from Turkstra and Kennedy (2005) and Ylvisaker et al. (1998) a set of essential skills for supporting CYP with ABI have been documented (see Utley et al., 2019). Nevertheless, Clasby et al. (2018) acknowledge that effective support is likely to require multi-component interventions which are responsive to specific individual needs.

N-ABLES (2021) introduced guidance to help education professionals prepare for and achieve a successful return to education and help progress a CYP's recovery. The importance of planning, collaboration, and careful coordination was noted alongside the provision of an individualised *Return to Education Plan* (N-ABLES, 2021). Bennett and Costello (2020) assert the importance of considering the cognitive demands of activities allowing for periods of rest and processing information, reducing non-essential tasks. The researchers also highlighted the vitality of monitoring the effectiveness of support plans over time so the CYP's needs are supported as they change or emerge over time (Bennett & Costello, 2020).

Walker and Wicks (2018) dedicated a chapter on planning provision for CYP with ABI to support education professionals. The authors write that a CYP's achievement must only be compared to their own previous and current potential, not with other pupils (Walker & Wicks, 2018). Also, with an awareness of the long-term sequelae of ABI in CYP, the authors purport that *a wait and see policy* is fallible.

Instead, educators must consider how the injury may affect a CYP's ability to access the curriculum and academic potential (Walker & Wicks, 2018). A focus on developing compensatory strategies may also be useful, helping the CYP to relearn ways to maximise their ability to learn and have support to compensate for their difficulties (Camm et al., 2021). This can also relate to readdressing skills or information a CYP may have missed due to gaps in their educational progress or learning (Walker & Wicks, 2018).

When identifying and considering the specific needs of CYP with ABI, Walker and Wicks (2018) propose thinking about what skills a CYP needs to complete a specific task, alongside if the CYP demonstrates age-appropriate skills for efficient learning. This analytical approach can enable target setting and intervention planning respectively to address the root causes and maximise CYP potential (Blosser & DePompei, 2019; Clasby et al., 2023).

2.4. Neuropsychological Theory and Educational Psychology

2.4.1. Neuropsychology

Few attempts have been made to formulate any comprehensive, integrative theories of neuropsychological development in children (e.g., Fletcher & Taylor, 1984) and explore the relationship between EP and neuropsychology within the UK (Misheva, 2020). Of the limited research conducted, Mackay (2005) claimed an interdependent relationship between the practice of the two disciplines and Misheva (2021) corroborates this claim describing the relationship as an essential aspect of EP practice and knowledge.

Within the wider scope of psychological research and developmental psychology, Hood (2003) argues for a more holistic and neuropsychologically

informed approach to encourage specificity within psychological formulation and interventions. Additionally, research has emphasised the importance of dynamic and developmental trajectory-focused approaches with CYP with neurodevelopmental conditions (Annaz et al., 2008). Although ABI is not classified as a neurodevelopmental condition, the dynamic, holistic, and trajectory-focused approach could prove useful for provision planning and interactionist involvement for CYP with complex presentations (Misheva, 2021) such as those affected by ABI. Accordingly, two neuropsychological approaches (Luria's theory of brain functioning and Neuroconstructivism) are presented with their links to EP practice and working with ABI in CYP.

2.4.1.1 Luria's Brain Functioning Theory.

One theory which remains relevant in current neuropsychological research is Luria's (1973) theory of brain functioning (e.g., Languis & Miller, 1992; Hazin & Tarcísio da RochaFalcão, 2014; Téllez & Sánchez, 2016; Ardila et al., 2020). Before Luria's theory, research about neurological development centred around the localisation of brain functions (Morgan, 1988). Luria proposed that a complex functional system of interacting parts is involved in neurological development, which is based on cultural and historical conditions (Morgan, 1988). Luria's theory offers an explanatory framework for brain plasticity whereby the brain adjusts to environmental conditions that define structural changes in the brain's functioning (Mikadze, 2014). Luria adopted a focus on Vygotsky's (1978) notion of dynamic change where the level of recruitment of the brains processes and areas changes throughout development. Luria formulated that "at different stages of development the same functions can be realized by different areas of the cerebral cortex, and at different

stages of development the relationship of individual cortical areas may not be the same" (Luria, 1970a, p.59) as noted in (Mikadze, 2014).

Morgan et al. (1988) assert that while Luria's theory has been interpreted in a developmental context (e.g., Golden, 1981; Hooper & Boyd, 1986), the area of child neuropsychology does not encompass a theory with the breadth and scope that Piaget's (1976) theory of cognitive development and Vygotsky's (1978) theory of sociocultural cognitive development do. Additionally, although Morgan et al. (1988) discuss the potential benefits Luria's theory could offer child neuropsychology, the need to incorporate concepts and research from developmental psychology was highlighted as important in neuropsychological theory and practice accordingly.

Furthermore, although most of the research relating to Luria's theory pertains to pathophysiology, Languis and Miller (1992) highlight contributions to EP practice. The researchers propose that it bridges the gap between EP and cognitive psychophysiology (physiological signals in the brain and their relationship to psychological processes) and that it could be used to associate cognitive performance with particular processing patterns in the brain (Languis & Miller, 1992). Additionally, advancements in science and technology within the 21st century have been able to mostly confirm Luria's hypotheses, contributing to evidence-based practice (Ardila et al., 2020).

2.4.1.2 Neuroconstructivism.

Misheva (2021) assert that some theorists and research adopt an empiricist perspective, where the brain is conceptualised as a blank slate at birth. However, Neuroconstructivism adopts a more nuanced perspective, that the brain dynamically changes over the developmental span according to multiple environmental interactions (Karmiloff-Smith, 2009). The Neuroconstructivist perspective claims that

aspects of the brain are not specialised to specific cognitive domains, but that each area can process a range of information, yet some areas are more adept at processing specific types of input better than others e.g., the hippocampus's main function involves human learning and memory (Farran & Karmiloff-Smith, 2012).

Throughout development, the brain goes through a gradual process of specialisation, influenced by environmental input (Westermann et al., 2007). Hence, a brain injury in the early stages of development in a particular area of the brain can precipitate later widespread difficulties with cognitive functioning (Misheva, 2021). From a Neuroconstructivist perspective, it is therefore more likely that difficulties in one area e.g., comprehension, will have implications for other areas of cognition and functioning because the needs are likely to have originated from a more specific local level such as visual processing. Misheva (2021) offers that adopting a developmental approach to assessment and intervention is therefore important for professionals working with CYP affected by ABI and could involve tracing developmental trajectory and CYP functioning over time for effective tailoring of interventions.

2.4.2. Literature Highlighting the EP Contribution to Work with CYP with ABI

Ball and Howe (2013) argue that EPs are well placed professionals to monitor changes and provide continued support across the systems surrounding a CYP following an ABI. They assert that this is because EPs have extensive training and knowledge for identifying, assessing, and suggesting interventions for learning and behaviour management, alongside systemic knowledge of education and child development (Ball & Howe, 2013). Bozic and Morris (2005) argue that EPs are often the most qualified educational professional and the only ones involved in long-term

planning following hospital discharge, which is paramount considering the long-term impact and sleeper effects attributed to childhood ABI (McKinlay et al., 2016). Moreover, Bozic and Morris (2005) highlight the influential nature of EPs within the Ecological-Transactional Model (Cicchetti & Toth, 1997; Empson et al., 2004) which is linked to Bronfenbrenner's (1979) Ecological Systems Theory, considering risk and protective factors across the levels of the environment and individual developmental processes when working to support CYP with ABI.

At an individual level, EPs can directly therapeutically work with CYP to help build effective strategies for coping with life after ABI (Bozic & Morris, 2005) and conduct holistic assessments of individual functioning (Marcantuono & Prigatano, 2008) which may encompass cognitive, neuropsychological, and dynamic procedures. EPs also often help to develop plans of support which include seeking CYP views and opinions (Smillie & Newton, 2020). Carroll (2011) claims that EPs are not only skilled at this practice but also take on an advocacy role for the CYP.

At the microsystems level, EPs can assist schools and other key adults involved in developing plans of support for CYP considering the interacting factors involved, typically through the mode of consultation (Bullock et al., 2005; Shaughnessy et al., 2006; Walker & Wicks, 2018; Renton, 2023). EPs can also provide support in line with the graduated pathway, signposting to other agencies and helping to translate medical, jargon-heavy reports into practical information to be applied within an educational setting (Ball & Howe, 2013; Gelbar & Bray, 2019). Additionally, Ball and Howe (2013) offer that EPs are well placed to monitor changes over time and provide continuous support to families and schools which Jantz et al's. (2015) peer-reviewed paper supports and offers the value of EP input at various time

intervals including review meetings and therapeutic support (e.g., Family-Focused Grief Therapy (Jantz et al., 2015)).

Considering the interactional nature of the mesosystem, EPs can arguably be highlighted as a crucial link between the family and school systems (Conoley & Sheridan, 2005). Carroll (2011) states that "EPs are skilled at working in multi-disciplinary teams" (MDT) (p.47) hence, the EP can help to bridge the gap between medical, education, and family systems. EPs can translate advice and knowledge into practical rehabilitation plans within the educational provision, encourage integrated care, and formulate how a CYP's ABI could affect their education and continuing development to support best practices with the adults around them (Davies, 2019).

EPs have the opportunity to influence the formal and informal societal structures in the Exosystem including policy, family functioning, and a school's approach to ABI support which may include educating CYP about disability and ABI in schools (CBIT, 2021). Davies (2019) assert that EPs can lead information sessions in schools and help to create mechanisms for documenting history and outcomes. These sessions can help to advocate for more frequent support plan reviews, especially during the first few years post-ABI, when a CYP's skills and needs can rapidly change (Davies, 2019). Furthermore, Bozic and Morris (2005) highlight that EPs can engage in planning and consultation discussions, deliver training, and educate professionals who work with ABI cases (e.g., advisory teachers, SENCos, social workers), upskilling the systems supporting CYP with ABI.

In a case series documenting the psychologist's role in inpatient paediatric rehabilitation for ABI, Lahey et al. (2017) concluded that more research is needed on psychoeducation and supportive intervention to demonstrate the value of psychology

in ABI rehabilitation. Considering this at a macro-systems level, EPs have the knowledge and skills to conduct research and project work to influence best practices and frameworks within the systems working with ABI in CYP (Renton, 2023) e.g., the ABI in Education Pathway & Guidance (Hammill et al., 2019). Additionally, EPs can work to consider neuropsychological principles as part of their essential knowledge base required for effective practice (Mackay, 2005). If these principles are considered within the context of EP, it can help to define the EP role as a vital component of a holistic, interactionist provision for CYP with ABI.

Jim et al. (2023) state that "Our practice is guided by the core question, what is likely to lead to positive change for the CYP we work with?" (p.260). Considering that an outcome is likely to be co-constructed using a consultative model of practice, EP's can work closely with the key people involved to (1) problem solve by keeping the CYP at the centre of the process, (2) advocate for reflexive processes, and (3) dispel myths and misconceptions surrounding ABI (Jim et al., 2023). This process can work to shift the ideologies and conditions in society to best support CYP affected by ABI.

Accordingly, EPs are arguably well placed and have a unique role to play when supporting CYP with ABI throughout education (Davies et al., 2014). Renton (2023) corroborates this assertion identifying the definition of EP to encompass the application of psychology in educational settings. Nevertheless, the perceived confidence and competency levels of EPs working with ABI prove to be a barrier to effective working practice (Misheva, 2021).

2.4.3. EP Knowledge and Confidence

Misheva (2020) conducted a national survey as part of a mixed methods research study to gather the views of EPs and trainee EPs regarding neuropsychology and its application to day-to-day EP practice. Among 200 respondents, 70% reported that they used neuropsychological concepts in daily practice and saw neuropsychology as relevant to their practice however, less than 25% reported having a good level of knowledge (Misheva, 2020). The researcher related this to limited teaching of neuropsychology on EP training courses with 73% reporting no neuropsychology-focused teaching on such courses (Misheva, 2020). Among the participants who did have neuropsychology-related teaching, these experiences varied depending on the teaching focus and largely centred on the facilitator's interests or experience. Despite this, 92% stated they would have liked to have some related input due to the range of situations identified in daily practice, with epilepsy and ABI emerging as the most commonly encountered conditions to which neuropsychological knowledge could be applied (Misheva, 2020).

Concerns regarding EP confidence when working with neuropsychological cases was also highlighted. Although 90% of qualified EPs reported working on these types of cases, only 22% felt confident about their knowledge and this was not related to their level of experience (Misheva, 2020). Renton's (2023) findings corroborate these claims documenting a lack of confidence as a theme across their dataset of 100 EPs in the UK due to a lack of experience or knowledge. Although, 63% of EPs in Misheva's (2020) sample reported feeling *somewhat confident* in supporting a CYP with an ABI therefore, this finding may be indicative of a lack of knowledge and understanding rather than experience (Misheva, 2020). Renton (2023) reported that EPs in their sample believed accessing training on ABI would

improve their confidence in supporting CYP with ABI. Nevertheless, some participants believed that generic EP skills (see Standards of Proficiency [SoPs] for Practitioner Psychologists Health and Care Professions Council, 2023) were enough, whilst others felt they were insufficient and further training would be needed to confidently provide effective support for CYP with ABI (Glang et al., 2017; Renton, 2023). If a large proportion of EPs report a lack of confidence as discussed, it remains unclear if they will be able to accurately identify and understand neuropsychological concepts or distinguish these effectively posing a barrier to working with CYP with neuropsychological conditions such as ABI.

In the USA, some research has been conducted on SP knowledge of ABI (e.g., Hooper, 2006; Slonaker, 2010; Duhning, 2021). In a national survey of SPs, Slonaker (2010) found that SPs identified the importance of neuropsychological assessment however, many do not use such assessments and methods due to a lack of knowledge. A general lack of confidence was highlighted amongst 82% of SPs from the sample, although a desire to receive additional training on neuropsychology and its application in schools was reported (Slonaker, 2010). To combat this, Davies (2019) stated that SP training courses (akin to EP training in the UK) and professional development sessions can teach practitioners to embed neuropsychological concepts into their practice with families of CYP with ABI. Bozic and Morris (2005) advocated for this development in the UK, highlighting in their questionnaire-based survey of EPs who had worked with a TBI case in the previous 12 months that TBI is an underdeveloped area of EP delivery, and reporting that 80% of EPs felt they had minimal preparation for working with these types of cases. Carroll, (2011) claims that Bozic and Morris's (2005) findings are concerning as the EP has been reported across the literature as the most qualified professional in

education involved when working with ABI and the only psychologist. Also, despite research identifying the SP or EP as a crucial professional working with brain injury (Ylvisaker et al., 2001) little has changed over the last 20 years regarding professional development. This absence of change may be attributed to the gap between clinical and educational systems, presenting a barrier to effective partnership working (Ashton, 2015). Accordingly, enhancing EP confidence in working with neuropsychological concepts and ABI proves vital due to the rising prevalence and awareness of ABI, and research about the EP role in promoting the best outcomes for CYP with ABI (Carroll, 2011; Ball & Howe, 2013; Misheva, 2021).

2.4.4. Future Directions

Predominantly, academic inquiries into ABI have emanated from the fields of clinical neuropsychology, neurology, and clinical psychology, many of which document sequelae in adults (Misheva, 2021; Goldman et al., 2022). The literature base concerning ABI in CYP is slowly growing, acknowledging the familial and wider system impacts, also highlighting educator knowledge as a priority area for development (Howe & Ball, 2013; Pappadis et al., 2022). Within the confines of the already limited research scope, there have been preliminary explorations of EP confidence levels when working with neuropsychology cases (Misheva, 2020), and (Renton, 2023) exploring the perceived EP role, barriers, and perceived knowledge levels among EPs working with ABI cases. Renton (2023) expressed the need to explore the benefits and drawbacks of EP involvement within MDTs and the possibility of examining the impact of EP confidence and perceived confidence on working effectiveness with ABI in CYP.

Furthermore, Best Practices in School Neuropsychology, published by Miller et al. (2022) offers a platform for SPs new to neuroscience to learn about and apply best practices. This book, although tailored toward SPs in the USA could prove beneficial to EPs in the UK bridging the gap between neuroscience and EP in an accessible way (Wilcox et al., 2021). Despite the literature highlighting the EP as a well-placed and crucial professional to be involved in working with ABI cases, there is no research about improving EP work in this area to have an overall impact at other systemic levels. Accordingly, the efficacy of EP training and seeking EP views on relevant Continuing Professional Development (CPD) pertaining to ABI could be beneficial across the profession to share good practices.

3. Summary and Rationale for Current Research

3.1. Summary and Research Rationale

ABI is a heterogeneous and complex condition highlighted as a global public health issue due to being a leading cause of death and disability worldwide (Maas et al., 2022). This narrative literature review has demonstrated the long-term sequelae of ABI within the context of the developing brain in CYP. The lack of awareness and education among educators and professionals working with ABI is concerning and feeds into the myths and misconceptions prevalent, creating a false narrative associated with long-term recovery. The slow process toward policy and legislative change has compounded this issue, yet there have been promising signs of progress moving toward an ABI strategy.

There have been few attempts to formulate integrative theories of neuropsychological development in CYP and the relationship of this to EP practice (Fletcher & Taylor, 1984; Misheva, 2020). Nevertheless, the EP has been offered as

a crucial and often the most qualified professional to be involved in long-term rehabilitation, promoting ABI literate practitioners, and enabling systemic change across multiple levels of the Ecological-Transactional Framework (Cicchetti & Toth, 1997; Ylvisaker et al., 2001; Empson et al., 2004; Bozic & Morris, 2005; Carroll, 2011; Misheva, 2021; Renton, 2023). Although, the levels of perceived confidence among EPs reported in the literature are concerning, which is related to a lack of consistency in the teaching of neuropsychology and ABI across EP training courses despite an increasing prevalence of neuropsychological casework and multi-disciplinary working practices (Glang et al., 2017; Misheva, 2020; Renton, 2023).

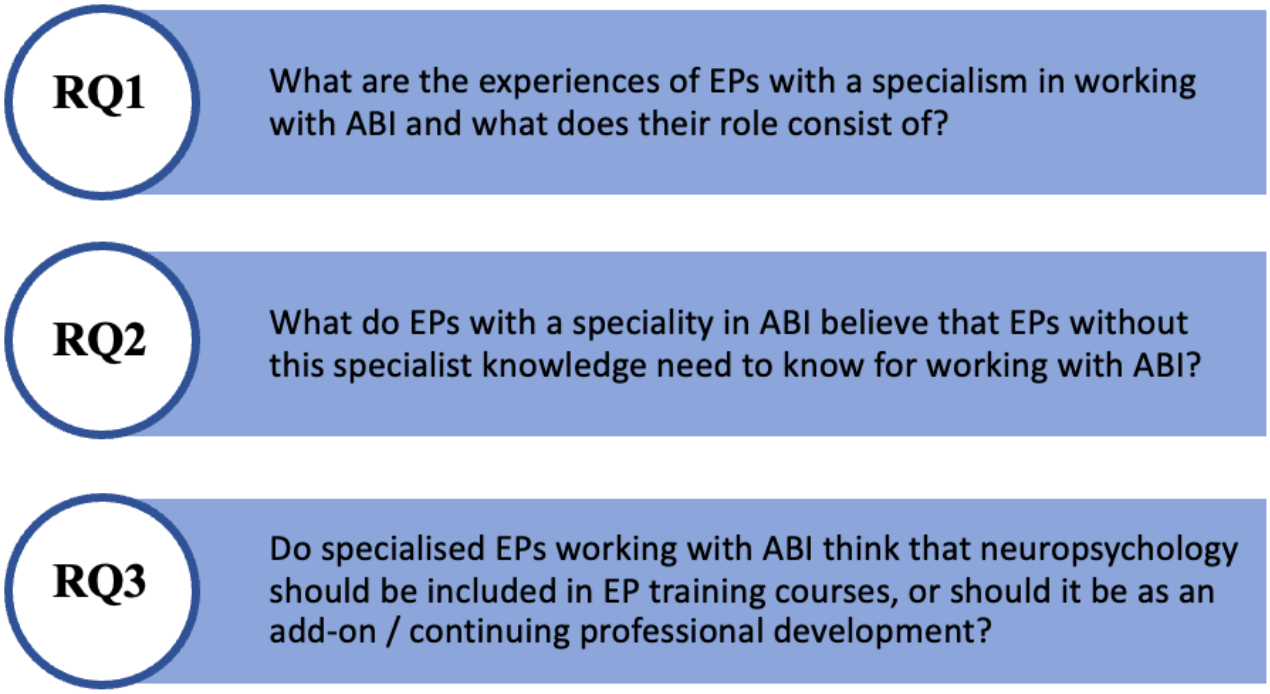
Future directions emerging from the literature document a need for improving educator knowledge as a priority area for development (Howe & Ball, 2013; Pappadis et al., 2022), alongside increasing EP confidence and perceived competency levels for working with ABI and neuropsychological cases (Misheva, 2021; Renton, 2023). The impact of this perceived confidence could also be explored concerning the effectiveness of EP work with ABI in CYP.

Previous research methodologies in UK-based research studies have gathered questionnaire-based survey responses from EPs regarding perceived confidence levels and knowledge of working with ABI (Bozic & Morris, 2005; Renton, 2021) and Neuropsychology (Misheva, 2020). Of these studies, two adopted mixed methods methodologies: Misheva (2020) also conducted semi-structured interviews of four EPs and six allied health professionals from two neuropsychological settings about the relationship between EP and NP profession. Renton (2021) conducted two online focus groups (two participants in each group from their survey pool) regarding the expansion of their survey answers, views of good practice, and the unique EP contribution for working with ABI. A limitation of Renton's (2021) study is the small

sample recruited for the focus groups limiting the opportunity to gather diverse perspectives and falling short of the recommended five to eight (Stewart, 2007). Similarly, Misheva (2020) conducted interviews with four EPs which does not adequately represent the views of all EPs and the interviews were conducted with participants working in London and the South-East of England only which fails to consider professionals across the UK. Nevertheless, their national survey accumulated relevant broad data on the relationship between NP and EP across the UK.

For this research study, it was felt that it would be useful to explore the views of EPs with specialist knowledge and experience in working with ABI due to their increased level of knowledge, expertise, and awareness about ABI-related issues as well as the relationship to the EP role for EP professional development purposes. It was felt that the previous studies mentioned had sufficiently scoped the UK EP profession for their views and experiences related to ABI. Therefore, the research study presented in Section 2 adopts a unique, nuanced focus on EP professional development from the perspective of EPs with specialist knowledge for working with ABI in CYP and neuropsychology. The research aims to provide guidance and information for EPs when working with ABI in schools, increasing confidence levels, and adding to the limited literature surrounding EP work with ABI. The research explores and aims to answer the following RQs in Section 3.2.

3.2. Research Questions



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Title: Neuropsychology: A Specialism or Fundamental Knowledge Base for Educational Psychologists? – A Case of Acquired Brain Injury

Part Two: Major Research Empirical Study

Word Count: 7,323

5. Abstract

Education has been documented as the most influential system in the rehabilitation and recovery from Acquired Brain Injury (ABI) in childhood, providing an optimum environment to support rehabilitation goals (Bennett & Costello 2020). The Educational Psychologist (EP) has a unique set of skills and knowledge which well places them to work with ABI, supporting the return to education and providing support over time (Howe and Ball, 2013; Walker and Wicks, 2018). The existing research base exhibits a deficiency in effectively bridging neuropsychology and the role of the EP, particularly in the context of working with ABI and its implications for educational intervention (MacKay, 2005; Howe and Ball, 2013; Misheva, 2020).

Thus, following a pragmatic qualitative approach, this study sought to explore the perspectives of EPs specialising in ABI and neuropsychology. Specifically, the research aimed to uncover the factors EPs need to consider when working with ABI cases and training implications. Semi-structured interviews were conducted with six EPs within the UK. Employing a Reflexive Thematic Analysis (RTA) framework (Braun & Clarke, 2022), the interpretation of data resulted in the development of three overarching Themes and seven Subthemes. The analysis delineated systemic constraints and revealed unseen competence and lacking confidence among EPs, overshadowed by misconceptions and debates on positionality. EP training courses were underscored as a fundamental proponent for equipping EPs with the requisite knowledge, advocating for a core level of understanding in working with ABI cases. Subsequently, future research considerations are offered, and an acknowledgement of the study's strengths and limitations.

6. Summary of the Literature

6.1. Current Context

ABI is a leading cause of disability and mortality in children and young adults in the UK and is a leading cause of death and disability worldwide (UKABIF, 2018; Maas et al., 2022). The long-term sequelae from ABI are evident across all areas of functioning (UKABIF, 2018), with impaired attention, concentration, information processing, and memory consistently cited as the most common (Wilde et al., 2015). These sequelae are evidenced to influence educational attainment and progress (Ewing-Cobbs and Bloom 2004; Mealings et al., 2021).

Education is highlighted as the most influential system in rehabilitation and recovery following childhood ABI (Slomine & Locascio, 2009; Nasen & CBIT, 2018). Renton (2023) claims that CYP with an ABI are likely to be classified as having SEN upon returning to school as they often require additional educational or learning provision. Unfortunately, the education system under-identifies and supports students with ABI (Glang et al., 2008; Hartman et al**.,** 2015) and there remains a current lack of legislative and policy backing, although there are signs of progress in this area (UKABIF, 2018; Balogun et al., 2020).

SPs in the USA have been recognised as essential professionals involved in supporting ABI, identifying individuals who need additional support and playing a role in the intervention needs of CYP affected by brain injury (Hooper, 2006; Glang et al., 2017). In the UK, Misheva (2020) discovered that less than 25% of EPs reported having a *good level of knowledge* about neuropsychology and ABI which the researcher purported to a lack of input on EP training courses (Misheva, 2020). Despite a significant number of EPs reporting working with ABI cases, less than 25%

felt confident about their knowledge which was not related to their level of experience (Misheva, 2020). A finding which has been corroborated more recently (Renton, 2023). Nevertheless, Carroll (2011) claims that with the right information and training, EPs can have a profound impact on the systems supporting young people.

There have been few attempts to formulate integrative theories of neuropsychological development in CYP and the relationship of this to EP practice (Fletcher & Taylor, 1984; Misheva, 2020). Nevertheless, the EP has been offered as a crucial and often the most qualified professional to be involved in long-term rehabilitation, promoting ABI literate practitioners, and enabling systemic change across multiple levels of the Ecological-Transactional Framework (Cicchetti & Toth, 1997; Ylvisaker et al., 2001; Empson et al., 2004; Bozic & Morris, 2005; Carroll, 2011; Misheva, 2021; Renton, 2023). Considering this, Bennett and Costello (2020) offer that school is arguably the primary source of rehabilitation following ABI in CYP and provides an optimum environment to support rehabilitation goals.

6.2. Rationale and Research Questions for the Current Study

There is limited research into the role of the EP in supporting CYP with ABI in education (Brooks et al., 2003; Misheva, 2020). There has, however, been research conducted in the USA concerning the SP role (Canto et al., 2014; Ball & Howe, 2013), yet this is minimal (see part 1 section 2.2.5.1). Furthermore, a significant proportion of the research surrounding ABI is focused on clinical rehabilitation, followed by a return to school (Hammill et al., 2017; Bennett et al., 2022). However, the majority of this research omits the EP role or profession. Accordingly, there is a potentially valuable and informative domain of research yet to be thoroughly explored regarding EP development and systemic change.

Initial scoping discussions were sought with local authority EPs to gain some understanding of the potential difficulties and concerns when working with ABI in CYP. These discussions indicated a lack of consensus of knowledge, awareness, confidence, and perceived competence when confronted with an ABI case. A finding corroborated by Misheva (2020) where less than 25% of EPs reported having a good or high level of knowledge of neuropsychology and the researcher alludes to a lack of confidence in the area of neuropsychological practice. Furthermore, these EPs had not been given any guidance on where to get information or advice (Misheva, 2020).

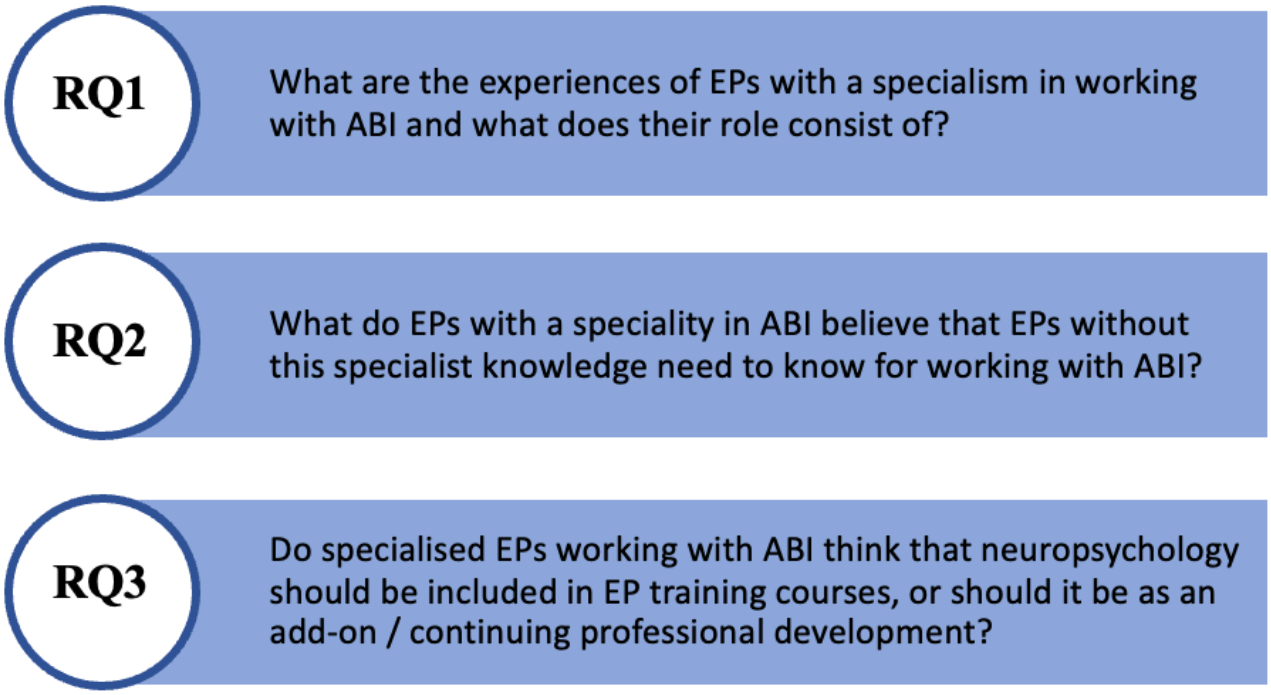
Further discussions with EPs who have developed specialist knowledge and expertise for working with ABI in CYP highlighted an underestimation among EPs of how an ABI can impact young people, particularly in the long term. Also, an observed lack of confidence in EPs when offering support to schools, alongside the school's awareness of ABI sequelae and where they can receive support.

On a broader level, Misheva (2020) highlighted an absence of empirical papers exploring how neuropsychology informs EPs day-to-day practice with MacKay (2005) being the most recent, attempting to locate it coherently within current and future directions for ABI research. However, there has been some albeit minimal research linking the EP role and ABI (Bozic & Morris 2005; Howe and Ball, 2013; Carroll, 2011; Gelbar & Bray, 2019; Renton, 2023). Misheva (2020) stated that "If paediatric neuropsychology is defined as "the study of brain-behaviour relationships within the dynamic context of the developing brain" (Anderson et al., 2001, p.3), it can arguably provide a useful conceptual framework for a range of presentations and conditions EPs work with on a daily basis" (p.24).

Thus, the purpose of this project is to gather the unique and nuanced experiences and knowledge of EPs who have developed specialist knowledge and expertise in working with ABI, to explore their role in supporting ABI, what they feel all EPs need to consider when working with this demographic, and training implications. It is hoped that this research would provide EPs with information and guidance for working with ABI consisting of best practices and suggestions for further support and information to support the schools and young people they work with. Additionally, to add to the limited literature surrounding work with ABI, particularly in the realm of EP practice with the aim of improving knowledge, confidence, and professional practice in this area.

7. Methodology

In this section, the following three RQ's are explored:



7.1. Research Paradigm

A pragmatist research philosophy has been adopted for this research as the researcher acknowledges the concepts of specialist EP experiences to be relevant to supporting action for the EP profession (Tashakkori & Teddlie, 2003). The researcher recognises that there are many different ways of interpreting the world, undertaking research, and no single point of view can provide an entire picture, thus there can be multiple realities and truths.

Pragmatism acknowledges that reality is multi-faceted and complex and that knowledge is context-dependent, based on real-world experience. Also, that meaning is created from human experience hence, truths can change over time (Tashakkori & Teddlie, 2003). Accordingly, the research ontology suggests that value is based on action and experiences justified by research, and the epistemology is that knowledge is built and modified through action and interaction based on real-world experience, therefore the knowledge-building processes must be active, linking to practical theory (Kaushik & Walsh, 2019).

Pragmatism is also often associated with researchers seeking to understand complex, dynamic, and context-dependent phenomena via strong roots in phenomenology emphasising the practicality for addressing the RQs and real-world problems (Kaushik & Walsh, 2019). Hence, the use of in-depth interviews was deemed appropriate to gain information-rich data due to the drive in pragmatism to understand meanings constructed through the interpretation of people's lived experiences (McGrath et al., 2019; Busetto et al., 2020). However, the researcher acknowledges the potential for bias and positionality in adopting this paradigm. Furthermore, the pragmatic approach aims to produce findings with real-world applications which can contribute to addressing practical issues and challenges. As

the EP role working with ABI is a relatively new area of research, the application of the current research may contribute to addressing this gap by providing novel insights to develop the EP profession.

7.2. Research Design

In line with the orientation of the research, it is recognised that researchers decide which methods are most appropriate for specific RQs and acknowledge the influence of the researcher's perspective in data collection and analysis. Hence, a qualitative research design was adopted; data was collected through semi-structured interviews and analysed using Reflexive Thematic Analysis (RTA) (Braun & Clarke, 2022). This design enabled the researcher to remain transparent and adopt reflexivity during the analysis and interpretation process (Braun & Clarke, 2021). Interviews were conducted virtually via the Microsoft Teams platform to enable UK-wide participation. See Part 3 Section 1 for reflections and considerations of alternative methodologies.

7.3. Participants

7.3.1. Sampling Procedure

In line with the pragmatist perspective, a purposive, iterative, and strategic sampling procedure was used to recruit relevant participants to provide diverse and rich perspectives as advocated by Busetto et al. (2020). Additionally, Braun and Clarke (2019) highlight that six to 10 interviews are sufficient for a small research project with a homogenous sample. Hence, the research aimed to recruit six EPs with specialist knowledge and experience working with ABI and neuropsychology. Indirect recruitment via professional connections of the researcher and word of

mouth increased the potential participant pool, alongside a social media post to recruit participants outside of the researcher's knowledge or professional connections. Demographic information was not collected for the current research due to the lack of relevance to the RQs and aims.

7.3.2. Inclusion Criteria

Participants were required to meet the inclusion criteria in Table 2 below to be eligible to participate in the research. The criteria were detailed in the participant information sheet (Appendix 6) and confirmed at the interview.

Table 2. Inclusion and Exclusion Criteria for Research Participation

Inclusion Criteria	Exclusion Criteria
• Qualified EPs only with Health and Care Professions Council (HCPC) registration (or international equivalent) working in a specialist role with a focus on ABI or neuropsychological conditions. • Also, qualified EPs not in a specialist role but working within a specialist setting for ABI or neuropsychology. • EPs will have developed experience and knowledge in the area of ABI and neuropsychological conditions through Continuing Professional Development and experience in case work overtime to acknowledge their specialism. • Independent EPs who do not work for a local authority are also included should they	• EPs without HCPC accreditation (or international equivalent) and those who do not work within a specialist setting or role in the area of ABI. • EPs who have not developed knowledge and experience in the area of ABI or been involved in casework overtime. • EPs with an interest in ABI and neuropsychological conditions without the experience and knowledge of working with this cohort.

meet the above criteria of specialism.	

7.3.3. Recruitment Method

Recruitment information was sent out between July and August 2023 and was presented in two formats; a recruitment poster was posted on Twitter (Appendix 7) and a recruitment email (Appendix 8) was sent to relevant charities, organisations, and individuals who are known to be working in specialist practice with ABI. This email was also posted on EPNet (a social forum for EPs). Potential participants contacted the researcher directly, via email, to express their interest and request the participant information sheet (Appendix 6) and consent form (Appendix 9). Participants were informed that they had two weeks to decide if they wanted to take part in the research and return the consent form due to the limited number of participants being interviewed. Participants returned electronically signed consent forms; upon receiving consent, a mutually agreed time to meet was arranged via email to take place over the Microsoft Teams platform and invites were sent to participant's email addresses (See Appendix 11 for a summary of this process).

7.4. Data Collection

7.4.1. Interview Guide

A semi-structured interview guide (Patton, 2002) was created including three major open-ended questions exploring participant perspectives on working with young people with an ABI and further sub-questions encouraged depth in participant views. The questions were formed according to the RQs and identified gaps in the literature through a process of exploration and discovery as advocated by Crestwell and Poth (2016) (see Appendix 12 for the full schedule). To encourage a natural and

active flow in the discussion, the question wording was contextual and inherently responsive to participant's emergent accounts, although the researcher remained mindful of the possible systematic influence of question-wording bias and therefore sought continuity in questioning where possible (Braun & Clarke, 2013). Participants were encouraged to discuss opinions and perspectives important to them and space was held at the end of the interview for further comments about the research topic and questions they would like to see answered. To actively play a role in data collection, the researcher followed unanticipated tangents offered by the participants and actively aimed to co-construct meaning (Braun & Clarke, 2019).

7.4.2. Conducting the Interviews

All interviews were conducted virtually via Microsoft Teams due to logistical constraints associated with a UK-wide participant pool. Interviews lasted between 45 – 60 minutes, and the interview audio was recorded for verbatim transcription purposes. All participants answered the questions presented and none requested information to be removed. (See Appendix 13 for information related to informed consent, confidentiality, anonymity, right to withdraw, dissemination, and General Data Protection Regulations (GDPR)). (See Appendix 10 for the Debrief form).

7.4.3. Pilot Interview

The first interview served as a pilot to review and reflect on the interview structure, format, and questions. This information was used to improve the interview delivery for subsequent participants (Malmqvist et al., 2019). As a result, additional time was spent with all participants to encourage reflections on the research and EP work with ABI. Also, to offer space for participants to share any other views they believed were helpful for EP professional development and any questions they would

like to see answered surrounding EP work with ABI. Accordingly, the initial participant's data was included in the main analysis.

7.4.4. Member Checking

Member checking seeks to ensure trustworthiness and rigour within qualitative research (Shenton, 2004; Birt et al., 2016). The researcher is aware that Braun and Clarke (2022) stipulate that member checking should only be used as a "Quality check" (p.277) when the information is recognisable as an account of the participant's experiences. Hence, following transcription, the researcher sent an anonymised copy of the transcript back to the participant. Participants were asked whether the transcript was believed to be a complete and accurate representation of their views and to offer the chance for participants to amend, clarify or elaborate on their answers should they wish to prior to the analysis. Participants were informed about the member checking in the participant information sheet (Appendix 6) prior to signing the consent form (Appendix 9) and verbal consent was ascertained both before and after the interview.

7.5. Ethical Considerations

Ethical approval was sought and granted by the Cardiff University School of Psychology Research Ethics Committee in February 2023 (see Appendix 14). The proposed research adhered to the ethical guidelines outlined by the BPS (2018) and the HCPC (2016). Steps were taken to ensure no harm came to participants; ethical considerations are documented in Appendix 13.

7.6. Data Analysis

RTA was employed for data analysis due to it being “a theoretically flexible method” for “developing, analysing and interpreting patterns across a qualitative dataset” (Braun and Clarke, 2021, p.4). RTA offered a flexible and iterative approach to data analysis, allowing for an inductively orientated experiential analytic process, facilitating a rich, and robust engagement with the data for knowledge production. Continued comparison uncovered semantic and latent codes across a six-phase process (See Appendix 15 for a description of each stage of the process and actions taken) which offered descriptive and interpretive accounts of the data.

RTA lends itself to the philosophical paradigm of pragmatism due to the inherent flexibility of the approach and the ability to be employed across the ontological and epistemological spectrum. Central to RTA is the researcher's position and their contribution as an integral ingredient of the analysis process (Byrne, 2022). Reflexivity encourages researchers to routinely consider their assumptions and expectations and maintain transparency about their positionality and subjective influence throughout the research process (Finlay and Gough, 2003). Hence, the analysis cannot remain purely inductive. Nevertheless, to promote the reliability of the research process, active consideration was given to a RTA checklist proposed by Braun and Clarke (2022, p.269.) (Appendix 17).

8. Analysis

8.1. Reflexive Thematic Analysis and Interpretation

The six-phase process of RTA (Braun & Clarke, 2022) was completed across the six interview transcripts (See Appendix 15 for a step-by-step of the process

undertaken). The analysis was a process of meaning-making conducted “at the intersection of the researcher, the dataset, and analytic and data contexts” (Braun & Clarke, 2022, p.45). This active process of reflexive engagement resulted in the development of three overarching Themes, including seven Subthemes (See Figure 2) for a visual representation of the Themes and respective Subthemes. These are explored in further detail in Table 3. See Appendix 18 for all extracts related to each Theme and Subtheme.

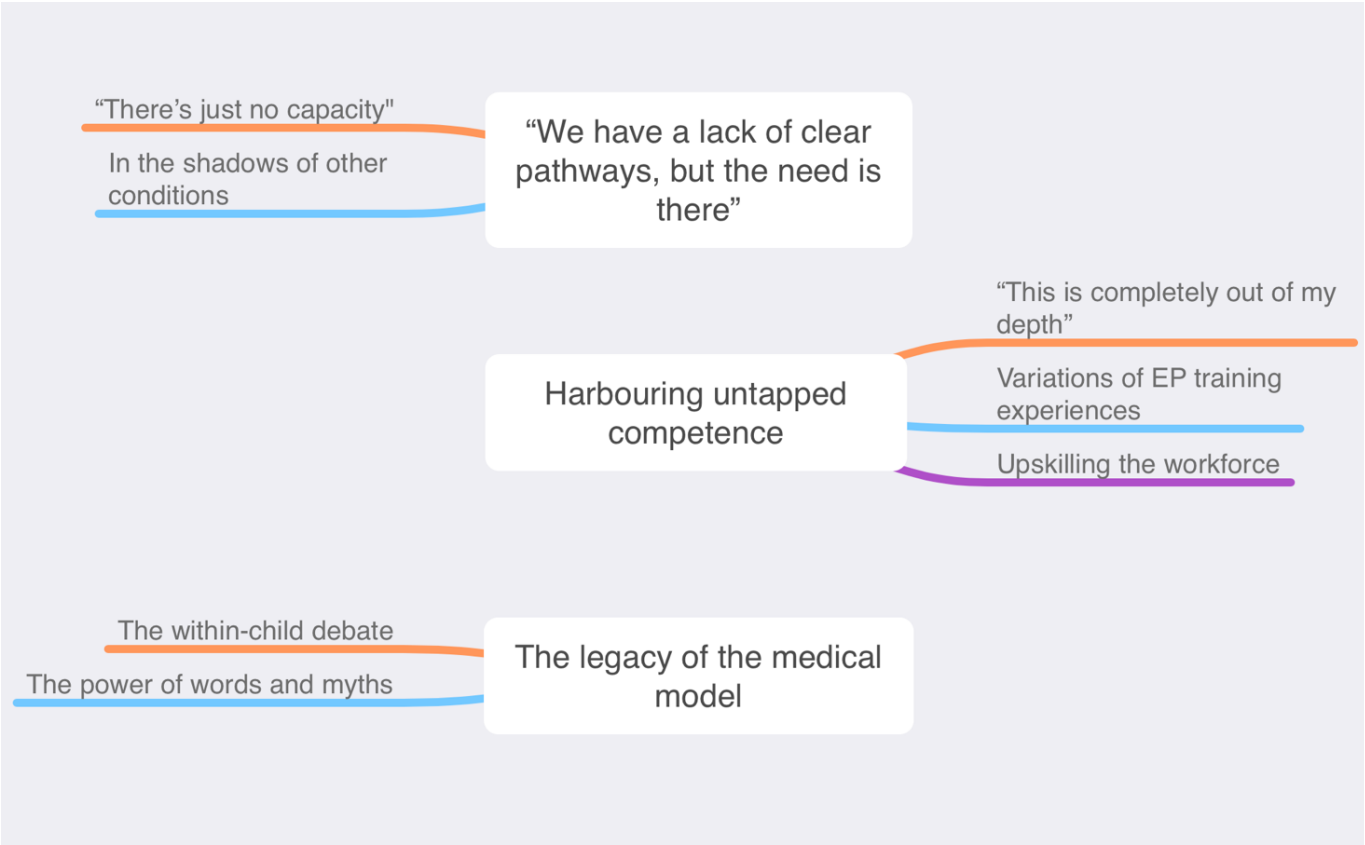


Figure 2. Thematic Map of Overarching Themes and Subtheme

8.2. Exploration of Themes

Table 3. Exploration of Themes

Theme 1: "We Have a Lack of Clear Pathways but the Need is There"	
Acquired Brain Injury in the context of EP work is acknowledged alongside the barriers and lack of systemic support available. Systemic constraints at a local and national level compound the difficulties of working with ABI cases. Therefore, interest-led exploration and individual advocacy were identified as driving factors in developing pathways for meeting the needs of CYP with ABI. The prevalence of ABI worldwide, as well as within EP caseload and training is acknowledged, raising concern that these CYP are being overshadowed by other young people with more well-known conditions such as ASC. This Theme sets the scene for what EP services can do to support EPs working with ABI and outlines clear gaps in current provision.	
Subtheme	**Illustrative Quotes**
<u>"There's just no capacity"</u> Although participants express that EPs are an underused resource for working with ABI, being a perfect translation between hospital and education. The systemic constraints make this harder, such as time, funding, and capacity within local authorities. Any involvement has been interest-led and has not been factored into local authority time so participants described it as purely passion-related.	P1: *I think there are ways we are being made to work because of system constraints that wouldn't work for ABI kids but I would argue they don't work for any child.* P2: *it's just really hard with local authorities shrinking and shrinking…* P3: *… you've got a very heavy workload…you are under huge time constraints…* P4: *I know local authority EP's don't have the time or the resources to or, the access. Time and resources. It is hugely dependent on local authorities, and it depends on how the local authority is working. If they're mainly writing EHCP's or statutory advice, well then how do they support a school or a family with a transition back to school…* P6: *it's a lack of clear pathways… that then potentially has the impact on EPs capacity to provide services to them. As well as the other pressures that we know are currently within the system.*
<u>In the shadows of other conditions</u> Despite the undeniable prevalence of ABI worldwide, the inclusion of teaching and awareness of it is considerably lacking. Instead, ABI is being overlooked in favour of other conditions	P2: *you end up having to draw on the wider evidence base…we could try that in a child who has social difficulties for a different reason. So, you find yourself scratching around a little bit for real solid evidence-based interventions…* *it is not mentioned in the code of practice…* P3: *It's one in 10 children will have some sort of brain injury… similar to the prevalence of dyslexia or autism so, why is that less important? I don't know.*

such as neurodevelopmental conditions that have more political and awareness backing. Raising more awareness and increasing the research base pertaining to ABI is therefore deemed important for the development of evidence-based interventions.	*how much time is devoted to something like autism or executive function or ADHD, or literacy difficulties, it has to have an equivalent position.* *… sometimes you go through a whole course and is traumatic brain injury or acquired brain injury actually even mentioned…* P4: *usually there's usually an early years specialist, there's usually an autism specialist but I've never heard of anyone having any ABI specialist.*
Theme 2: Harbouring Untapped Competence	
This Theme outlines the perceptions of EP competency across the workforce when working with ABI cases. Participants raised that they did not want EPs to feel deskilled and that increasing EP confidence is paramount for meeting the needs of CYP in this area. The power of the EP is conveyed for systemic change, outlining that with the right support and training the EP role with ABI can be co-constructed to facilitate increased confidence and perceptions of competence working with ABI. Clear links were highlighted to variations in EP training courses and the positionality of the courses which inherently influence the inclusion of neuropsychology and ABI content. Comparisons to clinical psychology were also made, misplacing competence with ABI as outside of the EP role. The accessibility of EPs with the requited knowledge about ABI and having a *champion* within local authorities were also suggested to assist with the upskilling of the workforce to meet the need.	
Subtheme	**Illustrative Quotes**
<u>"This is completely out of my depth"</u> EPs express a lack of perceived competence working with ABI cases yet participants convey that this is misplaced. Instead, that EPs are well placed to work with ABI and have the competencies to work effectively with this group of young people, they just perhaps do not see this. Therefore, injecting confidence into the workforce is needed. Nevertheless, there is also a level of specialism that can be developed, as with any other area of EP work.	P1: *I think it's an unconscious competence.* *if you look at the competencies for clinical and EPs, the overlap is massive…so I really think that we are so well placed.* *I do think there is a large segment of EPs that perhaps don't have the competency yet. But I do think that there's a lot of EP's who have the competency but don't see it.* *I think we need to inject a lot of EPs with the confidence.* P4: *In my experience EP's have those skills…very natural educational psychology skills… coming up with a holistic assessment of the situation.* *…I don't want EPs to feel deskilled. They absolutely can do these things, and it's all about being in tune with who you're working with and being holistic and triangulating information and interpretation and I think any good EP can do that.* P6: *I think EP's are incredibly well placed to shift those narratives and to support that understanding of the things that people might not be able to see and how they might be impacting on their regulation or their communication or their capacity to engage with aspects of their learning.*

	…might be that they need supervision in order to connect with all of our skills and our knowledge that we have to be able to make that bridge between the gaps that there might be…
<u>Variations of EP training experiences</u> EP training experiences can vary and because EP work is so large it is reasonable that people will have differing interests which can lead to specialism development - not everyone can be a specialist in everything. Each EP training course will also be guided by their own philosophical principles and groundings which can dictate the approach to teaching and what is included. The BPS provide an outline of what the courses need to include but there is flexibility in approach and content which raises questions over the continuity of training experiences linking directly to EP's perceived confidence and competence working with ABI cases.	P1: *…there's a big difference depending on where people trained and when people trained. Then depending when people trained, like whether they were on the master's cohort or even earlier cohorts of the doctorate, there might not have been that that focus at all.* P2: *Well, I trained a long time ago, and it was only a one-year course back then. So, I don't think we did…not in my EP training course.* *I'm aware that it's not part of the core stuff, and I think it's really interesting … you're going to come across at least one ABI case in a year…* P3: *Every course has a different approach to how they teach this and I do feel that it should be a fundamental part of the fabric of our understanding as EPs and run that golden thread through…sometimes you go through a whole course and is traumatic brain injury or acquired brain injury actually even mentioned?* *… there were some elements of neuropsychology as part of the course. It was quite limited, but actually where I went to my training it was still valued. I know that some programs give more or less focus on it, it.* P4: *I think because of the variations in training and experience, I don't know if all EPs do have that baseline understanding of the brain.* *I don't know who has the overview of the courses. It would be interesting to know… it wasn't taught on the course before I did it and I started doing my first session in either 2020 or 21. So it's very recent…* P5: *I trained in 2001, I did my educational psychology. There was absolutely no brain injury training included at all at that time.* *…I envisage that that's probably therefore going to be very EP dependent upon what your experience has been.*
<u>Upskilling the Workforce</u> What is being done and what needs to be done to upskill EPs to work effectively with ABI and tap into the competencies and increase confidence among EPs when working with ABI	P1: *I've been trying to raise more awareness around ABI and what we've been able to do this year is train the EP team and my current local authority in baby steps raising awareness.* *My hope is to have one person in every team that feels relatively competent … then disseminate information down because ultimately EP work is massive.* *So I think having resources built within teams…*

cases. Participants offer models and tools they use to facilitate their work yet acknowledge that they are always learning and improving their knowledge due to the growing knowledge and research base of the field. Signposting to charity information and resources as well as academic papers for continuing professional development were raised as accessible information.	*We need to understand the 'so what'…* P2: *… a bit in the training course about it (ABI)…that developmental view of acquired brain injury…* *I think my ideal scenario would be to have half a day on the training courses with that sort of stuff and then if people are interested, they can specialise just like in any other specialism.* *I think it's definitely doable with some supervision and support. So, there's definitely models of doing this where we can share the expertise around.* *how do we get it on the national radar first, because if it becomes a national issue, then it becomes something that EP services have to take notice of.* P3: *…definitely it being a core part of training anyway, on the program, whether that's in year one, two or three. I think that there needs to be some space given to that.* *I think there's definitely space for further training for CPD for qualified EP's, who possibly have trained later but is still really relevant to their work… It would be nice if there was a specialist within a service…* P4: *I think the training course is key… it unconsciously passes that message…I think just to know what neuropsychology is and their remit.* *I think it's more of a meeting of the two professions, there's overlap, there's huge overlap and Educational Psychologists already have excellent skills, and they are experts in how the education system works, in child development, in how processes work, in systemic working.* P5: *the most important thing would be, I think is understanding.. what that impact is on the brain and how the brain needs time. and how that might impact on a child in the short term medium term and in the longer term.* *the more knowledge that is shared between everybody, then the better that is for everybody - It is a small field and currently, it's a quite specialist field. So yeah, the more sharing the better, and it's just always good to know what's going on with other people.* P6: *Age, stage, severity of injury and the importance of psychosocial support as key indicators for outcomes. It's important, I think, that educational psychologists know about brain development. So thinking about when that injury occurred, what did that look like, what stage of development might they be.*

	My feeling is that the starting point is probably a set, basic level of awareness and understanding of acquired brain injury and brain development which would be really helpful. Which actually that wouldn't take much to add into our EdPsyc courses. *is there a way of reviewing and looking at those competencies and thinking about what key and core elements would need to go into educational psychology training in order to provide people with that opportunity.* *… I think it's probably for courses to determine what they feel that needs to be…I think then what people then choose to do that with that thereafter I think does come down to specialism.*
Theme 3: The Legacy of the Medical Model	
The medical model and views of positionality have ensued long debate within EP practice. Positionality within EP practice appears to underlie perceived competence and levels of confidence when working with ABI cases. However, the majority of neuropsychological work was deemed systemically focused highlighting incorrect assumptions based on perceived knowledge and assumption. The power of words and the convincing nature of neuromyths add to the perpetuation of false narratives associated with the within-child focus of neuropsychology and effective working with ABI. Due to the vastly hidden nature of difficulties attributed to ABI and the scarcity of positivism within EP practice in favour of a more socially constructive view, EPs are inherently not immune to falling into the false beliefs portrayed in *brain-based* approaches. Therefore, shifting narratives to support EP understanding and acknowledging pre-conceptions and subjectivities was a vital aspect of this theme.	
Subtheme	**Illustrative Quotes**
<u>The Within-Child Debate</u> There's a lean away from anything within-child or biological within the EP profession in favour of more psychosocial views of need. Participants raised concern about a scarcity of anything biological or seen as attributed within-child yet assert the systemic nature of neuropsychological work and importance of taking into consideration individual variables of one's brain injury.	P1: *I think sometimes that the move away from within child… sometimes I wonder whether the pendulum has swung so much to the other side.* *you have to consider the within child factors, but when you intervene most of the interventions are systemic.* *sometimes people can say that Neuro Psych or Neuro Psych formulations can be quite reductive, but actually both these formulations take into consideration environment and they both also speak about pre injury…* P3: *I think it's the mixing of recognising actually from a biological point of view, what has impacted on the child, how that's going to impact on their learning…* *… it should be part of what every EP does, as part of the information collection and in part of the formulation, we can't just focus on the psychosocial aspects of it.* *....you can't divorce the brain from behaviour and vice versa.*

	it's that kind of divide as soon as you say something that is a biological, or neurological it's suddenly seen as a bad word or within child and that can't be tolerated. P4: *I think there's a risk with acquired brain injury because the child has a brain injury, there's no getting away from that. Everything can seem very within child, and actually if we look at the research, the psycho-social factors play a huge role.* *… There's this strange idea that neuropsychology and acquired brain injury is linked to a within-child model and I don't know where that's coming from other than the fact that it's a brain injury so therefore there is a biological element ... neuropsychology at its best is very systemic and assessments are very holistic and systemic.* *I think we have a lot of work to do in terms of combating that myth of what neuropsychology is and that it is this within child model. I don't practice in that way, if anything, I practice in the opposite way.* P6: *I guess that argument around whether or not it's within child I think probably then depends on how you use that information and how it informs your formulation … it doesn't mean that our interventions aren't fully systemically focused on how we create environments that enable that young person to thrive.*
<u>The Power of Words and Myths</u> Myths and misconceptions pertaining to ABI are prevalent and EPs are not immune to falling into them. The credibility of 'neuro-based' explanations are called into question and participants convey the need to shift narratives associated with neuropsychology and the myths held especially due to the hidden nature of ABI impacts.	P2: *I think there's always the danger that a little bit of information can be a bit dangerous. there's a lot of things out there that market themselves as brain based or neuro… that slightly worries me.* P3: *we sometimes get stuck to these neuromyths or a very repetitive understanding or very superficial understanding …* P4: *I think there's definitely that myth around the place – neuropsychology being within child orientated.* *what's true and what isn't true in the world of neuroscience and how important it is for EPs to know that… the reality is that you're going to meet it…I think we have a lot of work to do in terms of combating that myth of what neuropsychology is.* *I think the word neuropsychology can be a bit scary…we think about and look at some of the research that shows that if you put the word neuropsychology or research shows X, how it changes the level of believability.*

9. Discussion

9.1. Overview

This qualitative research design has drawn on a range of unique and nuanced perspectives from EPs who have developed specialist knowledge and expertise in working with ABI in CYP. The aim was to explore the EP role in supporting CYP with ABI, what these specialist practitioners believe EPs need to consider when working with this demographic, and to discuss professional training implications. Additionally, to add to the limited literature surrounding work with ABI, particularly in the realm of EP practice with the aim of improving knowledge and confidence in this area. In this section, the analysis is discussed in relation to the three RQs and their relevance to current theory and research. Novel implications for EP practice from the research are also discussed, followed by a consideration of the strengths and limitations and areas for possible future research.

9.2. Research Q1: What are the experiences of EPs with a specialism in working with ABI and what does their role consist of?

The analysis uncovered that participants' journeys towards specialising in working with ABI was driven by their keen interest in neuropsychology, cognitive psychology, and ABI. One participant credited their doctoral training for introducing them to brain injury where they had the opportunity to complete a placement within a specialist setting "I was able to gain a lot of specialist knowledge whilst I was still in training" (P1). This initial exposure sparked an enduring passion they have since cultivated and developed further in their professional practice.

The roles of participants varied and often, these individuals took on multiple responsibilities. Participants worked across various sectors including local authority, the NHS, and independent settings, balancing statutory duties for local authorities with specialised work in neurorehabilitation settings, among others. Additionally, a few engaged in medico-legal work and contributed to teaching on doctoral training courses.

Participants demonstrated a strong appreciation for the multidisciplinary approach to their work, particularly in facilitating the return to education where this is possible to do so. Thus, EPs were raised as well-placed professionals capable of bridging gaps between different settings and services which otherwise would not exist. The literature base supports this assertion with the EP identified as a key stakeholder in the facilitation of support for CYP (Ball & Howe, 2013; Reilly & Fenton, 2013). Additionally, Misheva (2020) emphasised the EP value and contribution of EPs to facilitate an effective return to education. Passion and proactivity underscored the participants' commitment to establishing regional pathways and support networks to meet the ongoing needs of CYP with ABI.

Participants raised concerns about levels of EP confidence and perceived competence working with ABI cases mirroring Theme 2: Harbouring Untapped Competence, Subtheme 1 "This is completely out of my depth". There was a sense of frustration that EPs do not feel they have the competence to work with ABI cases despite the cross-over of competencies between neuropsychology and EP, as well as the applicable nature of EP knowledge and skills for working with ABI. These findings were reflected in Glang et al's. (2017) study on the perceptions of competency among SPs in the USA depicting that less than 60% rated themselves as qualified to differentiate between CYP with ABI and other SEN or offer

appropriate school-based intervention. The notion of unconscious competence was expressed, relating to an EP's inability to see that they have the competencies to work with this demographic.

In Noel Burch's Stages of Competence Model (Adams, 2021) EP's, based on the limited literature exploring EP views (Misheva, 2020; Renton, 2023) plausibly convey a false sense of conscious incompetence, where individuals are aware of what they do not know and hold a sense of imagined unattainability which can be a deterrent to progressing to the next stage of competence. Due, to the views of positionality conveyed through participant accounts, it is reasonable to assume that this imagined unattainability is due to views of neuropsychology and ABI not being within the EP remit due to a false sense of having a within-child focus.

Nevertheless, participants acknowledged that not all EPs have the knowledge and skills to work with ABI in CYP, dependent on training experiences, reflected in Theme 2, Subtheme 2, variations of EP training experiences. Therefore, according to the Stages of Competence Model, conscious incompetence is conveyed among some EPs when working with ABI cases (Adams, 2021).

However, participants highlighted that they do not want EPs to feel "deskilled" (P4) and due to the knowledge, experience, and professional competencies EPs possess, this well places EPs to work with ABI in CYP. Emphasis was placed on how well placed the EP is to create positive change for CYP with ABI, tapping into skills that "any good EP can do" (P4) and that "it is not outside the realms of EP possibility" (P2). Therefore, arguably EPs would be classified as being in a state of unconscious competence (Adams, 2021). However, although acting with intuition, EPs may feel an internal sense of incompetence related to working with ABI due to the heterogeneous nature of the condition and the medicalised realm of the research

base. Essentially, the goal here would be to assist EPs in gaining an evidenced sense of conscious competence through practice, experience, and support from a more knowledgeable other (Vygotsky, 1978) to offer guidance and bolster confidence in this area which was reflected by Participant 6: “it might be that they need supervision in order to connect with all of our skills and our knowledge … to make that bridge between the gaps that there might be, that that person doesn't feel so confident with…”

Unfortunately, systemic constraints depicted in Theme 1: “We have a lack of clear pathways, but the need is there” make it more difficult when attempting to increase EP work with ABI. Time and resource restrictions posed by top-down directives force EPs to work at a limited capacity without the ability to extend their skills and knowledge creatively in novel situations to espouse positive outcomes for CYP, “It's a lack of clear pathways… that then potentially has the impact on EPs capacity to provide services to them. As well as the other pressures that we know are currently within the system” (P6).

Participants alluded that some local authority services across England remain affected by the implications of the Covid-19 pandemic which has restricted the EP role and posed additional time pressures. Participants expressed concern but also disappointment over the systemic pitfalls “I think just wouldn’t allow the time to do the extent to what is ideal” (P5). What this means for CYP with ABI is a failure to recognise the need and these CYP ultimately falling under the radar until they progressively recede further behind peers later on in the developmental timeline (Walker & Wicks, 2018).

Unfortunately, the national landscape of work with ABI is restricted somewhat currently due to the lack of pathways and legislative backing reflected in Theme 1

Subtheme 2 In the shadows of other conditions. For example, ABI is not currently included in the SEN code of practice (Department for Education, 2015) and participants conveyed insufficient levels of teaching on EP training courses about ABI despite the high prevalence at or above that of other conditions with more social and political endorsement such as ASC (McKinlay et al., 2016; Jim et al., 2023). Emphasis was placed on the utility of peer supervision and sharing good practices, as well as trying to get ABI on the political agenda “The more knowledge that is shared between everybody, then the better” (P5).

Involvement in special interest groups and national syndicates such as N-ABLES are starting to break down barriers which will inherently influence EP practice (N-ABLES, 2021). Zirkel (2019) claims that legal recognition of the needs of CYP with ABI has been incomplete, especially compared to the breadth of professional literature documenting the ABI sequelae (e.g., Wilde et al., 2015; Nasen & CBIT, 2018; Rempe et al., 2023). Therefore, if ABI were in the SEN CoP or there were national ABI strategies then it would be imperative that EPs possess the requisite knowledge about ABI and information would be included as a matter of priority in training courses or required as part of CPD for qualified EPs (N-ABLES, 2020; Balogun et al., 2020).

Experiences of the ideological aspects of positionality developed as a broad meaning-making concept across participant experiences. The EP profession's move away from positivist stances in favour of more socially constructive views appeared contentious when discussing work with ABI (Kelly et al., 2017). Consistent with the findings of Misheva (2021), in Theme 3 The legacy of the medical model, participants advocated for a biopsychosocial formulation of need and emphasised the systemic nature of neuropsychological interventions and how neuropsychological

theory is integrated into their practice. Nevertheless, participants conveyed a fear of adhering to a within-child or medical model seen in Theme 3 Subtheme 1 The within-child debate, which directly influences their work with ABI, considering it to either not be within their competency or scope of practice. However, with education being consistently reported as one of the most important contexts in a CYPs development, after an ABI, the CYP would return to some form of education (Slomine & Locascio, 2009; Nasen & CBIT, 2018). As the EP is deemed as occupying expertise in child development and learning (Farrell & Woods, 2015), then this would provide a direct link between the EP role and working with ABI cases, to facilitate effective outcomes within school.

9.3. Research Q2: What do EPs with a speciality in ABI believe that EPs without this specialist knowledge need to know for working with ABI?

Fearing the within-child model across the EP profession was pertinent to discussion linking directly to Theme 3: The Legacy of the Medical Model. Participants emphasised the importance of considering the physical impacts of ABI within an EP's psychological formulation and acknowledging the differing complexities of ABI resulting in *spikey* profiles of learning and behaviour due to the changing needs evident as a CYP progresses through development (Ball & Howe, 2013). "Recognising actually from a biological point of view, what has impacted on the child, how that's going to impact on their learning…having that understanding of what can be done to support the adults around that child…to provide the environmental resources…"(P3).

The literature highlights that CYP with ABI are likely to require additional provision different to other CYP with similar needs, and likely be classified as having

SEN (Caplan et al., 2016; Walker & Wicks, 2018; Renton, 2023). Hence, participants advocated for systemic thinking “neuropsychology with a focus on application to education and development” (P1) despite pre-conceptions about reductionism.

Fox (2009) argued that EPs need to adopt systemic thinking at an organisational level in schools to challenge reluctance to change when the problem is seen as within-child. Therefore, scepticism among EPs about the within-child nature of neuropsychology and ABI could perpetuate these narratives resulting in a further lack of support. Participants reflected that “I think we have a lot of work to do in terms of combating that myth of what neuropsychology is and that it is this within child model. I don't practice in that way, if anything, I practice in the opposite way” (P4). Hence, the notion of positionality and EP perspective is important to consider when working with ABI because the professional stance of an EP will depend on how the information is used and how it informs intervention.

Furthermore, participants highlighted the importance of curiosity and proactivity in EP practice. Concerns about EPs falling into the traps of neuromyths and over-simplified understandings of neuropsychology and the brain were raised. These were attributed to possible differences in training course content and EP positionality reflected across Theme 2: Harbouring Untapped Competence and Theme 3: The Legacy of the Medical Model, Subtheme 2: The power of words and myths.

Misheva (2021) assert that EPs have a vital role in dispelling myths and misconceptions related to ABI and neuropsychology and promoting ABI literate practitioners. Unfortunately, Hooper (2006) found high rates of adherence to misconceptions among SPs particularly related to recovery and injury mechanism. Therefore, it is paramount that these professionals are knowledgeable about these

misconceptions and armed with up-to-date and accurate information to combat myths across the systems they work in, or risk perpetuating false narratives further.

A common discourse among participants was that EPs already have the skills and competence to work with ABI cases, the confidence levels just need to be bolstered. This pertains to Theme 2 Sub Theme 1 “This is completely out of my depth” and Sub Theme 3, Upskilling the workforce, relating back to the notion of unconscious competence, coined by Noel Burch in the 1970s in the Stages of Competence Model (Adams, 2021), discussed in section 9.2. Participants spoke about using EP skills of consultation, assessment, and triangulation to gain a holistic view of the young person within Bronfenbrenner's (1979) Ecosystemic Framework, highlighting the importance of taking into consideration all factors influencing the CYPs development and learning. These findings are supported by Bozic and Morris (2005) who highlighted the influential nature of EPs within the Ecological-Transactional Model (Cicchetti & Toth, 1997; Empson et al., 2004) considering risk and protective factors in the development and education of CYP with an ABI (see Section 2.4.1 for a detailed view of each aspect of this model).

The impact of an ABI on identity was also a common narrative. Work by Perkins et al. (2022) in identity rehabilitation was noted as a valuable resource to understand and explore CYP's perceptions of identity and helping them to thrive post-ABI. Relations to identity formation with other, neurodevelopmental conditions were also noted and the comparative nature of the impact of a sudden change in functioning as opposed to a gradual acceptance and identity formation (Jim et al., 2023). Despite shared mechanisms elucidated between ABI and the neurodevelopmental condition of ASC based on pathophysiological changes in the brain, the changing nature of ABI must be acknowledged (Singh et al., 2016).

Nevertheless, the same researcher concluded that interventions applicable to those with ASC may also benefit CYP with ABI (Singh et al., 2016).

However, participants acknowledged that some EPs may not yet have the competence to work with ABI dependent on the EP training course content and the practitioner's time of training, but that they have the means to be able to become foundationally competent due to the EP skills and competencies already gained through initial EP training. Also due to the overlap between EP, Clinical Psychology, and NP competencies (see SoPs for Practitioner Psychologists HCPC, 2023).

Finally, the awareness of ABI within the EP profession as well as the likelihood of coming across ABI cases was raised. This finding was not unexpected due to the prevalence of ABI worldwide (UKABIF, 2018; Maas et al., 2022). Therefore, arming EPs with the knowledge of what to do, having those pathways in place, and where to signpost, were deemed important which emphasises the need for policy developments surrounding best practices for ABI in CYP (see 2.3.3).

9.4. Research Q3: Do specialised EPs working with ABI think that neuropsychology should be included in EP training courses, or should it be as an add-on/ continuing professional development?

Participants held strong views that ABI and fundamental aspects of neuropsychology should be included in EP training courses. They acknowledged that the majority of EPs are not training currently, therefore, there needs to be a form of ongoing professional development as well, but this would have to be contracted with respective local authorities and organisations reflected in Theme 2: Harbouring Untapped Competence, Subtheme 3 Upskilling the workforce. Maricle and Miller (2022) assert that professionals providing services to paediatric populations must

have adequate education, training, and experience in neuropsychology and SP. The evolution in child neuropsychology research requires ongoing professional competence and a commitment to maintaining knowledge and skills via life-long continuing professional education (Maricle & Miller, 2022).

Participants expressed that they would like to know what EP services would want in terms of professional development content to tailor this accordingly. Hooper (2006) discovered that SPs reported a need for more professional development regarding ABI. Also, Misheva (2020) in a UK national survey found that EPs perceive neuropsychology as relevant to their everyday practice. However, research on reflective decision-making has identified that giving people agency in decision-making helps them to commit to the process of change as an active participant (Paternoster & Pogarsky, 2009). Therefore, implementation approaches using Motivational Interviewing (De Almeida Neto, 2017) strategies for instance may help to elicit meaningful change, especially for individuals who are in a stage of precontemplation (who have yet to see a reason for change) and those who are contemplating change (seeing a problem exists but are ambivalent about change) depicted in the Transtheoretical Stages of Change Model (Arbuckle et al., 2020).

Participants also highlighted a continuum from core psychological knowledge from the doctoral training courses to a more specialist level of information and knowledge which is set out in the training route to become a NP (See BPS, 2023). Pertaining to Theme 2: Harbouring Untapped Competence, participants queried why ABI would not be discussed in training courses when it is as or arguably more prevalent than other conditions which are commonly included such as reading difficulties (McGuire et al., 1998; McKinlay et al., 2008). Giving EPs an introduction to neuropsychology and the foundational understanding of how their skills and

competencies can be applied to working with ABI in CYP can therefore bolster confidence and awareness, as well as interest in entering the more specialist-focused field.

Although the skills and knowledge to work with ABI are arguably within the EP remit, because of the historical, philosophical link to the medical model, participants highlighted that there are more clinical psychologists than EPs becoming Neuropsychologists. Yet, looking at the competence crossover between neuropsychology, EP, and clinical psychology (briefly highlighted in section 9.3), EPs have the skills and applied knowledge to bridge the gap between services and provision which, participants suggest clinical psychologists may not feel confident doing due to the EPs understanding of the education system and child development needed when supporting the return to school. These findings corroborate prior research arguing for the well-placed nature of EPs to monitor change and provide continued support over time for CYP following an ABI (Ball & Howe, 2013). However, due to the emerging research base linking the EP role and ABI in CYP, it is currently a niche area which participants believe needs to be shared across the profession to have a more widespread impact. In doing so, it is hoped that CYP with ABI will be better supported across the systemic landscape.

9.5. Summary of All Research Questions

From this research, we know more about ABI in CYP and the applicability of neuropsychology to the EP role and EP practice. ABI remains under-identified within education despite its worldwide prevalence denouncing TBI alone as a global public health problem and a leading cause of death and disability worldwide (Maas et al., 2022). Also, one of a significantly higher quotient than widely acknowledged

neurodevelopmental conditions (McKinley et al., 2008). The research base concerning ABI and the EP role is marginal, with findings espousing that school staff and EPs do not feel they have the competence or confidence to work with and meet the needs of CYP with an ABI (Misheva, 2021; Renton 2023). Hence, the current research offers a unique contribution to the literature base, supporting these claims and outlining clear narratives and debates associated with this rhetoric denouncing neuropsychology principles as a fundamental knowledge base for EPs whilst acknowledging a level of specialism development involved in this knowledge progression. The research participants, sourced from a finite subset of EPs with additional training and knowledge in neuropsychology and ABI are part of a slowly developing field thriving on collaboration, passion and initiative.

The systemic constraints facing EP work with ABI were distinctly illustrated and participants are engaged in initiatives to create pathways to better serve CYP with ABI. This research reinforces the view that EPs have the foundational skills and competency to work with ABI however, that confidence remains a barrier to engagement. Also, the impetus on neuropsychology and ABI within doctoral EP training courses is paramount to set EPs up for success and to feel that working with ABI and fundamental aspects of neuropsychology is within their professional remit.

Research in the USA on SP work with ABI situates the current research findings in the broader scope of child development and neuropsychology (Slonaker, 2010; Guttormsen, 2014; Anderson et al., 2021). It also provides a platform for supporting CYP with ABI throughout their development according to their unique developmental trajectory from a similar profession (Davies, 2016).

The involvement of EPs within MDT's working in specialist settings such as neurorehabilitation further exemplifies the utility of the EP role and its value in

providing a unique lens on child development, learning, and the developmental trajectory post-ABI. The participants of this study emphasise and embody the application of psychology to the process of change within education for CYP with ABI, accentuating the value of collaboration and co-construction.

The use of semi-structured interviews facilitated the unfiltered, unique views of participants to emerge through detailed discourse, speaking passionately about the topic of ABI in CYP and neuropsychology (McGrath et al., 2019). The interview methodology encouraged open discussion and provided space for reflection on and around the ABI rhetoric within EP work, intending to hopefully advocate for positive and practical change (McGrath et al., 2019).

Based on these findings, it is reasonable to conclude that EPs work as applied systemic practitioners who possess a breadth of tools, skills, and knowledge to facilitate positive change which can undeniably extend to working with CYP with ABI. However, top-down, institutional directives, can pose difficulties with EPs engaging in ongoing, in-depth work over time which we have seen to be vital for positive outcomes for CYP with ABI (Walker & Wicks, 2018). EPs as professionals do not see themselves as experts, rather, having expertise in child development, education, and applying psychology therefore, although the participants have developed a specialist interest and a level of expertise in working within neuropsychology and ABI, they do not necessarily consider themselves as an expert, rather a piece of a wider picture of knowledgeable individuals in the process of change. Correspondingly, the findings espouse that participants consider core aspects of Neuropsychology as a fundamental knowledge base for EPs despite acknowledging a level of specialism development and that it should be embedded in EP training, practice, and continuing professional development.

9.6. Implications for EPs and Future Research Considerations

Participants explicitly illustrated the EP doctoral training course as a useful platform for introducing neuropsychology to trainee EPs and opening up discussions about working with CYP affected by ABI. There was a clear narrative that CPD was important for developing confidence and competence within this area, with whole service days and training courses named as possible routes to explore. Therefore, it would be useful for professional training providers including universities and local authorities to consider the value of and debates within neuropsychology, integrating these into EP training so that these professionals have a foundational understanding needed to work with ABI or at least next steps and relevant signposts.

In light of the competency overlap between Neuropsychology and EP, opportunities for CPD within EP services could include raising awareness of ABI and neuromyths within education, alongside commissioning training from Clinical Neuropsychologists or EPs who have developed a specialism in ABI and neuropsychology. It appeared from the data that the participants were more than willing to be involved in helping to upskill the profession and want to support ongoing EP professional development. Therefore, linking with those who hold extra knowledge and skills in this area would prove efficient and effective practice. The development of a specialist role within local authority teams could also be a route for supporting professional development via peer supervision. Often, EPS teams have a named specialist for ASC, or language needs for instance who keeps abreast with developments, relaying these back to the team, so extending this to encompass ABI and possibly supporting neuropsychological conditions is a position worth exploration and/ or development.

It is hoped this research provides EPs with the opportunity to reflect on their current practice with ABI and the support currently offered. By being aware of the prevalence and sequelae of ABI in CYP, EPs can help to shift narratives away from neuropsychology having a within-child focus, debunking neuromyths within education, and having a more proactive role in promoting neuropsychology principles within their practice. It is hoped that this research prompts further discussion regarding ABI across the EP community in relation to developing confidence and further competence to work with this population. By cultivating further discussion around ABI and the support CYP and systems may require post-injury, this could feed into the continued and future development of pathways linking services together to facilitate effective transitions, such as the return to education. This has been exemplified by Nottinghamshire's ABI in Education Pathway (The Sam White Pathway) (Hammill et al., 2019) and N-ABLES (2021) ABI Return, Best Practice Guidance. Additionally, by promoting broader engagement in discussion and reflection on this topic and body of research, it is hoped that ABI will become included in the SEN CoP, teacher training courses, and provide further support for developing a policy for long-term ABI rehabilitation for CYP.

Further research considerations could include developing and commissioning research on evidence-based interventions for ABI, as currently, participants highlighted that professionals are "scratching around for real evidence-based interventions" (P2) and research specific to ABI. Therefore, professionals are resorting to interventions evidenced for other needs such as learning disabilities or ASC (Singh et al., 2016). Hence, there is an absence of what works for this population. Additionally, seeking out EP opinions and perspectives about working with ABI cases and using neuropsychology within their work is an area of possible

exploration. By asking EPs what they would like to know more about and what they feel would be useful in terms of working with ABI in CYP, subsequent training and initiatives can therefore be developed to support professional development within the EP profession and solidify the rhetoric associated with Neuropsychology principles and ABI being a fundamental knowledge base for EPs.

9.7. Strengths and limitations of the research

Table 4. Strengths and Limitations

Strengths	Limitations
The sampling approach enabled sufficient participant recruitment (six), outlined in relevant research to be satisfactory to enable data saturation (Dworkin, 2012; Busetto et al., 2020). A pragmatist perspective offered a flexible and contextually sensitive approach which prioritises practical relevance making it well suited to the qualitative nature of the research and RQs emphasising the applicability to day-to-day EP practice. The use of member checking of the interview transcripts prior to analysis promoted the validity, credibility, and ethical conduct of the research. Involving participants in the validation process of the transcripts strengthened the quality and trustworthiness of the data as the data was recognisable as	The rigour of the sampling inclusion and exclusion criteria was lacking but this would have significantly reduced the participant pool due to the very scarce nature of Paediatric Neuropsychologists from an EP background. Online interviews may have hindered the ability to accurately interpret non-verbal cues which can be important for understanding participant responses. Also, it can be harder to build rapport in an online setting compared to face-to-face interactions which could lead to less candid responses and impact the quality of the interaction. Findings may be context-specific and not generalise universally due to the narrow focus on the EP profession. Nevertheless, the analysis uncovered useful next steps for decision-making,

an account of the participant's experiences, completed prior to analysis. Thus, participants had the opportunity to either add, amend, or retract information recorded during the interview. Braun and Clarke (2022) believe that reflexive TA is the most 'fully qualitative' member of thematic analysis and therefore the most suitable for exploring the deep, complex, and nuanced meanings of participants. RTA has also been aligned with the research goals and purpose. RTA works especially well for a single researcher, a wide range of data sets, and participant group sizes (Braun & Clarke, 2022). Research within a qualitative paradigm values reflexive subjectivity on the contextual nature of knowledge. The situated and subjective nature of coding was acknowledged throughout the analytical process and is discussed more in Section 3 where the researcher critically reflects on learnings as a result of the choices made throughout the process.	policy development and practice widely applicable for supporting CYP with ABI. It was difficult to situate the analysis within the broader context due to the paucity of research linking ABI and the EP role. Yet, efforts were made to consider the historical context and narratives associated with EP work. No thematic analysis is ever final or complete because it's a subjective situated engagement with the data. Therefore, the data analysis cannot be perfect, but there are quality criteria, useful for good practice (Appendix 17) which were considered throughout.

10. Conclusion

The paucity of research linking ABI and the EP role is staggering. The research base concerning the long-term sequelae of ABI is a more saturated domain of inquiry, however there are clear gaps regarding EP practice and linking neuropsychology to education. This study aimed to gain an in-depth insight into the nuanced experiences and perspectives of EPs who have developed a specialism in working with ABI and neuropsychology across the UK. The novel data gathered from semi-structured interviews highlight the well-placed nature of EPs to work with this population, particularly due to their knowledge of the education systems and psychology. However, barriers of perceived confidence and competence were raised which inherently affect the extent and nature of EP work with ABI in CYP. Systemic constraints such as time, resource, and top-down directives risk inequity of provision for CYP with ABI therefore, there was a clear desire for increased awareness, research, and support for ABI within EP teams and linking this to the wider community systems.

This study is considered to offer a unique contribution to the research base, by focusing on the views of EPs who have developed a specialism for working with ABI and neuropsychology, this research study not only links ABI and neuropsychology to the EP role but also provides context for developing EP practice and professional competency for working with ABI across the systemic landscape. It is hoped this research promotes further reflection on the applicability of EP skills and knowledge to work with ABI in CYP, encouraging proactive and creative engagement to facilitate and contribute to positive change. Additionally, that EPs become aware of their unique opportunity to bridge this provision inequity so that CYP with ABI

receive appropriate and targeted support for their needs that is evidence-based, individually focused, and psychologically informed.

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Neuropsychology: A Specialism or Fundamental Knowledge Base for Educational Psychologists? – A Case of Acquired Brain Injury

Part Three: Major Research Reflective Account

Word Count: 6,362

12. Introduction

This major research reflective account is presented in two sections. Section One provides a critical account of the research process and the development of the research practitioner. Section Two provides a critical account of the study's contribution to knowledge, including dissemination. This critical appraisal is written in the first person to reflect the thoughts and considerations made throughout the research process. It will consider how my values, beliefs, and experiences have influenced the research project and reflect on how the process has impacted my professional practice in becoming an EP. This account hopes to provide the reader with transparency regarding the research process, the decisions made, and what is hoped to be a unique contribution to the field of EP.

13. Section One: The Research Process and Development of the Research Practitioner

13.1. Rationale for the Thesis and Inception

The rationale for this topic came from my experience working in a rehabilitation centre for CYP with ABI. In this role, I was part of a MDT working to support CYP and their families. From when CYP arrived, the focus was on returning to the community, including education, and learning new skills. I had spoken to EPs working in the setting about their role and the impact they get to have on the lives of CYP and their families. When starting my training to become an educational psychologist, I retained this interest in the scope of the EP role and the diversity of people we work with.

In the initial phases of devising my research topic, by scoping the literature landscape, I was interested but not shocked to see the lack of literature pertaining to ABI in education across the UK. I reached out to EPs working in specialist settings and specialist roles from professional contacts known from my prior role where we discussed useful areas of research and gaps in knowledge. We discussed possibilities for meaningful change and identified clear gaps in the research base. Following these discussions, due to the vast scope of research possibilities, I took time to tune into my interests and positionality related to completing research and the type of researcher I wanted to be. I remained mindful that I wanted the research to provide a unique and valuable contribution to EP practice which helped to steer the research into focusing on EP professional development. This was further emphasised when, on professional placements, I noticed a few cases of ABI coming up where the EPs were either unsure of where to look for information or felt a lack of confidence in recommending the next steps in problem-solving discussions with schools. This further fuelled my interest in pursuing this research project and sharing best practices across the EP profession.

13.2. The Literature Review – Process and Difficulties

Conducting Part One: The Major Literature Review, was the most time-consuming and difficult part of the process. I was concerned about the overall size of the literature review and the worry about my literature searches not returning enough research to critically analyse. On the other hand, by broadening my search I was concerned that I would have to sift through a mountain of research related to ABI and neuropsychology without finding enough relevance to ABI and the EP role.

From the outset, after preliminary searches and background reading, I knew I had to either complete a scoping or a narrative style review due to the lack of literature related to my topic of interest and that I would need to develop loose questions about the EP role in supporting ABI in CYP to show the literary gap and a clear rationale for my research.

Narrative reviews have been argued to be subject to the researcher's bias when selecting research (Siddaway et al., 2019). Nevertheless, I remained mindful of my influence on the story I was telling throughout the literature review and believe that my views and biases enabled a unique and comprehensive review of the literature relevant to the RQs.

Additionally, a narrative review is based on individual interpretation and critique, to expand understanding (Green et al., 2006). When reading through the literature, I found letting go of certain research quite difficult due to having an interest in some topics which, although relevant to either EP practice or working with CYP affected by brain injury, were not pertinent to my literature RQs. I also had to keep in mind that the narrative review does not aim to provide a thorough examination of the literature, but rather a broad contextualising overview of ABI and its relevance to EPs (Popay et al., 2006).

The process I followed provided a clear rationale for conducting a narrative review. I initially screened for research specific to what the EP role looked like when working with ABI. The minimal returned literature was not surprising yet, prior to deciding to conduct a narrative review I wanted to assess the systematic suitability of the papers yielded, testing for quality, relevance, and robustness. However, these papers consisted of theses and narrative opinion papers and therefore were not suitable for a systematic review. By assessing the systematic suitability of these

papers, I was able to see gaps in the literature forming which enabled me to narrow down the relevant literature once the search terms were broadened.

Faced with the scope of literature to contextualise ABI, I decided after screening all the literature at a title and abstract level to work my way through and identify broad themes across the literature to define a structure for writing up. This process although time-consuming helped me to digest all the literature and place it within the developing context of EP work with ABI.

By conducting a narrative review, I was able to contextualise the wider experience CYP with ABI face alongside debates within education regarding neuropsychology and brain injury. I believe that the critical approach I took, alongside transparency in reporting the process led to an objective and balanced review of the literature. Additionally, it allowed the creation of a logical thread toward Part 2 (the major research project) and set the scene for the relevance of neuropsychology and being informed when working with CYP affected by ABI.

13.3. Researcher Positioning and Ethical Responsibility

It appeared to me that as a qualitative researcher, you either adopt an interpretative stance, aiming for understanding which is appreciated for being interesting and relevant, or a pragmatist stance which aims for constructive knowledge, appreciated for being useful in action. Both interpretivism and pragmatism share the orientation toward understanding yet there is a key difference: understanding is seen as a value of its own in interpretivism whereas, in pragmatism, understanding is seen as pivotal for change (Dewey, 2008). In this research, the latter is assumed due to the impetus for positive and practical change within the EP profession.

Hence, I adopted a pragmatist perspective as I believed this fit with the research aims. Pragmatism looks for what fits according to the research focus therefore, for this research, ABI is seen to exist and can be in the day-to-day role of the EP. I believe that the pragmatist perspective worked best for this research because it conveys the interlinked nature of knowledge and practice. This belief fits with my views as a researcher and the perspective that EP work using neuropsychology principles and with ABI are being influenced by an individual's level of knowledge and practice.

Furthermore, the pragmatist perspective views knowledge as being constructed based on real-world experiences and therefore truths can change over time (Kelly & Cordeiro, 2020). Also, that human experience is understood through language and communication, providing reasoning for the use of a qualitative methodology in this research via semi-structured interviews. The benefit of adopting a pragmatist perspective for this research is that it can help to generalise data to a target population, in this case, EPs. Accordingly, this perspective has enabled me to develop a holistic analysis to incorporate several relevant factors into the study e.g., experiences, training views, positioning, and continuing professional development.

I ultimately acknowledge that my positionality is biased as I recognise my experiences within the context of ABI and EP influence my perception of participant experiences. This inherently influences data collection and analysis, but I believe this enhances the integrity of the research. I consider myself an inside researcher (Bryman, 2016) due to my familiarity and knowledge of the topic area. Bukamal (2022) considers insider positionality to facilitate more nuanced perspectives, which can build credibility and rapport between researcher and participant. Therefore, I aimed to use my subjectivity as an analysis tool (as advocated by Braun & Clarke,

2019) which I feel extended the analysis and contributions of the research as a result. By considering my assumptions and standpoint, I have been able to locate myself as a researcher and align theory and research practice accordingly. This positioning, however, means that another researcher may interpret or influence the research in different ways thus, espousing different findings from the analysis.

I felt that it was my ethical responsibility as a psychological practitioner to increase awareness and knowledge about ABI within the EP profession after seeing the profound impact it can have. Also, throughout my training, I could see clear links between the EP role and the EP being a well-paced professional to support the ongoing development and rehabilitation of CYP with ABI. The regular contact and relationships with schools provide great links across the local authority to meet the educational and developmental needs of these CYP. Alongside this, the wealth of knowledge EPs possess regarding child development and education which apply to CYP with ABI. It would have felt like a missed opportunity if I had not taken the chance to increase knowledge and awareness among the EP profession, especially due to the high prevalence rates of ABI worldwide (Headway, 2023).

13.4. The Qualitative Methodology

In the initial stages of devising my thesis methodology, I wanted to be able to have a practical positive impact on the EP community as a result of the research. Before deciding to implement semi-structured interviews, I explored action research with the possibility of conducting a pilot project within a local authority: conducting a scoping survey of the knowledge, confidence, and competence levels when working with ABI, followed by developing a training session for the local authority with input from specialists in the field. Afterwards, conducting either interviews or a focus group

to discuss the process, training information, what participants felt they would take forward into their practice, and any further accommodations applicable to EPs to enhance their work with ABI. I acknowledged that one training session was likely not enough to provide EPs with all the knowledge and skills which had arisen from a scoping survey. Nevertheless, I believed it would provide a baseline understanding of the information that is needed as well as elucidating preferred modes of training delivery.

I also considered if I was the right person to be developing and delivering a training on ABI because, despite my prior knowledge and experience in the area I did not have the specialist knowledge or expertise for delivering a training. However, the EPs I held initial research discussions with kindly offered to deliver a training session on the back of the information I had gained. Although action research would have been ideal in this situation and I believe it would have been a useful project for enhancing perceived levels of confidence and competence in the area of working with ABI, it did not appear realistic within the timeframes for the completion of this thesis. Also, there was the additional consideration of the local authority's time and resources available to offer to my thesis project.

Accordingly, it was decided to conduct in-depth interviews with EPs with specialist knowledge and experience working with ABI in CYP and neuropsychology. I believe this was a more feasible way to begin the process of upskilling the workforce. Having this top-down approach I was able to unpick areas of need within EP practice as all participants were EPs currently working with or within a local authority setting. Although I acknowledge that it probably would have been useful to explore the levels of confidence and competence in working with ABI prior to discussing how to support the workforce, within initial discussions, it became

apparent to me that if EPs do not hold much knowledge regarding ABI then it would be difficult to ascertain what they think would be useful if they do not know it is applicable to their work in the first place. Therefore, by interviewing EPs with more specialist knowledge and expertise in the area of neuropsychology and ABI, I felt that I was able to delve into their unique constructions and experiences of how they see EPs best supporting CYP by also being aware of the relative strengths and downfalls associated with a local authority EP post.

13.5. Participant Selection

Due to the limited number of EP's specialising in working with ABI and neuropsychology, I was concerned that I would not achieve the desired number of participants for the research I was aware before embarking on this research that there was a limited number of professionals working in this area across the UK and did not know if they would be willing to or have time to participate. Hence, in line with my philosophical stance of pragmatism, I adopted a purposive and strategic sampling procedure which allowed me to increase the potential participant pool by reaching more individuals with my recruitment information.

I initially found it difficult to define the inclusion criteria for participants due to the arbitrary nature of specialism development within EP practice. If I restricted participants to those who had gained additional qualifications in neuropsychology, this would have significantly reduced those eligible to take part, rendering the research project insurmountable. Additionally, due to the majority of Clinical Neuropsychologists being from the field of clinical psychology, I did not envision there would be enough EPs willing or able to participate. Therefore, I had to broaden the criteria to include a level of specialism development without severely restricting

eligibility. However, I remained mindful that there would be some EPs with an interest in ABI and neuropsychology who would be interested in participating but would not necessarily have the additional knowledge or level of expertise to provide meaningful insight into the RQs posed.

I ensured to check with participants prior to them signing consent forms and conducting the interviews that these professionals had the prerequisite levels of specialism I was looking for (See 7.3.2 Inclusion Criteria). I acknowledge that I could have been more rigorous within this process by triangulating evidence of this specialism via casework overtime, and records of continuing professional development, yet due to the small field I did not believe this to be relevant at the time however, it would have added to the reliability and credibility of the research findings.

13.6. Data Collection and Using Semi-Structured Interviews

I aimed to recruit at least six participants for the research study as Braun and Clarke (2019) highlight that six to 10 participants gather “sufficient data for a small project” (p.50) when completing Thematic Analysis Additionally, with roots in phenomenology, the pragmatist perspective, therefore, advocates that in-depth interviews with a small sample are satisfactory to enable data saturation (Dworkin, 2012). After posting my recruitment documents on EPNET, and Twitter, I initially gained a good level of interest, although I later found out that some of these participants did not meet the inclusion and exclusion criteria. I also sent an e-mail to a known professional colleague working within a specialist rehabilitation centre for ABI who was able to share my recruitment information with the EP colleagues from their professional network. Thankfully, I was able to conduct all six interviews with

EPs working within different teams across the UK, providing a diverse scope of views from these participants.

Employing semi-structured interviews, I was aware that my own values, beliefs, and constructs would have influenced my responses to participant's accounts, as well as the questions asked during the interview process. I was mindful to keep the questions open-ended and avoid leading participants into answering in a way which would be seen as desirable. Having an interview guide to guide the process was valuable to aid consistency across the interviews and ensure that the aims of the research were addressed (Patton, 2002). Nevertheless, the value of a semi-structured interview meant that there was the opportunity to explore interesting tangents and narratives participants communicated which added breadth and depth to the individual accounts and overall analysis (McGrath et al., 2019).

I considered whether to provide participants with the interview guide ahead of time to assist with the depth of information processing and time to formulate some ideas. One disadvantage of this was the potential for participants to discuss the schedule with colleagues which would mean that there would be an indirect influence on their perspectives. Yet, due to the limited number of professionals and the heterogeneous nature of the role I chose not to provide the interview guides before the interview itself. Rather, I used the interviews as a way to provide space and time for participants to engage in a deeper level of discourse by building rapport and establishing a reflective and reflexive context of exploration (Braun & Clarke, 2022).

Malmqvist et al., (2019) advocate for the use of pilot studies within qualitative research, based on the assumption that a carefully organised and managed pilot study has the potential to increase the quality of the research findings. Accordingly, I used the first interview as a pilot to test the interview schedule and check the

question suitability for participants and for answering the RQs. By carrying out a pilot interview, I was able to further reflect on my contribution to the data collection process and tease out further areas to explore and expand upon. Following the pilot interview, I valued the time at the end of the interview for the participant and me to reflect on the interview process and to discover any more insights and narratives surrounding the topic itself. Qualitative data collection was described by Van Teijlingen and Hundley (2001) as often *progressive*, with subsequent interviews in a series being *better* than previous ones. Therefore, contamination is deemed a lesser concern in qualitative research and separating the pilot from the main analysis is not necessary (Van Teijlingen & Hundley, 2001). Hence, the additional time adopted in the pilot was also spent with all other participants and the initial interview was included within the main analysis.

The researcher's subjectivity within qualitative research is seen as an important aspect of the research process considered to enable a deeper engagement with the research topic, particularly when engaged with reflexively (Braun & Clarke, 2022). From an ethical perspective, it was important to me that participants felt safe and comfortable to share what they wanted to and engage in open discussion regarding the research focus. One participant acknowledged that due to the limited number of EPs working with ABI, there was potential to identify themselves. Therefore, I believed it was important to acknowledge participant concerns and ensure full anonymity within the analysis and write-up. The use of member checking also helped in this regard, whilst ensuring the validity, trustworthiness, and authenticity of accounts.

It was decided that interviews would take place online rather than in person due to the practical logistics of reaching participants across the UK, finding a suitable

place for interviews, and timeframes/availability of participant calendars. However, it is interesting to consider how participant responses may have differed if the interactions were in person. Nevertheless, I believe that the data gained via participant accounts was rich and plentiful, adding nuanced responses to the RQs posed. I ensured that there was time at the beginning and end of the interviews to facilitate rapport with participants, enabling for introductions and sharing of the research aims at the beginning, and space for reflection on the interview process and any questions the participants had at the end. Whilst the participants were not obliged to have their cameras on during the interview and only the audio was recorded, all participants chose to keep them on which I believe helped to facilitate our relationship and depth of responses gained from the process.

13.7. Considering Alternative Analytical Methods

Interpretative Phenomenological Analysis (IPA) was a plausible option for data analysis due to a phenomenological theoretical framework informing the research and a small homogenous sample exploring people's experiences and perspectives. However, the ontological and epistemological underpinnings of IPA lie within critical realism and contextualism (Larkin, Watts and Clifton, 2006) and this provides an entire framework for conducting research.

The current research, however, adopts a pragmatic approach which lends itself more readily to RTA due to the flexibility of the approach. RTA can be used widely across the ontological and epistemological spectrum and can also be underpinned by phenomenology (Braun & Clarke, 2022). This research also addresses a range of RQs which are not limited to experiences and perspectives, but also explore knowledge and development. Furthermore, aimed to focus on the

meaning of data across participants as opposed to unique and individual characteristics attributed to the idiographic approach in IPA. This does not, however, mean that differences and divergences in the data were not considered during analysis. The reflexive nature of RTA allows and encourages the researcher to acknowledge and incorporate their knowledge and understanding into the analysis process, which for this research is important to acknowledge with the researcher's background working in the area of ABI, an aspect that IPA does not consider as readily.

13.8. Data Analysis and Interpretation

Prior to beginning data analysis, I made sure to familiarise myself with the relevant articles and texts from Braun and Clarke (2019; 2022), where I learned to explore my subjectivity as a key aspect of the analysis process. During and following each interview, I noted down my thoughts, analytic insights, questions, and beliefs in response to the participant accounts "to recognise and take responsibility for one's own situatedness within the research and the effect that it may have on the setting and people being studied, questions being asked, data being collected and its interpretation" (Berger, 2015 p.220).

I specifically chose to complete a RTA due to my prior experience and knowledge in the area of ABI, therefore I was not able to entirely separate my assumptions and expectations from the research. Olmos-Vega et al (2023) state that by acknowledging my own views and biases, inherently makes the research better. Therefore, throughout the research process, I remained mindful of my influence on the data. Nevertheless, I believe that researcher assumptions and influence are inevitable parts of the knowledge production process. Hence, in the words of Braun

and Clarke (2022) “it's not a question of whether they influence but how they influence” (p.18).

13.8.1. Phase One: Data Familiarisation

I printed hard copies of the transcripts to engage in this initial phase of analysis. To develop a deep and intimate knowledge of the data set, I immersed myself in the data set reading and re-reading the transcripts and highlighting key aspects that stood out to me. I then re-listened to each of the audio files and made corresponding notes of my thoughts and questions related to the data set as I went along interspersed throughout each transcript. In developing potential patterns of meaning, I found it useful to keep certain questions in mind to facilitate my critical engagement (see Table 5).

Table 5. Questions I Kept in Mind During Familiarisation (adapted from Braun and Clarke, 2022)

Questions: Phase One	
1.	How is the participant making sense of the topic?
2.	Why might the participant be making sense of things in this way?
3.	What sort of assumptions are being made?
4.	Why might I be reacting to the data in this way?
5.	What different ways could I make sense of the data?

13.8.2. Phase Two: Data Coding

I systematically worked through each transcript and the entire data set applying analytically meaningful descriptions or codes to segments of data which appeared relevant to the RQs. I used both inductive and deductive coding and the codes spread across the semantic to latent spectrum, including both explicitly expressed meaning and deeper more implicit meanings. I ensured to keep my RQs

loosely in mind to ensure that they were not overlooked but I also coded data that did not directly relate to my RQs but provided meaning around participant's experiences. Akin to Nadar's (2014) claim that coding is a process of interpretation and meaning-making and researcher subjectivity fuels this process, I found it useful to contextualise the coding in relation to my broader thoughts and feelings around the topic of interest, alongside what I found during the literature review. To ensure rigour throughout the coding process, I systematically worked through the data set more than once and I also refined codes across multiple data items as I went along by moving back and forth between the interview transcripts and making notes, as advocated for by Trainor and Bundon (2021).

I decided to input each code and associated quotes onto the MAXQDA-24 software (an analysis software for qualitative and mixed methods research) to facilitate my ability to merge several codes to address duplication and minor differences to become part of similar code clusters. This enabled a more manageable number of codes, whilst still providing diversity and richness across the data set. Also, offering the flexibility of printing out codes and extracts for a more kinaesthetic approach to initial theme generation. I hoped this approach would assist me in future stages of analysis however, unfortunately caused me more stress and challenges as detailed below.

13.8.3. Phases Three and Four: Initial Theme Generation and Developing and Reviewing Themes

I printed out the codes from the MAXQDA-24, and physically moved these around in an initial thematic map, grouping them into clusters which generated candidate themes and a preliminary story relating to the RQs and data set (See Appendix 16). I felt a sense of frustration when looking at these clusters due to their

overlapping nature, as well as the predominant semantic nature of the codes. I found it difficult to convey the stories participants were sharing with the current codes and initial themes I had. At this stage, engaging in supervision with a more experienced qualitative researcher enabled me to contain my anxieties about getting the analysis *right* and helped me to realise that I had generated topic summaries rather than candidate themes. Also, to remember that RTA is a flexible process, and it is not about following procedures correctly but rather my reflective engagement with the data and analytic process (Braun & Clarke, 2022).

I went back to my initial transcripts to re-familiarise myself with the stories participants were conveying and sitting with the thoughts and feelings their accounts brought out in me as a researcher. There was something about having the physical transcript on paper in front of me with my thoughts, notes, and codes which was comforting but also helpful for me to find patterns of shared meaning around central concepts across the data set. Needless to say, putting the codes and associated quotes onto the MAXQDA-24 software although helpful in terms of addressing duplication in codes did not help me with theme generation and exploring the expressions of shared or similar meanings across the data set.

Keeping the following questions in mind I was able to develop a more nuanced understanding and analysis of the data which supported me in exploring patterned meanings (see Table 6).

Table 6. Questions I Kept in Mind During Initial Theme Generation and Developing and Reviewing Themes (adapted from Braun and Clarke, 2022)

	Questions: Phases Three and Four
1.	Does this theme capture something meaningful?
2.	Does the theme relate to the RQs and what does it contribute to the overall analysis?
3.	Is the theme coherent with a central organising concept bringing codes together?
4.	Does the theme enable nuance, diversity, and richness to be shown within the dataset?
5.	Is the theme distinctive/ does it have clear boundaries?

13.8.4. Phases Five and Six: Refining, Defining and Naming Themes and Writing Up

In refining the themes, I regularly returned to the notion that "Data do not speak for themselves" (Braun and Clarke, 2022 p.91). Throughout the analysis I aimed to tell the reader what the data and the themes mean, and why they matter. As a result, when refining and defining the themes I recognised cross overs and ultimately sought a narrative to explain the data in a logical format. Additionally, by being able to return to the transcripts I was able to pick out statements I felt best portrayed the essence of a theme or subtheme.

The theoretical flexibility of RTA meant that I could employ a deductive approach in the latter stages of analysis to refine and name themes whilst locating these within a socio-political context (Braun & Clarke, 2022). At this stage, I found it difficult to part ways with some of the salient information participants conveyed and did not want to do them injustice by missing out on information they believed to be important. However, coming back to the purpose of RTA and themes being actively created by the researcher at the intersection of the data, analytic process, and

subjectivity, I was able to acknowledge that “no RTA is ever final or complete, because it is subjective and situated engagement with data” (Braun & Clarke, 2021, p.92). Also acknowledging that other researchers may have drawn different interpretations and conclusions. Therefore, by recognising that I am an active agent in the production of knowledge, I was able to elevate and convey a compelling story about the data pertinent to my RQs.

RTA requires the implementation of a “theoretical knowingness and transparency” (Braun & Clarke, 2019, p.4); throughout the process, I strived to be fully aware of the philosophical sensibility and theoretical assumptions informing my use of RTA. Accordingly, from a pragmatist perspective, the themes from the data place an emphasis on actionable knowledge, alongside the interconnectedness between experience, knowing and acting (Kelly & Cordeiro, 2020). Holding the belief that knowledge is constructed based on real-world experiences which can change over time aligns directly with the aims of this research and the analytical process.

14. Section Two: Contribution to Knowledge and Dissemination

14.1. Contribution to the Literature

To my knowledge, this research study represents the first to explore the views and experiences of EPs with a specialism in working with ABI and neuropsychology within UK-based EP practice. Also, linking this to EP professional development opportunities.

In accordance with previous literature (e.g., Jantz et al., 2015; UKABIF, 2018; Alighieri et al., 2021; Hypher, 2023; Rempe et al., 2023) participants identified the long-term sequelae of ABI along with the importance of the education setting for ABI rehabilitation (NASEN & CBIT, 2018). Additionally, participants emphasised Bozic

and Morris's (2005) assertion that the EP is arguably the most qualified professional involved when working with ABI in CYP to support ongoing rehabilitation and educational support. However, they acknowledge that EPs may require supplementary training commensurate with their foundational knowledge (Bozic & Morris, 2005). Participants illustrated prominent debates within EP practice, such as the within-child debate, whilst also underscoring a prevalent lack of confidence and perceived competency among educational professionals, including EPs when working with ABI cases. This discourse expands on the insights derived from Bozic and Morris (2005), Misheva (2021) and Renton (2023).

The current study also made several unique contributions to the literature. This research study offers a distinctive contribution by delving into the practices undertaken by EPs possessing specialised knowledge and expertise in neuropsychology and ABI, aimed at facilitating ongoing rehabilitation efforts. Through documenting their roles and understanding the best practices and signposts associated with supporting ABI in CYP, this study provides a useful and pertinent discourse for EPs to incorporate into their day-to-day practice. Furthermore, it serves as a catalyst for subsequent discussions and investigations concerning using neuropsychology principles to support ABI.

Participants recounted their experiences of supporting CYP affected by ABI and their families, emphasising the need for a holistic, family-orientated strategy for rehabilitation. However, participants delineated systemic challenges, notably a lack of capacity within local authority services, thus documenting deficiencies in establishing cohesive pathways connecting health and education services to support ABI in CYP. This discovery was further substantiated by the absence of ABI being included within policy or legislative frameworks, such as the SEND CoP (Department

for Education, 2015), thereby relegating it to a secondary position behind more prominently recognised neurodevelopmental conditions such as ASC. Despite literature indicating intersections between neurodevelopmental conditions and ABI (e.g., Jim et al., 2023), participants unequivocally underscored the imperative for tailored and ABI-focused support.

14.2. Contribution to Future Research

This research provides a basis for future research to further build on the links between the EP and neuropsychology professions, as well as linking the EP role to working with ABI. This research opens discussions about the training of EPs alongside their continuing professional development, questioning if there is a level of fundamental or core awareness that is needed for working with neuropsychological cases including ABI, or if it is a specialism or specialist interest. The study allows for and encourages discussion regarding the overlap of competencies between psychological professions. Furthermore, this study encourages EPs to actively consider the current research base drawing comparisons from the similar but distinct field of SP.

In addition to the suggestions documented in Part 2 Section 9.6, it may be beneficial for future research to explore the following in Table 7 below.

Table 7. Suggestions for Future Research

	Possible Areas for Future Research
1.	Exploring evidence-based interventions for promoting ABI rehabilitation and their link to education.
2.	An exploration of the EP role in neuropsychology and working with neuropsychological casework.

3.	Views of EPs on the applicability of neuropsychology to their day-to-day practice and what they would like to know more about.
4.	The impact of ABI return to education pathways: a possible case study of best practice.
5.	Exploring the competency crossover between educational, clinical, and neuropsychology and how this can influence EP work with ABI.
6.	Examining the continuity between DEdPsy training course content: exploring the knowledge base trainee EPs are provided with to facilitate their work with ABI and other neuropsychological conditions.
7.	The impact of supervision networks for supporting the ongoing professional development of EPs working with ABI.
8.	An empirical evaluation of biopsychosocial formulation models for ABI: content and utility in applied psychology professional practice.

14.3. Plans for Dissemination of Findings

I plan to disseminate the research findings by presenting the project to my third-year professional placement local authority. My EP colleagues in this service have been supportive and interested in this research development and I hope it will inform and spark discussion among these professionals to consider how they support ABI in CYP. I am also planning to submit my thesis to be presented at an international conference on paediatric ABI.

In the future, I hope to publish my thesis either in the form of a book or a peer-reviewed journal to make the information accessible to a wider audience. I believe that by publishing this project I will be able to have conversations with other, interested EPs with the hope of conducting future research to further accentuate the link between the EP role, ABI, and neuropsychology. Aligning with my pragmatist positioning, by disseminating these findings, I therefore hope that the knowledge

gained from this research will inform positive and practical change to enhance EP work with ABI in CYP.

I also plan to create an infographic to outline areas of best practice arising from participant views. This infographic will aim to offer EPs a user-friendly resource containing the key aspects to consider when working with ABI cases and signposts for further guidance (e.g., formulation tools). I am going to take what I have learned throughout the research process into my professional practice as an EP. I aim to share my findings, increased knowledge, and understanding at the individual, group, and systemic levels around: (1) what EPs need to know for working with ABI in CYP, (2) current barriers preventing effective work with ABI in CYP, and (3) dispelling myths and misconceptions around ABI and neuropsychology.

14.4. Contribution to Professional Practice

The insight gained from this research has important implications for educational professionals including but not limited to EPs (see Part 2 Section 8 for the analysis and Section 9.6 for implications related to EP practice). The research provides an understanding of ABI within the context of EP practice, linking neuropsychology and EP respectively. Undoubtedly, a need for increased awareness surrounding ABI sequelae and their impact on developmental trajectories is seen. This research begins to open the discussion of EP professional development and emphasises the importance of setting EPs up with the prerequisite skills to work with this demographic. By evidencing the systemic barriers affecting EP work with ABI, it is hoped that this research provides an argument toward building frameworks and pathways to support ABI in CYP to help them thrive in their environments with suitable supports in place.

The findings espoused, acknowledge the level of knowledge and expertise EPs already hold relevant to working with ABI, linking to the HCPC's SoPs for Practicing Psychologists (2023). Therefore, it is hoped that EPs reading this research will feel more confident to work with ABI casework and be empowered to help combat the misconceptions and myths prevalent throughout the education sector.

Nevertheless, due to the highlighted need for increased confidence in working with this group, it is reasonable to assume that EPs may require extra supervision and guidance to support their views of competence for managing meaningful change in these situations. Hence, by exploring the views of EPs who have developed a specialism in working with ABI and neuropsychology, we can extract the best practices and procedures to inform and educate others, alleviating a level of perceived incompetence. Also, the findings from this research can easily be applied to EP training courses and continuing professional development sessions to begin this process.

It is also important to acknowledge the developing nature of research in EP alongside the findings outlined in this research, namely concerns regarding systemic challenges and debates over positionality. As research and practice continue to evolve, it will be important for EPs to remain reflective and reflexive of their practice, acknowledging their own biases and working to engender positive outcomes for CYP affected by ABI.

Additionally, EP doctoral training courses offer a unique opportunity for early information and support for professionals to build their skill repertoire. Participants reflected on the differences across EP training courses in the UK, specifically the content covered and how integrating information regarding ABI and neuropsychology

principles would be feasible and highly applicable. However, participants specified that this would depend on who, if anyone, has an overview of the training course teaching content within the scope of the BPS and HCPC requirements. Also, how best practice among the EP profession can be facilitated via offering trainee EPs the prerequisite knowledge to support their ongoing professional development where they can extend their knowledge and level of expertise working with ABI and in neuropsychology should they wish to. Therefore, there is the possibility for professional practice developments in the earlier stages of EP training which provides a building block for future casework requiring neuropsychological knowledge and theory to be considered as meaningful and relevant.

15. Concluding Reflections

I hope that this major research reflective account has provided a useful lens to view the research contributions. I have appreciated the opportunity to engage in thoughtful reflection on my decision-making throughout the research process and develop my “analytic sensibility” (Braun & Clarke, 2022, p.44). I acknowledge that my journey has been influenced by my positionality as an inside researcher however, I believe this adds to the depth of my analysis and subsequent practical implications outlined. I do not doubt that this research will enhance my future case work with ABI in CYP, alongside those whom I hope to engage with and read my research. Therefore, I feel grateful for the reflections and reflexivity offered by the research participants. I am hopeful that research and EP work with ABI in CYP will continue to expand as a result of this research, thereby providing a positive influence on the quality of provision for ABI in CYP within educational contexts UK-wide.

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17. Appendix

17.1. Appendix 1. Search Strategy

Database	Search terms	Number of sources
APA Psych Info	“brain injur*” OR neuropsychology AND “educational psycholo*”	6
ProQuest DTG	title ((“brain injur*” OR neuropsychology) AND “educational psycholo*”))	3
Scopus	((TITLE “brain injur*” OR neuropsychology) AND (TITLE “educational psycholo*”))	5 (DUPLICATES)
CINAHL	ti ((“brain injur*” OR neuropsychology) AND ti (“educational psycholo*”))	1 (DUPLICATE)
ProQuest Education Collection incl: ERIC and Education Database	title ((“brain injur*” OR neuropsychology) AND “educational psycholo*”))	0
BIE	TI (“brain injur*” OR neuropsychology) AND TI (“educational psycholo*”)	3 (DUPLICATES)
Child Development & Adolescent Studies	TI (“brain injur*” OR neuropsychology) AND TI (“educational psycholo*”)	0
PubMed	(("brain injur*"[Title] OR "neuropsychology"[Title])) AND ("educational psycholo*"[Title])	1 (DUPLICATE)

Key: (*) truncation character used to search for additional letters at the end of a word (e.g., educate or education).

17.2. Appendix 2. Systematic Suitability of Literature

Source	Type	Peer reviewed	Relevance to LRQ	Key Results	Implications	Reliability*	Validity*	Limitations
Van Pareen 2002	Master's thesis – case study design (interview and observations) and narrative review?	no	Yes – EP role in the emotional and social rehabilitation of TBI.	Traumatic brain injury during the developmental phase of adolescence negatively impacts the emotional and social well-being of these adolescents, and the educational psychologist plays a valuable role in the emotional and social rehabilitation of these adolescents.	Establishment of the role of the Educational Psychologist in the emotional and social rehabilitation of the TBI adolescent.	Not replicable due to a single case study and parameters of literature defined.	Face validity context in South Africa only but the limited case study design offers rich qualitative data.	Sensitive nature of the topic and bias in observations . Not conducted over time.

Brooks et al 2003	Case histories proceeded by four rating scales on support needs following ABI.	yes	Yes - whether the training and experience of Educational Psychologists has made them aware that young children are particularly vulnerable to long-term effects of brain injury	Educational Psychologists consistently rated young children with brain injuries as needing more additional social/family support for longer than adolescents.	The views of the Educational Psychologists who completed the questionnaire contrasted with the views of medical practitioners from three previous studies, who were found to believe that `younger is better' concerning TBI.	Sent to all EPs from the 1998 directory of Educational Psychology Services in the UK. 32% completion rate. Replicable procedure.	Face and context validity. Intent of research was representative.	Low response rate and high non-completion rate.
Bozic and Morris 2005	Questionnaire based survey and a more detailed survey of those with an ABI case in the past 12 months.	Yes ECP	Yes – views of Educational Psychologists on the support needed after a TBI.	Confirmed that it was unusual for more specialist colleagues, such as Clinical Neuropsychologists, to be involved in school-based consultation	Future training needs and practice of EPs.	Replicable but the questions were not included. Evidence of closed questioning. Opportunity sampling of 40 EPs.	Context within reason-UK wide. All DEdPsy included. Diverse length of service included. Face, construct, and	Known EPs Small sample although 75% response rate, not fully representative of all EPs. Not all key stakeholder views were considered.

				relating to such pupils, and indicated that, in a majority of cases, EPs initial and post-experience training had offered an insecure grounding upon which confidently to base their own practice in this domain.			content validity.	
MacKay 2005	Narrative review and position piece	yes	Relation between Neuropsychology and Educational Psychology	There is currently no literature defining the place of Clinical Neuropsychology within Educational Psychology practice in a way that	Clinical Neuropsychology is central to Educational Psychology. It is not so much a question for EPs of 'can we use neuropsychology in our	Search parameters are not defined or where the information was searched from.	Face and content: purpose of this paper is to explore that relationship, and to locate it	Unclear on the search strategy of data and highly interpreted findings by the researcher. Not robust but a useful overview of

				establishes the relationship between the two disciplines. This is particularly the case in relation to Educational Psychology in the UK. Neuropsychology in schools debated in United States of America in a dozen papers since 1980s.	practice?' as 'are we fully competent to practise without it?'.		coherently within current and future directions for the profession of Educational Psychology	potential next steps and developments. Cannot be quality checked though.
Parkhouse 2010	Book review	yes	Review of: Educational implications of acquired brain injury: a resource for Educational Psychologists	In my view, this is an exceptionally well-presented and useful book to support a training		Book review – bias of one person reading it.	Face validity	One person's view, although peer reviewed is not robust enough.

			, by Sue Walker,	course. It provides a wealth of information in a short space for busy EPs who are quite likely to come into contact with children with ABI.				
Carroll 2011	Thesis - Thirty-seven qualitative semi-structured interviews	no	Yes: experiences and perspectives of children, parents, teachers, and Educational Psychologists and implications for professional practice.	Importance of protective factors and change. Adjusting to being a parent of a child with ABI, facilitators of support and the need for psychological and specialist support. The need for prof	Demonstrate that there is a need for improved professional liaison and specialist input, especially in terms of emotional support.	Clear methodology for replicability of interviews. Rating scales also used – triangulation. Clear analysis – thematic.	Face Context is small but relevant across key stakeholders.	Small sample and scale – only London.

				essional lead ership and specialist knowledge, the responses to emotional needs and the challenges fo r the school. Roles and functions of t he profession al network, the needs of fam ilies and the need for spe cialist profess ional support for children wi th ABI, as well as their families and teachers.				
Ball and Howe 2013	Semi structured interviews	yes	Yes – how EPs can support the reintegration of children with an	Two main themes emerged: • The need for improved communicati	Highlighted a number of areas where EPs could contribute to supporting	Clear rigorous procedure to replicate study.	Offered training implicatio ns.	Interviews at 2 specialist settings only. No limitations were

			acquired brain injury upon their return to school.	on between professionals, particularly upon the young person's discharge from hospital; • The need for training for education staff, including raising awareness of the changing needs of children with an ABI as they develop.	children who have had ABI, as outlined as recommendation.	Range of relevant professionals included. Analysis method identified.	Face and content validity.	discussed, and bias included in Thematic Analysis.
Misheva 2020/ Misheva 2021	Thesis – national survey and semi structured interviews (mixed methods).	No	Yes – relation between Educational Psychology practice and Neuropsychology from an Educational	Majority of EPs perceive neuropsychology as relevant to their practice and report	Little is known about the specific work EPs undertake with these populations and the possible gaps in EPs	200 in the survey, 10 interviews. Literature review and research	Face and content validity. Attempt for ecological validity through a	Two specialist settings only and only EP views. Very broad about Neuropsychology in

	Published into a book.		Psychologist's perspective.	using neuropsychological principles in their work, less than a quarter of respondents reported having a good or high level of knowledge of the discipline or confidence.	knowledge that may need to be addressed. 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.	can be replicated.	UK wide survey.	general and is a big field.

Note. *These headings have been taken from other literature reviews and critical appraisal tools for ease of readership. It is acknowledged, however, that these terms may not be used in qualitative research.

Critical Appraisal Skills Programme – Qualitative Checklist (CASP; Singh, 2013) Responses: yes, no, can't tell, N.A.										
Source	**Section A: Are the results valid? Was there a clear statem**	**Is a qualitative methodology appropriate?**	**Was the research design appropriate to address the aims of the**	**Was the recruitment strategy appropriate to the aims of the**	**Was the data collected in a way that addressed the researc**	**Has the relationship between researcher and participants been adequatel**	**Section B: What are the results? Have ethical issues been taken into consideration?**	**Was the data analysis sufficiently rigorous?**	**Is there a clear statement of findings**	**Section C: Will results help locally? How valuable is the**

	ent of the aims of the research?		research?	research?	h issue?	y considered?				researc h?
Van Pareen 2002	Yes	Yes	Yes	Yes	Yes	Can't tell	Can't tell	Yes	Yes	Yes
Carroll 2011	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ball and howe 2013	Yes	Yes	Yes	Yes	Yes	No	Can't tell	Yes	Yes	Yes

Scale for the Assessment of Narrative Review Articles (SANRA; Baethge et al., 2019) Responses: each item is scaled from 0 – 2.						
Source	**Justification of the article's importance for the readership**	**Statement of concrete aims or formulation of questions**	**Description of the literature search**	**Referencing**	**Scientific reasoning**	**Appropriate presentation of data**
MacKay 2005	Partially - 1	Partially - 1	No - 0	Yes - 2	Yes - 2	Yes - 2
Parkhouse 2010	No - 0	No - 0	N/A	Yes - 2	No - 0	Yes - 2

The Mixed Methods Appraisal Tool (MMAT; Hong et al., 2018) Responses: yes, no, can't tell, N.A (researcher has included 'partially')

Source	Screening questions: •Are there clear RQs? •Do the collected data address the RQs?	Qualitative: •Is the qualitative approach appropriate to answer the RQ? •Are the qualitative data collection methods adequate to address the RQ? •Are the findings adequately derived from the data? •Is the interpretation of results sufficiently substantiated by data Is there coherence between qualitative data sources, collection,	Quantitative RCTs: •Is randomisation appropriately performed? •Are the groups comparable at baseline? •Are there complete outcome data? •Are outcome assessors blinded to the intervention provided? •Did the participants adhere to the assigned intervention?	Quantitative non-randomised: •Are the participants representative of the target population? •Are measurements appropriate regarding both the outcome and intervention (or exposure)? •Are there complete outcome data? •Are the confounders accounted for in the design and analysis? •During the study period, is the intervention administered (or exposure occurred) as intended?	Quantitative descriptive: •Is the sampling strategy relevant to address the RQ? •Is the sample representative of the target population? •Are the measurements appropriate? •Is the risk of non-response bias low? •Is the statistical analysis appropriate to answer the RQ?	Mixed methods: •Is there an adequate rationale for using a mixed methods design to address the RQ? •Are the different components of the study effectively integrated to answer to RQ? •Are the outputs of the integration of qualitative and quantitative components adequately interpreted? •Are divergences and inconsistencies between quantitative and qualitative results adequately addressed? •Do the different components of the study adhere to the quality

		analysis, and interpretation?				**criteria of each tradition of the methods involved?**
Misheva 2020	Yes Yes	Yes Yes Yes Yes	N/A	N/A	Yes Yes Yes Partially Yes	Yes Yes Yes Yes Yes
Bozic and Morris, 2005	Yes Yes	N/A	N/A	N/A	Yes Partially Yes Partially Yes	N/A
Brooks et al 2003.	Yes Yes	N/A	N/A	N/A	Yes partially Yes No Yes	N/A

17.3. Appendix 3. Broader Search Strategy

Database	Type	Search terms	Number of sources
Psyc Info	journal articles, books, book chapters, technical reports and American dissertations	Brain injur*" OR neuropsychology OR neurorehab* OR "neuro rehab*") AND TITLE (school* OR educat* OR classroom* OR teacher* OR student* OR pupil OR pupils	491
Scopus	Peer-reviewed literature, scholarly journals, conference papers, trade journals, books and patents.		547
ProQest PQDT Global	Dissertations and theses from around the world		133
ProQuest Education Collection incl: ERIC and Education Database	Journal articles, multi-author volumes, conferences and official reports		300
CINAHL	Publications, healthcare books, nursing dissertations, selected conference proceedings, standards of professional practice, educational software and audiovisual materials		351
BIE	Journal articles and grey literature		19
Child Development & Adolescent Studies	Journal articles, book chapters, reviews, technical reports, theses and dissertations		60

PubMed	NLoM medical and life science journals		17
EBSCOhost ebook collection and ebook Academic collection	ebooks		0
EThOS	Doctoral theses awarded by UK higher education		8
Overton	Grey		supplement
Theses Collection Wales	Theses and dissertations from Wales	“brain injur*”	19 supplement
Other relevant reading			47
		Total	1895
		Duplicates removed	884
		New Total	1011

17.4. Appendix 4. Inclusion and Exclusion Criteria for Papers

Inclusion	Exclusion
Must consider (but not necessarily only consider) acquired brain injury or traumatic brain injury or neuropsychology. Must consider (but not necessarily only consider) education or school. Studies looking at developments in neuropsychology. Studies looking at pre-school and school age population as this is where the majority of EP work is concentrated. All publication dates included. All types of methodology accepted. Literature worldwide with relevance to the RQ.	A lack of relevance to the literature Q and research scope. Young People 18+, Adults or higher education. Employment focus Medical intervention/procedures Neurology Studies not written in English. News articles.

17.5. Appendix 5. Long-Term Impact of an ABI

Supplementary Material

Long-term recovery from an ABI is a multi-faceted, complex and individual process (Reed et al., 2015). There is a lack of systematic studies and peer-reviewed research documenting sequelae from childhood ABI, however, this is steadily increasing in tandem with increased awareness of ABI within education (Wilde et al., 2015). The ongoing phase of rehabilitation and recovery is important to recognise in terms of manifestation over time in the context of the developing brain (Walker & Wicks, 2018). Accordingly, this section considers the long-term impact of an ABI at the individual and family system levels. The individual impact is considered through the four areas of need according to the Additional Learning Needs Code of Practice (2020) (Cognition and Learning; Communication and Interaction; Behaviour Emotional and Social Development; Physical and Sensory).

Cognition and Learning

Walker and Wicks (2018) assert that primarily, differences affecting CYP with ABI are cognitive in nature, which can influence functioning, educational outcomes and progress. CYP with an ABI are likely to have a constellation of cognitive differences including but not limited to memory (Conklin et al., 2008; Ahmed et al., 2017), attention (Catroppa et al., 2015; Backeljauw & Kurowski, 2014), executive functioning (Goh et al., 2021; Rempe et al., 2023), and information processing (Nasen & CBIT, 2018) which are unlikely to affect just one area of the brain (Glang et al., 2004; Wozniak et al., 2007; Anderson & Arciniegas, 2010; Suominen et al., 2014; Van Zellem et al., 2015). Rather, an individual may have a combination of several difficulties in one or more areas with lesser difficulties in others affecting adaptive

functioning (Nasen & CBIT, 2018; Rabinowitz & Levin, 2014) the extent and long-lasting impact of which is often dependent on injury severity (Forsyth & Kirkham, 2012).

Memory

ABI is known to disrupt memory to both a pervasive and significant level (Gross & McIlveen, 1999; Conklin et al., 2008; Ahmed et al., 2017). Most models of memory describe three cognitive processes (encoding, storage and retrieval), and the complexity of these processes relates directly to the efficiency of our memory systems, see (Walker & Wicks, 2018 p.45-48) for details on these processes and memory functions.

For most CYP with ABI, memories and learning secured prior to the ABI remain largely intact. However, new learning and information have been noted as hard to recall and integrate with prior learning (CBIT, 2021). This can mean a child could remember previously learnt material but struggle to remember what was taught the day before due to a difficulty with organising information for successful encoding and later retrieval (Rabinowitz & Levin 2014). Prospective, autobiographical, and planning functions seen in the ability to link to past and future events can also be impaired (Fletcher, 2006). Event-based prospective memory in adolescents has been seen to worsen with increased cognitive demands (Fletcher, 2006). Comparatively, children with severe ABI have been found not to benefit from prospective memory reminders (McCauley & Levin, 2004).

Furthermore, Lowther and Mayfield (2004) conducted a study of memory and learning post-ABI measured by the Test of Memory and Learning, comparing young people aged five to 16 with and without an ABI; the severity of injury was also taken into consideration. The researchers found marked impairments in both visual and

verbal memory in children with moderate to severe brain injuries. Additionally, the researchers demonstrated difficulties in immediate recall and delayed verbal recall alongside sequential, cued and free recall (Lowther & Mayfield, 2004). These findings were directly affected by the attention and concentration ability of CYP and have been replicated in more recent studies (Lowther & Mayfield, 2004; Allen et al., 2010). The severity of injury has also been linked to the significance of working memory difficulties which in turn is associated with impairments in comprehension and inference (Fletcher, 2006).

Information Processing

The Child Brain Injury Trust (2021) assert that it may take a CYP with an ABI longer to think about, process and respond to information. Information processing pertains to the brain's capacity to deal with information which is directly reflected in the efficiency and fluency of one's response (Walker & Wicks, 2018). It is closely linked with attention and memory skills because the speed of processing affects what can be noticed and therefore encoded (Walker et al., 2009). Over time, information processing has been noted to improve however, the residual effects can have a cumulative effect on academic progress (NASEN & CBIT, 2018).

Furthermore, the systems involved with information processing can easily become overloaded which is influenced by the complexity of the information and the demands on the learner (see Paas et al., 2003 for a detailed understanding of Cognitive Load Theory in EP). Difficulties with information processing tend to become more apparent as a CYP progresses through education and learning becomes more abstract, complex, and fast-paced (Walker & Wicks, 2018).

Attention

Impairments in attention are common sequelae following ABI (Ewing-Cobbs et al., 1998; Ylvisaker & Szekeres, 1998; Catroppa et al., 2015). It is important to note that a challenge of researching attentional difficulties post-ABI is that there are higher rates of ABI among individuals who have marked attention difficulties or ADHD before injury which has tentatively been linked to impulsivity and executive functioning (Brunkhorst-Kanaan et al., 2021; Asarnow et al., 2021). Many research studies therefore fail to obtain information about pre-morbid functioning which increases the risk of retrospective bias (Fletcher, 2006).

Nevertheless, CYP with ABI may exhibit significant difficulties with controlling their attentional processes which can compromise the ability to learn and can lead to more generalised difficulties in cognitive functioning (Catroppa & Anderson, 2004). The complex processes of mastering attention (sustained, selective, divided, and shifting) emerge over the course of development and the younger an ABI occurs, the increased likelihood that these skills are still in the process of developing or have not yet developed and therefore the likelihood of impairments increases (Walker & Wicks, 2018). Sustained attention matures relatively early in development whilst dividing and shifting emerge at later stages therefore explaining why children may be able to attend to some tasks but not others depending on the activity demands and skills required (Walker & Wicks, 2018).

Post-ABI, many CYP recover fundamental aspects of attentive behaviour, but higher-level deficits can persist long-term (Backeljauw & Kurowski, 2014). Difficulties with sustained attention can directly impact academic performance and progress for instance, Yeates et al. (2005) discovered a link between attention difficulties following ABI and problems with executive functioning and behavioural presentations of attention problems. A functional link mapping damage to the frontal lobe may also

lead to disruption of cognitive functions namely the top-down control of attention (Rabinowitz & Levin 2014).

It is important to acknowledge that attention and concentration difficulties may actually be difficulties with other areas of functioning caused by the ABI (Walker & Wicks, 2018). For example, a lack of attention in the classroom could reflect a failure to understand the task due to processing difficulties or difficulty remembering what has been taught. Nevertheless, some difficulties are thought to be a memory problem whereby they may actually be due to difficulty attending to the information demonstrating the complexity of ABI presentation (Walker & Wicks, 2018). Accordingly, attention and memory are closely interlinked processes which are constituent parts of the executive functioning system.

Executive Functioning

Planning, organising, flexible thinking, and problem-solving are commonly reported areas of difficulty following ABI and are aspects of executive functioning (CBIT, 2021). Executive functioning is an umbrella term referring to a range of skills required for controlling and monitoring intentional behaviour (Walker & Wicks, 2018). Interestingly the majority of executive functioning processes are located in the frontal and pre-frontal regions of the brain which are particularly vulnerable to damage and commonly affected in ABI (Walker & Wicks, 2018). An overview of difficulties associated with executive functioning that a young person with an ABI may experience is shown in Table 8. Executive functioning difficulties are also typically manifested in behavioural and social presentation.

Difficulties with executive functioning can make it challenging for individuals to make sense of and keep track of the information in their environment. Research has consistently documented prominent difficulties with executive functioning following

childhood ABI (Giza, 2006; Anderson et al., 2005; Catroppa & Anderson, 2008; Catroppa et al., 2009) with the most significant effects in children whose ABI occurred before the age of five (Goh et al., 2021). Additionally, a prospective longitudinal cohort study of 559 children highlighted a sharp worsening of executive functioning from 0-12 months post-ABI, then again between 24-36 months for those with severe injuries (Keenan et al., 2021). However, Rempe et al. (2023) found that increased concerns over time were associated with increased baseline executive functioning needs alongside environmental components. These findings extend previous research on the recovery of executive functioning skills in educational settings (Treble-Barna et al., 2017) and note potentially modifiable risk factors to assist school success such as authoritarian parenting styles and barriers to consistent care including financial burden and health care disparities (Rempe et al., 2023).

Table 8. *Executive Functioning Difficulties*

Area of Functioning	**Description**
Planning and Organising	Due to potentially disorganised thinking, identifying and arranging the sequence of steps needed to carry out a task may be challenging and confusing for a young person with an ABI.
Initiating and Sustaining	The inability to get started on an activity and to continue with the activity until completed although a young person may have the knowledge and skills to carry out the task.
Goal Setting	A difficulty thinking about the end product of a task or an activity, alongside the relevance of a task completion. Without a goal in mind thinking can be disjointed and disorganised Therefore specific and sequential steps may be required.
Inhibiting	A tendency towards impulsivity and the inability to suppress inappropriate language or behaviour. Inhibiting attention may also be difficult due to competing stimuli e.g. Noises in a busy classroom unrelated to a task.

Problem Solving	If a strategy does not work, a young person with an ABI may be unable to move forward, determine relevant information to think about the problem and think of a different way to complete a task.
Self-Monitoring	Difficulty with being able to evaluate the appropriateness of behaviour. A young person with an ABI may not understand why they are in trouble and may find it difficult to reflect on the implications of this. They may also find it difficult to benefit from feedback due to decreased awareness of their difficulties.
Generalising Newly Acquired Skills	Individuals with an ABI can be concrete in their thinking making it hard for information to be applied to other situations.
Flexibility of Thinking	Difficulty with the ability to adapt to new and variable situations, finding change difficult to cope with.
Perseveration	Getting stuck on a topic idea word or behaviour and repeating this unawares of changes in the situation which make their action or comment inappropriate.

In all of these areas it is important to consider that recovery of function is gradual, with the most rapid improvement seen in the early stages post-ABI (Williams et al., 2020). Initial rates of recovery are often more rapid for CYP with moderate to severe brain injuries than those with milder injuries (Yeates, 2010). Nevertheless, more severe injuries are associated with persistent deficits once the rate of recovery slows down (Taylor et al., 2003; Yeates et al., 2002).

Communication and Interaction

Both receptive and expressive language can be impaired following ABI (Alighieri et al., 2021) and the majority of individuals who sustain an ABI have been evidenced to experience some form of communication impairment with incidence rates of 75% plus when screened in adulthood (MacDonald, 2017). Haarbauer-Krupa et al. (2019) gathered descriptive child assessment and parent report measures after the first year of a three-year longitudinal study to capture cognitive,

language, reading and behaviour outcomes of young people (aged six to nine) with an early childhood ABI comparative to a control group. The researchers discovered group differences in verbal knowledge, receptive language, and reading comprehension with significant differences in pragmatic language, word fluency and retelling a story (Haarbauer-Krupa et al., 2019). Parental reports also identified concerns regarding executive functioning affecting communicative ability. LeBlanc et al. (2021) and others (see Wiseman-Hakes et al., 2018; Cermak et al., 2019) confirm these findings depicting cognitive communication performance among young people with ABI.

Difficulties with expressive language, including the ability to find the right words has been identified as a frequent occurrence following childhood ABI (CBIT, 2021). Sustaining conversation can therefore be challenging as speech may not flow as well as prior to the injury and particular difficulties have been noted when there is more than one other participant during a discussion (Chea et al., 2019; CBIT, 2021). Pragmatic language and speech articulation may also be impacted, affecting the ability to use language appropriately in social situations (CBIT, 2021). The extent and range of communication and interaction needs often depends on the young person's age at the time of injury and the standard of skills the young person had acquired prior.

Nasen and CBIT (2018) reported that age is a defining factor involved with communication and speech differences. For instance, children with an ABI aged three to four years old may experience difficulties with grammatical structures because this capability has not yet been fully developed. In a similar fashion, an individual aged 10 years old at the time of an ABI may experience difficulties with abstract thought and reasoning skills, as these skills generally will not have

developed until the teenage years. Bardoni et al. (2013) conveyed that children who had acquired a brain injury in early childhood (before seven years old) were especially vulnerable to more generalised difficulties, particularly in the areas of expressive language and reading comparative to CYP experiencing ABI at later ages. Additionally, Vassel-Hitier et al. (2019) identified that CYP with moderate to severe ABI experienced significantly delayed language skills which impacted on the CYPs long-term educational outcomes.

From the research mentioned, the importance of in-depth and long-term follow-up were consistently reported along with timely assessment and interventions to best support young people with ABI (Haarbauer-Krupa et al., 2019). Furthermore, a challenge when considering the communication and interaction needs of CYP with ABI is the hidden nature of some difficulties (Wiseman-Hakes et al., 2018). A young person may present as having good communication skills, but subtle injury-related impairments may be more difficult to perceive overtly therefore in-depth and overtime assessment will be imperative for educational planning (Wiseman-Hakes et al., 2018). It is important, however, to acknowledge that the use of speech and language is dependent on cognitive functions such as memory, processing speed and attention therefore needs may derive from a cognitive difference rather than a language concern (NASEN & CBIT, 2018). It was also reported that speech production may be affected by impaired motor function of the physical elements involved in speech production - graphemes and phonemes (NASEN & CBIT, 2018).

Behaviour, Emotional, and Social Development

Children with an ABI are at an increased risk for long-term emotional, social, and behavioural sequelae (Vanderlind et al., 2022). This risk has been found to increase where such problems present pre-morbidly (Anderson et al., 2005) and a younger

age at the time of injury (Chapman & Hudson, 2010). Such sequelae place CYP at increased risk for poorer educational functioning post-injury.

Behavioural Development

NASEN and CBIT (2018) note the most common difficulty reported following ABI is behavioural challenges which can manifest in a multitude of ways (i.e. emotional outbursts, impulsivity (Wilde et al., 2015), social disinhibition (Tredoux et al., 2023), a lack of insight or empathy (Noggle & Pierson 2010), educational disengagement (Wright, 2016), aggression (Wood & Worthington, 2017), and absenteeism (Novak et al., 2016). Behaviours that challenge can be a direct result of injury or as an indirect consequence of difficulties a young person is facing (NASEN, 2018). Behavioural changes can emerge over time as an individual becomes more aware of changes in their abilities and the cumulative effects of learning difficulties become more apparent (Thaler et al., 2012).

Dollman et al. (2017) triangulated behavioural data to examine post-injury behavioural sequelae through standardised assessments, observations, medical folders, and caregiver perspectives. The research revealed clinically significant behavioural problems in more than half of the participants. Correlation analyses also depicted that CYP with increased externalising behaviour problems and executive dysfunction post-ABI were more likely to require some level of special educational support or repeat a school year (Dollman et al., 2017). Hence, post-injury behavioural sequelae may adversely affect academic and behavioural outcomes.

Wilde et al. (2015) documented in their systematic review, poorer adaptive skills and behavioural difficulties in peer-reviewed studies using long-term follow-up measures compared to typically developing controls. Additionally, McKinlay et al. (2010) gathered prospective data from an epidemiological study of birth cohorts to

examine behavioural effects associated with ABI during preschool years. The researchers found evidence of increasing difficulties from years seven to 13, with more severe injuries associated with persistence in negative effects on psychosocial development. Long-term adaptation appears as a major concern for both teachers and parents due to the presence of behavioural and emotional difficulties (Soo et al., 2014; Silberg et al., 2015). This is a reasonable concern seeing as the prevalence rate of behavioural and psychological difficulties post-ABI ranges from 10-50% (Li & Liu, 2013).

Nevertheless, the ABI may cause a halo effect or bias toward perceiving a secondary problem. The halo effect can alter an individual's perceived ability to manage the challenges accompanying the ABI and can influence reports of CYP behaviour as a result (Mohr & Bullock 2005). However, research over the years has produced a clear argument for behavioural disturbances associated with ABI which can interfere with classroom adjustment, academic outcomes, educational progress, and overall psychosocial functioning (Barker-Collo, 2007; Thaler et al., 2012; Dollman et al., 2017).

Emotional Development

Brain injuries may impact neural networks directly involved in emotional regulation and reactivity (the limbic system and prefrontal cortex) (Garcia, 2022). Clinical levels of Anxiety, Depression, ADHD, and Post-Traumatic Stress Disorder (PTSD) have been consistently reported in the literature with Anxiety manifesting at rates as high as 70% (Albicini & McKinlay, 2018; Goldstein, 2019; Karver et al., 2012). Additionally, Max et al. (2011;2012;2013) reported rates ranging from 36-49% of novel psychiatric disorders following TBI with post-traumatic stress, anxiety, and depression present in 20-25% of children following TBI. Mild TBI was associated with

remission of anxiety symptoms however, individuals with severe TBI anxiety were reported to be sustained and can become worse over time (Max et al., 2013; Keenan et al., 2021). Hence, psychological and psychiatric morbidity is exceedingly common among individuals who have sustained a childhood ABI (Garcia, 2022).

Increased levels of stress have also been commonly reported following childhood ABI and stress is a prominent risk factor for psychiatric difficulties (Vanderlind et al., 2022). Nelson et al. (2021) describe neuropsychiatric symptoms post-ABI to be omnipresent, comorbid and often debilitating, and these frequently develop in the first year following injury (Alway et al., 2016). Max et al. (2015) outlined injury variables depicting elevated risk for developing psychiatric or internalising disorders following paediatric ABI: injury severity (damage to the frontal lobe), preinjury ability (cognitive function), and preinjury family factors (dynamics; socioeconomic status). The risk for psychiatric sequelae is reported to be highest in individuals with pre-existing psychiatric disorders and those with raised parental distress following injury (Emery et al., 2016). Furthermore, Saarinen et al. (2023) revealed that cognitive function and symptoms predicted later use of psychiatric services after ABI. These findings complemented Saarinen et al's. earlier research asserting that prolonged injury symptoms were related to later psychiatric visits Saarinen et al. (2021).

Arif et al. (2021) compared psychiatric outcomes in adults with and without a history of paediatric ABI. The researchers discovered poorer long-term outcomes for both early onset and prevalence of psychiatric difficulties in those hospitalised for ABI in childhood. Furthermore, Keightley et al. (2014) asserted that CYP who sustained a Mild ABI at younger than 14 years old experienced higher rates of psychiatric disorders compared to controls, and Lloyd et al. (2015) in a systematic

review of psychiatric diagnoses in paediatric TBI survivors found a particular increase in diagnoses where the ABI occurred in the first five years of life. Anxiety symptoms have also been associated with a younger age at the time of injury (Max et al., 2011; Keenan et al., 2021) while depressive symptoms have been associated with injuries later in childhood and adolescence (Laliberté Durish et al., 2018).

There is also a well-documented increased risk of externalising disorders in children post-ABI with disinhibition and aggression most commonly reported (Schachar et al., 2015). Personality changes may also be documented following ABI. Adults and peers can perceive the individual as 'different' with the most noticeable elements of personality change reflected in recurrent outbursts, impaired social judgement, and affective instability (NASEN & CBIT, 2018). Often, these changes can be falsely attributed as the primary cause of behaviour change as opposed to the ABI itself, whereas research indicates that personality changes are due to the direct physiological effect of the injury, causing distress and impairment in multiple areas of functioning (Wilde et al., 2015; Schachar et al., 2015).

Interestingly McKinlay et al. (2009) reported that internalising disorders (such as Anxiety and Depression) remit more frequently than externalising disorders (ADHD and Conduct Disorder) in CYP with a history of paediatric ABI. However, fortunately, symptom severity has been reported to often decrease with time (Emery et al., 2016; Nelson et al., 2019). Nevertheless, in a retrospective cohort study based on adolescent (12-17 years old) survey data from the National Survey for Children's Health in the US, Chrisman and Richardson (2014) discovered that a history of mild TBI was associated with a higher prevalence of diagnosed depression at a three-fold severity rate over non-injured counterparts. Also, more recently, in a registry-based

retrospective cohort study, Madsen et al., (2018) found, compared to the general population, a doubled risk of suicide associated with ABI.

Unfortunately, it is not surprising that CYP experiences emotional difficulties following brain injury when the impact of an ABI is taken into consideration. Rapid and often intense mood changes are common with presenting features which can include irritability, fear, emotional reactivity, and a low tolerance to frustration (Davies & Bernstein, 2018; NASEN & CBIT, 2018). Hence, these difficulties can directly impact an individual's personal, social and educational outcomes.

Social Development

Social challenges including reduced social participation (Anderson et al., 2014; Greenham et al., 2015; Shultz et al., 2016), social acceptance and changes in peer relationships (Catroppa et al., 2015) have been reported as part of the long-term social sequelae following childhood ABI (Vanderlind et al., 2022). NASEN and CBIT (2018) report that established friendships can dissipate after the acute hospital phase of ABI recovery is over. This may be due to a change in the CYP's skills needed to maintain existing and build new friendships as a consequence of the injury, for example, listening, insight, and empathy. Muscara et al. (2009) described increased difficulties with social norms and rules following ABI which can lead to social isolation and loneliness due to a decreasing social circle as changes in a CYP's functioning may make it difficult for peers to understand or relate to them. Although the emergence and persistence of social difficulties post-ABI is an under-researched area relating to the developing brain of a CYP (Ryan et al., 2016), currently documented sequelae (namely that the severity of the injury has been linked with an increased likelihood of interfering and persistent social difficulties as with other ABI sequelae (Yeates et al., 2013)), mean that it is reasonable to consider

that social outcomes may also be affected by the age at which the brain injury occurred and provides useful insight for the focus of psychosocial intervention and functional educational considerations (Jantz & Coulter, 2007).

Physical and Sensory

Physical

Physical changes such as headaches and post traumatic epilepsy have frequently been reported post-ABI (Sharp et al., 2006; Gupta & Gupta, 2006). Motor functioning, planning, and reaction time may also be affected which influences one's ability to coordinate certain body movements and ability to carry out tasks in a swift manner (Headway, 2023). Hormonal and weight changes have been reported post-ABI resulting in precocious or delayed puberty, however, weight changes are more often associated with motor function, and this is less common (Walker & Wicks, 2018).

Injuries to the parts of the brain responsible for regulating movement, posture and coordination can result in fine and gross motor difficulties (Walker & Wicks, 2018). Gross motor skills comprise the larger movements which involve the whole body e.g., walking, throwing, and jumping (Sutapa et al., 2021). Fine motor skills on the other hand are smaller movements for activities involving the manipulation of objects e.g., using a knife and fork or a pencil (Sutapa et al., 2021). These changes can directly affect a CYP's ability to engage in learning tasks and influence academic performance.

The effect of an ABI on motor skills ranges in severity from total paresis such as quadriplegia (paralysis in all four limbs) and more commonly hemiplegia (motor weakness or paralysis on one side of the body) to more subtle differences including tremors and difficulty motor planning (the ability to select required movements in a

particular sequence) (Walker & Wicks, 2018; Headway, 2023). Reaction time may also be affected post-ABI affecting one's coordination and ability to carry out tasks in a swift manner (Headway, 2023). Muscle tone abnormalities can also be seen whereby the brain may no longer be able to send appropriate messages to each of the muscle groups which can restrict the range and type of movement in certain body parts or joints (Walker & Wicks, 2018).

Fatigue. Fatigue resulting from ABI is exceedingly common and can impact a CYPs level of functioning and ability to access education and learning (Walker and Wicks, 2018). Mental fatigue for example can be seen as a limited capacity to stay on task and actively participate in learning activities (Walker & Wicks, 2018). Furthermore, due to the effort necessary to carry out tasks that may have been completed with little or no difficulty prior to their injury, CYP can become easily tired despite no obvious physical changes post-injury (Hypher, 2023).

In a cross-sectional design study of functional school outcomes >1 year following childhood ABI, Stubberud et al. (2022) found that overall, fatigue emerged as the strongest predictor of parent and self-reported quality of life in school. However, the study did not consider injury severity which would be a useful variable to consider when assessing fatigue impact. Nevertheless, energy levels for physical and mental activity have widely been evidenced to rapidly decrease post-ABI, which can affect mood and behaviour (Wilkinson et al., 2018; Van Markus-Doornbosch et al., 2020; Åkerlund et al., 2021; Hypher, 2023).

Unfortunately, fatigue is not often well understood although it is reported to be one of the most common and longer-term problems following ABI (Johansson, 2021). CBIT (2021) highlight in a factsheet about thinking and learning after ABI that fatigue levels can change across the day and week, and this may be associated with

fluctuations in skills related to thinking and learning. Correspondingly, flexibility and patience are needed to make allowances for fatigue within the classroom, without this pressure for continued effort can have a negative effect on behaviour and motivation levels (CBIT, 2021). Sleep disturbance has also been known to provoke fatigue, this is either as a direct result of the injury or as an indirect result of subsequent changes in routine or other injury-related symptomology (Viola-Saltzman & Musleh, 2016).

Sensory

An ABI can disrupt any aspect of the sensory system and interrupt perceptual processing which can affect sensory integration (Ylvisaker et al., 2005). It is however uncommon for complete loss of function in one sensory area due to the widespread subsumption across the brain (Walker & Wicks, 2018). The most frequent impairment is a loss of the ability to filter incoming information and focus on one aspect of it (Perkins et al., 2022). Therefore, young people with an ABI may find it hard to cope with environments which include high levels of sensory stimulation. They may find it difficult to cope with or distinguish between multiple sensations concurrently e.g. a bright classroom display combined with sound (Thielen et al., 2023).

Nevertheless, some sensory and perceptual changes can resolve over time, but others may be permanent and have direct influence on a CYPs learning and development (Walker & Wicks, 2018). For instance, visuo-perception can be affected which is the ability to make sense of what is seen. Even if an individual's vision is not affected, their understanding of what is seen can alter e.g. figure ground perception, the ability to recognise objects as distinct from the background where they are presented (CBIT, 2021).

Walker and Wicks, (2018) claim that the physical processes for learning may be impaired post-ABI. The researchers assert that educators tend to focus on what is visible which leads to a failure to make the connection between the ABI and a disruption of the underlying brain functions that affect learning ability and potential (Walker & Wicks, 2018). There is also evidence for cognitive recovery, reorganisation and plasticity following ABI (Anderson et al., 2012; Aaro Jonsson et al., 2013). The mechanisms whereby changes occur and interact with development and how this can change over time is an under-researched area but an interesting one worthy of exploration.

Family Implications

Research has consistently identified ABI as something affecting the entire family system (Davies, 2020). Jantz et al. (2015) assert that 'family homeostasis can be altered overnight' (p.218) when an individual sustains an ABI. In the initial stages post-ABI there is an intense period where family functioning is disrupted, as with many family-focused acute traumatic events. The expectations, hopes, and responsibilities change as a result of an ABI due to the inability to function at preinjury levels and the ongoing impact on familial functioning (Carroll, 2011; Jantz et al., 2015). Wright (2014) discovered wider effects on families including parents needing to take time off of work and associated financial implications. Renton (2023) corroborates these findings and conveys that families of CYP with an ABI report changes in family relationships, loss of income due to caring for the CYP, high rates of psychological distress, social isolation and enduring burden.

Living with a CYP who has sustained an ABI can cause cumulative amounts of stress for primary caregivers and siblings in particular e.g., worry, disruption in routine; and concerns about the future which could lead to emotional well-being

issues for caregivers which further complicate ABI recovery and can impact on a caregivers ability to be an advocate for their CYP (Carroll, 2011; Calvete & Lopez De Arroyabe 2012; Las Hayas et al., 2015).

The impact of ABI on siblings has also been discussed, referring to sibling neglect and a need for resilience (Carroll, 2011). Wright (2014) conducted an exploratory study as part of their doctoral thesis into the Educational Experiences of Children, Their Families and the Professionals who Support Them. A thematic analysis of semi-structured interviews highlighted sibling experiences of jealousy, confusion, and trauma associated with the event leading to the ABI and the consequences of the injury (Wright, 2014). Jantz (2015) report that these sibling experiences can result in reduced self-esteem and high levels of psychological stress (e.g. worry and interpersonal sensitivity) which can affect school performance, personality changes, and alterations in the sibling relationship.

Davies (2020) assert that initially, family members may feel a sense of relief that the cyp survived, yet they may not fully recognise the long-term implications associated with an ABI. Emotional distress, relationship discord and burden of care have been identified among family members and these have been often related to the severity of injury (Brown et al., 2014). Walker and Wicks (2018) highlight that it is common to see carer's hopes change rapidly during recovery from an ABI e.g., if only they could walk, or talk, which is often associated with rapid physical recovery in the early stages of rehabilitation. Unfortunately, although early rapid recovery of function is common, progress is known to slow down, and further recovery ensues at a slower rate (Walker & Wicks, 2018).

Additionally, family members are reported to go through a grieving process (Davies, 2020). Difficulties with familial grief associated with ABI is often

compounded by the fact ABI is considered as an ambiguous loss because the family member is still alive but may present differently than prior to the injury (Walker and Wicks, 2018).

The effects of ABI on the family can be explained by the Dual Process Model of Grief, (Schut, 1999) which demonstrates that we oscillate between loss-orientated coping (focusing on grief) and restoration-orientated coping (focusing on growth) as we process grief. Stroebe and Schut (1999) note that both phases are stressful and can bore feelings of guilt, but the dynamic regulatory coping process of oscillation between the two phases acts as an adaptive coping mechanism. For example, restoration-orientated coping would involve a change in family roles and building resilience, creating new experiences with the 'new normal' after the CYP's ABI. Loss-orientated coping on the other hand would involve feelings of grief and perceived loss of the CYP prior to injury.

Research has shown that improved identification and provision of services is a potentially modifiable factor that may decrease family burden after ABI (Aitken et al., 2009; Davies, 2020). Family members advocate for professionals to acknowledge the uncertainty of their child's recovery but respect their need to maintain hope and positive thinking concerning possible outcomes (Robson et al., 2005; Roscigno & Swanson, 2011). More recently, Davies (2020) held focus groups of SPs across the USA who have worked with ABI cases. Participants were asked about the challenges they face when working with families affected by ABI and how SPs can support them. Findings included themes of guilt, a lack of time and resource, change, and fragmented advice and services, which offer a useful insight into the systemic factors involved in ABI rehabilitation (Davies, 2020).

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17.6. Appendix 6. Participant Information Sheet

Participant Information Sheet

Study title: Neuropsychology: a specialism or fundamental knowledge base for Educational Psychologists?

You are invited to participate in this research study to explore the role of specialist educational psychologists (EP) working with acquired brain injury (ABI) and neuropsychological conditions to help answer to the question of whether neuropsychology is a specialism or a fundamental knowledge base for EPs. To help you decide if you would like to take part or not, it is important to understand why the research is being done and what will happen before, during and after the research. If you are happy to take part, you will be asked to sign the accompanying consent form and return this to the researcher prior to data collection. If there are any questions or queries after reading the research information, please email the researcher at lathamp@cardiff.ac.uk.

What is the research about? The research is seeking to explore the role of specialist EPs working with ABI. The research is interested in exploring the views of EPs who have developed a specialism in working with ABI on whether neuropsychology should be included in EP training courses or if it should be deemed a specialism explored as continuing professional development. Also, the research aims to uncover what specialist EPs think that all EPs need to know when working with ABI cases, including what helps and specific approaches deemed useful. By gaining the experiences and views of specialist EPs working with ABI, the research aims to improve the limited pool of literature linking ABI and the EP role and to support the knowledge development, and possible perceived confidence of EPs working with ABI cases.

Why have I been asked to take part? The researcher would like to gain the experiences and input from EPs who have developed specialist knowledge and experience working with ABI and other neuropsychological conditions to gain insight into the under-researched area of EP development and discover areas of best practice and knowledge development whilst de-mystifying the link between educational psychology and neuropsychology.

Do I meet the research criteria?

The researcher would like to hear your views if you meet the below criteria:

- Qualified EPs with Health and Care Professions Council (HCPC) registration (or international equivalent) working in a specialist role with a focus on ABI or neuropsychological conditions.
- Qualified EPs not in a specialist role but working within a specialist setting for ABI or neuropsychology.
- EPs will have developed experience and knowledge in the area of ABI and neuropsychological conditions through Continuing Professional Development and experience in case work overtime to acknowledge their specialism.

- Independent EPs who do not work for a local authority are also included should they meet the above criteria of specialism.

What will happen to me if I take part? If you choose to take part in the study and return the signed consent form, you will be invited to a virtual interview on Microsoft Teams with a Trainee Educational Psychologist at a mutually agreed time. You will be asked a series of semi-structured interview questions about your role, experiences, and opinions about working with ABI. The interview will last approximately 45 minutes, only the audio from the conversation will be recorded for the purpose of transcription and analysis using a Dictaphone device. It is at your discretion to have your camera on or off during the interview. After transcription, the audio file will be deleted. No identifying information will be included in the transcription. After the interview, the researcher will contact you via email within three weeks to check whether the transcript summary accurately reflects your views and will offer the opportunity for you to clarify or elaborate on any of your responses (member checking).

Are there any risks involved? There are no immediate risks involved and the questions should not be upsetting or cause distress. However, if you feel uncomfortable at any point or decide you no longer want to participate, you can stop the interview at any time without detriment and your data will be removed.

What data will be collected? The data collected will include your answers to the interview questions and the confirmation of agreed consent prior to the interview beginning.

What will happen to my personal data? Only the researcher will have access to your data which includes the information communicated during the interview and contact information (email address and name only). This will be secured on an encrypted computer with a multi-factor security process. After the interviews have been transcribed, the audio files will be deleted, and any identifying information will be deleted. All data will be anonymised to ensure that participant views cannot be attributed to individuals.

Will anyone else know I have taken part in the research? All personal data will remain confidential. Data gathered through the interviews will be anonymised but will not be confidential, as it will potentially be included and even quoted in the research.

Do I have to take part? No, you do not have to take part if you do not want to, and you can change your mind at any point during the data collection process. If you decide you do want to take part, you will be asked to sign a consent form to agree to your participation in the present research. We request that this is returned to the researcher within two weeks of receiving it. Consent will also be verbally clarified at the beginning of the interview.

What happens if I change my mind? You can change your mind and withdraw your data without any reason prior to member checking and for up to two weeks after this. This will not affect any of your participant rights. After this time, due to the anatomisation of transcripts and analysis proceedings, you will no longer be able to withdraw your data.

What will happen to the results of the research? Research findings written in any reports or publications will not include any participant-identifying information. The findings of this research will be written up as part of a research paper within a doctoral thesis and may be developed into an information resource for EP professional development. You may request a summary of the research findings after its completion should you wish to by contacting the researcher.

Where can I get more information? If you have any further enquiries, please contact the researcher or the research supervisor at the following details:

Paige Latham
(Trainee Educational Psychologist)
Cardiff University Centre for Human Developmental Science
70 Park Place
Cardiff
CF10 3AT
LathamP@cardiff.ac.uk

Hayley Jeans
(Supervising Educational Psychologist)
Cardiff University Centre for Human Developmental Science
70 Park Place
Cardiff
CF10 3AT
JeansH@cardiff.ac.uk

What happens if there is a problem? If you are worried about any part of the study, you can contact the researcher at any time. If you are still unhappy or have a complaint about any aspect of the research, please contact The Secretary of the Ethics Committee at psychethics@cardiff.ac.uk; Tel: 029 2087 0707.

Secretary of the Ethics Committee
School of Psychology
Cardiff University
Tower Building
Park Place
Cardiff
CF10 3AT

Data Protection Privacy The information found at https://www.cardiff.ac.uk/public-information/policies-and-procedures/data-protection/research-participants-data-protection-notice should be read alongside this information sheet. This web page will give further information about how Cardiff University deals with the personal information of individuals who take part in university-led research projects.

Thank you for taking the time to read the information sheet and considering taking part in the research. If you are happy with the information above and would like to participate in the research, please read and sign the attached consent form and return this to the researcher at Lathamp@cardiff.ac.uk

17.7. Appendix 7. Recruitment Poster

NEUROPSYCHOLOGY: A SPECIALISM OR FUNDAMENTAL KNOWLEDGE BASE FOR EDUCATIONAL PSYCHOLOGISTS?

INTRO

I am a trainee educational psychologist. For my thesis, I am looking to explore the views and experiences of

EPs with a specialism in neuropsychology and neuropsychological conditions, particularly acquired brain injury (ABI).

RESEARCH QUESTIONS

1. What are the experiences of specialised EPs working with ABI?
2. What do EPs with a specialism in ABI think the unique contribution of the EP is when working with this group of young people?
3. What do EPs with a specialism in ABI believe that EPs in general practice need to know for working with ABI?

PROCEDURE

Virtual Semi-Structured Interview lasting approximately 45 minutes

BENEFITS

The research hopes to:

- Improve the limited pool of literature linking ABI and the EP role.
- To support and inform the continued professional development of EPs when working with ABI cases.
- Explore whether neuropsychology should be a fundamental knowledge base for EPs and therefore be included in initial EP training.

should you be interested in taking part in this research and would like some more information about the study, please contact the researcher at Lathamp@cardiff.ac.uk.

17.8. Appendix 8. Recruitment Email

To whom it may concern,

I am a trainee educational psychologist from Cardiff University and for my doctoral thesis, I am looking to explore the views and experiences of specialist EPs within the area of neuropsychology and neuropsychological conditions, in particular acquired brain injury (ABI).

I am seeking to interview EPs who have developed a specialism in this area to answer the following three questions:

1. What are the experiences of EPs who have developed a specialism in neuropsychology (specifically working with young people with ABI)? And what does their role consist of?
2. What has the experiences of working in a specialist role with ABI taught specialist EPs about what all other EPs need to know and should be aware of when working with young people with ABI?
3. What are the implications of Q2 for EP training? (CPD and initial doctoral training).

By understanding these views and experiences, the research hopes to inform educational psychology practices by informing the continued professional development of EPs and exploring whether neuropsychology should be a fundamental knowledge base for EPs and therefore be included in initial EP training.

Should you be interested in taking part in this research and would like some more information about the study, please contact the researcher at **Lathamp@cardiff.ac.uk.** You will be sent a participant information sheet with more information regarding the research, rationale, and procedure. This will also be accompanied by a consent form to be signed and returned to the researcher should you wish to participate.

Kind Regards,

Paige Latham

Trainee Educational Psychologist
Cardiff University

17.9. Appendix 9. Consent Form

Neuropsychology: a specialism or a fundamental knowledge base for Educational Psychologists?
Consent Form

I understand that my participation in this project will involve answering open-ended interview questions about my experiences, views, and reflections on my role as a specialist Educational Psychologist who has developed specialist knowledge in working with acquired brain injury (ABI). The interview will last for approximately 45 minutes. Questions will endeavour to gain insight into the EP role when working with neuropsychological conditions, particularly ABI. Also, questions will explore what the specialist role has taught you about what non-specialist EPs need to know or should be aware of when working with young people with ABI. Finally, implications for EP training will be discussed.

I understand that participation in this study is entirely voluntary, that I do not have to provide consent if I do not wish to, and that I can withdraw my participation and data at any time prior to member checking which will be carried out within three weeks of the interview date by contacting the researcher.

I understand that the audio from the interview will be recorded for transcription and analysis purposes only, and after transcription, the original recording will be deleted. I understand that I am free to ask any questions at any time. I am also free to discuss any concerns with the researcher and/or the research supervisor.

I understand only the researcher will have access to my information and that my personal data (name, email address) will be processed in accordance with GDPR regulations (see privacy statement below).

I understand that at the end of the study, I will be provided with a debrief including written information and feedback about this study. I also understand that I may be directly quoted in the research write-up.

I, _____(NAME) consent to participate in the study

conducted by Paige Latham, School of Psychology, Cardiff University with the supervision

of Hayley Jeans.

Signed: _____ Date: _____

Paige Latham
(Trainee Educational Psychologist)
Cardiff University Centre for Human Developmental Science
70 Park Place
Cardiff
CF10 3AT
LathamP@cardiff.ac.uk

Hayley Jeans
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Privacy Notice: *Cardiff University is the Data Controller and is committed to respecting and protecting your personal data in accordance with your expectations and Data Protection legislation. The University has a Data Protection Officer who can be contacted at* inforequest@cardiff.ac.uk.
Further information about Data Protection, including your rights and details about how to contact the Information Commissioner's Office should you wish to complain, can be found at the following: https://www.cardiff.ac.uk/public-information/policies-and-procedures/data-protection*). The lawful basis for processing this information is public interest. This information is being collected by* the researcher only.
The information on the consent form will be held securely and separately from the research information. Only the researcher will have access to this form, and it will be destroyed after 7 years. The research information you provide will be used for the purposes of research only and will be stored securely. Only the researcher *will have access to this information. After two weeks, the data will be anonymised (any identifying elements removed) and this anonymous information may be kept indefinitely or published*

17.10. Appendix 10. Debrief Form

Neuropsychology: a specialism or a fundamental knowledge base for Educational Psychologists?
Debriefing Statement

Thank you for your participation in this research.

The aim of the research is to:
Explore the experiences of specialised EPs working with young people with ABI and what they feel the EP can contribute when working with this cohort as well as exploring what EPs need to know when working on cases involving ABI and consequent training implications for EPs.
Your views will help add to the limited literature surrounding the link between neuropsychology and educational psychology. Also, to build the knowledge base for EPs working with neuropsychological cases to clarify the contribution of EPs when working with ABI.

Only audio was recorded during the interview which will be transcribed and used for data analysis. The audio recording will be deleted immediately after transcription but you may be directly quoted in the research write-up. From the date of research participation, you can withdraw your data at any time prior to member checking which will be carried out within three weeks of the interview date by contacting the researcher. After this time, data will no longer be able to be removed due to transcription, anonymisation, and audio file deletion.

You may request a summary of the research findings upon project completion should you wish to.
If you have any further questions relating to the research, please contact the researcher directly at the following details:

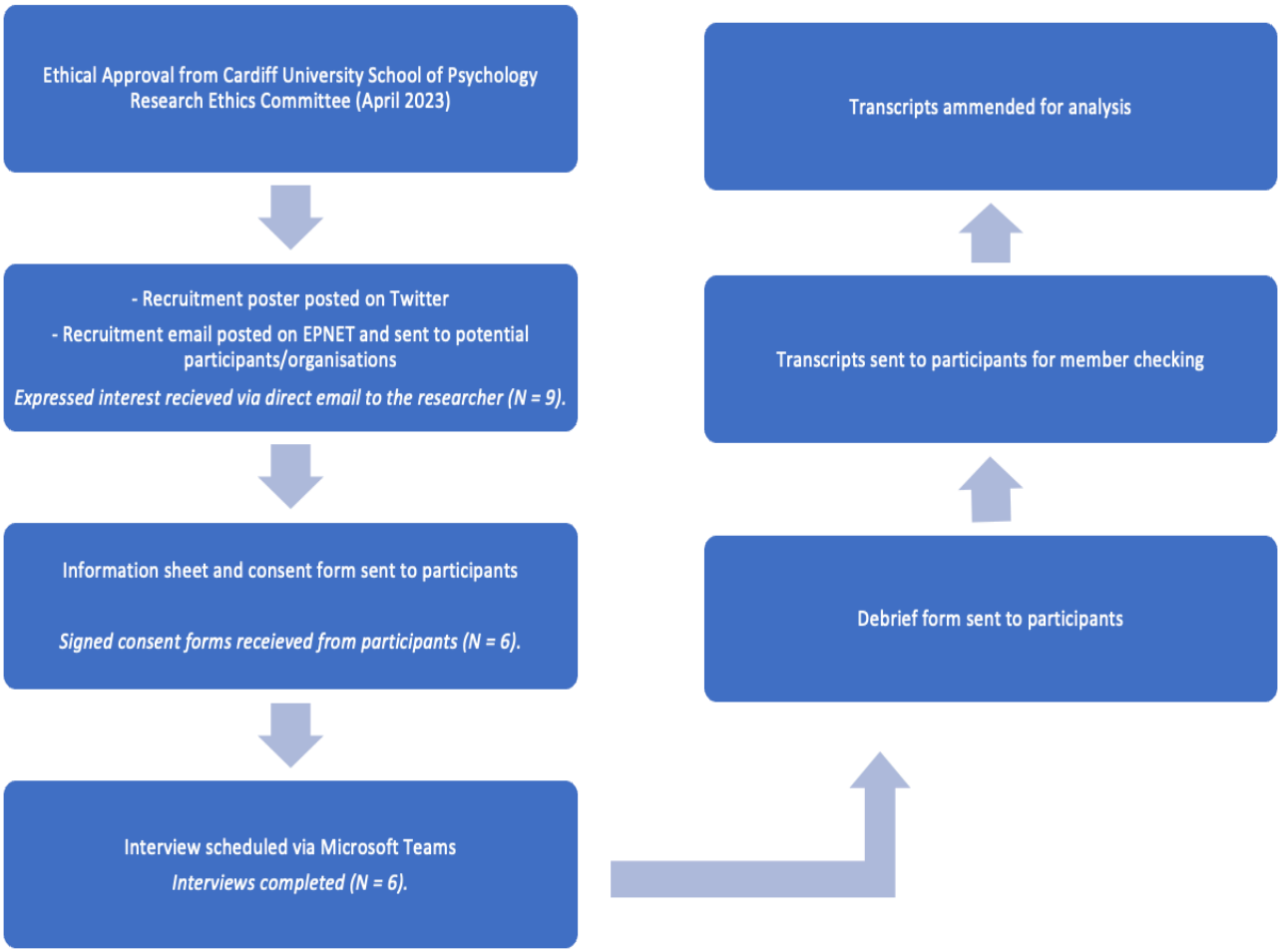
Paige Latham
(Trainee Educational Psychologist)
Cardiff University Centre for Human Developmental Science
70 Park Place
Cardiff
CF10 3AT
LathamP@cardiff.ac.

Hayley Jeans
(Supervising Educational Psychologist)
Cardiff University Centre for Human Developmental Science
70 Park Place
Cardiff
CF10 3AT
JeansH@cardiff.ac.uk

Thank you for your participation in this research. If you have questions about your rights as a participant in this research, or if you feel that you have been placed at risk, or if you have any complaints please contact:

Secretary of the Ethics Committee
School of Psychology
Cardiff University
Tower Building
Park Place
Cardiff
CF10 3AT
Tel: 029 2087 0707
psychethics@cardiff.ac.uk

17.11. Appendix 11. Summary of procedure



17.12. Appendix 12. Interview Schedule

Interview Schedule

RQ1: What are the experiences of EPs who have developed a specialism in neuropsychology (specifically working with young people with ABI)? And what does their role consist of?

- What does your day-to-day role look like?
- What psychological models or theories inform your advice when working with ABI cases?
- How would you describe the difference between your role and that of a non-specialist EP?

RQ2: What have the experiences of working in a specialist role with ABI taught specialist EPs about what all other EPs need to know and should be aware of when working with young people with ABI? (what helps and particular approaches).

- What do you think that all other EPs not in a specialist role need to know when working with ABI?
    - Are there any particular approaches or techniques you would recommend for consultative work? If so, please explain.
    - What approaches or techniques would you recommend for individual work or assessment?
    - What approaches would you recommend for developmental history taking and formulation?
    - What would you suggest if you were to signpost another EP to further resources or reading to support their work with ABI?
    - What, if any practice is less helpful or unhelpful when working with young people with ABI?
- In your opinion, do you think that EPs already have the skills and competence to work with ABI cases? If not, why not? If so, what factors do you believe are affecting EP work with this group?
- How could this and other relevant information be best shared with EPs?

RQ3: What are the implications of Q2 for EP training? What sorts of information should be included in EP training (including initial doctoral training) that would be helpful to EPs working with ABI cases?

- What is your opinion on aspects of neuropsychology being included in DEdPsy training courses?
    - Do you think that neuropsychology principles and practices should be a fundamental knowledge base for EPs or should it be deemed a specialism?

17.13. Appendix 13. Ethical considerations

Ethical Consideration	How This Was Addressed
Informed Consent	Once there has been an expressed interest, participants will receive an information sheet and consent form by email detailing the purpose of the research and asking for consent. Participants will have 2 weeks to decide if they want to participate in the project and return the signed consent form. Consent will be clarified verbally before the interview on the call verbally. There will be no deception as part of this research. Participants will be provided with a participant information sheet and a consent form which outlines the purpose and rationale for the research as well as the study procedures, what they should expect, and the contact details of the researcher and research supervisor should they have any questions.
Confidentiality and anonymity	Identifying information and contact information will be deleted immediately after the interviews to ensure participant anonymity. Audio transcripts will be deleted after they have been transcribed verbatim for analysis which will take two weeks from the interview date. No specific young people's names are to be talked or asked about or personal experiences with having an ABI because this is not necessary to answer the RQs and speaking about personal experiences with ABI has the potential to evoke feelings of discomfort or distress which is not the intention of the current research.
Right to withdraw	A summary of the interview transcript data will be member checked with participants within three weeks of the interview. Participants can withdraw their data any time before this and for up to two weeks after member checking. After this time identifying participant information will be deleted. Participants will have the right to withdraw at any time before and during the interview. They also do not have to answer any questions that they do not want to. Interviewed individuals will have two weeks after the interview to remove their data - after this time it will no longer be possible due to the transcripts being anonymised and the voice recording deleted.
Debriefing	After the interview, participants will be given a verbal debrief and sent a debrief form via email.
General Data Protection Regulations (GDPR)	This study ensured compliance with GDPR. Participants were informed as to what personal data would be collected and how it would be stored, and for how long. They were also informed as

	to how their privacy would be protected as documented in the information sheet, consent form and debrief sheet.
Risk of distress and Safeguarding	ABI is a sensitive topic therefore participants will be asked to be mindful of this when signing up to the interview. Participants will also be asked to be mindful of the location where they choose to be at the time of the interview due to the possibly sensitive and complex nature of acquired brain injuries which may evoke emotional responses from people with lived experience in caring for or living with an ABI. Also, for professional courtesy when discussing what participants believe other professionals should know when working with ABI. All participants will be professionals working as an EP and will not include any vulnerable groups.

17.14. Appendix 14. Ethics Approval

Dear Paige,

The Ethics Committee has considered your PG project proposal: Neuropsychology: a specialism or fundamental knowledge base for Educational Psychologists? (EC.23.03.07.6771).

Your project proposal has received a **Favourable Opinion** based on the information described in the proforma and supporting documentation.

Additional approvals
This letter provides an ethical opinion only. You must not start your research project until all appropriate approvals are in place.

Conditions of the favourable opinion
The favourable opinion is subject to the following conditions being met:

- You must retain a copy of this decision letter with your Research records.
- Please note that if any changes are made to the above project then you must notify the Ethics Committee.
- Please use the EC reference number on all future correspondence.
- The Committee must be informed of any unexpected ethical issues or unexpected adverse events that arise during the research project.
- The Committee must be informed when your research project has ended. This notification should be made to psychethics@cardiff.ac.uk within three months of research project completion.
- All data will be retained/processed/destroyed in line with University policy.

Amendments
Any substantial amendments to proposal previously reviewed by the Committee must be submitted to the Committee via psychethics@cardiff.ac.uk for consideration using the PSYCH amendment form and cannot be implemented until the Committee has confirmed it is satisfied with the proposed amendments.

Complaints/Appeals
If you are dissatisfied with the decision made by the Committee, please contact psychethics@cardiff.ac.uk in the first instance to discuss your complaint. If this discussion does not resolve the issue, you are entitled to refer the matter to the Head of School for further consideration.
The Head of School may refer the matter to the Open Research Integrity and Ethics Committee (ORIEC), where this is appropriate.
Please be advised that ORIEC will not normally interfere with a decision of the Committee and is concerned only with the general principles of natural justice, reasonableness and fairness of the decision.

The Committee reminds you that it is your responsibility to conduct your research project to the highest ethical standards and to keep all ethical issues arising from your research project under regular review.

You are expected to comply with Cardiff University's policies, procedures and guidance at all times, including, but not limited to, its Policy on the Ethical Conduct of Research involving Human Participants, Human Material or Human Data and our Research Integrity and Governance Code of Practice.

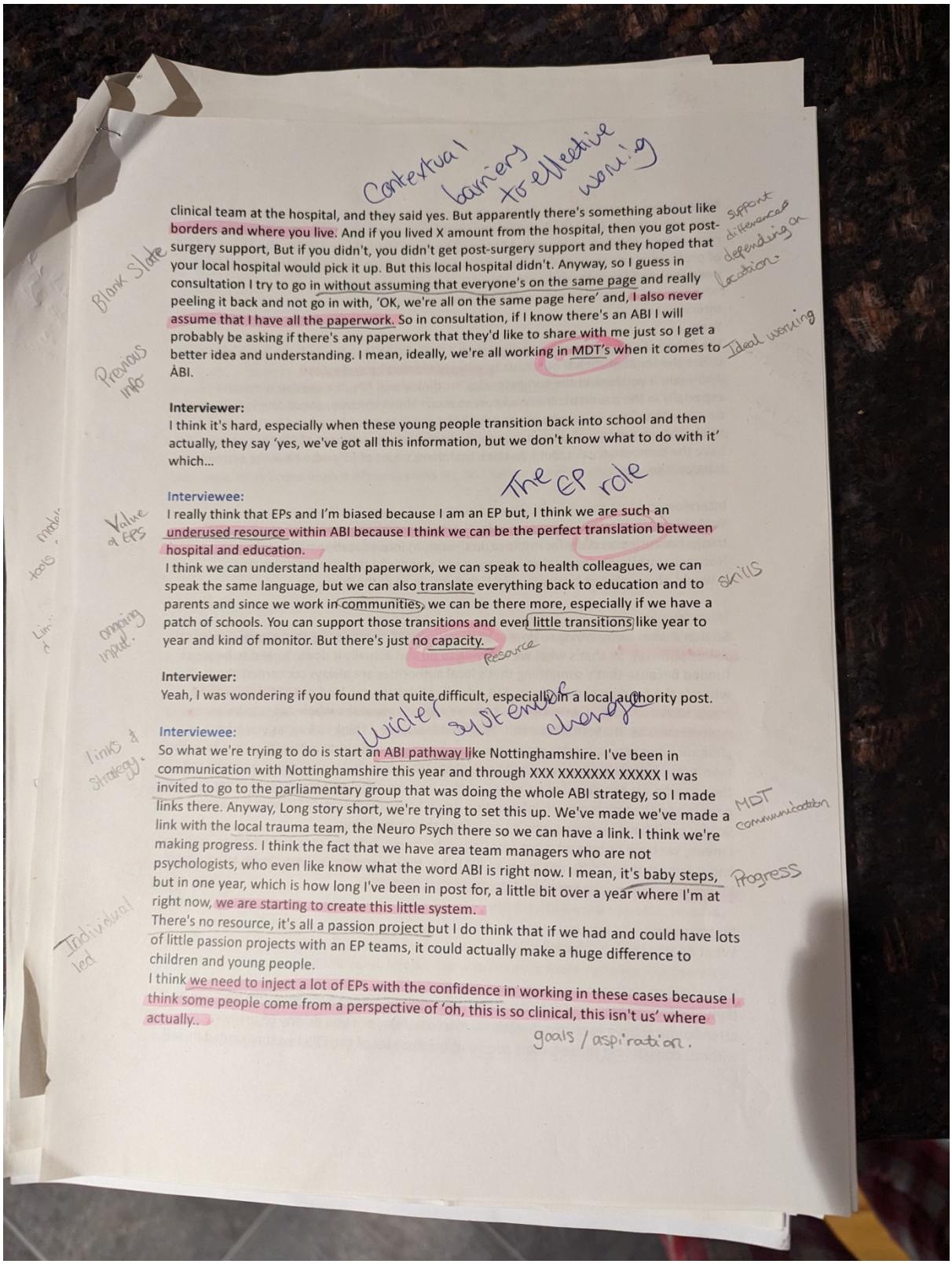
17.15. Appendix 15. The Six Phases of Reflexive Thematic Analysis

The Six Phases of Reflexive Thematic Analysis (Adapted from Braun and Clarke 2022, P.35/36).		
	Process	**Actions Taken**
Phase 1: Dataset Familiarisation	Becoming deeply and intimately familiar with the content of your dataset, through an immersion process. This involves reading and re-reading your data and making (brief) notes about analytic ideas or insights, both related to each data item and the dataset as a whole.	Transcripts were read several times and initial thoughts, and insights were noted.
Phase 2: Coding	Systematically work through the dataset in a fine-grained way. Identification of segments of data that appear interesting, relevant or meaningful to the RQ, and apply short, analytically-meaningful descriptions (codes) to them. Specific and detailed focus aimed at capturing single concepts or meanings. Coding can take place at a variety of levels - explicit or surface meanings (semantic), to more conceptual or implicit meanings (latent). Process of capturing the researcher's 'analytic take' on the data. Coding takes place across the whole dataset, thoroughly and systematically. Once finished, codes are collated then relevant segments of data are added for each code.	Transcripts were worked through systematically and sections of data deemed of interest and relevant to the RQ were highlighted. Each data extract was given a code to reflect the researcher's conceptualisation of the data and capture a single concept. Codes were compiled and aligned with the relevant data extracts.

Phase 3: Initial Theme Generation	Initial identification of shared patterned meaning across the dataset. Clusters of codes sharing the same core idea or concept which may provide a meaningful answer to the RQ are compiled together. Theme development is denoted as an active process, constructed by the researcher, based around the data, the RQs, and the researcher's knowledge and insights. In comparison to codes, themes describe broader, shared meanings. Once potential themes that appear to capture the data and answer the RQ are identified, collate all coded data relevant to each theme.	Codes sharing similar core concepts were clustered together to form possible candidate themes and Subthemes. Candidate themes aimed to represent the broader shared meaning captured within the codes along with the researcher's insights, knowledge and the RQs. All themes were collated in a visual representation - thematic map.
Phase 4: Developing and Reviewing Themes	Assessment of the initial fit of the themes to all the data and the overall analysis by returning to the full data set. Check that themes make sense relating to both coded extracts and the full dataset. Themes should tell a convincing story about a pattern of shared meaning related to the dataset. Identify if the themes highlight the most important patterns across the dataset related to the RQ. (revise if necessary). Some themes can be collapsed together: one or more may be split into new themes; candidate themes may be retained; some or all may be discarded. Think about the core focus or idea of each theme and	All themes were assessed against the codes and the full dataset to ensure they made sense in relation to the RQs. Transcripts and codes were read and reread whilst holding in mind the themes and RQs. Candidate themes and subthemes were revised according to their importance reflection of the data set. Additional Subthemes were developed to consider possible contradictions within the dataset and aspects of themes to be emphasised.

	its scope and start considering the relationship between the themes, existing knowledge, practice, and the wider context of the research.	Candidate themes were examined to identify a concept that unified meaning within the theme. Candidate and Subthemes were considered in relation to the existing literature within the field. Visual thematic maps were revised.
Phase 5: Refining, Defining, and Naming Themes	Ensure that each theme is clearly separate and has a strong core concept. Ask yourself what story does this theme tell?' and 'how does this theme fit into my overall story about the data? Write a brief synopsis of each theme and decide on a concise and informative name for each theme. (In this phase, you still need to be prepared to let the analysis go, if your refining process indicates more development is needed).	The analysis was refined to ensure separate candidate themes and sub themes. The core concepts of the candidate themes were written down. Theme names were adjusted and finalised to best represent the data set. The visual thematic map was finalised.
Phase 6: Writing Up	Formal analytic writing often starts from Phase 3. (informal writing throughout prior stages can feed into this). Aim to weave together your analytic narrative and compelling data extracts, to tell your reader a coherent and persuasive story about the dataset that addresses your RQ.	Extracts from the data were chosen based on the strength and compelling nature of the account in relation to the theme and subthemes accordingly. The analysis write up continued to form part of the analysis process in terms of researcher reflexivity.

17.16. Appendix 16. Examples of the Six-Stage Analysis Process



clinical team at the hospital, and they said yes. But apparently there's something about like borders and where you live. And if you lived X amount from the hospital, then you got post-surgery support, But if you didn't, you didn't get post-surgery support and they hoped that your local hospital would pick it up. But this local hospital didn't. Anyway, so I guess in consultation I try to go in without assuming that everyone's on the same page and really peeling it back and not go in with, 'OK, we're all on the same page here' and, I also never assume that I have all the paperwork. So in consultation, if I know there's an ABI I will probably be asking if there's any paperwork that they'd like to share with me just so I get a better idea and understanding. I mean, ideally, we're all working in MDT's when it comes to ABI.

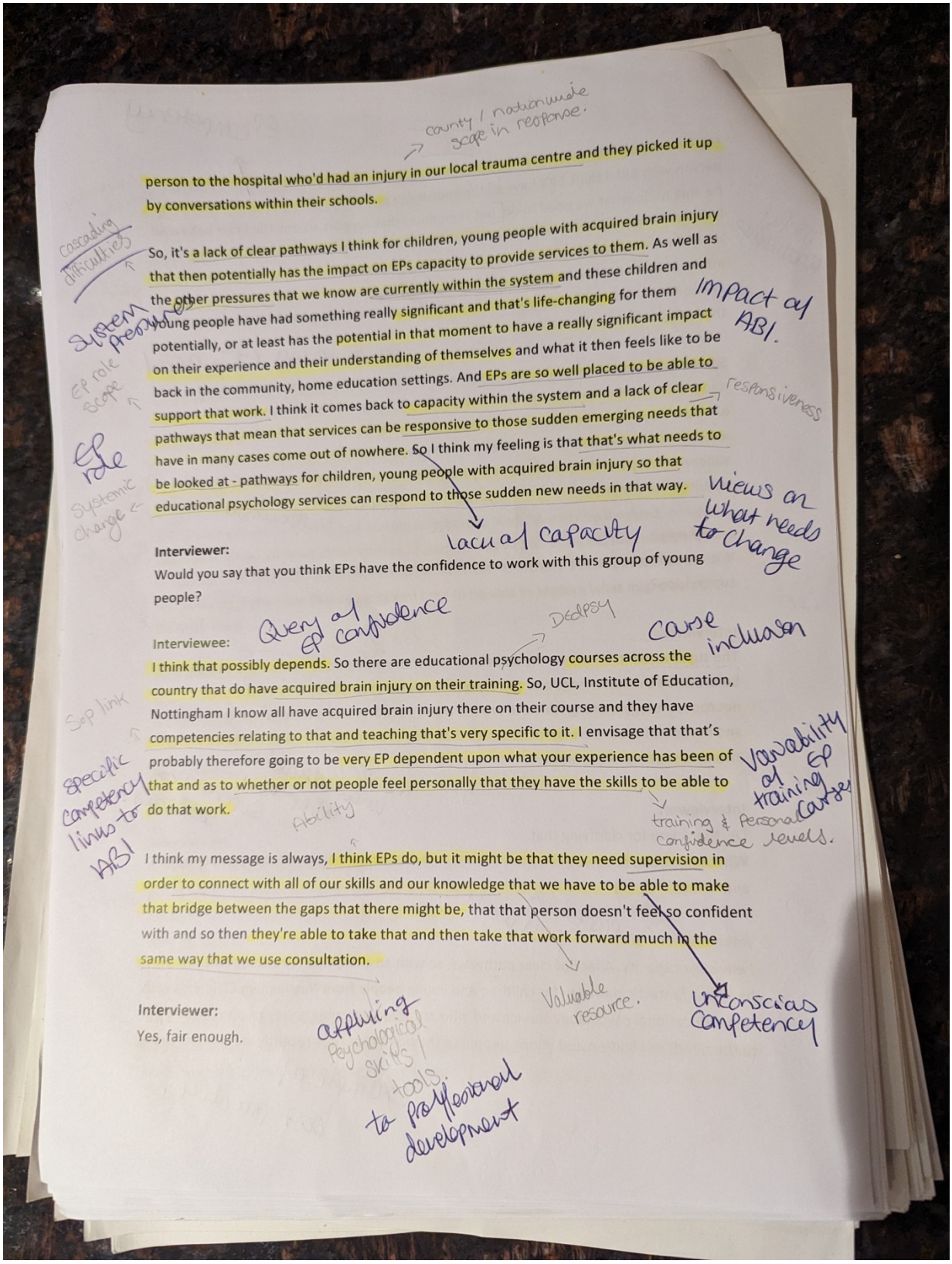
Interviewer:
I think it's hard, especially when these young people transition back into school and then actually, they say 'yes, we've got all this information, but we don't know what to do with it' which...

Interviewee:
I really think that EPs and I'm biased because I am an EP but, I think we are such an underused resource within ABI because I think we can be the perfect translation between hospital and education.
I think we can understand health paperwork, we can speak to health colleagues, we can speak the same language, but we can also translate everything back to education and to parents and since we work in communities, we can be there more, especially if we have a patch of schools. You can support those transitions and even little transitions like year to year and kind of monitor. But there's just no capacity.

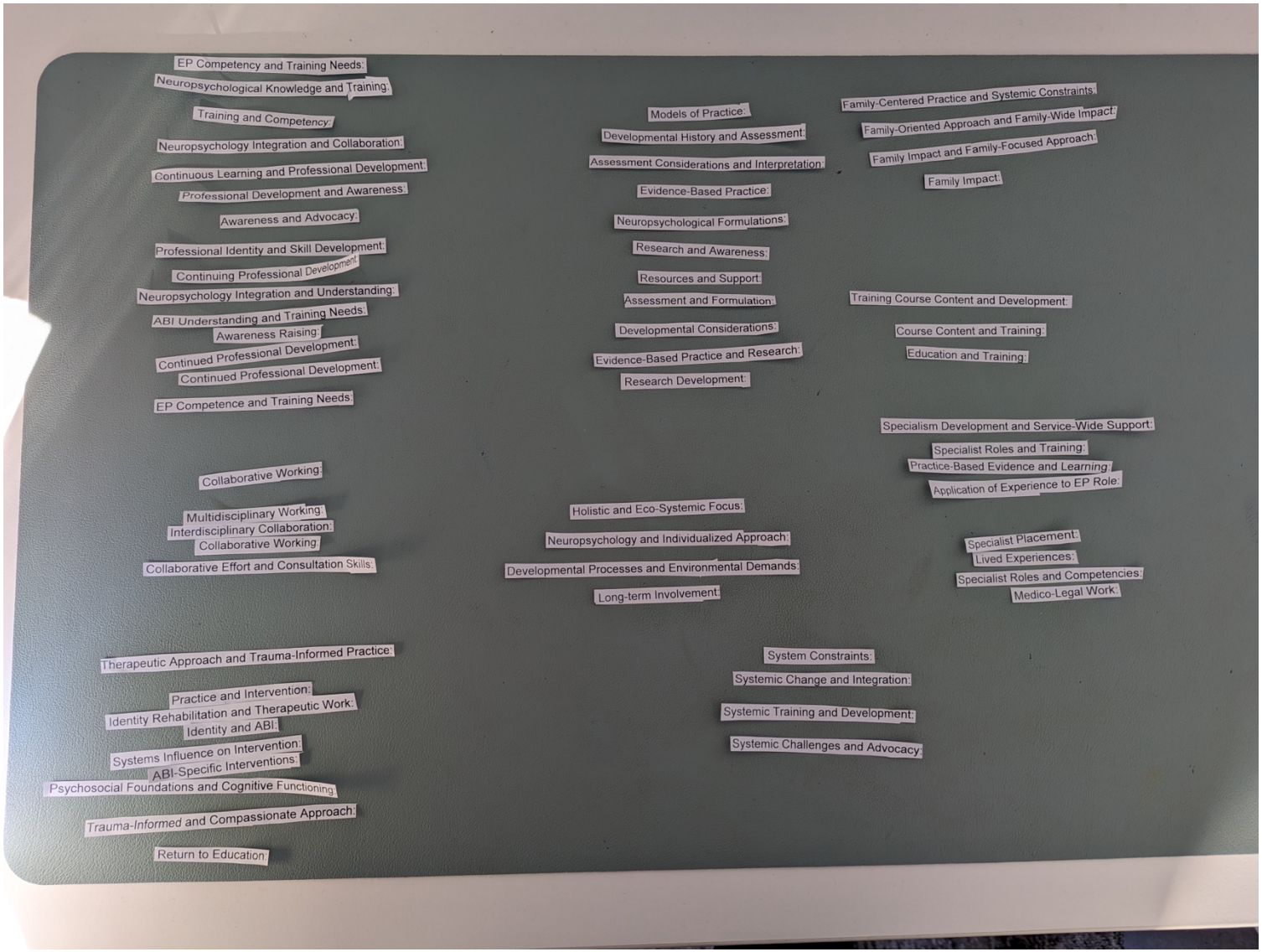
Interviewer:
Yeah, I was wondering if you found that quite difficult, especially in a local authority post.

Interviewee:
So what we're trying to do is start an ABI pathway like Nottinghamshire. I've been in communication with Nottinghamshire this year and through XXX XXXXXXX XXXXX I was invited to go to the parliamentary group that was doing the whole ABI strategy, so I made links there. Anyway, Long story short, we're trying to set this up. We've made we've made a link with the local trauma team, the Neuro Psych there so we can have a link. I think we're making progress. I think the fact that we have area team managers who are not psychologists, who even like know what the word ABI is right now. I mean, it's baby steps, but in one year, which is how long I've been in post for, a little bit over a year where I'm at right now, we are starting to create this little system.
There's no resource, it's all a passion project but I do think that if we had and could have lots of little passion projects with an EP teams, it could actually make a huge difference to children and young people.
I think we need to inject a lot of EPs with the confidence in working in these cases because I think some people come from a perspective of 'oh, this is so clinical, this isn't us' where actually..

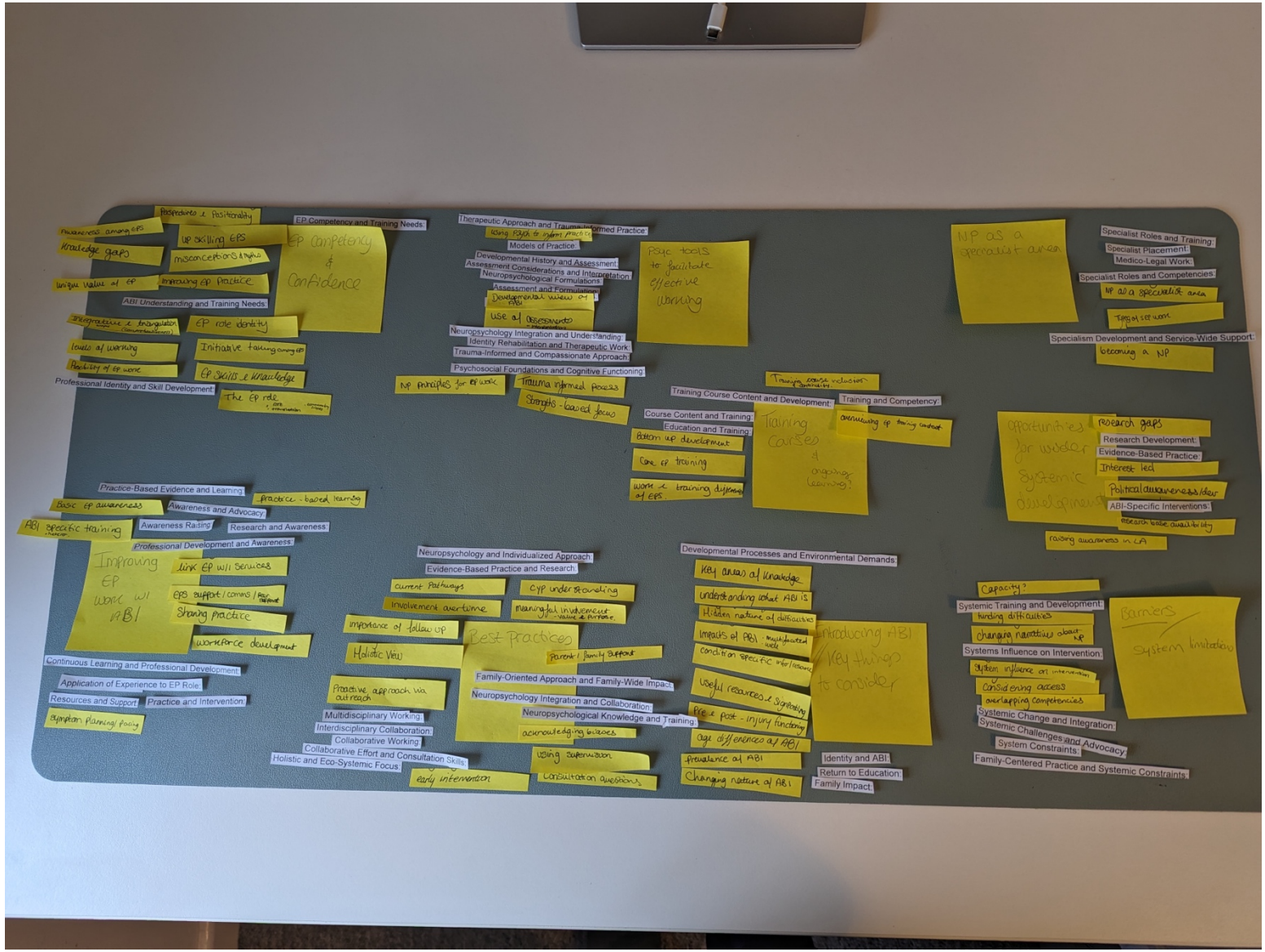
Familiarisation and Coding:



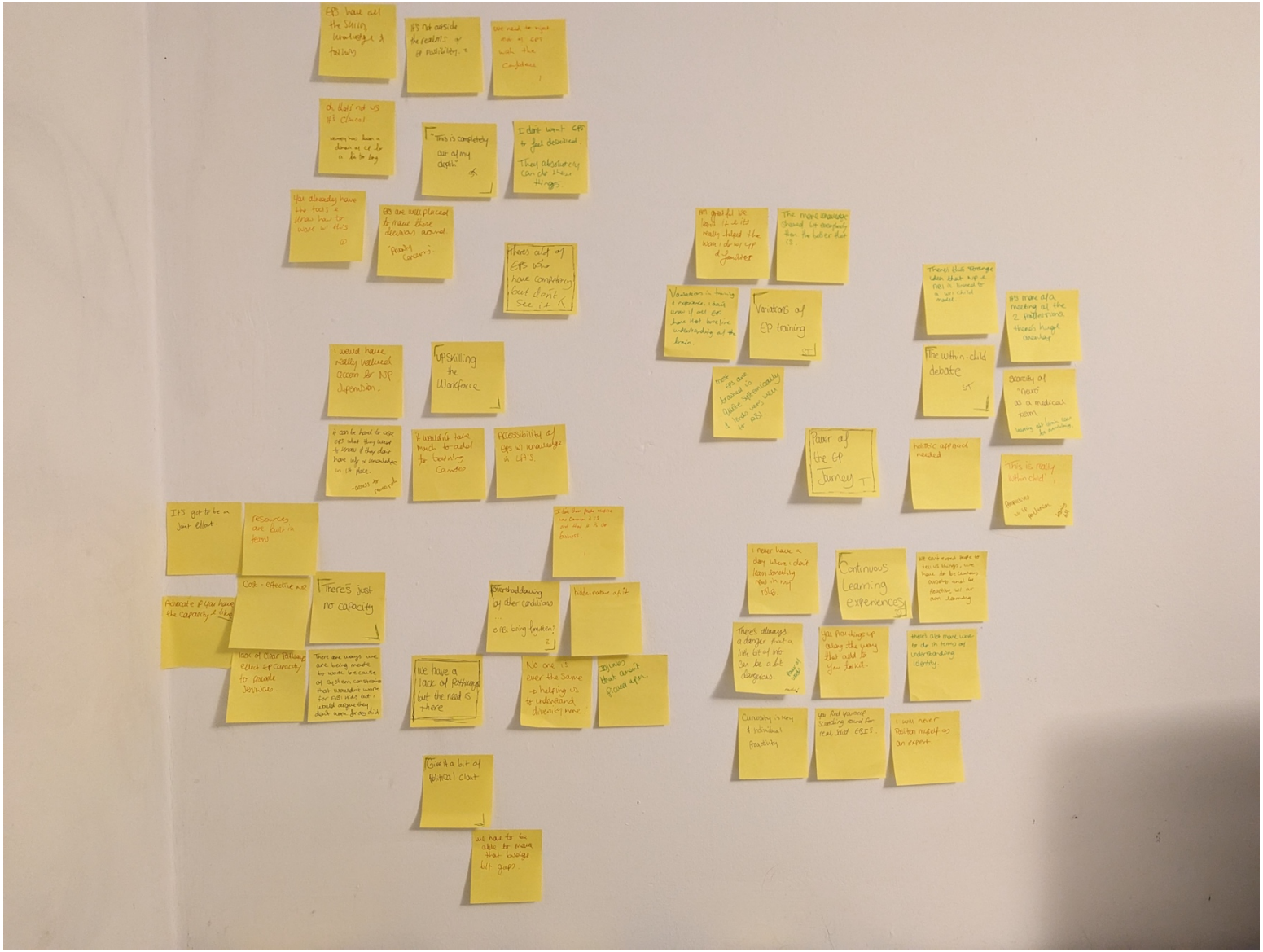
Initial Theme Generation:



Developing and Reviewing Themes 1:



Developing and Reviewing Themes 2:



Refining, Defining and Naming Themes:

17.17. Appendix 17. Reflexive Thematic Analysis Checklist

Transcription	The data have been transcribed to an appropriate level of detail, and the transcripts have been checked against the tapes for 'accuracy'.
Coding and Theme development	Each data item has been given thorough and repeated attention in the coding process.
	The coding process has been thorough, inclusive and comprehensive; themes have not been developed from a few vivid examples.
	All relevant extracts for all each theme have been collated.
	Candidate themes have been checked against coded data and back to the original data set.
	Themes are internally coherent, consistent, and distinctive; each theme contains a well-defined central organising concept; any subthemes share the central organising concept of the theme.
Analysis and Interpretation	Data have been analysed – interpreted, made sense of – rather than just summarised, described, or paraphrased.
	Analysis and data match each other – the extracts evidence the analytic claims.
	Analysis tells a convincing and well-organised story about the data and topic; analysis addresses the RQ.
	An appropriate balance between analytic narrative and data extracts is provided
Overall	Enough time has been allocated to complete all phases of the analysis adequately, without rushing a phase, or giving it a once-over-lightly.
Written Report	The specific approach to thematic analysis, and the particulars of the approach, including theoretical positions and assumptions, are clearly explicated.
	There is a good fit between what is claimed, and what was done.
	The language and concepts used in the report are consistent with the ontological and epistemological positions of the analysis.
	The researcher is positioned as active in the research process; themes do not just 'emerge'.

(Braun and Clark, 2022, p. 269)

17.18. Appendix 18. All codes related to each Theme and Sub Themes

Theme 1: "We Have a Lack of Clear Pathways but the Need is There"	
Subtheme	**Illustrative Quotes**
"There's just no capacity"	P1: *What we're also trying to do is make links with local trauma centres so we can know when kids are coming in, so we can lay the groundwork and inform schools.* *that's something that's local authorities are always concerned about, like where's the funding coming from.* *you could be doing identity work, that would be individual work and I cannot see an EP service right now, a local authority EP service that could have capacity to do any of that type of work. I think we would be really well placed for it, but I don't.* *I spoke to some Welsh EPs and they were doing some really interesting work and they weren't as constrained by statutory.* *I'm aware that in the other nations there seems to be more scope for more holistic or broader work or more therapeutic work.* *we're trying to do is start an ABI pathway like Nottinghamshire… Long story short, we're trying to set this up.* *I think for all children we need to follow up. I think there are ways we are being made to work because of system constraints that wouldn't work for ABI kids but I would argue they don't work for any child.* *There's no resource, it's all a passion project but I do think that if we had and could have lots of little passion projects with an EP teams, it could actually make a huge difference to children and young people.* *in local authority work in our current context we have a directive.* *But actually I think we can kind of build it on existing frameworks of ways of working and I guess you don't need the whole team to be super competent within ABI to have something that functions. I think as long as you have a champion in every subject.* P2: *It all works on relationships though like anything. And then when the people move on to different jobs, the system kind of collapsed because it isn't a post as such.* *there's a massive divide between statutory work, which is what a lot of Ep's do because that is all their local authority can afford.* *it's just really hard with local authorities shrinking and shrinking.* *because local authorities are shrinking or at least regionally, perhaps.* *But I do think where is the access to that specialist supervision? Where is the access to the kinds of tools that you might not have on your shelf beyond a WISC?* *I think it is lovely that you've got the children's trust in Surrey, and you've got the CPNR in Cambridge, but if you're seeing children in Lancashire, there is nothing like that, there is only community services.*

	there's none of that structure around them. What is there for them? (CYP who don't have legal cases). *So I think even if you did have a national service of some sort, I don't think they could take on all the cases. I think it would be a case of supporting and supervising people who are local to do it.* *it's just really hard with local authorities shrinking and shrinking to see how they're going to do it.* *When the people move on to different jobs, the system kind of collapsed because it isn't a post as such.* P3: *that's quite hard for EP's, given particularly working in local authorities when you've got a very heavy workload and you don't have a lot of time to immerse yourself in the understanding of it, and you are under huge time constraints, and your own physical constraints of doing too much of that.* *Often, we only have time for a snapshot.* P4: *I know local authority EP's don't have the time or the resources to or, the access.* *Time and resources. It is hugely dependent on local authorities, and it depends on how the local authority is working. If they're mainly writing EHCP's or statutory advice, well then how do they support a school or a family with a transition back to school to ensure they don't get to the point where they need statutory support? And it is that gap, I think. I'm sure you will find local authorities where they can do that.* *I think they're there's pockets of information out there where Nottinghamshire EPS have worked with the hospital staff and the psychologist in Nottingham Hospital and with the parent to show what a pathway looks like.* *the problem is the funding and resources depending on how the local authority is set up.* *with some local authorities I think just wouldn't allow the time to do the extent to what is ideal.* *P5: when I worked in a local authority for those 17 years, we really didn't, everything to do with the brain, neurological processes, those kind of things just didn't really come into my practice.* *I think we all know we're far too busy to sit down and read a big book or anything like that. But I think all EPs accept now how important the brain and neurological factors are on what's going on for a child and brain development.* P6: *I envisage capacity. A lack of clear pathways, so with an exception of Nottinghamshire which has got a fantastic pathway for children and young people from Nottingham Children's with their educational psychology service and who are able to provide a very responsive service to the needs of children and young people to the point that they recently identified a young person to the hospital who'd had an injury in our local trauma centre and they picked it up by conversations within their schools.* *it's a lack of clear pathways I think for children, young people with acquired brain injury that then potentially has the impact on EPs capacity to provide services to them. As well as the other pressures that we know are currently within the system.* *I think it comes back to capacity within the system and a lack of clear pathways that mean that services can be responsive to those sudden emerging needs that have in many cases come out of nowhere.* *what needs to be looked at - pathways for children, young people with acquired brain injury so that educational psychology services can respond to those sudden new needs in that way.*

	when you're working in the local authority, you don't have that ready-made team around you and I think there's that onus therefore on you to find that capacity and those opportunities to make those connections. *there's the opportunity to be a real advocate if you have that capacity and time to be able to explore what might be out there for them.*
In the shadows of other conditions	P1: *So in my local authority job, I've been trying to raise more awareness around ABI.* *When I know that I'm working with an ABI case, which actually I've had so many of in local authority, once you are aware and you're asking certain questions, things come out like ohh, why wasn't this documented?* *one, this is a common thing because I don't think people realize how common it is and two, that it is our business.* *it comes out a lot in private work more than in local authority work just because in local authority work in our current context we have a directive.* *I think thirdly, for them to realize how common ABI is. It was interesting because before the training we asked people if they had ever worked with an ABI case and some of them said no even though they have been practicing for like 20 plus years. And then after the training, they're like 'ohh all these things are ABI. Yeah, I've seen all these things.' So I think people don't really understand what an acquired brain injury is.* P2: *you end up having to draw on the wider evidence base. You know there is some evidence for children with learning disabilities in general and some evidence for children who have social difficulties because of autism. So, we could try that in a child who has social difficulties for a different reason. So, you find yourself scratching around a little bit for real solid evidence-based interventions, I think.* *It is missing, and I think there's lots of reasons for that. And one of them is that they are (children with ABI) such a heterogeneous group in themselves. You know, if you've met one child with ABI, you've met one child with an ABI. They are not necessarily going to present similarly to another child with ABI. So, you would need quite a big sample size to make it meaningful in the same way that the assessment studies are meaningful* *we never really have had people identify with that specialism, I don't think.* *I bet they do a bit on autism, and I bet they do a bit on dyslexia, and I bet they do a bit on all these other things which you know are just as common.* *There's some stuff happening at a political level at the moment which might be interesting for local authorities to bear in mind in terms of ABI pathways, that might be a way in, give it a bit of political clout.* *it is not mentioned in the code of practise for example.* P3: *Why is it less important than dyslexia or autism or ADHD?* *it's one in 10 children will have some sort of brain injury, and that's from the British Medical Journal. That's probably similar to the prevalence of dyslexia or autism so, why is that less important? I don't know.* *how much time is devoted to something like autism or executive function or ADHD, or literacy difficulties, it has to have an equivalent position.* *So much of our focus is on these things (pointed toward ASD, ADHD, learning disabilities, Dyslexia prevalence on the graph) and yet look at that (pointing toward the prevalence for traumatic brain injury on the graph) And yet, sometimes*

	you go through a whole course and is traumatic brain injury or acquired brain injury actually even mentioned? So yeah, I think I have many passions, this is one of them. P4: *usually there's usually an early years specialist, there's usually an autism specialist but I've never heard of anyone having any ABI specialist.* *It one of the highest levels, it is one of the highest numbers if you look at it and incorporate widely.* *actually you have much higher numbers of brain injury than Dyslexia. You have much higher numbers of brain injury than visual impairment. But we're getting lectures/ most of the courses will be covering those things, they might not be calling it dyslexia, maybe reading difficulties, but most of the courses are doing things on things that are lesser in the population.* *if a course didn't teach anything about reading difficulties, is that OK?, most of them probably do. If a course decided not to bother with visual impairment, is that OK?; If you play with it in that way.* P6: *yet we know that even just traumatic brain injury alone is the leading cause of neuro disability worldwide.*
Theme 2: Harbouring Untapped Competence	
Subtheme	**Illustrative Quotes**
"This is completely out of my depth"	P1: *I think it's an unconscious competence.* *if you look at the competencies for clinical and EPs, the overlap is massive especially in the paediatric bit. We know so much about children, about development and development from infancy to young adulthood like that is our bread and butter, so I really think that we are so well placed.* *I do think there is a large segment of EPs that perhaps don't have the competency yet. But I do think that there's a lot of EP's who have the competency but don't see it.* *I think we need to inject a lot of EPs with the confidence.* *for so long Neuro Psych has been seen under the remit of clinical but actually, why shouldn't it be under EPs* *Ed Psych's are so good at thinking about how people got to where they are, any trauma, so they'll consider the hospital trauma, they'll consider the social aspects of you've being out of school and away from the community. They'll think about all those systemic stuff really well.* *the bit that I think is missing is what does this actually mean for cognition, but even for, emotional regulation for physical things about which parts of the brain's got impacted at what age.* *they already have the tools, that especially I think a lot of people here the word ABI or Neuro Psych and they're like 'Oh my gosh, this is completely out of my depth, I don't know how to do this' and actually the tools are the same tools, we're using the same assessment, it's the same pieces. I mean yeah, you might add some memory stuff that maybe you haven't been completely familiar with but it's nothing that you can't teach.* *If you're trained as an EP you're very able to learn how to do the other bits of assessment that you might not be super familiar with. So that's first, that you already have the tools, you already know how to work with this.* *I think we are such an underused resource within ABI because I think we can be the perfect translation between hospital and education.*

	My hope is to have one person in every team that feels relatively competent. *those types of papers can really overwhelm people, so I try to stick to the charities first.* *there's just so much that you could be doing and facilitating and that would definitely be in the competency really of any EP.* P2: *the EP role looks really different depending on your context of work and the level of confidence that people have.* *I think it's going to be more of a specialism (neuropsychology as a whole)* *I guess the specialist bit comes in when you're thinking more about the long-term impacts for the child and the family.* *And if you're going to be able to offer help, then you need to understand that a bit more, I think.* *It's not outside of the realms of EP possibility.* *I think some of it just comes with experience. You know, the issues come up and you learn what to do with them.* *But I think you need to be a good psychologist so that you can draw on all of those tools and think 'ah, this would be relevant here'.* *I don't know, I feel like I wouldn't want to think that it was just, 'ohh yeah, everybody can do this, It's just something that all EPs can do', so I don't.* *You know people have different interests in the team or you hope they will overtime. And so, you go and have some supervision with them when a case comes up. You don't necessarily hand it over and say, 'I can't do this, can you do this case', but you would want to perhaps have that conversation with them about, how can I adapt my work in this particular case? And ABI is a bit like that.* P3: *I think they do have the skills.* *I think sometimes they need to be a bit more curious and maybe do a little, because there's so many underlying factors linked to different types of brain injury, there does need to be an element of going and doing a bit more reading around that and understanding of it specific to the case. You can't know everything about everything.* *Often, we only have time for a snapshot but maybe triangulating that, which is basic EP stuff.* P4: *In my experience EP's have those skills, especially if they go on to have further neuro psychology qualifications or they have any knowledge of brain injury. They have both those skills, so the combination is really powerful.* *It really tapped into I think, very natural educational psychology skills.* *I think the way most EPs are trained is quite systemically and working with the systems around the child, and I think that lends very well to acquired brain injury.* *Well, I would say firstly, I would say they do have the skills.* *They definitely have the skills to think about it, just come back to what you know, coming up with a holistic assessment of the situation.* *It's how you use things and you can have a very good EP who isn't using any of those things, but because they have good observational skills and they're very in tune with families and schools, which I think a lot of good EPs are really good at. I don't want EPs to feel deskilled.*

	They absolutely can do these things, and it's all about being in tune with who you're working with and being holistic and triangulating information and interpretation and I think any good EP can do that. *I think they have the foundational skills.* *I think they have the consultation skills. I think they have the skills to offer supervision and help people problem solve and think of goals.* *They're very good* *at understanding child development and I think that's where they can come in to think about this child, what does this child need in their daily life and how are all these appointments and how is this brain injury affected in that.* *Yeah, I do think they can benefit from learning more about the brain if they haven't had that.* *I don't expect them to be experts in brain injury, but I think what I would expect is that when they come across a acquired brain injury case that they go 'OK, yeah, I have some of the basic knowledge of this. This is what I need to do to find out more or this is who I need to contact to find out more'. To also know the limits of what they can do and what are good assessment of a child with acquired brain injury is and if their service can support that holistic assessment then great.* P5: *I think EPs have got the skills and knowledge to assess a child and pick up on lots of the things that are relevant for a child with an ABI. But I do think it's helpful to, I think it's really important to understand the difference: What's different for a child with an ABI versus another child who needs additional support or has special educational needs.* *I don't think I would have felt I had the competence to work with an ABI case. That's how I would have been, to be honest, if I hadn't worked here beforehand, I'd have been like, Oh my goodness ABI.* *that you have that knowledge and understanding and confidence is really, really important I think to take on a case.* P6: *I used to feel like actually as an educational psychologist, I felt like my role was about trying to help translate that health and that medical information into that current everyday experience that the young person, that family were having. Then to then think about what did that mean in a school and an education environment in terms of the context of the helping questions that they had, the things that they wanted to see. And so it was very consultative.* *it's thinking about the amount of time that you have and what's going to give you the most meaningful intervention and meaningful information to be able to support the questions or the priority concerns that people have at that point in time and I think Ed Psych's are well placed to make those decisions around.* *I think EP's are incredibly well placed to shift those narratives and to support that understanding of the things that people might not be able to see and how they might be impacting on their regulation or their communication or their capacity to engage with aspects of their learning.* *Yes. I mean I do and I have before (believe that the EP have the skills and the competence to work with ABI cases).* *I think EP's have all the knowledge and all the skills and all the toolkits to be able to do what we need to do, but sometimes that support around the brain behaviour links and that translation between what we know about the injury and what that might mean for that young person gives us as an educational psychologist that additional layer of*

	information to then take into those conversations, those situations and see that within the environment that the young person's in and think about the types of interventions that therefore might be helpful. *EPs are so well placed to be able to support that work.* *I think that possibly depends (if EPs feel the have the confidence to work with ABI cases).* *going to be very EP dependent upon what your experience has been of that (EP training) and as to whether or not people feel personally that they have the skills to be able to do that work.* *I think EPs do, but it might be that they need supervision in order to connect with all of our skills and our knowledge that we have to be able to make that bridge between the gaps that there might be, that that person doesn't feel so confident with and so then they're able to take that and then take that work forward much in the same way that we use consultation.* *I think EPs are really, really well-placed - There was lots, though that was about adapting methods of testing and thinking about how we make our assessments accessible. And, we cover all of that within EP training - We're very well versed in that.* *A basic level of information that everybody needs, I think it's really important.*
<u>Variations of EP training experiences</u>	P1: *I was able to gain a lot of specialist knowledge whilst I was still in training.* *there's a big difference depending on where people trained and when people trained.* *So I trained at XXXX and we had a neuro psych component, so even though all my cohort doesn't have the experience I had via placement, they all had lectures and a PBL like a unit on Neuro Psych, so at least the seed was planted, but obviously with some other programs it's not there at all.* *Then depending when people trained, like whether they were on the master's cohort or even earlier cohorts of the doctorate, there might not have been that that focus at all.* *I think the EP role and ABI is really interesting if you've been trained in a way that doesn't look at internal factors* *I think people don't really understand what an acquired brain injury is. I think people also don't recognize the spectrum of an ABI like something from a concussion, all the way to the more severe traumas. Even something like brain tumours, they're very easily forgotten and because I think people think more of, the traumatic injuries.* *we had a focus on memory and attention, like those different tracks. Because I really do think it gave us a solid starting point then people can kind of launch off it.* *ultimately EP work is massive. So you can't have everyone who's specialized than everything.* P2: *Well, I trained a long time ago, and it was only a one-year course back then. So, I don't think we did, but I always had an interest in it right from my undergraduate days, so pretty soon I did my postgraduate diploma in neuropsychology from UCL. So that's where I got it from, not in my EP training course.* *(EP specific book content on ABI) I think that it is really accessible, and I think it's quite nice to have it aimed at educational psychologists as well, because we don't often get our own bit do we. It is often clinical in nature.* *in terms of further training, I mean, obviously there's the postgraduate diploma at UCL, which is really the only specific training course you can do on paediatrics in this country.*

	I think there should be some in there (the training courses) because you're going to come across ABI cases. *I'm aware that it's not part of the core stuff, and I think it's really interesting because if you work in an EP job taking generic work, you're going to come across at least one ABI case in a year, aren't you? So, you want some idea of what that might involve and the wider* *issues that are going to go around it.* P3: *Before I did the training, there was a lot of free training available from, I can't remember which charity it was, the children's trust and Ricolo. That is available and you just have to look out for it as I did.* *think places like XXXX will be more inclined to do that (include links to biological elements) as compared to another training course which has a more psychodynamic or social justice approach.* *Whether courses have tutors who have that knowledge who can deliver that, that may be a reason for it.* *Every course has a different approach to how they teach this and I do feel that it should be a fundamental part of the fabric of our understanding as EPs and run that golden thread through.* *sometimes you go through a whole course and is traumatic brain injury or acquired brain injury actually even mentioned?* *I obviously trained a little while ago and there were some elements of neuropsychology as part of the course. It was quite limited, but actually where I went to my training it was still valued. I know that some programs give more or less focus on it, but I think it was still an area as well as the approach to assessment as well.* *if you don't have access to having done the course, there is still lots you still can do to understand the impact of the variety of acquired brain injury across the way.* P4: *I do the lecture on brain injury and brain development, I do those lectures for the doctoral course.* *I think because of the variations in training and experience, I don't know if all EPs do have that baseline understanding of the brain.* *That's my role on the training course to teach neuropsychology and brain injury and brain development and I bring in formulation and I give them examples.* *how much is the argument that it should be a universal offer on the training course versus it's up to different courses to incorporate it or not.* *I think there's a difference between the training on neuropsychology and neuroscience on the course versus training on Brain injury* *the majority of EPs are not on the training course right now. So, it's not going to affect them.* *I know it's taught on the XXXX course because XXXXX and XXX we're doing it. XXXX I'm not sure or XXXX. Yeah, I'm not sure. So I teach at the XXX, XXX.* *I don't know who has the overview of the courses. It would be interesting to know.* *I don't know much about that side of thing on the course, but it wasn't taught on the course before I did it and I started doing my first session in either 2020 or 21. So it's very recent on the course, I've only caught the last two or three cohorts. So it's very recent and it wasn't on the course before that.*

	what are the decision-making factors that decide what's universal towards all courses and what is the next tier of what courses can decide within themselves whether to teach or not? *I'm not confident that all the EP courses are teaching the interpretation of standardized assessments in a holistic way, where we're looking at the cog they are in an overall picture and how they all relate to each other and actually a low score in one thing is going to have a knock on effect on other things.* *in one way I think it is good because there is some variation and you can choose the one that suits you and what you want to specialise a little bit in.* P5: *EPs who come from a bit more where I was, which is where it didn't really come into their training.* *I worked for XXXX for 17 years and in my training, which was many, many years ago, I trained in 2001, I did my educational psychology. There was absolutely no brain injury training included at all at that time.* *So when I worked in a local authority for those 17 years, we really didn't, everything to do with the brain, neurological processes, those kind of things just didn't really come into my practice.* *I think there is a real difference between and I don't know how much in training now, the brain comes into it.* *I'm assuming that now on most courses there is some neuropsychology and brain work.* *So I'm assuming that most EPs that are qualifying now do have some basic knowledge of it. Maybe I'm wrong in thinking that though.* *there are educational psychology courses across the country that do have acquired brain injury on their training.* *XXX, XXXX, XXX I know all have acquired brain injury there on their course and they have competencies relating to that and teaching that's very specific to it. I envisage that that's probably therefore going to be very EP dependent upon what your experience has been.* *There was lots, though that was about adapting methods of testing and thinking about how we make our assessments accessible. And, we cover all of that within EP training.*
<u>Upskilling the Workforce</u>	P1: *I've been trying to raise more awareness around ABI and what we've been able to do this year is train the EP team and my current local authority in baby steps raising awareness.* *a young person who had an ABI when she was 18 and now she's 21 and she's worked a lot alongside us to be able to raise awareness and start with baby steps.* *What we're also trying to do is make links with local trauma centres so we can know when kids are coming in, so we can lay the groundwork and inform schools.* *to train some of the plan coordinators and some of the SENCo's in our area, so we're really trying to do grassroots work in acquired brain injury.* *I feel like I'm continuing growing my knowledge in the area because obviously it's fast changing, it's quite a new area in reality, as a field.* *I think it's a consideration of what actually happened to the brain.*

	we found that showing people the neuro psych formulation models help because it gave people a structure to think through and for them to make sure they're actually thinking about all the different elements, and it helps you to feel more contained as well if they were to work with an ABI case. *to realize how common ABI is. It was interesting because before the training we asked people if they had ever worked with an ABI case and some of them said no even though they have been practicing for like 20 plus years. And then after the training, they're like 'ohh all these things are ABI. Yeah, I've seen all these things.' So I think people don't really understand what an acquired brain injury is.* *we are starting to create this little system.* *So that's what we're trying to do. In collaboration with them to use that pathway, the Sam White pathway.* *I think we can kind of build it on existing frameworks of ways of working and I guess you don't need the whole team to be super competent within ABI to have something that functions. I think as long as you have a champion in every subject.* *My hope is to have one person in every team that feels relatively competent and then maybe we can do extra training and that becomes kind of a specialist area for the three people and then disseminate information down because ultimately EP work is massive.* *So I'd go to the brain injury trust, to the Children's Trust website. Then I'd go to the specific charity. There's a really good paper about EP work with epilepsy specifically. that those types of papers can really overwhelm people, so I try to stick to the charities first.* *we've started doing training and it was extremely well received, people were extremely receptive, asked lots of questions, you could tell people are thinking of active cases they either currently have or have just had.* *So I think having resources built within teams, so having people who have the competence or have the interest or have the specialization, whatever you want to call it embedded within teams so then people know where to go.* *starting off with the awareness that one, this is a common thing because I don't think people realize how common it is and two, that it is our business.* *we need to understand the 'so what'. How does this apply, what do we need to be doing, what do we need to be thinking about in our formulations, I think it's extremely important.* *understanding brain development and then when it gets impacted and really thinking about all the different kind of ways it can happen and then trajectory from there.* *it's the application of neuropsychology to a school and that's missing in the UK, we don't have that.* *I wonder if there were, more CPD or if there was more extra training that's really focused on the application of neuropsychology to education and to learning and to development and all that, maybe EP's would be more interested and would see it more to be within our scope of practice because it's packaged in a different way and it's packaged to the application to children and development and schools and education and all that.* P2: *I've learned loads about that from my colleagues in the clinical psychology field and using resources from Bath Hospital and things like that.*

	I suspect it would be really helpful to have a bit in the training course about it (ABI). And then if you're really interested, then you do the training and get the experience, same as if you were going to specialise in autism or early years or trauma or whatever your interest is, I guess. It's good for everyone to have a little taster and I suppose in that little taster, I'd be thinking about how whole brain development can be disrupted at a point in time. And so that developmental view of acquired brain injury, that it isn't just something that happens and then you get better. It actually affects the entire development of how the brain is going to be. *I think my ideal scenario would be to have half a day on the training courses with that sort of stuff and then if people are interested, they can specialise just like in any other specialism.* *the postgraduate diploma at UCL, which is really the only specific training course you can do on paediatrics in this country.* *in terms of what you actually do, interventions that work. There is very, very little research that you can draw on. So, you end up having to draw on the wider evidence base.* *Go and have some supervision with them when a case comes up.* *I think it's definitely doable with some supervision and support. So, there's definitely models of doing this where we can share the expertise around.* *join the special interest group and there's people around nationally who are very happy to help you and talk things through.* *A little bit on your training course so that you know a bit about it and then if you're interested, here is the training route, because it is all set out for you.* *I think there should be some in there because you're going to come across ABI cases.* *I'm aware that it's not part of the core stuff, and I think it's really interesting because if you work in an EP job taking generic work, you're going to come across at least one ABI case in a year, aren't you? So, you want some idea of what that might involve and the wider issues that are going to go around it.* *it's definitely important to put in the training courses to be aware of all of that stuff.* *it's difficult because once you're qualified, there's no CPD that everyone has to do.* *whole service days, those kinds of things where teams get together and think about a particular topic and how we get that on the agenda really.* *how do we get it on the national radar first, because if it becomes a national issue, then it becomes something that EP services have to take notice of.* *the guidance that's produced to be more holistic, because I think at the moment it's quite NHS based.* *that doesn't include education or social care or the justice system or the private sector. And actually it does have to work together doesn't it.* *it worked best when I was in local authority practise was when I was the point of contact for the local authority, I knew who my point of contact was in the NHS, I had a paediatrician, I had a neurologist and a clinical psychologist and I knew who those people were that I would pick up the phone… So, there was a little system/network.*

	I think the business of understanding neuroanatomical development, normal trajectories and then how that can be disrupted, I think that is core knowledge (for EPs). I think that it's really important that is taught well. *you need somebody who's really excited about it and passionate and gives you case studies and ways in which it's relevant and applied and things that you would see in real life and make it come alive. if you teach it in a from the textbook boring way, it's such a turn off that it might do more harm than good.* *The important part of it is to understand how brains develop, what you would see in a normal or within a typical boundary trajectory and then what sorts of things might disrupt that and then what you might you see. So, that bit I do think should be in the core EP training curriculum.* *I would like to see some national developments that bring services together for children with ABI and make it more holistic for them.* *Maybe we need something along the lines of a virtual school type thing.* P3: *I think my concern is that it's considered specialism, but actually it should be part of our training that we can still add value whether we've had more further training in this or not.* *the fist model of the brain, it is quite a simplistic understanding of the brain and yet if that's where a majority of EPs are with their knowledge of neuropsychology and so, having done the diploma gives me a bit more depth.* *It should be part of the course, developmental milestones or asking if at any time was there any head injuries or concussions as a child, because a lot of this stuff goes unnoticed and actually it could be part of the formulation. Sometimes we don't ask the right questions in order to include that in our formulation, but there should be a base level of knowledge of what's likely to be impacted from that brain injury, base level and therefore the best way to ascertain what impact that's going to have on learning and independent skills is really key.* *there was a lot of free training available from, I can't remember which charity it was, the children's trust and Ricolo. That is available and you just have to look out for it as I did. Sometimes we have to be a bit more proactive in looking for that.* *definitely it being a core part of training anyway, on the program, whether that's in year one, two or three. I think that there needs to be some space given to that.* *I think there's definitely space for further training for CPD for qualified EP's, who possibly have trained later but is still really relevant to their work. It's quite easy to do, to have a specific focus for example, the impact of epilepsy or downs or extreme premature.* *So, you could do them in small snapshots within the service, in learning groups within the service. If they're finding when looking at the numbers coming in, how many of the cases tick those boxes or whether it's a particular gap in the services understanding. It would be nice if there was a specialist within a service, not a lot of services have that, having a specialist EP that has that insight.* *There is so many different ways a service can accommodate this, whether it's more ad hoc through CPD or through own self-development at a service identifying where the gaps are.*

	It's still growing and I think that's also what is hard. It is a moving piece, it's a moving fast and for EPs to then try and link on to that it's a bit disorientating in terms of where do you start, which part do you start. Even stuff that I possibly learned or through my CPD focused on, now maybe no longer is understandable. When I did my masters and I did cognitive psychology and learning about the different parts of the brain, that's moved on now, and that wasn't that long ago that was 15 years ago. *Someone available to share that the key points of where, what is interesting, what is new in this area, what they may need to consider when they're working with the child so that you know. And it's not necessarily just one person, but a group of people who share the same interest, who can keep abreast with developments, I suppose.* P4: *I think there's a lot more work to do in terms of understanding identity.* *I think it's important for them (EPs) to know the difference between brain injury in children and adults because in terms of intervention and outcomes and impact is very different and I think people don't realise that as much.* *I think ideally it would be good for EP's to have some basic, some general information about how we would expect the brain to function, what happens when it's interrupted, how is it different when it's interrupted at different stages and, what are the typical things to look out for if you have a child with a brain injury.* *Yeah, the obvious ones are The Children's Trust website, the brain injury hub, you've got headway, you've got the child brain injury trust. In terms of books, you've got Educating Children with Acquired Brain Injury by Sue Walker. there's journals that focus on it, the neuropsychology division of BPS (British Psychological Society). It's often worth contacting another EP you know has experience in brain injury. So, I get emails and phone calls quite often from former colleagues and local authorities, or someone passed on to say, 'I have a case in local authority, can you give me some advice'. There is a lot of ad hoc peer support that goes on, I think, and I'm not the only person who gets asked those questions, I'm sure lots of them do. So I think ad hoc peer support, peer supervision, those websites, those books, the peer reviewed journals.* *Yeah, I do think they can benefit from learning more about the brain if they haven't had that, and learning about what brain injury is. One of the things that comes up when I lecture on this is, people often don't know what the definition of brain injury is.* *So, I do think they, the doctoral students really benefit from having at least one or two, minimum lectures on the brain and brain injury. What we expect, what to look out for, even if they just have that and when they come up with a case, they can look back on their notes and just see where to signpost and what to look up. It's very hard to train them up fully, I don't expect them to be neuropsychologists. I don't expect them to be experts in brain injury, but I think what I would expect is that when they come across a acquired brain injury case that they go 'OK, yeah, I have some of the basic knowledge of this.* *I think the training course is key because I think just having it as part of the training course and it unconsciously passes that message, that this is important and this part of your basic training. I don't expect anyone to come from that course feeling they're a neuropsychologist and qualified, but I think just to know what neuropsychology is and their remit.*

	I think service training, I've been contacted by services to do whole service training. I have done whole service training for people in the past in neuropsychology and brain injury. But it is up to the services to buy that in. But I have done it and I've been contacted about doing it in the future, so there is some interest there. *the majority of EPs are not on the training course right now. So, it's not going to affect them.* *I don't expect the courses (DEdPsy) to be able to incorporate that as a dual qualification profession in any way and I do see the value in it being a separate qualification.* *I think it's more of a meeting of the two professions, there's overlap, there's huge overlap and Educational Psychologists already have excellent skills, and they are experts in how the education system works, in child development, in how processes work, in systemic working.* *Ideally, it would be great to follow up with some of the students who have had lectures on the training course, a few years later and say was it helpful, was it not helpful, do these cases come up, versus someone who didn't have it, like doesn't make any difference. I think that's interesting.* P5: *the most important thing would be, I think is understanding.. what that impact is on the brain and how the brain needs time. and how that might impact on a child in the short term medium term and in the longer term.* *most importantly I think it's about rather than all the biology of the brain and all those kinds of things, it's about what does it actually mean for children?* *'children with acquired brain injury and returning to school', I've used that a lot* *I think it's crucial that they do have some knowledge of the brain. I think it's really important as a module on all training courses without a doubt.* *How exactly that's delivered? I don't know, but obviously it's got to involve some sort of training.* *I know if I didn't work here and was still in a local authority and somebody said 'Look come and do this training on brain injury, this is really important because it really, really is a massive thing for the child'. I would have jumped at it, and I think I don't know anybody who wouldn't to be honest.* *I think it should be part of the training course. I think it should be compulsory.* *I think it's really, really important that it is. Brain development and how the brain develops and the impact on things like executive functioning skills and problem-solving and all those kinds of things are just underpinned so much by brain development that I think it's really important.* *I think it's going to be the biopsychosocial model. I mean, that's certainly what we follow here. It's not one or the other, it's about looking at everything that's impacting the child.* *within wider neuropsychology, thinking about narrative approaches, all of those different kinds of things, I think it should be core, to be honest. I really, really do.* *those principles and theories are really important to all of EP work because there is overlap between all of these things.* *We can talk about brain injury, but actually, as I was just saying, trauma comes into that, and trauma actually then happens outside of the brain injury as well.*

	There's such a crossover between all of these things that I think a lot of these principles and theories that might be associated with brain injury are really important for general EP practice. *but to have ABI there as something that's recognised and is an independent separate special educational need or additional need.* *So, I think the more that the awareness of that is built up within the communities and local authority, then the better that is.* *the more knowledge that is shared between everybody, then the better that is for everybody - It is a small field and currently, it's a quite specialist field. So yeah, the more sharing the better, and it's just always good to know what's going on with other people.* P6: *thinking about models of trauma and the Elhers Clark model.* *The PNI (Paediatric Neurocognitive Interventions) model as well, so when I'm thinking and working with young people and helping them to make sense of things. But also with schools, thinking about levels of intervention and what that looks like.* *I never have a day where I don't learn something new in my role, which is I think, says a lot, but also makes it a really a great field to be working in.* *Age, stage, severity of injury and the importance of psychosocial support as key indicators for outcomes. It's important, I think, that educational psychologists know about brain development. So thinking about when that injury occurred, what did that look like, what stage of development might they be.* *I think it's that awareness and that understanding that we've had an injury to the brain; children's brains are still developing. And so whilst we have plasticity and we have capacity within our brain and our networks to create those pathways. I think for me the crucial thing is recognizing the impact that that has on that trajectory of brain development.* *So I would never want to say 'ohh you must do this or you must do that'.* *I think it's just, I would always come back to things like that PNI model, the Paediatric Neurocognitive Interventions model and I would come back to thinking about the literature and what we might know about those types of injuries.* *N-ABLES, the National Acquired Brain Injury Learning and Education Syndicate and they have resources for returning to education following acquired brain injury.* *I think if you can always hold that injury in mind and the stage at which the young person was in that development and where they might be in their ongoing brain development, I think that's really important.* *I guess step one is about awareness raising.* *exploring current levels of understanding about it and about its prevalence.* *So, I think there's something about awareness raising and then something within the field, asking those questions around what would people value most around supporting them.*

	But I guess my feeling is that the starting point is probably a set, basic level of awareness and understanding of acquired brain injury and brain development which would be really helpful. Which actually that wouldn't take much to add into our EdPsyc courses. *neuroanatomy and the ideas and models around things like interactive specialization and things like that. That are all the new bits of information and also thinking about condition-specific, and co-occurring conditions. Building that in to the educational psychology doctorate I don't think would add a considerable amount of extra time and whether or not there's the potential to look to something that, in the future, that would give educational psychologists the required competencies to then go on to if they wish to, to go on and complete the supervision and the casework that is required to then become a neuropsychologist, they could choose to do that.* *is there a way of reviewing and looking at those competencies and thinking about what key and core elements would need to go into educational psychology training in order to provide people with that opportunity.* *I think a basic level of knowledge and information is really helpful and I think it's probably for courses to determine what they feel that needs to be.* *I think then what people then choose to do that with that thereafter I think does come down to specialism.*
Theme 3: The Legacy of the Medical Model	
Subtheme	**Illustrative Quotes**
The Within-Child Debate	P1: *because I've got a bit of pushback from some colleagues saying 'ohh, but this this is really within child' and I respond with, 'well, you have to consider what happened to the child or to the person'.* *I think sometimes that the move away from within child… sometimes I wonder whether the pendulum has swung so much to the other side.* *we see it really clearly with ABI cases, where we know for a fact something has happened that now we're not considering what happened at all.* *if we do consider what happened to the child, and maybe any deficits that now the child has, it doesn't mean that the child is bad, It just means that the environment has to adapt.* *you have to consider the within child factors, but when you intervene most of the interventions are systemic.* *maybe some people would still see it as reductionist – neuropsychology with a focus on application to education and development.* *sometimes people can say that Neuro Psych or Neuro Psych formulations can be quite reductive, but actually both these formulations take into consideration environment and they both also speak about pre injury and what do we know about the pre injury phase and I think that's really important when working in an educational psychology context.* P3: *it's not just about a within child issue here and it tends to be viewed like that particularly with the clinical psychologists profession with people who are averse to looking at biological aspects as it's kind of, you know this is within child and that that's viewed as a negative. I think it's the mixing of recognizing actually from a biological point of view, what has impacted on the child, how that's going to impact on their learning, their social, emotional well-being, sensory processing, their physical, their language, all sorts of things and therefore, having that understanding of what*

	can be done to support the adults around that child to either transition them or to provide the environmental resources that they need. *I'm not saying that it has to be the main part, but actually it should be part of what every EP does, as part of the information collection and in part of the formulation, we can't just focus on the psychosocial aspects of it. That's ignoring the whole biological element, and it shouldn't just be a specialism, particularly in psychology, you can't divorce the brain from behaviour and vice versa.* *you look at the research base in terms of correlations to the likelihood of facing challenges in that area.* *it's a whole jigsaw of different elements that's impacting on them.* *Just keeping the whole child in view, not just within that, but also the environment,* *what the access is to resources.* *it's that kind of divide as soon as you say something that is a biological, or neurological it's suddenly seen as a bad word or within child and that can't be tolerated.* P4: *I think there's a risk with acquired brain injury because the child has a brain injury, there's no getting away from that. Everything can seem very within child, and actually if we look at the research, the psycho-social factors play a huge role.* *I think, because people meet a child with a brain injury and they're struck by how different they are or there's something or they don't see the difference, but then as they go through their daily life, they notice 'Ohh, they're not quite doing that'. So it's being viewed in that view of your lacking or you're minus something, there's a deficit.* *I think that's required for a child with brain injury, and even though they probably can't consciously explain it that way, they're picking up on that deficit model and that's how a lot of health professional therapies work. You know, with speech and language or occupational therapy, they're looking at what what's wrong and we're trying to fix that. emphasizing the strengths within the child and what those are and what they like to do, I think is really key before anything else.* *I have come up against this a lot (worry about positivism). There's this strange idea that neuropsychology and acquired brain injury is linked to a within child model and I don't know where that's coming from other than the fact that it's a brain injury so therefore there is a biological element.* *But I would say in neuropsychology at its best is very systemic and assessments are very holistic and systemic and working with all the key systems around at the child. A good neuropsychological assessment would never be just doing assessment with the child.* *I think we have a lot of work to do in terms of combating that myth of what neuropsychology is and that it is this within child model. I don't practice in that way, if anything, I practice in the opposite way.* P5: *I think it's going to be the biopsychosocial model. I mean, that's certainly what we follow here. It's not one or the other, it's about looking at everything that's impacting the child.* *I think it's about rather than all the biology of the brain and all those kinds of things, it's about what does it actually mean for children?*

	P6: *I guess that argument around whether or not it's within child I think probably then depends on how you use that information and how it informs your formulation.* *just because we have an understanding about the brain and how the brain works and potentially what may or may not be happening there, it doesn't mean that our interventions aren't fully systemically focused on how we create environments that enable that young person to thrive. We don't have to be changing them or putting interventions that are on the onus for them to do something differently. Actually, our interventions can solely be focused on participation and supporting them to achieve things that they want to be able to do and that largely more than anything is about working with the context that the young person is in and making those changes in the environment around them.* *you're creating environments based on what we do understand about potentially how that young person's brain is working. And then you create interventions that are about making sure that you create an environment in which they're able to thrive. So, I would argue that our interventions are very systemic in that nature and are very much about providing optimal environments.* *I felt like my role was about trying to help translate that health and that medical information into that current everyday experience that the young person, that family were having.* *having that understanding of the brain and of neuropsychology just enhances my formulation to be able to bring in those biological and those brain elements to that. But it doesn't take away from my educational psychology experience.*
<u>The Power of Words and Myths</u>	P2: *I think there's always myths that go around.* *I think there's always the danger that a little bit of information can be a bit dangerous.* *there's a lot of things out there that market themselves as brain based or neuro in some way but actually when you get to the bottom of it, it's not really at all and that slightly worries me. And there's been quite a bit of research out there, that if you put pictures of brains on something, people tend to believe that it's more credible and that's slightly worries me.* *It doesn't mean it's a bad thing, it just means you barking up the wrong tree* P3: *we sometimes get stuck to these neuromyths or a very repetitive understanding or very superficial understanding.* *the fist model of the brain, it is quite a simplistic understanding of the brain and yet if that's where a majority of EPs are with their knowledge of neuropsychology.* *Seven and a Half Lessons About the Brain. It's a nice read, easy read and it gives you, it gives you accessible aspects of the brain and also debunk some neuromyths* *sometimes psychology, particularly neuropsychology, there is this adherence to psychological theories and the links to the biological elements maybe philosophically different to what the different training courses give to you.* *it's almost, it's that kind of divide as soon as you say something that is a biological, or neurological it's suddenly seen as a bad word or within child and that can't be tolerated.* P4: *I think there's definitely that myth around the place – neuropsychology being within child orientated.*

	the power of words and what these words mean and being aware of that power dynamic. *neuromyths and what's true and what isn't true in the world of neuroscience and how important it is for EPs to know that. Because even if you're not interested in neuropsychology, neuromyths or acquired brain injury, the reality is that you're going to meet it. So, I think it's really important.* *I think we have a lot of work to do in terms of combating that myth of what neuropsychology is.* *a bit about neuromyths because I've said to students, most of you will probably come across people saying, 'oh, they have a left brain, they have a right brain or brain training is really important'. And it's very important for you as EPs to know how to respond to those things because you will hear them in schools and what do you say?* *When teachers say 'ohh neuroscience says this' you're sitting there thinking 'well where do you go to?' So, there's a really good website called Educational Neuroscience, it's based at XXX. We have a look at that and neuromyths and what's true and false, so that's a good resource to check. Have they done an investigation of to what is true or false about this neuromyth?* *I think the word neuropsychology can be a bit scary.* *we think about and look at some of the research that shows that if you put the word neuropsychology or research shows X, how it changes the level believability.* *I'm not sure who it was but someone else came up with how actually people who had an interest in neuroscience, and educational professionals with an interest in neuroscience actually believe some of these sentences that weren't true more than people who didn't. It was just checking in with yourself that actually because you're interested, you could be even more susceptible to things.* P6: *I think the other thing just to bear in mind is, is that acquired brain injury is hidden and being really careful sometimes of the narratives that can exist or develop around a young person, and how we understand their needs. shift those narratives and to support that understanding of the things that people might not be able to see and how they might be impacting…*