

Exploring Post-traumatic Growth following an Acquired Brain Injury

being a thesis submitted in partial fulfilment of the

requirements for the degree of

Doctor of Clinical Psychology

in the University of Hull

by

Ariyana Reddy

MSci (Hons) Psychology, University of York

May 2024

Acknowledgements

I would like to thank all the people who have kindly taken up their time to participate in my research. To all the lovely individuals who took their time to tell me their story, I am forever grateful for you sharing your story with me to have a greater understanding of your experiences. This research would not have been possible without you, so thank you!

A huge thank you to my research supervisor Emma. You have guided me with your expertise and knowledge. I will always be grateful for your continuous reassurance when I have doubted myself or felt lost in my research. Thank you for showing me your kindness, and patience throughout our three years together. I would also like to thank the research team (Tim and Sue) for supporting me with statistical support and for calming my worries and concerns.

I would also like to thank my personal supervisor Annette, you have always been supportive, kind, and compassionate during difficult times. Thank you for helping me to reflect on my experiences and grow throughout our time together, I am forever grateful for all the support you have given me.

To Charlotte, I would like to say a very special thank you. Thank you for the endless car chats, the countless memories of laughter and stupidness, and your unwavering friendship over the past three years. You have always been by myside supporting and helping me through life's challenges. Your hard work and dedication have been truly inspiring, and I have no doubt you will be brilliant at whatever you do! I look forward to many more years of friendship as we embark on our journeys as qualified clinical psychologists.

To my family, friends and partner thank you for your continued support during the past three years. When I have found navigating life and the course difficult you have made me believe in myself and keep going. I would have not been able to do the last three years without you.

i

Overview

This thesis portfolio comprises three parts:

Part One: Systematic Literature Review

The systematic literature review explored whether social support facilitated post-traumatic growth (PTG) following an acquired brain injury (ABI). Eleven studies were selected for the review using five electronic databases: MEDLINE, APA PsycInfo, PsycArticles, CINAHL and Academic Search Ultimate. The studies were assessed for quality using the Critical Appraisal Skills Program Qualitative Studies Checklist (CASP-UK, 2018) prior to thematic synthesis. The four themes identified in the study supported social support facilitated PTG through closer relationships with friends and family, shared experiences, reconnection with the social world and support from wider networks. However, one theme did not agree with social support facilitating PTG and explored the hinderances of social support. The limitations, clinical implications and suggestions for future research are discussed.

Part Two: Empirical Paper

The empirical paper investigated predictors of post-traumatic growth (PTG) in early stroke recovery. In particular, age, education, gender, psychological support, social support and health-related quality of life were assessed in terms of their relationship with PTG. 143 participants completed an online survey including measures of social support, quality of life and PTG, additional relevant demographic information was also asked. Independent sample t-tests and a one-way ANOVA were conducted to investigate the relationship of categorical variables with PTG and a multiple linear regression was conducted to investigate the relationship of continuous variables with PTG. Findings suggest that social support predicts PTG in early stroke recovery, however, the rest of the factors did not show any significant results. The results are discussed in context with the current literature base, limitations, clinical implications and considerations for future research.

Part Three comprises the Appendices:

The appendices comprise of additional information for the systematic literature review and the empirical statement. Included in the appendices will be; reflective and epistemological statement, ethical improve, consent forms, information sheets, measures, author guidelines for journals and any other supporting documentation.

Total word count (excluding appendices): 30, 687

Contents

Part	One – Systematic Literature Review
Abs	stract
Кеу	words
1.	Main Text10
2.	Introduction
3.	Method
4.	Results
5.	Discussion
6.	Clinical Implications and Future Research
7.	Conclusion
8.	References
Part 1	wo – Empirical Paper
Abs	stract
Кеу	words
1.	Main Text
2.	Introduction
3.	Method
4.	Results
5.	Discussion
6.	Conclusion92
7.	Clinical Implications and Future Research93
8.	References

List of Figures

Systematic Literature Review	
Figure 1	20
List of Tables	
Systematic Literature Review	
Table 1.	23
Table 2	27
Empirical Paper	
Table 1	70
Table 2.	71
Table 3	75
Table 4	80
Table 5	82
Table 6	85
Table 7	86

v

Appendix	
Appendix A: Reflective statement	Ι
Appendix B: Epistemological statement	VI
Appendix C: Notes or Guideline for authors for the Systematic Literature Review &	Х
Error! Reference source not found	Error!
Lifer Reference source not found.	Rookmark
	not
	defined
Error! Reference source not found.	Error!
	Bookmark
	not
	defined.
Error! Reference source not found.	Error!
	Bookmark
	not
	defined.
Error! Reference source not found.	Error!
	Bookmark
	not
	defined.
Error! Reference source not found.	Error!
	Bookmark
	not
	defined.
	XXI
Appendix I: Empirical Non-Online Survey	
Appendix J: Empirical Measures (PTGI)	XXVI
Appendix K: Empirical Measures (Multidimensional Support Scale)	XXVII

Appendix L: Empirical Measures (Stroke Specific Scale)	XXVII
Appendix M: Statistical Output (Independent T-Tests)	XXVIII
Appendix N: Statistical Output (One-Way ANOVA)	XXIX
Appendix O: Statistical Output (Bivariate Correlation)	XXX
Appendix P: Statistical Output (Multiple Linear Regression)	XXXI
Appendix Q – Clinical Implications for SLR and Empirical	XXXIII

Part One – Systematic Literature Review

Does Social Support Facilitate Post-Traumatic Growth following an Acquired Brain Injury: A Thematic Synthesis.

Ariyana Reddy*, Dr Emma Lewis

School of Psychological Health, Wellbeing and Social Work, Aire Building, University of Hull, Cottingham Road, United Kingdom, HU6 7RX *Corresponding Author Email Address: <u>a.reddy-2021@hull.ac.uk</u> This paper is written in the format ready for submission to the Journal of Disability and

Rehabilitation. Please see Appendix C for the Guideline for Authors".

Word Count (Excluding title page, tables and figures, references, and appendices): 10, 939

Abstract

Purpose: An acquired brain injury (ABI) can be a traumatic, life-threating experience. ABI's can impact on an individual's physical, cognitive, and psychological health. However, studies have suggested that individuals may experience positive changes following an ABI, referred to as post-traumatic growth (PTG). Previous studies have found social support to be a predictor of PTG following an ABI. Therefore, the current study aimed to conduct a thematic synthesis of how social support facilitates PTG following an ABI.

Method: A search of five electronic databases was conducted (MEDLINE, PsycInfo, PsycArticles, CINAHL and Academic Search Premier). Qualitative studies were included if any domains of PTG were reported.

Results: A total of eleven papers met the inclusion criteria and were analysed in the review. Four overall themes were generated supporting social support facilitating PTG through shared experiences, strengthen relationships, support from wider networks. One theme explored the hinderances of social support and how this may not facilitate PTG.

Conclusion: Findings of this review suggest that social support can facilitate the process of PTG following an ABI. However, there can be difficulties with social support hindering the process of PTG for the individual.

Keywords

Post-traumatic growth; acquired brain injury; physical health; coping; rehabilitation.

1. Main Text

Acquired Brain Injury (ABI) is referred to as a non-traumatic brain injury that causes damage to the brain by internal factors, such as a stroke, lack of oxygen, and a brain tumour (Goldman et al., 2022). The consequences of an ABI can be both physical, cognitive, and psychological (Goldman et al., 2022). The physical symptoms of an ABI include weakness, shaking, poor balance, headaches, changes in vision, mobility, tiredness and many more (Suskauer et al., 2020; Goldman et al., 2022). Some individuals with ABI experience changes in their cognitive abilities, for example, difficulties with memory, concentration, attention, planning, organisation, and communication (Rees et al., 2007). Additionally, some individuals have difficulties with regulating their emotions and behaviours including mood swings, anger, grief, confusion, anxiety, irritability, and changes in personality (Ruff, 2014; Coetzer, 2018).

Following an ABI there is a significant risk of difficulties with employment, social participation and community reintegration increasing social isolation and exclusion for the individual and their family (McCabe et al., 2007; Berger, 2020). Moreover, there are higher risks of poorer mental health, coping skills, and difficulties with adjustment (Gracey et al., 2016). As a result of difficulties with employment the individual and their family can be at risk of experiencing financial difficulties, which could consequently lead to strains on relationships, difficulties with housing, self-esteem, and self-worth (Dalton et al., 2014). The impact of an ABI such as stroke is not only regarding the specific individual but can influence wider settings. For example, the estimated cost to the NHS is around 3 billion per year on stroke, with additional costs to the economy for a further £4 billion in lost productivity, disability, and informal care (Patel et al., 2020; King et al., 2020). There appears to be a consensus that social support and social participation can support with these aspects' recovery and rehabilitation after an ABI (Walsh et al., 2015; Batchos et al., 2018; Salas et al., 2022). Therefore, it seems important to learn more about how social support can facilitate recovery and growth for not only the individual but identify the impact this type of support can also have on wider settings.

2. Introduction

2.1. Posttraumatic Growth

It has been well-recognised through the literature base in philosophy, psychology, and religion that after facing trauma and adversity positive changes can be experienced (Calhoun & Tedeschi, 2014). This has been coined by Tedeschi and Calhoun as post-traumatic growth (2004). Post-traumatic growth (also frequently referred to as PTG or positive change) was first conceptualised as the positive psychological changes to an individual's life after highly stressful and challenging life events (e.g., trauma, illness, bereavement; Wu et al., 2019). PTG has been said to be specific to the individual's experience and can be on a continuum (Linley & Joseph, 2004). For example, individuals may interpret the presence and degree of growth experienced after a traumatic event differently (Grace et al., 2015). PTG has been associated with; a greater appreciation of life, increased personal strength, more meaningful personal relationships, development of new opportunities, improved coping and adaptive skills, deepened self-awareness, and recalibration of personal values (Tedeschi & Calhoun, 1996; 2004).

Whilst some may not experience PTG following facing adversity, the evidence base has found that between 30-80% of individuals who have sustained an ABI have experienced some positive changes following injury (Linley & Joseph, 2004). Research has proposed following an ABI individuals can experience PTG with strength, changes in their values and priorities as areas of growth (Grace et al., 2015). Greater appreciation of life, closer relationships, religious coping, and greater use of reframing were found to be predictors of PTG (Platte et al., 2022). However, the general trends in some studies appear to dispute the original model of PTG by Tedeschi and Calhoun (2004) that suggest there is little to no change in spiritual beliefs (Yang et al., 2023). Overall, apart from spiritual changes, the literature base appears to agree with the model of PTG from Tedeschi & Calhoun (2004) in relation to the areas of growth following an ABI. However, there have been concerns in regard to the definition and empirical findings of PTG in the literature base (Ulloa, 2016).

Throughout the literature, there has been confusion regarding the terminology and definition used to describe PTG (Casellas-Grau et al., 2017). In research, multiple terms have been used interchangeably to describe PTG, for example, benefit finding, positive changes, positive

rehabilitation and many more (Rogan et al., 2013; Lindstrom et al., 2010). Despite the wide evidence base for PTG, there have been concerns over how PTG differs from resilience (Westphal et al., 2007). Resilience refers to the process of successfully adjusting and adapting to cope with the adversity an individual has faced (Masten, 2016). It has been suggested that resilience is required to cope with the initial challenges and adjustment after trauma, however, it does not mean that PTG will occur during this time (Finstad et al., 2021). PTG differs from this as it is the meaning-making process whereby the individual's world view and self-view change following trauma (Aguirre, 2008). It is suggested that PTG is when an individual moves beyond their baseline pre-trauma in terms of relationships, self-views and opening-up to life possibilities (Kelly et al., 2018). This occurs through the process of reassessing their belief system about themselves, the world around them and their future, this may be an underpinning reason through which growth can develop (Su et al., 2015).

Critics of PTG also have concerns that PTG may not be experienced by everyone and may be misreported by inaccuracy of the most commonly used self-report measure the Post-traumatic Growth Inventory (PTGI: Cann et al., 2010). The PTGI relies on the individual to have a good understanding and memory prior to the adversity they have faced, this can be very difficult for most people to have an objective and accurate view of this (Jozefiakova et al., 2021). Despite these limitations of PTG, there is still a lot of interest and emerging research in PTG, particularly in recent years there has been a focus on the prevalence of PTG in the context of after an ABI (Grace et al., 2015). Although there may be different terminologies used for PTG, the literature base appears to have a consistent definition that is used across studies to demonstrate when they are referring to specifically PTG and is able to explain the difference between PTG and other psychological growth processes (Masten, 2016). With this growing evidence looking at other psychological processes involved in the development of PTG following an ABI.

Research exploring PTG after an ABI has primarily focused on the principles of a strengthsbased approach looking at "building what's strong" rather than trying to "fix what is wrong" (Karagiorgou et al., 2018). The literature base has suggested that the process of growth following an ABI can be facilitated by social and psychological processes that can support brain function recovery and improve mental health outcomes in this population (Walsch et al., 2014). Grace et al., (2015) completed a systematic review of PTG following an ABI. The study found that demographic factors were correlated with growth, in particular greater levels of education, older age, time since injury and relationship status. The study also emphasised the importance of social relationships and networks, particularly in the formation of positive social identity and improved sense of self after an ABI which have been associated with PTG and positive adjustment (Larsson et al., 2013). This has been suggested to be particularly important as the end goal for many individuals' rehabilitation as community and social integration which are positively associated with higher rates of PTG (Grace et al., 2015). By being able to reintegrate into the community and socialise with others, this may increase the confidence and motivation for the individual to return to daily activities such as employment if they are still able to work (Simpson et al., 2023). Therefore, it is important to seek to understand more about the social and psychological processes associated with positive psychological outcomes following an ABI.

2.2. Social Support

Social support is exceptionally important for maintaining good physical and mental health (Thoits, 2011). Social support has been described as "support accessible to an individual through social ties to other individuals, groups, and the larger community" (LAM, 2019). Through social support an individual may perceive they are loved and cared for by others, esteemed and valued and part of a social network of a mutual and reciprocal relationship (Wills, 2016). Social support can come from many sources such as a partner, relative, friends, co-workers, peer supports, community ties or even beloved pets (Upton et al., 2015). Theoretical models of social support specify the following two important dimensions: a structural dimension, which includes network size and frequency of interactions and a functional dimension with emotional (such as love and empathy) and instrumental (practical help such as gifts, money, and assistance) components (Ozbay et al., 2007). Most research has found that quality of relationships (functional dimension) is a better predictor of good mental health than quantity (structural dimension), although both are important (Ozbay et al., 2007). Studies have suggested that good social support can encourage people to have more belief in themselves and motivation with adherence to treatments plans, support community reintegration and increasing confidence to try new opportunities they may have not previously had (Okech et al., 2018). Therefore, when looking at social support it is vital to examine not only the size of the network around someone but the quality of the support as well. The research has also demonstrated that social support is important in reducing the

chances of readmissions therefore reducing the cost for the NHS as well as supporting the individual to reintegrate into the community and seize new opportunities (Arozullah et al., 2006).

Social support has been found to be an effective emotional regulator after facing trauma, where the behaviours of others can soothe fears and anxieties (Charuvastra and Cloitre, 2008). It has also been seen to be a vital protective factor when having to return to their lives (Ozbay, 2007). Social support from workplaces can often increase the level of PTG, feelings of being supported, increased self-worth and sense of purpose and belonging and willingness to return to work (Gök & Çiftçi, 2023). By returning to work individuals are able to connect to their pre-injury identity and have the opportunity to experience feelings of accomplishment and fulfilment through their work (Boyce, 2006). It has been suggested that social support from workplaces can have a great impact on the rate of individuals returning to work after illness, on not only the individual but also the company as they have their employees returning to work in a supported manner which is less expensive and time-consuming than hiring and training new staff (Boyce, 2006). Although, there seems to be great evidence for the benefits of social support for mental health outcomes, some research has indicated that social support can sometimes hinder the progress for an individual during recovery (Lincoln, 2000)

Despite the well-known benefits of social support, some studies have posited that social support can sometimes discourage an individual from expressing their feelings as their social position has changed (Lincoln et al., 2005). Moreover, research has suggested that sometimes social support can restrict autonomy and privacy in a person's life (e.g., decisions making with personal care and finances) which can impact on self-esteem and confidence in decision making (Peterson et al., 2021). Thus, making them more reliant upon others (Ozbay, 2007). Although, some research highlighted the hinderances of social support the majority of research suggests that social support is beneficial in facilitating psychological processes for an individual (Schwarzer & Knoll, 2007). As social support is well-established and evaluated within the literature base, researchers have started to look at social support in relation to neurological conditions, for example, social support to individuals who may have an ABI.

2.3. Social support and ABI

After an ABI, individuals can access support from many forms of social relationships including friends, family, community networks, institutions, and government support networks (Bellon et al., 2017; Stephens et al., 2014). It is thought through these social supports ABI survivors can re-establish their skills to reconnect and engage with the world (Cook, 2017). In particular, relationships with others who have had similar experiences can support recovery. Social comparison theory posits that social relationships facilitate positive recovery through shared experiences with others (Festinger, 1957). These relationships allow for comparisons to be made between each other that can support with greater appreciation of their own recovery, feelings of being understood by others, increased connections with others and opportunities to learn and share with others (Festinger, 1954). Relationships based on shared experiences following an ABI have been found to be associated with higher quality of life, better well-being, and better health outcomes (Van Bost, 2017). However, some research has indicated that relationships based on shared experiences can have negative effects, such as social comparisons of others progress which can at times feel demoralising for the individual if they are finding progress difficult (Lyon et al., 2021). Nevertheless, there appears to be a large evidence base suggesting that social support is helpful to the individuals' connections back into the community, this research has led to suggestions that social support may be an important aspect in the development of self-identity following an ABI (Walsh, 2015).

After a brain injury individuals may experience difficulties with self-identity and relating to their "old self" as a consequence of the physical, cognitive and psychological change (Freeman et al., 2015; Morris, 2004). They may have to adapt and develop new ways to engage with others socially and in meaningful activities (Banerjee et al., 2021). It has been suggested that as part of rehabilitation the greatest importance to some survivors has been the development of 'sub identities' including learning the new post-injury self and building a new identity that integrates the new self, reconnecting with the old self and the self who does meaningful activities (Glintborg et al., 2019). Social comparison theory suggests that after illness individuals may compare themselves to others in the community who are perceived as worse off (Festinger, 1954). They may also compare themselves to others to positively

support them with enabling their sense of self and to learn from others who are better at coping (Festinger, 1957; Allen et al., 2022). By being able to engage in social activities and be part of social groups, studies have found that this facilitates feelings of reconnecting with the self, belonging within the community and wider society (Roffey, 2013; Tamplin et al., 2013; Allen, 2020). It also provides the opportunities to have support with understanding and negotiating social position with themselves and with others (Allen, 2020). This social connectedness with others can help to alleviate the feelings of isolation, improve mental health outcome, learn new perspectives from others, and enable development of the self, which in some cases has been found to be development of the "better self" (Yeates et al., 2008; Walsch, 2014).

2.4. PTG and Social Support and ABI

Social support has been suggested to be an important factor in the development of PTG, particularly regarding the accessibility and quality of the support (Hao et al., 2023). Researchers postulate that to develop PTG after a traumatic experience, a supportive social network which provides empathy, compassion, opportunities for reframing, development of coping strategies and new understandings are required (Munroe et al., 2022).

It has been suggested that it is imperative that family and close friends are part of the process to developing PTG to support positive recovery and growth (Jones, 2020). A well-established aspect of PTG has been closer relationships to others. These changes within their relationships may increase greater appreciation for other around them, greater compassion and sympathy for others and increased understandings of their emotions and how to articulate them to others (Goetz et al., 2010). It has also been found that relationships with those who have faced similar experiences, for example, others who have an ABI help to develop sense of belonging within the wider community and support with the development of self- and social identity (Griffin et al., 2022).

Given the aforementioned studies exploring the role of social identity, social support and community reintegration, it is important to understand the role social support plays in the

development of PTG so this can be integrated into clinical practice. Greater social support appears to be critical in the development of self-esteem, motivation, facilitating connections with the community and rebuilding their lives (Feeney & Collins, 2015). Despite, the evidence on social support being important in the development of PTG, there seems to be a gap regarding how these factors contribute to the development of PTG. Therefore, the following research question was formulated: how does social support facilitate post-traumatic growth following an ABI?

Commented [RA(ASTHNF1]: Correction 1 addressed: Make your review question more prominent for the reader. It should be phrased as a question not a referenced statement and should appear at the end of the introduction.

3. Method

3.1. Overview

A thematic synthesis was chosen as it is a fitting approach for synthesising multiple qualitative studies to create new understandings of the evidence base. This approach was preferred as the current review will be addressing a gap in the literature and will develop further understanding for future research and service implementation. Alternative approaches were considered, however, approaches such as a meta-synthesis would involve creating a novel theory which did not fit the focus of this review. The current systemic review was prospectively registered with PROSPERO on 23rd January 2024 (CRD42024500902) and conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Mata-Analysis (PRISMA; Page et al., 2021).

3.2. Search Strategy

Between November 2023 and January 2024, a search of five databases which were relevant to acquired brain injury were conducted via the EBSCO service. The databases included in the study were: MEDLINE, PsycInfo, PsycArticles, Cumulative Index to Nursing and Allied Health Literature (CINAHL) and Academic Search Premier. These databases were selected to ensure that the relevant literature gathered was from extensive range of multidisciplinary backgrounds. Search terms for the review were established from previous reviews and the evidence base within the field of PTG and the role of social support following an ABI. The following search terms were included:

"Acquired brain injur*" or "ABI" or "cerebrovascular accident*" or "CVA"

AND

"psychological growth" or "perceived benefits" or "benefit finding" or "stress- related growth" or "Posttraumatic growth" or "post-traumatic growth" or "post traumatic growth" or PTG or positiv* NOT

> "traumatic brain injury" or "TBI" AND "social*"

3.3. Selection Strategy and Selection

Studies were identified by title and abstract. In addition to this, the key words of the articles stated after the abstract would be examined, if the key words included one of the interchangeable terms for PTG then it would be included for further screening. Moreover, one the title, abstract and keywords were checked the full text would be screened for to assess whether it included at least one of the five domains of PTG in the results sections, if it met these criteria the study would be included if it met all other inclusion criteria.

Studies were also screened by inclusion and exclusion criteria. This involved: qualitative papers, studies published in English, peer-reviewed articles, reports of an ABI and the concept of PTG based on the definition and inclusion of one of the five domains of PTG. Studies including mixed populations with ABI populations were included, however, only data relevant to ABI populations were included in the results of the study. Studies were excluded from analysis if the participants were children or young adults (under 18 years old), due to the differences in anatomy, influence of life stages and rehabilitation variances. Additional exclusion criteria were if the sample contained individuals with other neurological injuries or had sustained a traumatic brain injury. The reasoning for this is recovery for TBI is different in terms of acceptance and how the injury came about, most likely it was due to an accident whereas ABI is typically health related (Goldman et al., 2022). Studies were also excluded if the entire article text could not be accessed, the publication was not in English, or the study was non-human studies. The key researcher conducted a database search and initial screening.

Quality Assessment

Once the relevant articles were selected, the included studies were assessed for strengths and limitations using the Critical Appraisal Skills Programme (CASP) to determine applicability to their practice (CASP UK; Critical Appraisal Skills Programme, 2018) (*see Appendix E*). The CASP is a well-established appraisal tool that is extensively used. The checklist consists of three main sections: (i) are the results valid (section A), (ii) what are the results (Section B), and (iii) will the results help locally (Section C).

The CASP for qualitative studies included ten questions, the first two questions were screening questions to consider whether it was worth proceeding with the tool or not. If the study met the criteria for the first two questions you would proceed, if not they would be excluded from the study (CASP Qualitative Checklist for systematic reviews; CASP, 2018). For this review, this was the minimum criteria studies had to meet to be assessed further and potentially included in the study. The studies were re-read by the key researcher with each study being scored on each question of the CASP, the tool provided prompts to remind aspects that were important to the criteria.

3.4. Method of Synthesis

Data was analysed using thematic synthesis (Thomas & Harden, 2008). The method consisted of three stages, with the first involving line-by-line coding of extracted data in order to search for concepts related to PTG (*See Appendix D for extraction table*). This stage also allows for the translation of concepts from one study to another. Coding was inductive and iterative as concepts and themes developed throughout this stage. All eleven papers were coded by the first author (AR) and were reviewed under the second author (EL). The second stage of analysis involved grouping together codes to form descriptive themes. Similarities and differences were reviewed in order to begin grouping codes. Codes were grouped in a manner based on their content, and descriptive themes were generated by AR in consultation with EL. In the third stage, AR generated analytical themes that go beyond the content of the original

articles and is in a critical stage where descriptive themes are used to determine key

messages. Themes and messages will be reviewed independently to consider implications.

4. Results

Figure 1

Search Procedure using the PRISMA Diagram (Page et al., 2021).



4.2. Overview of search

The initial search revealed 1,509 papers, once duplicates were removed there were 1, 200 articles left for screening. These articles were screened by the title and abstracts, 54 articles were selected for screening of the full articles. Of the 54 full articles, 11 studies met the inclusion and exclusion criteria and were selected to include in the review (*Figure 1*).

The descriptive characteristics of the included studies is displayed in Table 1. Table 2 shows the CASP scores for each study, this was important for the robustness of the study in ensuring the papers were reviewed for quality (CASP UK, 2018).

4.1. Description of Studies

The articles were all published between 2012 and 2022 and included studies from across the world, including countries from the developed and developing nations. The sample size between the studies ranged from nine to 68 participants. The timescale in the search for papers was not limited, it appears that the most relevant studies for the systematic review were in the time period of just over 10 years ago. Most of the studies reported from mixed-gender studies, one study reported results from a male only sample (Wijekoon et al., 2020). The mean age of participants ranged between 49-81 years old (see for descriptions of all studies included in the review).

Occupation was not consistently reported by the studies, four studies reported the occupations of the participants, the occupations stated varied greatly. These studies also included whether people were retired and if this was due to their ABI, for some participants they had to retire due to their ABI, some were retired prior to their ABI (Govender et al., 2019; Materne et al., 2022; Northcott et al., 2022). Similarly, education was not consistently reported in the studies, only one study reported education. This study paper was from a developing country whereby staying in education, for some, may be difficult for long period of times due to responsibilities providing support for their families (Kurz et al., 1994). Four studies included relationship status of the participants (Anderson et al., 2013; Brunborg & Ytrehus,2014; Chang et al., 2022; Materne et al., 2022), generally from these studies most participants were married or had a partner, others were single, separated or divorced. However, as the majority

of studies did not report relationship status it is hard to know the validity or generalisability of this (*see Table 1. for descriptions of all studies included in the review*).

The time since their ABI ranged from zero months to around 20 years. Most of the studies were in community settings, one study was in the form of an online forum setting (Smith et al., 2021). A limitation of many of the studies were that they did not state the ethnicity of the participants, only two studies stated ethnicity (Govender et al., 2019; Northcott et al., 2022). In most of the studies the methodology and analysis were most consistent with semi-structured interviews and thematic analysis being the most prominent methodologies. One study collected data from an online forum (Smith et al., 2021), and another study used interviews with focus groups (Chang et al., 2022). Three out of the eleven studies did not use a thematic analysis, instead either grounded theory or content analysis were used for analysis. All studies used a purposive sampling method (*Table 1*.

Table 1.

Description of Studies

First author, year	Topic of Interest	Sample Method and Location	Sample characteristics (sample size, gender, age, relationships, and profession)	Injury Characteristics	Setting and Ethnicity	Methodology	Analysis	Main Findings in Relation to PTG.
Anderson (2013)	Social identity following a stroke.	Purposive sampling. Location: Canada	 Sample size: 9 participants. Gender: 6 males and 3 females. Mean age: 58.2 years. Occupation: 2 administrators, 1 fitness instructor, 6 not stated. Education: Not stated. Relationship status: 6 married, 1 single, 1 separated and 1 divorced. 	Range: 5-11 years.	Community setting. Ethnicity: Not stated.	Semi-structured interviews.	Grounded Theory.	Social support helped individuals re society which contributes to mainta and increased growth and well-bein stroke survivors ¹ to contrast a value without the support of others.
Brunborg (2014)	Factors that contribute to long term well- being after a stroke.	Sampling method: Purposive Location: Norway	 Sample size: 9 participants. Gender: 4 males and 5 females. Mean age: 80.8 years. Occupation: Not stated. Education: Not stated. Relationship status: 4 married, 4 widows/widowers, 1 not stated. 	Range: Not stated.	Community settings. Ethnicity: Not stated.	Semi-structured	Thematic Analysis.	Most participants managed well for with little formal support. Family ar be immense support for their adapta Family members encouraged and er part in new opportunities socialising
Chang (2022)	Perspectives of recovery in young stroke survivors in Taiwan	Purposive sampling. Location: Taiwan	 Sample size: 25 participants. Gender: 15 males and 10 females. Mean age: 55.1 years. Occupation: Not stated. Education: Not stated. Relationship status: 20 reported to be living with spouses and 5 were not stated. 	Range: 5-113 months	Community setting. Ethnicity: Not stated.	Interviews within focus groups.	Thematic Analysis.	A facilitator of supporting individua status and beyond this was that they encouraged by others around them t community. They were also able to strength and will power which supp
Lyon (2021)	Process of developing PTG after an ABI	Purposive sampling. Location: United Kingdom	 Sample size: 10 participants. Gender: 6 males and 4 females. Mean age: 49.9 years. Occupation: Not stated. Education: Not stated. Relationship status: Not stated. 	Range: 2 – 19 years.	Community setting. Ethnicity: Not stated.	Semi-structured interviews.	Grounded Theory.	Shared experiences helped individu with their new self. They were able closer relationships with others and reflecting their perspectives of their Participants also discussed being ab opportunities and develop a "better
Govender (2019)	Cerebrovascular accident survivors' experiences of community reintegration.	Purposive sampling. Location: South Africa	 Sample size: 8 participants. Gender: 3 males and 5 females. Mean age: 56.1 years. Occupation: 4 employed prior to stroke, 3 retired prior to stroke and 1 unemployed prior to stroke. Current work status: 2 employed, 3 retired and 3 unemployed. Education: 3 did not finish lower secondary school (ages 12-15), 2 did not finish upper secondary school (ages 15-18), 2 finished upper secondary school and 1 continued to higher education. Relationship status: Not stated. 	Range: Not stated.	Community setting. Ethnicity: Not stated.	Semi-structured interviews.	Thematic Analysis.	Individuals felt a sense of dependen experienced loss of social roles. The reintegration with support of friends community they were able to have h reconnecting with the old self and h appreciation of life. Willpower and positive change and to the sense of rehabilitation facilitated positive charge

¹ Stroke survivor has been the most consistent term used throughout the literature base and is used on the Stroke Association information pages

ls regain social position in intaining a positive identity being. It was difficult for alued social identity

for 10 years after stroke y and friends appeared to aptation and well-being. d empowered them to take sing with others.

iduals return to pre-stroke they were motivated and em to reintegrate into the e to use their own personal upported their recovery.

viduals accept and identify able to develop new and and were supported with their progress and recovery. g able to participate in new tter self".

dency on others and Through community ends, family, and the we hope and joy in nd have a greater and positivity were part of of self. Outpatient e change.

Table 1.

(Continued)

First author, Topic of Interest S year a		Sample Method and Location	Sample characteristics (sample size, gender, age, relationships, and profession)	Injury Characteristics	Setting and Ethnicity	Methodology	Analysis	Main Findings in Relation to PTG.	
Grohn (2014)	Living successfully with aphasia over time.	Sampling Method: Purposive. Location: Australia	Sample size: 15 participants. Gender: 8 males and 7 females. Mean age: 64.27 years. Occupation: Not stated. Education: Not stated. Relationship status: Not stated. Sample size: 4 participants	Range: 0-12 months.	Community and outpatient services. Ethnicity: Not stated.	Semi-structured interviews at four time points: 3,6,9, and 12 months post- stroke.	Thematic Analysis.	Overarching theme of actively moving forward. Partic positive changes as a result of feeling connected to the social activities which in turn improved their abilities a Participants developed closer relationships to family a encouraged to take part in new opportunities within the helped empower the participant to be more independent	
Henriksson (2020)	Experience of persons with aphasia and a librarian participating a book club.	Sampling method? Location: Sweden	 Gender: 3 males and 1 females. Mean age: 58.7 years. Occupation: 1 forwarding agent, 2 teachers and 1 professor. Education: Not stated. Relationship status: Not stated, 	Range 4 months – 13 years.	Community setting. Ethnicity: not stated.	Observations, interviews, and field notes.	Thematic Analysis.	Overarching theme: Empowerment through a joint rea Participants felt that they were able to express and 'rev within the peer group and share strategies to help each skills. The group encouraged participants to visit the li and increase confidence in abilities.	
Materne (2022)	Lived experiences of resilience and participation and their relationship to quality of life after stroke in Sweden	Sampling method: Purposive Location: Sweden	 Sample size: 19 participants. Gender: 10 males and 9 females. Mean age: 62.8 years. Occupation: 8 Retired Pension, 3 sickness compensation, 1 part-time sickness compensation, 1 part time school assistant, 1 transport manager, 1 finance assistant, 1 human resources manager, 2 teachers, 1 administrator and 2 work training. Education: Not stated. Relationship status: 12 had partners and 7 were single. 	Range: 1-19 years.	Community setting. Ethnicity: Not stated	Semi-structured interviews.	Content Analysis.	Following a stroke participants experienced increased closer relationships to friends and family post stroke. T individual provide personal strength to help them cope difficult. Spirituality created meaning and comfort for said it did not add any value.	
Northcott (2021)	Experience of peer-befriender for people who have aphasia	Sampling method: Purposive Location: United Kingdom	 Sample size: 10 participants. Gender: 8 females and 2 males. Mean age: 54.2 years. Occupation: 0 in full-time or part-time paid work, 5 in volunteer work, 1 retired prior to stroke, 1 retired due to stroke and 3 employed. Education: 2 did not finish school, 2 completed school, 4 went onto further education and 2 obtained a university degree. Relationship status: Not stated. 	Range: 2.8-19.8 years.	Community setting. Ethnicity as specified by study: 4 black participants and 6 white participants.	Qualitative approach interviews.	Thematic Analysis.	Both befrienders and befriendees found the experience Befrienders experienced reconnections to their old self The opportunity provided a safe challenge for new opp growth. Befriends also experienced a sense of purpose part of social support. Participants were able to share s progress made, by spending time with others both befr befriendees recognised improvements in their speech a Befrienders were able to appreciate and reflect on their health whilst supporting others.	

cipants experienced e community through and self-esteem. and friends and were he community. Others ent across time.

ading experience. eveal' themselves h other develop their library on their own

l gratitude for life and Those close to the e when things are r some, whilst others

e enjoyable.

If by helping others.

portunities to promote

e taking part and being strategies and validate

frienders and

and confidence.

ir own progress and

Table 1.

(Continued)

First author, year	Topic of Interest	Sample Method and Location	Sample characteristics (sample size, gender, age, relationships, and profession)	Injury Characteristics	Setting and Ethnicity	Methodology	Analysis	Main Findings in Relation to PTG.
Smith (2021)	Explore the process of emotional adjustment post- stroke and investigate the role played by participation in an online stroke community.	Sampling method: Purposive. Location: United Kingdom	 Sample size: 39 stroke survivors and 29 carers. Gender: Stroke survivors: 15 males, 19 women and 5 not stated. Carers: 22 males and 7 females. Mean age: 50.3 years. Occupation: Not stated. Education: Not stated. Relationship status: Not stated. 	Range: 0-24 months, however, 7 participants did not state their time since stroke.	Online setting. Ethnicity: Not stated.	Data collected from posts on online forum.	Thematic Analysis.	Participants noted they found shared exp and were able to gain inspiration from th their own recovery. Friends and family h encouragement and giving confidence to taking part in activities or regaining inde Participants discussed having a greater ap and adjusting to the new self. They did d reactions from others and how this impace confidence and self-esteem and sometim peer's progress could be demoralising.
Wijekoon (2020)	Experiences of occupational performance in stroke survivors attending a peer support group.	Sampling method: Purposive. Location: Canada	 Sample size: 7 participants. Gender: 7 males. Mean age: 57.5 years. Occupation: Not stated. Education: Not stated. Relationship status: Not stated. 	Range: 29 – 54 months.	Community setting. Ethnicity: Not stated.	Semi-structured interviews.	Thematic Analysis.	Four themes were related to the experien on occupational performance: finding ho meaningful occupation, a place for belon purpose beyond oneself. Participants exp encouragement and inspiration from peet appreciation of their own recovery. They regain confidence and hope when part of group being. The group provided new op participants were able to develop new rel take part in new opportunities. They were confident expressing themselves and recc old self. The group gave participants a se value.

speriences helpful them and reflect on helped with to participants when dependence. appreciation of life discuss negative sacted on their mes comparing to

ence of peer support hope to return to onging and finding a xperienced eers and greater ey were able to of a peer support opportunities where relationships and ere able to feel more econnect with their sense of purpose and

4.3. Quality Assessment

The CASP tool was used to assess the quality of the included studies, this appeared to vary between studies achieving between five and nine out of an overall score of 10 of the criteria (Table 2). All the studies (100%) met the mandatory criterion of having a clear statement and qualitative method. If studies did not meet this criterion it was suggested by the CASP tool to not continue with the review of the study, as all the studies met this criterion no studies were excluded from the review. No other criterion was met 100% by all the studies. Nine studies met the research design, recruitment, clear statement of finds and how valuable is research criterion. Seven of the eleven studies (63%) did not provide enough detail on their data collection procedures, therefore, impacting on the level of replicability of the study. Less than half the studies met the criteria for consideration of ethical issues. Data analysis was described reasonably well by more than half the papers, however, the researcher's transparency of how their have influenced generation of the themes was not always clear. Therefore, there was a lack of information about how the researchers may have accounted for implicit bias when analysing the results with only four studies including this in the research. Despite these limitations of the studies, seven of the studies scored above 60% which is an sign of reasonable quality research.

Table 2

CASP Scores for Included Studies

First Author, year, country, reference	1.Clear Statement	2.Qualitative Method	3.Research Design	4. Recruitment	5. Data Collection	6. Consideration of relationship between researcher and participants.	7. Consideration of ethical issues.	8. Rigorous data analysis.	9. Clear statement of findings.	10. How valuable is the research?
Anderson, 2013, Canada	Yes	Yes	Yes	Yes	Yes	No, did not mention	No, limited information on consent and confidentiality.	No did not consider own role.	Yes	Yes
Brunborg, 2014, Norway.	Yes	Yes	Yes	Yes	Yes	No, did not describe.	Yes	No, did not consider own role.	Yes	Yes
Chang, 2022, Taiwan	Yes	Yes	Yes	Yes	Yes	Yes	No, ethical approval not mentioned.	No, did not consider their own role and biases. More information needed on how the themes were derived.	Yes	Yes
Lyon, 2021, United Kingdom	Yes	Yes	Yes	Yes	No, saturation not reached during data collection and theoretical sufficiency used instead.	Yes	No, limited information on informed consent and support after study.	Yes	No, credibility of the findings was not discussed.	Yes
Grohn, 2014, Australia	Yes	Yes	Yes	No, discrepancies between participant numbers at different time points were not accounted for.	Yes	Yes	No, limited detail of ethical considerations,	Yes	Yes	Yes
Northcott, 2022, United Kingdom	Yes	Yes	No, insufficient information on the design.	No, recruitment process mentioned unclear.	Yes	Yes	No, limited information on ethical issue.	No, did not consider own role.	No, limitations were not addressed.	Yes
Wijekoon, 2020, Canada	Yes	Yes	Yes	Yes	No mention if there were any modifications to the interviews and unclear what form the data is in.	No, did not describe.	Yes	Yes	Yes	Yes
Smith, 2021, United Kingdom	Yes	Yes	No, more information on design needed.	Yes	No, limited information on the process of data collection.	No, did not describe.	Yes	Yes	Yes	No future questions were considered.
Materne, 2022, Sweden	Yes	Yes	Yes	Yes	Yes	No, did not describe.	No, more information on ethical standards is needed.	Yes	Yes	Yes
Henriksson, 2020, Sweden	Yes	Yes	Yes	Yes	Yes	No, did not describe	Yes	Yes	Yes	Yes
Percentage of studies that achieved each question on the CASP	100%	100%	81%	81%	63%	36%	55%	55%	81%	81%

ole	Overall CASP score /10
	7
	8
	8
	7
	8
	5
	8
	6
	8
	9
	-

4.4. Themes

The current thematic synthesis discovered five themes that supported that following an ABI, PTG is facilitated by an individual's experience of social support. Overall, the studies from the synthesis suggested the importance of relationships in the development of PTG. The studies concur that social support can facilitate PTG through strengthened relationships with close family and friends, peer support, reconnection with the social world and wider community support. However, some studies did reflect on the hinderances of social support and how this may impact on the process of PTG.

4.4.1. Theme 1: Shared Experiences

In many of the studies participants discussed the significance of meeting other people who have similar injuries/conditions to them (Smith et al., 2021; Wijekoon, 2020; Henriksson et al., 2020; Lyon et al., 2021; Grohn, 2014; Northcott, 2021). It appeared throughout the studies that it was beneficial to meet others who had similar activities and enjoyed new meaningful activities with them (Lyon et al. et al., 2020; Wijekoon, 2020; Smith et al., 2021; Grohn, 2014). By being part of a group, this allowed for the participants to develop new and closer relationships based on shared understanding of their condition and learning new strategies from one another and ways of coping with their condition (Smith et al., 2021; Wijekoon, 2020; Henriksson et al., 2020; Lyon et al., 2021; Grohn, 2014; Northcott, 2021).

"Headway has helped me a lot with my having a bit of a chip on my shoulder and helping in my life. I've always wanted to do things and I've never at the time realised that I couldn't actually do it, and Headway has been a good anchor to try and explain it. The activities I do and even socialising with the people at Headway help because everyone else is in the same boat and it's like a family situation–you've got more understanding". (Lyon et al., 2020, p. 3230).

Throughout the studies it appeared that by being part of a support group and participating in meaningful group activities, participants engendered a sense of belonging, relief acceptance and feeling valued by their peers (Wijekoon, 2020; Lyon et al., 2021; Smith et al., 2021; Henriksson et al., 2020; Grohn, 2014). Others talked about peer support being a form of prevention as the support prevented them from feelings of loneliness and buffered them from experiencing depression and gave them confidence in their progress and recovery journey (Wijekoon, 2020). The significance of shared experiences and being able to share stories with others who have a greater understanding

was a common theme, with participants discussing how peer support can be at times more valuable than family support (Smith et al., 2021). Connecting with others in a similar situation mitigated feelings of loneliness and isolation in the community.

"... made me feel that I wasn't alone for starters, because I was in a group with others in a similar situation, [that gave me] a lot of encouragement that I could recover." (Smith et al., 2021, p)

Many participants across the studies discussed comparing themselves to others within their peer support group (Smith et al., 2021, Henriksson et al., 2020, Lyon et al., 2021). A common theme from this was participants found themselves re-evaluating their own recovery and discovering a newfound appreciation of the progress they have made so far (Smith et al., 2021; Lyon et al., 2021; Wijekoon, 2020). For other participants they discussed how talking to others who have similar conditions helped them shift their perspectives as to what is important in their life (Smith et al., 2021).

"I look around and see people worse off than I am and that's another thing Headway has shown me. I am very lucky I still have the same wife, I mean lots of compatriots here, their marriages have been destroyed by the brain injury" (Lyon et al., 2021, p.3230)

A common theme in the studies was how peer support groups allowed gave participants the opportunity to express themselves again (Henriksson et al., 2020). Participants discussed how they had become dependent on others and felt they had lost their voice (Henriksson et al., 2020). With peer groups participants were able to feel heard and validated for their opinions in a non-judgmental space and feel valued for their contributions even if they found it difficult (Henriksson et al., 2020; Wijekoon, 2020; Lyon et al. et al., 2020; Smith et al., 2021).

"I feel like I've helped certain people too you know, the ones that are new to the group, just come out of strokes. [I] feel like I can give back a little you know, giving them encouragement." (Wijekoon, 2020, p.176)

A prominent theme within the studies in relation to peer groups was encouragement and inspirations from others in the group, particularly during difficult times (Wijekoon, 2020; Henriksson et al., 2020; Northcott, 2021). Participants talked about how seeing others in the group at different stages of recovery gave them an insight into what their future may look like which motivated further.

"And I get it here with some of the people I know that attend the auditorium meeting, that we relate to. You know? I can see where other people are 5 years or 10 years down the road." (Wijekoon, 2020, p.176)

Developing social relationships based on shared experiences in these studies contributed to participants finding enjoyment in new meaningful activities. Participants were able to re-evaluate their progress and discover what may be achievable for them in the time ahead. This growth in regard to changes in the perception of themselves, the world and others echoed the idea that trauma confronts a person's belief about the world, highlighting this process of creating meaning in the development of PTG.

4.4.2. Theme 2: Closer relationships with friends and family

In most of the studies the theme of 'closer relationships with friends and family' was recognised as an important factor following an ABI. Participants reflected on how family motivated them and gave them inspiration to fight and keep going through different times.

"She stayed [when we separated] and I moved to [the town's name] and then only a month went by and then this happened [the stroke]. So I have my daughter every other week. This has helped me a lot to come back. When I was paralysed and couldn't talk and eat, I had that to fight for, it helped me a lot mentally. We are very tight, it's daddy's girl, she prefers to be with me all the time. And then I just disappeared and she, unfortunately she was with me when it happened". (Materne et al., 2022, p.6)

Participants discussed how feeling accepted by others and not being treated differently helped them with their recovery following an ABI (Materne et al., 2022; Smith et al., 2021; Grohn, 2014; Govender, 2019; Lyon et al. et al., 2020; Chang et al., 2022; Brunborg & Ytrehus, 2014; Anderson et al., 2013; Northcott, 2021). Participants also talked about how friends and family help participants become more confident and encouraged and motivated them to continue with their recovery.

"For example, within my family, it's what . . . it is as it was before, but friends have also adapted and the friends I had before [my] stroke and I also have them now and I also have contact with them". (Materne et al., 2022, p.7)

A reoccurring reflection throughout the studies was the importance of spousal support. Participants talked about how spousal support was different from other types of support and how they reevaluated the importance of their spouse (Grohn, 2014; Chang et al., 2022; Brunborg & Ytrehus, 2014; Anderson et al., 2012). Participants talked about having increased appreciation of the spouses, they discussed spousal support helped reduced feelings of loneliness and offered physical and psychological safety for them (Chang et al., 2022; Brunborg & Ytrehus, 2014; Anderson et al., 2012). In addition, participants mentioned that their spouses were great advocates for them in supporting them to be autonomous in the decision making of their treatment and recovery and promoting independence (Anderson et al., 2013; Grohn, 2014).

"I am going to take him to open up his own bank account ... Like that's for him to go and be a bit more independent when he is down at the shops or whatever. Yeah it is just getting him his control of his life back I think". (Grohn, 2014, p.1416)

Participants spoke about friends and family being encouraging for them to go out and reintegrate into the community (Govender, 2019; Anderson et al., 2013; Materne et al., 2022). Participants reflected on how family members would help them find new meaningful activities to take part in and support with any adaptations that needed to be made in order to improve their quality of life (Anderson et al., 2013; Grohn, 2014; Brunborg & Ytrehus, 2014). This could help them connect with their new self and engender sense of purpose and meaning for them.

"[The support] helped me a lot; [my family] motivated me a lot – they were there for me when I had no hope of improving. They really motivated me." (Govender, 2019, p.4)

Closer relationships appear to be a crucial part of PTG experience as it enabled a sense of assurance, and safety. Participants felt supported by their families through unwavering support encouraging a more positive outlook on life. Family played a key role in motivation and encouragement in rehabilitation in early stroke recovery and can be an important in the role of advocacy.

4.4.3. Theme 3: Difficulties with social support

Throughout the papers, the studies mention some of the difficulties associated with social support after an ABI (Anderson et al., 2013; Brunborg & Ytrehus, 2014; Chang et al., 2022; Lyon et al., 2021; Smith et al., 2021; Materne et al., 2022). Some participants spoke about feeling like a burden to their friends and family which made them feel guilty and hopeless (Smith et al., 2021; Chang et al., 2022; Govender, 2019). Others mentioned distancing some friends. They reflected on friends distancing themselves as they did not know what to say or could not engage in previous activities they used to do together (Materne et al., 2022; Chang et al., 2022; Smith et al., 2021; Grohn, 2014). Some participants spoke about how they distanced themselves from their friends as their friends could not understand their situation or how hard they were struggling.

"No. I'm feeling terrible, I'm getting depressed, I'm depressed right now. I'm just lying in bed and not doing anything. It feels like they [i.e., friends] have distanced themselves, I don't think they really understand how I feel, how hard it is with a stroke". (Materne et al., 2022, p.7)

Some participants who were parents talked about losing value and meaning to their family as they could not engage in previous activities as they used to. They experienced guilt as a result of these restrictions from their conditions and expressed they felt of less value to their families which lead to them withdrawing from their family (Govender, 2019; Grohn, 2014; Smith et al., 2021). Other participants who were in a spouse role spoke about role Chang et al., (2020) since their ABI and how it has been difficult as they feel like a burden and disappointed in themselves as they cannot provide as they previously did (Materne et al., 2022; Grohn, 2014; Govender, 2019; Lyon et al., 2021; Chang et al., 2022; Brunborg & Ytrehus, 2014).

"There is a big difference between now and before, especially because I am a married woman – I can't take care of my husband; I need to be cleaning, cooking and washing his clothes but I can't do all that because of my condition." (Govender, 2019, p.3)

Others spoke about the physical limitations from their ABI stopped them from going to see others and engage in activities (Grohn, 2014; Govender, 2019). For example, participants talked of how

driving could increase their independence and improve their recovery and meaningful activities, but they are unable to do it, so this reduces their social and community network (Grohn, 2014).

"If I had the ability to drive ... I could do so much better. I could do the shopping. I could go into other pieces [people's] homes. And things like that". (Grohn, 2014, p.1419)

Some of the studies mention overprotection from friends and family hindering progress for them (Chang et al., 2022; Anderson et al., 2013). Participants mentioned they felt they were losing their autonomy and choice as others would stop them from doing things they enjoyed (Anderson et al., 2013; Grohn, 2014). Others talked about how friends and family made them feel more disabled than they were as they were not able to complete basic tasks themselves (Anderson et al., 2013). This contributed to feelings of loss of identity as participants spoke about how they felt they would just go along with whatever everyone else's choices (Anderson et al., 2013; Chang et al., 2022).

"I wish I could ride my motorcycle, but my wife doesn't allow me to do so. My family members always say 'No.' They always say 'Don't do it. It's too dangerous.'" (Chang et al., 2022, p)

"My daughter voided my driver's license." (Chang et al., 2022, p.1980)

"My wife doesn't allow me to work." (Chang et al., 2022, p.1980)

The studies reflect that although social support may support individuals after an ABI, there are some difficulties with the support. Participants discussed overprotection and negative comments from family and friends being a hinderance to their recovery as others would make them feel less confident in their own abilities. It is thought that these hinderances may impact on an individual's development of PTG as they may be prevented by others at times from experiencing growth in certain areas.

4.4.4. Theme 4: Re-connection with the social world

The theme of re-connection with the social world stems from participants discussing having experienced enjoyment with others whilst engaging in new meaningful activities and groups.

Across the studies a prominent discussion was initially feeling strong emotions such as loneliness, anger, fear of rejection, fear of being judged, ashamed, fearful of being hurt physically by others and difficulty around how to interact socially with others (Wijekoon, 2020; Lyon et al. et al., 2020; Govender, 2019; Henriksson et al., 2020; Grohn, 2014; Chang et al., 2022; Northcott, 2021). Overtime, participants talked about how these emotions dissipated and they started to regain some of their identity in combination with forming their new identity as they had to enter and learn to navigate a new social world (Smith et al., 2021; Wijekoon, 2020; Henriksson et al., 2020; Govender, 2019; Lyon et al., 2021; Brunborg & Ytrehus, 2014 ; Northcott, 2021).

"One of our friends in the group is a snowboarder up in Collingwood. My wife and myself were skiers. So just having that connection to get back outside and to be able to do those previous things, maybe not at the same level as before, but trying." (Wijekoon, 2020, p.177)

The fear of not being able to take part in previously enjoyed activities made PTG difficult for participants. However, this encouraged participants to find new opportunities for new meaningful and activities to aid community re-integration (Wijekoon, 2020; Henriksson et al., 2020; Lyon et al. et al., 2020; Grohn, 2014; Chang et al., 2022; Brunborg & Ytrehus, 2014; Northcott, 2021). These activities supported participants feel that they were valued, appreciated, validated and more confident in adapting to new situations (Lyon et al., 2020; Grohn, 2014). Others talked about the enjoyment of finding new activities they are good at that they have not discovered before; this improved participant self-worth as they were able to achieve new things (Lyon et al., 2021).

"It's amazing I found different talents that I didn't think I had and things that I thought I wasn't good at before. People praise you [at Headway] and that is important as people outside degrade you a lot." (Lyon et al., 2021, p.3230)

Some of the studies mention that participants following their ABI would actively look for new opportunities within the community, it was mentioned that this really helped with the participants confidence in their own abilities, and they had recognised through taking part in new activities their physical abilities were improving as well (Northcott, 2021; Anderson et al., 2013; Brunborg & Ytrehus, 2014). By taking part in new social activities as well, participants found themselves feeling more confident to try these activities independently as well (Grohn, 2014).

"I found out there's a ... a shop just down the road a bit that sort of does some sort of ... it's a ... like [name of charity organisation] or somebody like that, that I can go and help them sort out some clothes at my own pace. Not sort of price them or anything, but like put shirts and pants and all that sort of [thing] in different areas for them, to help them for the shop. I thought that might help me a bit as well". (Grohn, 2014, p.1420)

Across the studies participants reflected that through new activities and reconnecting with the social world they were able to have the confidence to form new friendships and learn new skills from others (Wijekoon, 2020; Henriksson et al., 2020; Grohn, 2014; Lyon et al., 2021). They also reflected on the importance of group encouragement being a motivator for creating new ways they could connect further with the community (Wijekoon, 2020; Lyon et al., 2021). This appeared to be integral in the participant feeling of value in the community as they are contributing (Northcott, 2021). The importance of forming these new friendships and sharing meaningful activities together with friends led to feelings of enjoyment, happiness and respect (Wijekoon, 2020).

"You get information about different things that are necessary in your social life. I am more informed at the time when I'm doing this club than I was before. It does give you information that encourages you to explore relationships outside the group. It is a good recovery idea because it gives that kind of orientation you are tuned towards that when you go outside." (Wijekoon, 2020, p. 176)

Participants new formed relationships and priorities in regard to their social relationships are an important aspect of the development of PTG Chang et al., (2020). Feeling strong emotions and moving through them are an integral aspect for the development of PTG.

4.4.5. Theme 5: Support from wider networks

The theme 'support from wider networks' highlighted the importance in participants understanding their conditions, being more open to acceptance therefore supporting coping, that could be factors in the process of PTG. Across the studies it was apparent that different forms of support from wider networks were a source of motivation, strength and encouragement (Materne et al., 2022; Grohn,
2014; Govender, 2019; Chang et al., 2022; Brunborg & Ytrehus, 2014 ; Anderson et al., 2012; Northcott, 2021).

The role of support from religious and spiritual communities was seen as an important factor for sense of belonging within the community, this also provided participants the ability to seek comfort and safety from their belief system (Materne et al., 2022). Others spoke about how seeking comfort through faith provided them with strength and meaning in their life to keep going (Govender, 2019; Materne et al., 2022). Some participants spoke about how attending their religious place of worship was a goal in their recovery, they experience feelings of great achievement and accomplishment when they were able to re-join the community (Govender, 2019).

"Yesterday was the first time I went to church by myself, and it felt good." (Govender, 2019, p.4)

Across the studies participants spoke about the value of receiving formal support and how this helped with their understanding and acceptance of their condition and shifting the blame from them (Chang et al., 2022; Govender, 2019; Brunborg & Ytrehus, 2014 ; Grohn, 2014). The formal support mentioned within studies were psychological support, physical therapy support, occupational therapy and charity organisations (Chang et al., 2022; Govender, 2019; Brunborg & Ytrehus, 2014 ; Grohn, 2014).

"I was very frustrated and thought why did I have stroke? Why is it me rather than other people? My therapists were all very friendly. They told me it's not my fault. I did a good job. I felt very happy every time when I left the hospital." (Chang et al., 2022, p.1980)

A prominent sub-theme throughout the wider support theme, was the support provided from work. Participants talked about work being a form of enjoyment for them as they were able to feel motivated by going to work and it engendered a sense of belonging and purpose for them, which is an important aspect in the development of PTG (Govender, 2019; Chang et al., 2022; Anderson et al., 2013). Others talked about acceptance from work being a positive factor in their recovery as they were able to adapt the workplace for them so they were able to continue with their normal job, this may have helped participants feel reconnected with their old self and give them hope that they can still continue with some of their normal activities, just maybe in an adapted way (Chang et al., 2022).

"My colleagues are superb. They went to the Department of Labor to inquire about modifying our office and classrooms, and they shared my workload so that I didn't need to do the physically challenging part. They helped me a lot, and they prepared touch screens and an interactive whiteboard for me. These technologies helped me go back to teaching." (Chang et al., 2022, p.1979)

The studies demonstrate that wider social support is important in positive recovery and community reintegration which has been shown to be significant in the development of PTG (Gannon; 2014).

5. Discussion

This thematic synthesis sought to assess the current qualitative literature base looking at PTG following an ABI. The review exclusively focused on does social support facilitated PTG after an ABI. Eleven qualitative studies were included in the review exploring social support following an ABI. The five key themes identified in the study appeared to concur social support facilitated PTG through, shared experiences, closer relationships, reconnection with the social world, and support from wider networks (Materne et al.,2022; Smith et al., 2021; Wijekoon, 2020; Grohn, 2014; Govender, 2019; Lyon et al., 2021; Change et al., 2020; Brunborg & Ytrehus, 2014 ; Anderson et al., 2013; Northcott, 2021) . However, one key theme, difficulties with relationships did not support that social support facilitated PTG (Chang et al., 2022; Smith et al., 2021; Anderson et al., 2013; Grohn, 2014; Govender et al., 2019). Many of the studies focused on primarily only one type of ABI which was stroke, this suggested that more research is needed to explore the impact of social support in relation to other types of ABI.

In reflection of previous PTG qualitative studies exploring social support following an ABI, the synthesis is fairly consistent with the literature base (Allen et al., 2022). The findings from this review echo the conclusions from Grace et al., (2015) supporting that social relationships in the

form of shared experiences, wider networks, family, and friends facilitate PTG through positive social identity, group belonging and improved sense of self (Henson et al., 2021). However, this review builds on Grace et al., (2015) research with findings suggesting that social support for some individuals can act as a buffer against experiencing mental health difficulties (Wijekoon, 2020). This may be due to social support having a protective role in mental health and in shaping how individuals perceive and manage distress. When individuals feel more supported and equipped to cope this tends to reduce feelings of overwhelm and distress (Acoba, 2024). This is due to the process of acceptance from others, emotional processing, and increased expression. Consequently, the risk of mental health difficulties decreases and individuals are able to take part in new meaningful activities, re-integrate into the community and return to daily activities such as work (Acoba, 2024). Thus, supporting the importance of functional dimensional relationships and how they facilitate PTG through these different mechanisms and processes.

The synthesis supports the theories of Calhoun and Tedeschi (2014) who conceptualised that an individual's social context may influence the development of PTG. This included rumination about the experience, responses from loved ones and PTG modelled through relationships with those who have shared experiences (Calhoun and Tedeschi, 2014). The synthesis reflects the importance on development of PTG through shared experiences with others who have an ABI (Wilkie et al., 2023). Through shared experiences individuals were able to safely share and express their experiences facilitating the meaning-making process of PTG, as well as the opportunity to learn from others (Slade et al., 2019). The shared experiences of ABI relationship are particularly unique in that participants are able to reflect and re-evaluate their progress in their recovery (Allen et al., 2022, Lyon et al., 2021). The findings suggest they adopt a new appreciation and purpose for how far they can come and see what future recovery may look like (Grace et al., 2015). As suggested by the social comparison theory, it may be this relationship based on shared experiences is unique to others as individual's are able to share group identity and group belonging where they feel validated and

included by others rather than 'protected' (Festinger, 1984). Therefore, they are accepted as an equal in social position to others (Smith et al., 2021). Individuals are also able to reconnect and revise their sense of self through sharing their stories and exploring their new self (Jirek, 2017). By changing their self-narrative, there is the opportunity for individuals to adopt alternative assumptions through different perspectives and validation of their experiences (Neimeyer, 2000). However, it is important to consider the impact of mixed support groups, for example, a group including both ABI and TBI populations. Research has suggested that individuals with a TBI experience more global deficits than those with ABI due to the nature of the injury (Lippert-Gruner et al., 2006). Therefore, individual's with TBI may have more difficulties with cognition, processing, concentration, attention, inhibition, restlessness etc (Azouvi et al., 2017). In comparison, individuals with an ABI, typically experience more specific deficits, therefore it may be difficult for a group of TBI and ABI populations to discuss topics such as recovery and growth as they may have very varying needs and strategies for rehabilitation (Adiguzel et al., 2018). It may also be more difficult for individuals with TBI to connect with PTG experiences and meaning making as it requires higher levels of cognitive abilities such as reflection and psychological thinking which may be more difficult with global deficits (Shah et al., 2004). Therefore, it may mean that the two populations may not be able to relate to each other when discussing development of PTG. However, this is not to say that individuals with TBI do not experience PTG, they may experience PTG in a different way dependent on the extent of their injury. Therefore, it could be suggested that social environment and the role the individual has within the environment may play an important role in the development of PTG.

Unlike other reviews exploring post-traumatic growth following an ABI, this review offers a novel perspective suggesting that not all social support may be positive and facilitate PTG (Grace et al., 2015). The review discusses how overprotection from others and feeling like a burden may hinder the development of PTG (Wang et al., 2023; Chang et al., 2022). By overprotecting the individual,

they are more likely to feel restricted, less autonomous and have less opportunities to express themselves (Chang et al., 2022). Therefore, limiting the opportunity for them to have access to make meaning from their experiences with the support of others which is pivotal in the development of PTG (Almeida et al., 2022). The possible reasons for this oversight in other reviews may be due to close relationships and health being newly integrated into research and theory (Long et al., 2022). Previously, social support has been explored in terms of what the person's marital status is, if they have a large social network, social integration, and their perceived level of social support (Zhang et al, 2023). However, reviews have not considered the interactional patterns that may underlie social relations in respect to health and well-being (Ankrett, 2020). Therefore, little is known about the ways in which social support can hinder the development of PTG. Thus, for the development of PTG it is important for the theory of growth that the interactional patterns and interpersonal processes are needed to support with the process of PTG.

In contrast to previous PTG reviews, the review emphasised the importance of support from wider community networks, such as work, faith, and formal support (Carmen, 2024; Kotze, 2013). Through interactions with community groups this can engender feelings of belonging through attachment to others (Farahani, 2016). Communities may provide an additional cushioning effect for individuals creating a sense of comfort for them as they may have more exposure to alternative means of support and information (Cullen, 1994). Involvement within communities can lead to increased opportunities for connecting and building relationships with others and feel empowered within their position in the group and society (Butt et al., 2021). More formal types of community support such as healthcare appeared to be an important factor in the development of PTG for some participants (Henson et al., 2021). This may be to healthcare staff being perceived as being in the expert position, therefore, once again providing a comforting effect for the individual during times of worry (Borg et al., 2004). Healthcare professionals are also able to normalise and validate the experiences of the individual and reflect on the recovery of the person (Bird et al., 2014). GP's also

play a large role in recovery as individuals can turn to them prior to returning to work (Murfett, 2011). With GP support individuals are able to feel more confident returning to work as they have received reassurance, they are well-enough to return and have discussed phased-returns and any adaptations that they may require (Sturesson et al., 2014). Overall, it would seem that support from the community in different contexts is hugely beneficial in the development of PTG as individual's are able to feel comforted by additional supports which gives rise to more opportunities of making connections with others (Kotze, 2013). Additionally, PTG appears to be facilitated by community support enhancing development in confidence of sense of self, group belonging and identity (Henson et al., 2021).

The limitations of this review primarily lie in the definitions, there is no one specific meaning or interpretation for PTG (Johnson et al., 2007). It is hard to distinguish between actual growth and perceived growth which may make the validity of the findings questionable, additionally PTG can differ amongst people in various ways making it difficult to generalise (Kashyap et al., 2018). Moreover, the methodology of the review is also a potential limitation due to the difficulties in generalising qualitative research (Smith, 2018). The nature of qualitative research is that it is specific to the individual's experiences therefore one experience for one person does not necessarily mean another person will experience the same thing (Smith, 2018). The characteristics of the studies included in the review were limited by the majority of the studies being stroke populations and not covering other types of ABI, therefore it is difficult to apply these findings to ABI as a whole. This oversight may be due to stroke being the most common type of ABI, therefore, more research is funded for it (Goldman, 2022). Most of the studies used similar methodologies of semi-structured interviews and thematic analyses' therefore limiting the generalisability of the results to research using other methods (Low, 2019). Lastly, the review is limited by only English language papers, in the search studies were omitted due to being in a different language therefore limiting the

data for the review and considerations of PTG in places that English is not one of the primary languages (Kashyap et al., 2018).

The strength of this thematic synthesis was that the key themes found were common throughout the studies, with these findings echoing those of current literature on PTG and suggesting robustness of the studies (Grace et al., 2015). In addition, the synthesis included studies from a variety of settings and global populations/cultures, considerations need to be given for cultural perceptions and beliefs around relationships, growth, and disability, however, research has indicated that PTG may develop across many cultures (Kashyap et al., 2018). Thus, the diversity of the study enriches the application of the review to different global populations. The review also strictly followed guidelines for how to complete a thematic synthesis and used critical appraisal tools that are widely used and recommended to determine the quality of the papers included in the review (CASP, 2018). Therefore, ensuring the study was transparent and robust. However, the CASP recommends that if the first two criterion of the checklist are not met, these studies should be excluded, however, this could prove to be problematic where studies do not meet this criterion (CASP, 2018). There may be instances where papers may be methodologically flawed, due to article word limitations or different constraints where the results may be pertinent to the findings of the review, therefore, it may be that the CASP tool should be used cautiously as a reflective tool to determine quality of papers rather than an exclusion tool.

6. Clinical Implications and Future Research

An ABI can be life-changing and can impact on a person's relationships, meaningful social participation, mobility, sense of self and identity (Walsch, 2014). The synthesis supports previous research denoting that reconnecting with the social world, taking part in meaningful social

participation and reintegration into the community and society contribute to the development of growth in recovery and therefore more positive psychology outcomes (Berger, 2020). Therefore, it is important in rehabilitation to consider what the person's social needs are in their recovery and integrate this into part of their goal (Grace et al., 2015).

The synthesis poses that social support can facilitate the meaning-making process of PTG and finding a purpose for an individual following an ABI through identifying with others through shared experiences and learning from one another (Morris, 2011). Therefore, supporting previous research that peer group interventions or support groups may be beneficial for people who have similar injuries, in this case ABI (Womba et al., 2016; Huges et al., 2020). It has been suggested from the synthesis through these unique shared relationships individuals are able to express and share their own story enabling them to take control of changing their self-narrative (Eakin, 2011). By changing their self-narrative individuals are able to explore and navigate their position once again in the social world which is an important aspect in group identity and group belonging (Anderson et al., 2013). This process can be supported by re-evaluating their own progress in their recovery with others in group and being able to see what future recovery may look like from others ahead in their recovery journey creating a sense of hope and purpose (Delbridge et al., 2023; Douglas et al., 2019). This appears to be an important aspect in developing greater appreciation of one's own recovery, inspiration, and encouragement for future recovery for the development of PTG (Allen et al., 2022; Lyon et al., 2021). However, the current literature does not discuss the practicalities of peer support groups, for example, how to make people feel safe and comfortable in the space and did not discuss how any ruptures in relationships or difficulties with shared comparisons would be handled (Peterson et al., 2008). The National Stroke Guidelines (2023) has recognised that services are not specifically structured to foster community support. The resources and links to other organisations for stroke support (e.g. peer support groups) is not as integrated as it should be, therefore, the guidelines call for rehabilitation services to increase participation and

improve the quality of life for people with stroke through integration of services (The National Stroke Guidelines, 2023). Thus, it would be beneficial for future research to explore the effectiveness of integrated community support in rehabilitation for stroke.

However, the synthesis does differ from the existing literature, it accounts for the difficulties that may occur with social support. These difficulties primarily being overprotection from others and feeling like a burden to others (Chang et al., 2022). Therefore, highlighting the importance of an individual's ability to express themselves and feel autonomous in order to promote positive changes in recovery (Panday et al., 2022). Nevertheless, the synthesis did account for the benefits of advocation particularly from spouses (Ghosh-Cannell et al., 2023). Thus, future research could focus on the complexity of these relationships and understanding the interpersonal and interactional patterns in social relationships that are needed to facilitate PTG following an ABI.

7. Conclusion

This thematic synthesis review extends the evidence base on PTG through reflecting that social support does facilitate the development of PTG following an ABI. Some of the social support factors that promote facilitation of PTG were shared experiences, closer relationships, reconnection with the social world and support from wider networks. The synthesis suggested that social support can act as a buffer against mental health and provide a cushioning effect of increased perceived support facilitating confidence and motivation. Social support can also help an individual navigate the social world and their role and purpose within the community and larger society which is important in the context of PTG. However, the synthesis did suggest that social support may not always facilitate PTG due to difficulties in relationships, therefore more research is needed to explore the difficulties social relationships and the development of PTG.

8. References

- Acoba, E. F. (2024). Social support and mental health: the mediating role of perceived stress. *Frontiers in Psychology*, *15*, 1330720. <u>https://doi.org/10.3389/fpsyg.2024.1330720</u>
- Aguirre, M. G. (2008). *An examination of the role of meaning in posttraumatic growth following bereavement*. Auburn University.
- Allen, N., Hevey, D., Carton, S., & O'Keeffe, F. (2022). Life is about "constant evolution": the experience of living with an acquired brain injury in individuals who report higher or lower posttraumatic growth. *Disability and Rehabilitation*, 44(14), 3479-3492. https://doi.org/10.1080/09638288.2020.1867654
- Almeida, M., Ramos, C., Maciel, L., Basto-Pereira, M., & Leal, I. (2022). Meaning in life, meaning-making and posttraumatic growth in cancer patients: Systematic review and metaanalysis. *Frontiers in Psychology*, 13, 995981.<u>https://doi.org/10.3389/fpsyg.2022.995981</u>
- Anderson, S., & Whitfield, K. (2013). Social identity and stroke: 'they don't make me feel like, there's something wrong with me'. *Scandinavian Journal of Caring Sciences*, 27(4), 820-830.<u>https://doi.org/10.1111/j.1471-6712.2012.01086.x</u>
- Arozullah, A. M., Lee, S. D., Khan, T., Kurup, S., Ryan, J., Bonner, M., Soltysik, R., & Yarnold, P. R. (2006). The roles of low literacy and social support in predicting the preventability of hospital admission. *Journal of General Internal Medicine*, 21(2), 140-145. https://doi.org/10.1111/j.1525-1497.2005.00300.x
- Banerjee, M., Hegde, S., Thippeswamy, H., Kulkarni, G. B., & Rao, N. (2021). In search of the 'self': Holistic rehabilitation in restoring cognition and recovering the 'self' following traumatic brain injury: A case report. *NeuroRehabilitation*, 48(2), 231-242. DOI: 10.3233/NRE-208017
- Batchos, E., Easton, A., Haak, C., & Ditchman, N. (2018). Social factors predictive of social integration for adults with brain injury. *Disability and Rehabilitation*, 40(17), 2062-2069. <u>https://doi.org/10.1080/09638288.2017.1326175</u>
- Bellon, M., Sando, S., Crocker, R., Farnden, J., & Duras, M. (2017). Information, connection and giving back: peer support outcomes for families following acquired brain injury in South Australia. *Health & Social Care in the Community*, 25(1), 204-214. <u>https://doi.org/10.1111/hsc.12294</u>

- Berger, G. (2020). No title. Understanding the Benefits, Barriers and Correlates to Social Connectedness and Participation for People Following an Acquired Brain Injury, (Doctoral dissertation, University of East Anglia).
- Bird, V., Leamy, M., Tew, J., Le Boutillier, C., Williams, J., & Slade, M. (2014). Fit for purpose? Validation of a conceptual framework for personal recovery with current mental health consumers. *Australian & New Zealand Journal of Psychiatry*, 48(7), 644-653.
- Borg, M., & Kristiansen, K. (2004). Recovery-oriented professionals: Helping relationships in mental health services. *Journal of Mental Health*, 13(5), 493-505. https://doi.org/10.1177/0004867413520046

Boyce, C. (2006). Acquired brain injury: Journeys from pre-injury to return to work.

- Brunborg, B., & Ytrehus, S. (2014). Sense of well-being 10 years after stroke. Journal of Clinical Nursing, 23(7-8), 1055-1063.<u>https://doi.org/10.1111/jocn.12324</u>
- Butt, S., Smith, S. M., Moola, F., & Conway, T. M. (2021). The relationship between knowledge and community engagement in local urban forest governance: A case study examining the role of resident association members in Mississauga, Canada. Urban Forestry & Urban Greening, 60, 127054. https://doi.org/10.1016/j.ufug.2021.127054
- Calhoun, L. G., & Tedeschi, R. G. (2014). The foundations of posttraumatic growth: An expanded framework. *Handbook of posttraumatic growth* (pp. 3-23). Routledge
- Cann, A., Calhoun, L. G., Tedeschi, R. G., Taku, K., Vishnevsky, T., Triplett, K. N., & Danhauer, S. C. (2010). A short form of the Posttraumatic Growth Inventory. *Anxiety, Stress, & Coping*, 23(2), 127-137. <u>https://doi.org/10.1080/10615800903094273</u>
- Carmen, E., Fazey, I., & Friend, R. M. (2024). Community-based sustainability initiatives: the quality of relationships matter? *Sustainability Science*, 1-16. <u>https://doi.org/10.1007/s11625-024-01492-8</u>
- Casellas-Grau, A., Ochoa, C., & Ruini, C. (2017). Psychological and clinical correlates of posttraumatic growth in cancer: A systematic and critical review. *Psycho-oncology*, 26(12), 2007-2018. <u>https://doi.org/10.1002/pon.4426</u>
- CASP, U. K. (2018). No title. Critical Appraisal Skills Programme (CASP). Qualitative Checklist.

- Chang, F., Lin, Y., & Liou, T. (2022). Recovery after stroke: perspectives of young stroke survivors in Taiwan. *Disability and Rehabilitation*, 44(10), 1976-1983. <u>https://doi.org/10.1080/09638288.2020.1817157</u>
- Charuvastra, A., & Cloitre, M. (2008). Social bonds and posttraumatic stress disorder. *Annu.Rev.Psychol.*, 59, 301- 328. <u>https://doi.org/10.1146/annurev.psych.58.110405.085650</u>
- Coetzer, R., Daisley, A., Newby, G., & Weatherhead, S. (2018). *Practical neuropsychological rehabilitation in acquired brain injury: A guide for working clinicians*. Routledge.
- Cook, R. (2017). Exploration of community neuropsychological rehabilitation following acquired brain injury: psychosocial outcomes and narratives of identity.
- Cullen, F. T. (1994). Social support as an organizing concept for criminology: Presidential address to the Academy of Criminal Justice Sciences. *Justice Quarterly*, 11(4), 527-559. <u>https://doi.org/10.1080/07418829400092421</u>
- Dalton, C., Kingston, A., Martin, A., O'Riordan, J., Caples, M., & Edwards, C. (2014). Living with acquired brain injury.
- Delbridge, A., Davey, J., Galloway, M., Drummond, A., Lanyon, L., Olley, N., Mason, G., English, C., & Simpson, D. B. (2023). Exploring post-stroke fatigue from the perspective of stroke survivors: what strategies help? A qualitative study. *Disability and Rehabilitation*, 1-7.<u>https://doi.org/10.1080/09638288.2023.2266363</u>
- Douglas, L. J., Jackson, D., Woods, C., & Usher, K. (2019). Rewriting stories of trauma through peer-to-peer mentoring for and by at-risk young people. *International Journal of Mental Health Nursing*, 28(3), 744-756.<u>https://doi.org/10.1111/inm.12579</u>
- Eakin, P. J. (2011). *Living autobiographically: How we create identity in narrative*. Cornell University Press.
- Feeney, B. C., & Collins, N. L. (2015). A new look at social support: A theoretical perspective on thriving through relationships. *Personality and Social Psychology Review*, 19(2), 113-147. <u>https://doi.org/10.1177/1088868314544222</u>
- Festinger, L. (1954). A theory of social comparison processes. *Human Relations*, 7(2), 117-140. https://doi.org/10.1177/001872675400700202

Festinger, L. (1957). Social comparison theory. Selective Exposure Theory, 16, 401.

- Finstad, G. L., Giorgi, G., Lulli, L. G., Pandolfi, C., Foti, G., León-Perez, J. M., Cantero-Sánchez, F. J., & Mucci, N. (2021). Resilience, coping strategies and posttraumatic growth in the workplace following COVID-19: A narrative review on the positive aspects of trauma. *International Journal of Environmental Research and Public Health*, 18(18), 9453. https://doi.org/10.3390/ijerph18189453
- Freeman, A., Adams, M., & Ashworth, F. (2015). An exploration of the experience of self in the social world for men following traumatic brain injury. *Neuropsychological Rehabilitation*, 25(2), 189-215. <u>https://doi.org/10.1080/09602011.2014.917686</u>
- Ghosh-Cannell, C., Fisher, P., Ajayi, J., & Gracey, F. (2023). The experiences of wives following acquired brain injury (ABI). A qualitative analysis exploring realisations of change following the ABI of a "loved one.". *Neuropsychological Rehabilitation*, 33(2), 356-377. <u>https://doi.org/10.1080/09602011.2021.2017982</u>
- Glintborg, C. (2019). *Identity (Re) constructions after brain injury: personal and family identity.* Routledge.
- Goetz, J. L., Keltner, D., & Simon-Thomas, E. (2010). Compassion: an evolutionary analysis and empirical review. *Psychological Bulletin*, 136(3), 351. <u>https://doi.org/10.1037/a0018807</u>
- Gök, M. Ş, & Çiftçi, B. (2023). Relationship between perceived social support and post-traumatic growth in coronavirus disease 2019 patients discharged from the hospital. *World Journal of Psychiatry*, 13(4), 171. doi: 10.5498/wjp.v13.i4.171
- Goldman, L., Siddiqui, E. M., Khan, A., Jahan, S., Rehman, M. U., Mehan, S., Sharma, R., Budkin, S., Kumar, S. N., & Sahu, A. (2022). Understanding acquired brain injury: a review. *Biomedicines*, 10(9), 2167. <u>https://doi.org/10.3390/biomedicines10092167</u>
- Govender, P., Bricknell, K., Naidoo, D., Message, H., Njoko, S., & Ayob, Z. (2019). 'No one prepared me to go home': Cerebrovascular accident survivors' experiences of community reintegration in a peri-urban context. *African Journal of Primary Health Care and Family Medicine*, 11(1), 1-8.
- Grace, J. J., Kinsella, E. L., Muldoon, O. T., & Fortune, D. G. (2015). Post-traumatic growth following acquired brain injury: a systematic review and meta-analysis. *Frontiers in Psychology*, 6, 1162. <u>https://doi.org/10.3389/fpsyg.2015.01162</u>

- Gracey, F., Longworth, C., & Psaila, K. (2016). A provisional transdiagnostic cognitive behavioural model of post brain injury emotional adjustment. *Neuro-Disability and Psychotherapy*, 3(2), 154-185.
- Griffin, S. M., Kinsella, E. L., Bradshaw, D., McMahon, G., Nightingale, A., Fortune, D. G., & Muldoon, O. T. (2022). New group memberships formed after an acquired brain injury and posttraumatic growth: A prospective study. *Neuropsychological Rehabilitation*, 32(8), 2054-2076. <u>https://doi.org/10.1080/09602011.2021.2021950</u>
- Grohn, B., Worrall, L., Simmons-Mackie, N., & Hudson, K. (2014). Living successfully with aphasia during the first year post-stroke: A longitudinal qualitative study. *Aphasiology*, 28(12), 1405-1425. <u>https://doi.org/10.1080/02687038.2014.935118</u>
- Hao, R., Han, P., Wang, L., & Zhang, Y. (2023). The effect of the social support on PTSD and PTG about university student volunteers in the prevention and controlling of coronavirus: with coping style as the intermediary. *Frontiers in Psychology*, 14, 1152823. <u>https://doi.org/10.3389/fpsyg.2023.1152823</u>
- Hughes, R., Fleming, P., & Henshall, L. (2020). Peer support groups after acquired brain injury: a systematic review. *Brain Injury*, 34(7), 847-856.<u>https://doi.org/10.1080/02699052.2020.1762002</u>
- Jirek, S. L. (2017). Narrative reconstruction and post-traumatic growth among trauma survivors: The importance of narrative in social work research and practice. *Qualitative Social Work*, 16(2), 166-188.<u>https://doi.org/10.1177/1473325016656046</u>
- Johnson, R. J., Hobfoll, S. E., Hall, B. J., Canetti-Nisim, D., Galea, S., & Palmieri, P. A. (2007). Posttraumatic growth: Action and reaction. *Applied Psychology*, 56(3), 428-436. <u>https://doi.org/10.1111/j.1464-0597.2007.00296.x</u>
- Jones, A. C., Hilton, R., Ely, B., Gororo, L., Danesh, V., Sevin, C. M., Jackson, J. C., & Boehm, L. M. (2020). Facilitating posttraumatic growth after critical illness. *American Journal of Critical Care*, 29(6), e108-e115.<u>https://doi.org/10.4037/ajcc2020149</u>
- Jozefiakova, B., Kascakova, N., Adamkovic, M., Hasto, J., & Tavel, P. (2021). Posttraumatic growth and its measurement: A closer look at the PTGI's psychometric properties and structure. <u>https://doi.org/10.31234/osf.io/6ncsw</u>

- Karagiorgou, O., Evans, J. J., & Cullen, B. (2018). Post-traumatic growth in adult survivors of brain injury: A qualitative study of participants completing a pilot trial of brief positive psychotherapy. *Disability and Rehabilitation*, 40(6), 655-659. <u>https://doi.org/10.1080/09638288.2016.1274337</u>
- Kashyap, S., & Hussain, D. (2018). Cross-cultural challenges to the construct "posttraumatic growth". *Journal of Loss and Trauma*, 23(1), 51-69. <u>https://doi.org/10.1080/15325024.2017.1422234</u>
- Kelly, G., Morris, R., & Shetty, H. (2018). Predictors of post-traumatic growth in stroke survivors. *Disability and Rehabilitation*, 40(24), 2916-2924. <u>https://doi.org/10.1080/09638288.2017.1363300</u>
- King, D., Wittenberg, R., Patel, A., Quayyum, Z., Berdunov, V., & Knapp, M. (2020). The future incidence, prevalence and costs of stroke in the UK. *Age and Ageing*, 49(2), 277-282. <u>https://doi.org/10.1093/ageing/afz163</u>
- Kotze, J. (2013). Developing collaborative and sustainable networks of social support–Community chaplaincy, faith communities and the successful reintegration of exprisoners. *International Journal of Community Chaplaincy*, 2(1), 3-13.
- Kurz, K. M., & Johnson-Welch, C. (1994). The nutrition and lives of adolescents in developing countries: findings from the nutrition of adolescent girls research program. *International Center for Research on Women.ICRW Reports and Publications*, 1.
- LAM, B., & LAM, B. (2019). Understanding social support. Social Support, Well-being, and Teacher Development, 29-83. https://doi.org/10.1007/978-981-13-3577-8_2
- Larsson, J., Björkdahl, A., Esbjörnsson, E., & Sunnerhagen, K. S. (2013). Factors affecting participation after traumatic brain injury. *Journal of Rehabilitation Medicine*, 45(8), 765-770. https://doi.org/10.2340/16501977-1184
- Lincoln, K. D., Chatters, L. M., & Taylor, R. J. (2005). Social support, traumatic events, and depressive symptoms among African Americans. *Journal of Marriage and Family*, 67(3), 754-766. https://doi.org/10.1111/j.1741-3737.2005.00167.x
- Lindstrom, C. M., & Triplett, K. N. (2010). Posttraumatic growth: A positive consequence of trauma. *Handbook of Stressful Transitions Across the Lifespan*, 569-583. https://doi.org/10.1007/978-1-4419-0748-6_28

- Linley, P. A., & Joseph, S. (2004). Positive change following trauma and adversity: A review. Journal of Traumatic Stress: Official Publication of the International Society for Traumatic Stress Studies, 17(1), 11-21. https://doi.org/10.1023/B:JOTS.0000014671.27856.7e
- Long, E., Patterson, S., Maxwell, K., Blake, C., Pérez, R. B., Lewis, R., McCann, M., Riddell, J., Skivington, K., & Wilson-Lowe, R. (2022). COVID-19 pandemic and its impact on social relationships and health. *J Epidemiol Community Health*, 76(2), 128-132. https://doi.org/10.1136/jech-2021-216690
- Low, J. (2019). Unstructured and Semi-structured interviews in Health Research. *Researching Health: Qualitative, Quantitative and Mixed Methods.London: Sage Publications,*, 123-141.
- Lyon, I., Fisher, P., & Gracey, F. (2021). "Putting a new perspective on life": a qualitative grounded theory of posttraumatic growth following acquired brain injury. *Disability and Rehabilitation*, 43(22), 3225-3233. https://doi.org/10.1080/09638288.2020.1741699
- Mahmoudi Farahani, L. (2016). The value of the sense of community and neighbouring. *Housing, Theory and Society, 33*(3), 357-376.https://doi.org/10.1080/14036096.2016.1155480
- Masten, A. S., & Cicchetti, D. (2016). Resilience in development: Progress and transformation. *Developmental Psychopathology*, 4(3), 271-333.
- Matérne, M., Simpson, G., Jarl, G., Appelros, P., & Arvidsson-Lindvall, M. (2022). Contribution of participation and resilience to quality of life among persons living with stroke in Sweden: a qualitative study. *International Journal of Qualitative Studies on Health and Well-Being*, 17(1), 2119676. <u>https://doi.org/10.1080/17482631.2022.2119676</u>
- McCabe, P., Lippert, C., Weiser, M., Hilditch, M., Hartridge, C., & Villamere, J. (2007). Community reintegration following acquired brain injury. *Brain Injury*, 21(2), 231-257. <u>https://doi.org/10.1080/02699050701201631</u>
- Morris, B. A., Campbell, M., Dwyer, M., Dunn, J., & Chambers, S. K. (2011). Survivor identity and post-traumatic growth after participating in challenge-based peer-support programmes. *British Journal of Health Psychology*, 16(3), 660-674. <u>https://doi.org/10.1348/2044-8287.002004</u>
- Morris, S. D. (2004). Rebuilding identity through narrative following traumatic brain injury. *Journal of Cognitive Rehabilitation, 22*(2), 15-21.
- Munroe, M., Al-Refae, M., Chan, H. W., & Ferrari, M. (2022). Using self-compassion to grow in the face of trauma: The role of positive reframing and problem-focused coping strategies.

Psychological Trauma: Theory, Research, Practice, and Policy, 14(S1), S157. https://doi.org/10.1037/tra0001164

- Murfett, A. (2011). No title. *Time Out for Respite and Recovery: A Qualitative Study of Influences on General Practitioners' Adaptation to General Practice,* (Doctoral dissertation, Victoria University).
- Neimeyer, R. A. (2000). Narrative disruptions in the construction of the self. In R. A. Neimeyer & J. D. Raskin (Eds.), *Constructions of disorder: Meaning-making frameworks for psychotherapy* (pp. 207–242). American Psychological Association. <u>https://doi.org/10.1037/10368-009</u>
- Northcott, S., Behn, N., Monnelly, K., Moss, B., Marshall, J., Thomas, S., Simpson, A., McVicker, S., Flood, C., & Goldsmith, K. (2022). "For them and for me": a qualitative exploration of peer befrienders' experiences supporting people with aphasia in the SUPERB feasibility trial. *Disability and Rehabilitation*, 44(18), 5025-5037. https://doi.org/10.1080/09638288.2021.1922520
- Okech, D., Hansen, N., Howard, W., Anarfi, J. K., & Burns, A. C. (2018). Social support, dysfunctional coping, and community reintegration as predictors of PTSD among human trafficking survivors. *Behavioral Medicine*, 44(3), 209-218. <u>https://doi.org/10.1080/08964289.2018.1432553</u>
- Ozbay, F., Johnson, D. C., Dimoulas, E., Morgan Iii, C. A., Charney, D., & Southwick, S. (2007). Social support and resilience to stress: from neurobiology to clinical practice. *Psychiatry* (*Edgmont*), 4(5), 35.
- Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., & Brennan, S. E. (2021). The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *Bmj*, 372. doi: https://doi.org/10.1136/bmj.n71
- Panday, J., Velikonja, D., Moll, S. E., & Harris, J. E. (2022). Experiences of inpatient rehabilitation from the perspective of persons with acquired brain injury. *Disability and Rehabilitation*, 44(19), 5539-5548. https://doi.org/10.1080/09638288.2021.1938706
- Party, I. S. W. (2023). National clinical guideline for stroke for the UK and Ireland. *London: Intercollegiate Stroke Working Party,*

- Patel, A., Berdunov, V., Quayyum, Z., King, D., Knapp, M., & Wittenberg, R. (2020). Estimated societal costs of stroke in the UK based on a discrete event simulation. *Age and Ageing*, 49(2), 270-276. <u>https://doi.org/10.1093/ageing/afz162</u>
- Peterson, A., Karlawish, J., & Largent, E. (2021). Supported decision making with people at the margins of autonomy. *The American Journal of Bioethics*, 21(11), 4-18. <u>https://doi.org/10.1080/15265161.2020.1863507</u>
- Peterson, U., Bergström, G., Samuelsson, M., Åsberg, M., & Nygren, Å. (2008). Reflecting peersupport groups in the prevention of stress and burnout: Randomized controlled trial. *Journal of Advanced Nursing*, 63(5), 506-516. <u>https://doi.org/10.1111/j.1365-2648.2008.04743.x</u>
- Platte, S., Wiesmann, U., Tedeschi, R. G., & Kehl, D. (2022). Coping and rumination as predictors of posttraumatic growth and depreciation. *Chinese Journal of Traumatology*, *25*(05), 264-271.
- Rees, L., Marshall, S., Hartridge, C., Mackie, D., & Weiser, M. (2007). Cognitive interventions post acquired brain injury. *Brain Injury*, 21(2), 161-200. <u>https://doi.org/10.1080/02699050701201813</u>
- Roffey, S. (2013). Inclusive and exclusive belonging: The impact on individual and community wellbeing. *Educational and Child Psychology*, *30*(1), 38-49.

Rogan, C., Fortune, D. G., & Prentice, G. (2013). Post-traumatic growth, illness perceptions and coping in people with acquired brain injury. *Neuropsychological Rehabilitation*, *23*(5), 639-657. <u>https://doi.org/10.1080/09602011.2013.799076</u>

- Ruff, R. M., & Chester, S. K. (2014). *Effective psychotherapy for individuals with brain injury*. Guilford Publications
- Salas, C. E., Rojas-Líbano, D., Castro, O., Cruces, R., Evans, J., Radovic, D., Arévalo-Romero, C., Torres, J., & Aliaga, Á. (2022). Social isolation after acquired brain injury: Exploring the relationship between network size, functional support, loneliness and mental health. *Neuropsychological Rehabilitation, 32*(9), 2294-2318. <u>https://doi.org/10.1080/09602011.2021.1939062</u>
- Schwarzer, R., & Knoll, N. (2007). Functional roles of social support within the stress and coping process: A theoretical and empirical overview. *International Journal of Psychology*, 42(4), 243-252.<u>https://doi.org/10.1080/00207590701396641</u>

- Simpson, G. K., McRae, P., Gates, T. M., Daher, M., Johnston, D., & Cameron, I. D. (2023). A vocational intervention that enhances return to work after severe acquired brain injury: a pragmatic trial. *Annals of Physical and Rehabilitation Medicine*, 66(8), 101787. <u>https://doi.org/10.1016/j.rehab.2023.101787</u>
- Slade, M., Rennick-Egglestone, S., Blackie, L., Llewellyn-Beardsley, J., Franklin, D., Hui, A., Thornicroft, G., McGranahan, R., Pollock, K., & Priebe, S. (2019). Post-traumatic growth in mental health recovery: qualitative study of narratives. *BMJ Open*, 9(6). <u>https://doi.org/10.1136/bmjopen-2019-029342</u>
- Stephens, A., Cullen, J., Massey, L., & Bohanna, I. (2014). Will the National Disability Insurance Scheme improve the lives of those most in need? Effective service delivery for people with acquired brain injury and other disabilities in remote Aboriginal and Torres Strait Islander communities. *Australian Journal of Public Administration*, 73(2), 260-270. https://doi.org/10.1111/1467-8500.12073
- Sturesson, M., Edlund, C., Falkdal, A. H., & Bernspång, B. (2014). Healthcare encounters and return to work: a qualitative study on sick-listed patients' experiences. *Primary Health Care Research & Development*, 15(4), 464-475. https://doi.org/10.1017/S1463423614000255
- Su, Y., & Chen, S. (2015). Emerging posttraumatic growth: A prospective study with pre-and posttrauma psychological predictors. *Psychological Trauma: Theory, Research, Practice, and Policy*, 7(2), 103.<u>https://doi.org/10.1037/tra0000008</u>
- Suskauer, S. J., Kurowski, B. G., Slomine, B. S., Evanson, N. K., & Yeh, N. (2020). Acquired brain injury. *Pediatric Rehabilitation: Principles and Practice*, , 294-318.
- Tamplin, J., Baker, F. A., Jones, B., Way, A., & Lee, S. (2013). 'Stroke a Chord': The effect of singing in a community choir on mood and social engagement for people living with aphasia following a stroke. *NeuroRehabilitation*, 32(4), 929-941. https://doi.org/10.3233/NRE-130916
- Tedeschi, R. G., & Calhoun, L. G. (1996). The Posttraumatic Growth Inventory: Measuring the positive legacy of trauma. *Journal of Traumatic Stress*, 9, 455-471. <u>https://doi.org/10.1007/BF02103658</u>
- Tedeschi, R. G., & Calhoun, L. G. (2004). "Posttraumatic growth: conceptual foundations and empirical evidence". *Psychological Inquiry*, 15(1), 1-18. <u>https://doi.org/10.1207/s15327965pli1501_01</u>

- Thoits, P. A. (2011). Mechanisms linking social ties and support to physical and mental health. Journal of Health and Social Behavior, 52(2), 145-161. <u>https://doi.org/10.1177/0022146510395592</u>
- Thomas, J., & Harden, A. (2008). Methods for the thematic synthesis of qualitative research in systematic reviews. BMC Medical Research Methodology, 8, 1-10. <u>https://doi.org/10.1186/1471-2288-8-45</u>
- Ulloa, E., Guzman, M. L., Salazar, M., & Cala, C. (2016). Posttraumatic growth and sexual violence: A literature review. *Journal of Aggression, Maltreatment & Trauma, 25*(3), 286-304. <u>https://doi.org/10.1080/10926771.2015.1079286</u>
- Upton, D., Upton, P., Upton, D., & Upton, P. (2015). Family, Friends and Social Support. *Psychology of Wounds and Wound Care in Clinical Practice*, 191-216.
- Van Bost, G., Van Damme, S., & Crombez, G. (2017). The role of acceptance and values in quality of life in patients with an acquired brain injury: a questionnaire study. *PeerJ*, *5*, e3545. https://doi.org/10.7717/peerj.3545
- Walsh, R. S. (2014). A Social Identity Approach to Acquired Brain Injury (ABI). University of Limerick.
- Walsh, R. S., Muldoon, O. T., Gallagher, S., & Fortune, D. G. (2015). Affiliative and "self-as-doer" identities: relationships between social identity, social support, and emotional status amongst survivors of acquired brain injury (ABI). *Neuropsychological Rehabilitation*, 25(4), 555-573. <u>https://doi.org/10.1080/09602011.2014.993658</u>
- Wang, Y., Wang, H., Wang, Z., Xie, H., Shi, J., & Zhao, X. (2017). The process of posttraumatic growth in individuals with traumatic spinal cord injury in Mainland China: An interpretative phenomenological analysis. *Journal of Health Psychology*, 22(5), 637-649. https://doi.org/10.1177/1359105315610812
- Westphal, M., & Bonanno, G. A. (2007). Posttraumatic growth and resilience to trauma: Different sides of the same coin or different coins? *Applied Psychology*, 56(3), 417-427. <u>https://doi.org/10.1111/j.1464-0597.2007.00298.x</u>
- Wijekoon, S., Wilson, W., Gowan, N., Ferreira, L., Phadke, C., Udler, E., & Bontempo, T. (2020). Experiences of occupational performance in survivors of stroke attending peer support groups.

Canadian Journal of Occupational Therapy, *87*(3), 173-181. https://doi.org/10.1177/0008417420905707

- Wilkie, L., Arroyo, P., Kemp, A., & Fisher, Z.Posttraumatic Growth in Acquired Brain Injury: A Narrative Review. *The Routledge International Handbook of Posttraumatic Growth*, 367-379.
- Wills, T. A., Bantum, E. O., & Ainette, M. G. (2016). Social support. The Assessment in Health Psychology, , 131-146.
- Wobma, R., Nijland, R. H., Ket, J. C., & Kwakkel, G. (2016). Evidence for peer support in rehabilitation for individuals with acquired brain injury: A systematic review. *Journal of Rehabilitation Medicine*, 48(10), 837-840. <u>https://doi.org/10.2340/16501977-2160</u>
- Wu, X., Kaminga, A. C., Dai, W., Deng, J., Wang, Z., Pan, X., & Liu, A. (2019). The prevalence of moderate-to-high posttraumatic growth: A systematic review and meta-analysis. *Journal of Affective Disorders*, 243, 408-415. https://doi.org/10.1016/j.jad.2018.09.023
- Yang, C., Chiang, Y., Wu, C., Hung, S., Chu, T., & Hsiao, Y. (2023). Mediating role of spirituality on the relationships between posttraumatic stress and posttraumatic growth among patients with cancer: A cross-sectional study. *Asia-Pacific Journal of Oncology Nursing*, 10(5), 100221. <u>https://doi.org/10.1016/j.apjon.2023.100221</u>
- Yeates, G. N., Gracey, F., & Mcgrath, J. C. (2008). A biopsychosocial deconstruction of "personality change" following acquired brain injury. *Neuropsychological Rehabilitation*, 18(5-6), 566-589. <u>https://doi.org/10.1080/09602010802151532</u>
- Zhang, Z., Hsieh, N., & Lai, W. (2023). Social relationships in later life: Does marital status matter? Journal of Social and Personal Relationships, 40(9), 2946-2968. <u>https://doi.org/10.1177/02654075231163112</u>

Part Two – Empirical Paper

Predictors of Post-Traumatic Growth in Early Stroke Recovery

Ariyana Reddy*, Dr Emma Lewis

School of Psychological Health, Wellbeing and Social Work, Aire Building, University of Hull, Cottingham Road, Hull, HU6 7RX

*Corresponding Author Email Address: <u>a.reddy-2021@hull.ac.uk</u>

This paper is written in the format ready for submission to the Journal of Disability and Rehabilitation. Please see Appendix C for the Guideline for Authors".

Word Count (excluding title page, tables and figures, references, and appendices): 10, 238

Abstract

Purpose: There is limited research investigating the development of post-traumatic growth (PTG) in early stroke recovery. The current study aimed to explore demographic and psychosocial predictors of PTG in early stroke recovery.

Methods: One-hundred and forty-three stroke survivors took part in an online survey. Each completed the Post-traumatic Growth Inventory, Stroke-Specific Quality of Life Scale, The Multidimensional Social Support Scale and were asked their age, gender, time spend in education, and whether they had received psychological support since their stroke.

Results: The results reflected that gender, psychological support and education did not significantly predict PTG. In terms of age, social support, and quality of life, social support was the only significant and largest predictor of PTG, the multiple linear regression reflected that the variables accounted for 14.8% of the variance in PTG during early stroke recovery.

Conclusions: Post-traumatic growth can develop in early stroke recovery; however, social support is an important influence in PTG. The implications for rehabilitation include services assessing for PTG in early stroke recovery and looking to promote PTG through integrated care which priorities social support. Future research and limitations of the study are also discussed.

Keywords

Stroke; Rehabilitation; Coping; Psychological Adjustment; post-traumatic growth.

1. Main Text

Stroke is the second leading cause of death worldwide (World Stroke Organisation, 2022). It is estimated that in the United Kingdom 100,000 people have strokes each year, with a stroke occurring every five minutes (World Stroke Organisation, 2022). A stroke happens when the blood supply to part of the brain is blocked or when a blood vessel bursts (Barinaga, 1998). A stroke is usually described as a traumatic life-threatening experience that is typically unexpected, uncontrollable, and frightening (Edmondson, 2014). It has been suggested that there is a critical period in early recovery where the most physical recovery occurs, this is between the first six months and two years of recovery (Crammer, 2008).

However, there is little research exploring psychological recovery within this critical period (Crammer, 2008). There is extensive research exploring the physical effects of a stroke and some exploring the negative effects of stroke, however there is little research exploring if there are any positive outcomes of psychological recovery in this timeframe (Cameron et al., 2023). Recent research has postulated that there may be positive changes that occur after traumatic events (Linely & Joseph, 2004). This is referred to as Post-Traumatic Growth (PTG; Tedeschi and Calhoun, 1994). PTG has been well-researched in many areas and has been found to be facilitated by certain social, demographic, and psychological factors such as age, gender, education etc (Kelly et al., 2018). However, there is further research needed around stroke, particularly in the early recovery period. It is important to look at the development of PTG and the potential predictors of them so that clinicians can identify areas where people may need more support to facilitate the development of PTG (Michael and Cooper, 2013). In the current study, certain demographic and psychosocial factors were explored to see if they were predictors of PTG during the early recovery period after a stroke.

2. Introduction

2.1. Physical Effects of Stroke

Although strokes typically happen rapidly, the consequences of them can be long-term physical and cognitive difficulties (Vahlberg et al., 2017). Some of the most common effects can include paralysis (typically on one side of the body), stiffness, spasticity in muscles, changes in sensation or fatigue (Van Peppen, 2004). These difficulties can be very painful and tiring, making it challenging for individuals to move some parts of their body and cause difficulties with completing everyday activities (Atler, 2016). Within the literature base the physical effects of stroke appear to be extensively explored, however, when looking at the psychological effects of a stroke overall there appears to be less research in this area (Johnson, 2013; MacKenzie et al., 2012).

2.2. Psychological Effects after a Stroke

Despite the physical symptoms of stroke being commonly known, there appears to be a smaller evidence base looking at the psychological effects of a stroke (Lincoln et al., 2011). After a stroke, individuals can experience a range of psychological conditions, the most common including depression, anxiety, and emotionalism (Morris, 2020).

Around 55% of stroke patients experience depression at some stage after their stroke, despite increased awareness of the condition and therapeutic support this statistic has not declined (Kouwenhoven et al., 2011). People who have had a stroke and experience depression may experience insomnia, feelings of hopelessness and despair, loss of identity, low mood and apathy (Koenig and Blazer, 1990). Additionally, individuals who experience depression are more likely to have poorer functional recovery, lower quality of life, reduced confidence, and self-esteem (Connell et al., 2012). Depression has also been associated with reduced engagement in rehabilitation and treatment adherence increasing the rate of re-hospitalisation (Morris, 2020). This can impact on the individual's recovery in terms of their motivation for community reintegration, and belief in their recovery and self (Johnston et al., 2005).

In addition to depression stroke survivors can also experience anxiety (White et al., 2014). Around one in four people who have a stroke will experience anxiety within the first few years (Burton et al., 2013). Studies have found that anxiety is associated with poor social functioning, lower quality of life and poorer functional ability (Morris, 2020). As a result of anxiety, stroke survivors may have trouble concentrating, persistent thoughts about things that worry them, continuous feelings of impending danger, and physical sensations such as a high heart rate and feeling irritable (Robinson, 2006). Anxiety can impact on social functioning where individuals may find it difficult to go out and engage in activities (Russell and Topham, 2012). This may lead to increased isolation and reduced confidence socialising with others and returning to daily activities such as employment (McKinlay et al., 2022). Anxiety may make it difficult for stroke survivors to return to work as they may feel less confident in their abilities to complete work tasks (Hartke et al., 2015). They may worry about their adjustments back into the workplace and other people's perceptions of them (Brereton and Nolan, 2000).

Despite the most common psychological effects of strokes being described as depression and anxiety stroke survivors can often experience emotional lability and difficulties with self-esteem and confidence (Hackett et al., 2014). This is when an individual experiences rapid and exaggerated changes in their mood, where strong emotions or feelings occur. It is suggested that it is often disproportionate to the emotional stimulus (Hackett et al., 2014). The prevalence of emotional liability is around 20-25% of survivors within the first six months but declines in frequency and severity by around 12 months (Morris et al., 1993). This can often be distressing for the person and their families and can impact on rehabilitation and confidence in engaging in social situations

(Kitzmüller et al., 2012). Moreover, individuals who have experienced a stroke may have difficulties with self-esteem and self-worth as a result of, difficulties with speech, changes in social roles and social position and changes in abilities due to the physical and cognitive impact of their stroke (Keppel & Crowe, 2000; Lapadatu & Morris, 2019). This can make it difficult for individuals to reach their end goal of community reintegration and social participation as they may experience feelings of shame and embarrassment. (Grace et al., 2015)

Overall, there are many psychological effects of a stroke however the most referred to are depression, anxiety, and emotionalism. These psychological difficulties have been seen to decrease functioning, reduce confidence and self-esteem and lead to struggles with social situations and community re-integration which for many is the end rehabilitation goal. With all the negative effects of a stroke being increasingly known it may engender a sense of hopelessness for the individuals reading the research. Therefore, few studies have considered a strengths-based approach exploring any positive effects that may happen after a stroke.

2.3. Positive changes after a Stroke

Despite the current evidence base focusing on negative psychological effects after a stroke, there have been a few studies which discuss positive changes after experiencing a stroke (Mackenzie et al., 2012; Nott et al., 2021). Contrary to the majority of studies on personality after stroke, some studies have suggested that after a stroke individuals can experience positive changes in their personality (Brunborg & Ytrehus, 2014). For example, some researchers have found that individuals have reported being happier, nicer and less self-absorbed following their stroke (Fredrickson, 2004). Consequently, they have become more patient with others, empathetic and understanding to different people's needs (Fredrickson and Losada, 2005).

Other studies discussed the development of positive changes through new meaningful activities and new habits (Brunborg & Ytrehus, 2014). Research has suggested that after trauma individuals can develop closer relationships with their social networks and family, this is a result of a shift in values and priorities after trauma (Calhoun and Tedeschi, 1998; Sippel et al., 2015). It has also been suggested that after trauma, new opportunities can arise for some, for example, new friendships and social participation in support groups (Northcott et al., 2018). This can lead to new relationships of shared experiences being formed and greater appreciation for their own recovery process (Woodman et al., 2014).

As this area of research is still developing, it seems important to consider the positive changes after experiencing a stroke. It is hoped that this research can provide some assurance and empower individuals and contribute to the emerging strengths-based literature base. Additionally, there appears to be gaps in the literature base exploring different stages of recovery after a stroke and possible positive changes.

2.4. Early Recovery

It is thought that most recovery after traumatic brain injury (TBI) takes place in the two years after injury (Ponsford et al., 1995). Studies have found that in the first six months after a TBI the brain is in a heightened state of plasticity, thus the greatest physical gains in recovery will occur within this time (Crammer, 2008). From six months onwards, 60% of TBI patients can walk again. Moreover, in the span of two years patients can make good cognitive recovery and start to engage in daily activities such as driving again (Peters et al., 2014). With these developments during recovery, it is at this point that it is suggested that TBI patients show greater levels of positive change and improvements in psychological health (Ponsford et al., 1995; Crammer, 2008). So far, there has been limited research exploring this early recovery period within the first two years after an ABI

(Allen et al., 2022). Moreover, there appears to be further scope to investigate the factors that support with facilitating recovery during this time frame. Therefore, the current study explored psychological and social factors in this early recovery period after a stroke as there appears to be little research in this area (Hochstenbach et al., 2003). Given the recovery from a stroke can be considerable, the impact of a stroke has been explored further in the context of wider contextual and systemic settings (Sarre et al., 2014).

2.5. The impact of stroke on wider settings

Given the significant physical and psychological effects of a stroke and the need for significant rehabilitation, studies have started to explore the wider societal cost (Daniel, 2009). It is estimated the cost to the NHS is around 3 billion per year on stroke, with additional costs to the economy for a further £4 billion in lost productivity, disability, and informal care (King et al., 2020). Despite this figure suggesting there is a substantial need to learn more about how to support stroke survivors, there still appears to be limited research in this area (Kelly et al., 2018). Review studies of ABI populations have suggested that there are certain demographic factors that link to the development of PTG, which is sometimes referred to as positive change after a traumatic event (Kelly et al., 2018). PTG is important in relation to stroke as it can help facilitate aspects of recovery for an individual which could lead to better community integration, social participation, return to work and other daily activities (Grace et al., 2015). There appears to be a gap in the literature base exploring demographic and some psychosocial factors focusing solely on stroke (Grace et al., 2015). This evidence demonstrates that it is not only important for the individual to explore stroke recovery but also for the wider settings.

2.6. Post-Traumatic Growth

With the gradual emerging research on positive change, studies have begun to look at posttraumatic growth (PTG; Jayawickreme et al., 2021). This has been coined by Tedeschi and Calhoun (2004) as post-traumatic growth. Posttraumatic growth (also frequently referred to positive change) was first conceptualised as the positive psychological changes to an individual's life after highly stressful and challenging life events (e.g., trauma, illness, bereavement; Wu et al., 2019). PTG has been said to be specific to the individual's experience and can be on a continuum (Allen et al., 2022). For example, individuals may interpret the presence and degree of growth experienced after a traumatic event differently (Kashyap & Hussain, 2018). PTG has been associated with; a greater appreciation of life, increased personal strength, more meaningful personal relationships, development of new opportunities, improved coping, and adaptive skills, deepened self-awareness, and recalibration of personal values (Tedeschi & Calhoun, 2004). With this greater focus on PTG, researchers have started to explore PTG in relation to other areas.

2.7. Stroke and PTG

As aforementioned, most research investigating stroke survivors focuses on the negative outcomes of a stroke (Gillen, 2005). The impact of reading negative outcomes for stroke survivors could contribute to feelings of hopelessness and despair regarding rehabilitation and reduced motivation to return to daily life (Jones et al., 2008). There currently is a small evidence base examining PTG growth after experiencing a stroke, therefore studies exploring PTG following ABI have been included in the following literature review (Sherratt & Worrall, 2021). It is thought the importance of investigating demographic and psychosocial factors can help identify certain factors that may be associated with PTG, this will enable predictions of those who may need more support offered and inform therapeutic interventions (Kolokotroni et al., 2014). After examination of the literature base of ABI studies, there appeared to be gaps in the literature exploring age, education, psychological input, gender, quality of life and social support in regard to PTG after a stroke, particularly in the early recovery period (Kelly et al., 2018; Grace et al., 2015).

2.8. Age

An important demographic supported by the evidence base has been age, there have been differences throughout the general trends in studies with regards to age being a predictor of PTG (Boyle, 2017). In a systematic review and meta-analysis, the findings suggested that in an ABI population older individuals report greater levels of PTG compared to young people (Grace et al., 2015). It has been suggested this may be due to older adults perhaps being exposed to more difficult life events than younger people and having developed more established ways of coping and adjusting helping them to navigate difficult situations (Brennan, 2011). However, other studies with ABI participants have found younger people may report higher levels of PTG after experience an ABI (Barskova and Oesterrich, 2009). From the current evidence base, there appears to be inconsistencies in relation to PTG and age, however, from the current search there seems to be more studies suggesting older age is associated with higher levels of PTG (Kadri et al., 2022).

2.9. Education

In previous meta-analyses and systematic reviews, researchers have suggested that education is a predictor of PTG in a sample of ABI participants (Gangstad et al., 2009). Other studies have supported this with findings of medium effect sizes that people who have reported being in education for a longer duration (pre-injury) experienced greater levels of PTG following an ABI (Grace et al., 2015). However, other studies have disagreed with these findings and suggested that PTG and education are unrelated in a sample of participants with serious medical conditions, however, it was acknowledged that the sample distribution of education in the review had limitations (Barskova and Oesterrich, 2009). Despite the differences in some studies, the general trends in research appear to agree that longer time in education is associated with greater levels of PTG.

2.10. Gender

Gender has been inconspicuous in the evidence base, due to previous studies suggesting that gender did not moderate the relationship between PTG and positive adjustment and subjective physical health (Tomich & Helgeson, 2012; Sawyer et al., 2012). However, these populations were not ABI populations. Further reviews of ABI studies suggest very small effect size for gender with women experiencing greater levels of PTG than men. Other studies have supported this with similar findings (Grace et al., 2015; Barskova and Oesterreich, 2009). Although, the evidence for gender predicting PTG appears to be inconclusive, there has been more studies suggesting that women will experience greater levels of PTG following an ABI.

2.11. Health-Related Quality of Life

Within the literature base it has been suggested that following an ABI, higher PTG levels are most likely going to be reported by individuals who report a higher health-related quality of life (Igoe et al., 2024). Other review studies have found similar findings with medium effect sizes and PTG, in some stroke, cancer and HIV studies PTG was strongly associated with quality of life and life satisfaction, in both short term and long-term recovery after a stroke (Helgeson et al., 2006; Powell et al., 2012).

2.12. Psychological Therapy

There appears to be no direct studies exploring the association of psychological therapies and PTG after experiencing a stroke (Grace et al., 2015). Gleeson et al., (2022) suggested psychological therapies were influential in the development of PTG based on the number of sessions. Research has shown some types of psychological therapies can enhance psychological flexibility which has been associated with higher levels of PTG and lower levels of stress (Landi et al., 2022). Additional research has proposed that therapy after a trauma event can help with processing the event information and can aid a person's sense of self, improving their sense of identity and self-esteem

(Lanius et al., 2020). Therefore, it may be predicted that psychological therapies may be associated with higher levels of PTG.

2.13. Social Support

Within the current evidence base there is a clear trend suggesting that social support is a predictor of PTG (Yu et al., 2014). Peng and Wan (2018) found moderate positive correlations (r2 = 0.336) among a Chinese sample of stroke survivors, this has been strengthened by multiple studies agreeing with these findings (Jeong & Kim, 2019; Kelly et al., 2018). It is suggested that social support enables trauma survivors to learn new ways of coping, social support can support with reappraising and re-framing trauma and create psychological safety (Sippel et al., 2015; Calhoun et al., 2022). This in turn reduces rumination and depressive symptoms (Ames-Sikora et al., 2017).

2.14. Hypotheses

Given the evidence from the current literature base suggesting that psychological predictors of PTG (e.g., psychological distress, coping and rumination) of PTG have been established (Kelly et al., 2018). The current study aimed to investigate the factors that have yet to be explored during the early recovery period following a stroke. From this, the final research question was developed: Are demographic and psychosocial useful in predicting PTG in early recovery following a stroke? Considering the research question, evidence base and models of PTG, the following hypotheses were formulated:

 There will be a significant positive association between age and PTG levels, for instance, as increases in age will be linearly associated with an increase in PTG levels.

- There will be a significant positive association between time spent in education and higher levels of PTG. In particular, longer time spent in education will be linearly associated with an increase in PTG levels.
- There will be a significant positive difference between women and men and associated levels of PTG, women will be associated with higher levels of PTG than men.
- 4. There will be a significant positive association between quality of life and PTG, for instance, as quality of life increases this will be linearly associated with an increase in PTG levels.
- There will be a significant positive relationship between social support and PTG.
- There will be a significant positive relationship between psychological support following a stroke and PTG levels.
- Age, gender, psychological input, social support, quality of life, education will predict PTG levels.

3. Method

3.1. Design

A cross-sectional survey design was used to investigate the relationship between PTG and the potential predictors: social support, quality of life, age, gender, education, and psychological therapy since experiencing a stroke (*see Table 1*). The study utilised a multiple regression to explore the relationship between PTG and the possible

predictors of this after experiencing a stroke.

Table 1

Potential Predictors and Outcomes of the Proposed Study

Predictors	Outcomes
Social support	Posttraumatic growth
Quality of life	
Age	
Gender	
Education	
Psychological Therapy Since Stroke	
Education Psychological Therapy Since Stroke	

3.2. Participants

Participants for this study were recruited through charities that support stroke survivors and online social media platforms (Facebook, Twitter, Instagram).

The inclusion criterion required participants must have experienced a stroke at least six months ago and within the first two years of post-stroke. This criterion was set due to the study investigating this critical early recovery time period of six-months to two-years post stroke (Ch'Ng et al., 2008). Thus, the individual must have had a stroke between the first six months and two-years post-stroke, were proficient in English, over the age of 18 and had capacity in line with the Mental Capacity Act (2005) to consent to taking part in the study. Capacity was assumed if people are filling in the questionnaire as they have consented.

The exclusion criteria for participants were if the individual lacks capacity to consent to take part in the study. The information sheet provided to participants/consent questions both mimic elements of the formal MCA, a formal MCA assessment was not being conducted nor are staff at centres asked to complete this (*see Table 2. for guidelines*). Staff at centres helpfully handed out the posters and information sheets.

Table 2.

Mental Capacity Act Principles (2005)

Principle	Inclusion in the Study
Understand information given to them	It would be deemed that individuals had an
	understanding to proceed forward through the
	information and consent form.
Retain that information long enough to be	Participants would have held the information
able to make the decision.	contained within the information sheet for a
	long enough period in order to complete the
	consent form.
Weigh up the information available to	A binary choice of 'I consent' and 'I do not
make the decision.	consent' would be available at the end of the
	consent form.
Weigh up the information available to	A binary choice of 'I consent' and 'I do not
make the decision	consent' would be available at the end of the
	consent form

All of the factors indicated that the individual had capacity to consent to partake in the study. Participants were encouraged to contact the key researcher if they were having difficulties understanding the information sheet, from this the key researcher assessed their grasp of the study and worked out if they were able to take part in the study using the MCA principles, were they able to understand, retain, weigh up and communicate their decision to the study (MCA, 2005). It is assumed that someone who does not have the capacity to consent to the study would not understand what to do next (e.g. contact research or access the link using a computer). The information sheet and accessible debrief sheet both included additional support numbers for participants if they felt they required any additional support.
3.3. Sample Size

A sample size calculation using G Power Version 3.1.9.7 (Buchner, Erdfelder, Faul & Lang, 2020) indicated that when six predictor variables are added to a regression model with a two-sided 5% significance level an estimated sample size of 142 will give 80% power to detect a fairly small effect size of 0.10.

3.4. Ethical Approval

Ethical approval was granted by the University of Hull research committee (Appendix F).

3.5. Ethical Considerations

It is possible that participants experienced distress as a consequence of thinking about a traumatic event and completing tasks this may have triggered reminders of the event. All participants received information signposting to appropriate stroke support services at the start and the end of the survey. The survey itself had the opportunity to exit at any point which rerouted them to the debrief page with support contact details.

Participants may have felt fatigued because of the length of the survey, they may have also found it difficult to complete as it displayed with tables. To overcome this, there was an option to finish the survey later on the JISC survey. To make the layout of the survey more accessible, there was also a function that allowed participants to complete each question separately rather than view all questions at once on the table.

Another potential ethical issue was capacity to consent to the questionnaire. The information sheet mimicked the four principles of the MCA assessment and participants had to consent by clicking a box prior to starting the survey.

3.6. Measures

There are common measures typically used when investigating PTG, these measures have been used with various populations and have been found to be valid and reliable measures to have included in the study. The self-report measures (all free and accessible online) collected data on PTG, social support, and health-related quality of life. Demographic data was also collected for further in-depth data analysis *(see Table 3 for predictor variable measures)*.

3.6.1. Demographic data

At the start of the questionnaire, participants were asked to provide their age, gender, highest level of education and whether they had received psychological therapy since experiencing a stroke. Participants were instructed that they could have help completing the survey and asked if they had support in filling out the survey.

3.6.2. Posttraumatic Growth

Grace et al., (2015) state that there are at least 14 measures of PTG, however, the mostly commonly used measure is The Posttraumatic Inventory (PTGI; Tedeschi and Calhoun, 1996) (*Appendix J*). This relates to the five factors associated with posttraumatic growth. The scale consisted of a 21 self-report items using a six-point Likert scale to measure possible positive outcomes after traumatic events. The scale ranges from 0 (no experience of change) to 5 (change experience to a very great degree) the scores mean the degree of change they have experienced. The PGI also had high reliability and internal consistency (Cronbach's alpha = 0.90 - 0.94; Tedeschi and Calhoun 1996).

The scale however was limited by the social desirability effects and had been criticised for the validity as the definitions for the key terms lack clarity. Nevertheless, the PTGI has been shown to have excellent internal consistency in a sample of stroke survivors and therefore seemed an appropriate reliable and valid measure for the study (Cronbach's alpha = 0.92; Gangstad et al., 2009).

3.6.3. Social Support

The Multidimensional Scale of Social Support (MSPSS; Zimet et al., 1988) assessing for the measure perceived support from three sources: family, friends, and significant others (*Appendix K*). The scale was a 12 self-report item inventory with a seven-point Likert scale. The scale ranged from 1 (very strongly disagree) to 7 (very strongly agree). Any mean scale score ranging from 1 to 2.9 could be considered low support; a score of 3-5 could be considered moderate support and a score from 5.1-7 could be considered high support. The MSPSS previously has been tested using a sample of older adults and demonstrated high internal consistency (Cronbach's alpha = 0.87- 0.94) and moderate test-rest reliability (r= .73). It has been widely used in ABI studies and PTG studies (Zhao et al., 2022).

3.6.4. Health-Related Quality of Life

The Stroke Specific Quality of Life Scale (SS-QOL: Zeltzer, 2008) is a patient centred outcome measures which aimed to provide an assessment of health-related quality of life (HRQOL; *Appendix L*) specific to stroke survivors. The questionnaire had 49 items in 12 domains: mobility, energy, upper extremity function, work, mood, self-care, social roles, family roles, vision, language, thinking and personality. The questionnaire should have taken around 10 minutes to complete and was scored on a 5-point Likert Scale. High scores indicate better functioning. Williams et al., (1999) examined internal consistency and test-retest reliability of

the SS-QUOL. The studies reflected the internal consistency in 34 individuals with stroke was (Cronbach's alpha = 0.75 for productivity) to excellent (alpha = 0.89 for self-care subscale) suggesting high internal consistency (Williams et al., 1999). The test re-test validity was r = 0.92 showing excellent test-retest reliability of the SS-QUOL (Williams et al., 2000).

Table 3

Predictor variable	Measurement		
Age	Ordinal.		
Education	Categorical – highest level attained.		
Social support	Scale. Total score, range.		
Quality of life	Scale. Total Score, range.		
Psychological Therapy Since Experiencing a Stroke ²	Categorical – Yes/No		
Gender	Categorical – Yes/No		

3.7. Stimulus Materials

The questionnaire was produced in two different formats: firstly, a paper-based version and an

online version, allowed for more participants who did not have access to the internet or were able

to use computer devices. Both versions of the questionnaire were identical.

 $^{^{2}}$ ² Psychological therapy in this study is informed by the stepped care model for psychological intervention after a stroke (National Stroke Guidelines, 2023HSE, 2022). The study defines psychological therapy following levels 2 and 3 for mild/moderate symptoms of impaired mood or level three severe and persistent disorders of mood and/or cognition that require clinical psychology intervention (National Stroke Guidelines, 2023).

3.8. User involvement

Patient and Public Involvement (PPI) was encouraged throughout this research (Jenning et al., 2018). Individuals who had experienced a stroke were asked to for their views on the terminology used in the materials for the study and screening questions. They were also asked to review the information sheet and poster to ensure it was appropriate.

3.9. Procedure

3.9.1. Online survey participants

The named contact at each research site approached individual's appropriate for the study with a poster and information sheet. Participants were also recruited through social media platforms (e.g., Twitter, Facebook, and Instagram) or through the local and online organisations and charities. The advertisement for social media was a poster with a link to the information pack and questionnaire. The research site was also able to provide the poster to promote the study, including the information about the study and the inclusion and exclusion criteria. Contacts were not asked to screen for eligibility, this should have been determined by the participant once they had read the consent form. If they were unsure they were encouraged to contact the researcher for further support. If the individual was interested in taking part, they were provided with the link to JISC Online Surveys (*Appendix H*). Once the participant accessed the survey the individual was provided with the information sheet to read, followed by a consent form (*Appendix G*). If they did not meet this criterion, they were directed to an exit page which contained support information. At this point, participants were also asked if they had received help completing the survey. Once again, consent was assumed once they had ticked the consent box and continued with the survey. If they had

consented, it was assumed they were able to understand, retain, weigh up and communicate their decision to take part in the study and therefore it was assumed they had capacity. If they did not wish to consent, they were taken to the exit page containing sources of support. This was followed by the abovementioned measures. At the end of the survey participants were directed to a short debrief sheet where there were details signposting participants to further support if they had felt distress or upset by the study.

3.9.2. Participants who are unable to access online surveys.

Participants who were recruited from charities who may not have had access to the online survey or may be unable to complete a survey online were recruited via the named contact at each research site. The contacts handed out the poster and information sheet to the potential participants, and a copy of the questionnaire with the freepost envelope. The participants had at least 24 hours to consider if they would have liked to take part in the study and could return to the contact for a survey or take one with them whilst considering *(Appendix G; Appendix I)*. The primary researcher's contact details and research supervisors' details were on the information page and poster for participants to contact if needed for any questions/concerns. At the end of the procedure participants were debriefed and provided with a summary sheet of contacts for further support if they felt they needed it. Participants are told in the information sheet they were able to withdraw at any time whilst filling in the questionnaire, they simply do not need to return the survey. If they had already returned the survey, they will be unable to withdraw their data as it is all anonymous.

3.10. Analysis of Data

All statistical analyses were conducted using SPSS for Windows Version 27.0 (IBM Corp., 2020). The categorical variables were analysed using independent sample t-tests and a one-way ANOVA. The data was checked to make sure it met the assumptions of an independent sample t-test and One-Way ANOVA (see Appendix N; Appendix O for output table for all statical tests). The reasoning for not entering the categorical data straight into the multiple linear regression was that categorical variables represents groups, whereas a multiple linear regression requires this to be recoded into a numerical input to perform the calculation. Therefore, dummy variables may need to be used as the variables had many levels, however, the limitation of using dummy variables are they take one option and use it as a baseline comparison (Knight, 2018). Furthermore, as there are a lot of categorical variables that therefore means there will be many dummy variables which can cause difficulties with multicollinearity and affect the accuracy and stability of the coefficients and standard error (Lavery et al., 2019).

If the any of the categorical variables were significant, then they would cautiously be included into the multiple linear regression (O'Grady et al., 1988). However, if they were not significant there would be no reasoning to include them into the multiple regression due to the difficulties with dummy variables (Starkweather, 2010). Secondly, a bivariate correlation was conducted to examine the measure of associations between the study variables. Lastly, the continuous variables were assessed to see if they met the assumptions of a multiple linear regression. The data was checked for multicollinearity through the Tolerance and Variance inflation faction (VIF; Tabachnick et al., 2013). The data met the assumption of VIF values below 10 and a tolerance of larger than .10 (see Appendix O). The data was then assessed for outliers, normality, linearity, homoscedasticity, and independence of residuals using the Normal Probability Plot of Regression Standardised Residual and the scatterplot (Tabachnick et al., 2013). To check outliers the scatterplot and Mahalanbois distance were checked, the maximum value was less that the critical value of 16.27 as there were three predictor variables (Tabachnick et al., 2013; Appendix O). Furthermore, none of the Cook's value were larger than 1 suggesting no problems with the outliers and assumptions of the data set (Tabachnick et al., 2013).

4. Results

A total number of 177 participants completed the survey, however, missing data was found for 34 participants. Therefore, only 143 participants were included in the statistical analysis. All participants completed the online survey. Out of 143 participants, 73 responded that they had support with filling in the survey.

4.1. Sample Characteristics

4.1.1. Gender

As reflected in Table 4, the sample consisted of more than twice the number of females (n = 101) than males (n = 42).

4.1.2. Education

From the sample the most common level of qualification with almost half the sample reporting they had a postgraduate degree/equivalent (n = 47, 32.9%). The second most common qualification level was an undergraduate degree/equivalent (n=39, 27.3%). In regard to pre-university qualifications, more participants reported GCSE/equivalent qualifications (n = 30, 20.9%) than A-Level/equivalent qualifications (n = 21, 14.7%). The lowest reported option for education was None of the Above (n = 6, 4.2%; see Table 4 for education frequency and percentages)

4.1.3. Psychological Support

As shown in Table 4 the sample was almost equally split between participants who had received psychological support (n = 77, 53.8%) and participants who had not received psychological support (n = 66, 46.2%).

Table 4

Categorical Variable	Frequency	Percentage (%)
Gender		
Female	101	70.6%
Male	42	29.4%
Psychological Support		
Yes	77	53.8%
No	66	46.2%
Education		
GCSE/Equivalent	30	20.9%
A-Level/Equivalent	21	14.7%
Undergraduate Degree/Equivalent	39	27.3%
Postgraduate Degree/Equivalent	47	32.9%
None of the Above	6	4.2%

Participant Characteristics for Categorical Variables

Table 5 shows the means and standard deviations of the continuous variables included in the study (age, social support, quality of life and PTGI).

4.1.4. Age

Participants range in the age range from 21 to 84 with an average age of 51.98 (SD 12.33).

4.1.5. Social Support

The present sample scored a mean score on the MSPSS of 60.41 out of a possible 84 (SD 18.83). Whilst there are no clear cut off scores suggested for the total score of the MPSS, it has been suggested to divide the sample by three and categorise the groups into poor, moderate and high social support Zimet et al., 1988)). Therefore, scores of 0-28 represent poor social support, 28-56 represent moderate social support and 56 –84 represents high social support. Therefore, on average the present sample demonstrates high levels of perceived social support. This mean score appears to be consistent with other studies investigating stroke and perceived social support suggesting that the current sample perceived social support is like others when compared with a stroke population (mean = 64.42, 67.16; Kelly et al., 2018).

4.1.6. Quality of Life

As shown in Table 5, the current sample scored a mean score of 141.37 (SD 18.83) out of a possible 245 on the stroke-specific health-related quality of life scale. On this scale, scores equal or below 147 are indicated to be poor quality of life (Rosa et al., 2023). Therefore, it would be suggested from this cut off score that on average the current sample health-related quality of life was poor. This mean differs from other studies investigating stroke populations whereby only 30% of the sample had poor health-related quality of life. (Rosa et al, 2023). Therefore, suggesting that the presenting samples health-related quality of life is poorer than similar studies from stroke populations, however, it should be held in mind the comparison study is based on a sample of Brazilian participants (Rosa et al., 2023). Whereas the current study was shared globally, thus considerations should be taken for cultural and geographical differences.

4.1.7. PTG

On the PTGI the current sample scored on average 49.04 (SD 24.87) out of a possible 105 (see Table 5). The cut off score for the PTGI is scores equal to or below 45 represent none to low PTG levels, whereas scores of 46 and above represent medium to high levels of PTG. As the present samples average score was just above the cut off score it could be interpreted that the current sample experienced medium levels of PTG. The mean score of the PTGI in the present study appears to be consistent with other stroke studies investigating PTG (mean score 50.93, Gangstad et al., 2009). Therefore, it could be suggested that the present samples experiences of PTG are similar to those of the stroke population.

Table 5

Mean and Standard Deviations for Continuous Variables.

Continuous	Mean	Standard	Range	
Variables	Deviation (SD)			
Age	51.98	12.33	21-84	
Social Support	60.41	18.83	12-84	
Quality of Life	141.37	47.00	58-244	
PTG	49.04	24.87	0-105	

4.2. Internal Consistency

Cronbach's Alpha's were calculated for the MPSS, Stroke-Specific Quality of Life Scale and the PTGI to determine internal consistency. The following values were obtained: MPSS: a = .94; Stroke Specific Quality of life: a = .97; PTGI: a = .94. All scores ranged except the Stroke Specific Quality of life score scored within the acceptable range of .70-.95 (Tod et al., 2012) and seem consistent with values reported by other studies. However, the very high score for quality of life suggests there may be problems with the scale. This may be to the scale being very long, as scales with a large number of items typically score higher alpha scores (Jozsa & Morgan, 2017).

The following statistical analyses tests were conducted to answer the overarching question of: How effective are demographic and psychosocial factors in predicting post-traumatic growth during early stroke recovery?

4.3. Categorical Variables

4.3.1. Independent Sample T-Test (Appendix M)

Hypothesis 1: There will be a significant positive difference between women and men and associated levels of PTG, women will be associated with higher levels of PTG than men.

An independent sample t-test was conducted to compare PTG scores for male and females. There was no significant difference in scores for males (M = 54.19, SD 46.90) and females (46.90, SD 26.03; t(141)= 1.616, p = .111). This means that there was no difference in PTG scores between males and females.

Hypothesis 2: There will be a significant positive difference between psychological support following a stroke and PTG levels.

Another independent sample t-test was undertaken to compare PTGI score for participants who received psychological support and participants who did not receive psychological support after a stroke. There was no statistical significant difference in scores for psychological support (M = 49.81, SD = 25.20) and no psychological support (M = 48.15, SD = 24.66; t(141) = 0.40, p = .693).

This suggested that there were no changes in PTG scores for people who had received psychological support and those who did not.

4.3.2. One-Way Between Groups Analysis of Variance (Appendix N)

Hypothesis 3: There will be a significant positive relationship between time spent in education and higher levels of PTG. In particular, longer time spent in education will be linearly associated with an increase in PTG levels.

A one-way ANOVA between groups ANOVA was conducted to explore the impact of education on levels of PTG, as measured by the PTGI. Participants were divided into five groups according to their stated education qualifications. As the last option of None of the Above provided no information about the individual's level of education their data has been removed from the data. (Group 1: GCSE/Equivalence; Group 2: A-Level/Equivalent; Group 3: Undergraduate Degree/Equivalent; Group 4: Postgraduate/Equivalent; Group 5: Postgraduate Degree/Equivalent). There was no statistical difference at the level of p< .05 in PTG scores for the education groups F(3,136) = 0.74, p = .531. This reflects that there is no difference in PTG levels based on time spent in education.

4.4. Bivariate Correlation Analysis (Appendix O)

Hypothesis 4: There will be a significant positive association between age and PTG levels, for instance, as increases in age will be linearly associated with an increase in PTG levels.

A Pearson correlation coefficient was performed to evaluate the relationship between PTG and age. The results indicated that a relationship between age and PTG was not significant r = .055, n = 143, p = .513. Therefore, as age increases there was no significant changes in the level of PTG *(Table 6)*.

Hypothesis 5: There will be a significant positive relationship between social support and PTG.

A second Pearson's correlation coefficient investigated the relationship between social support and PTG. The results indicated there was a significant medium, positive relationship between social support and PTG, r = .401, n = 143, p < .001. Therefore, suggesting as social support increases this is associated with higher levels of PTG *(Table 6)*.

Hypothesis 6: There will be a significant positive association between quality of life and PTG, for instance, as quality of life increases this will be linearly associated with an increase in PTG levels.

A third Person's correlation evaluated the relationship between quality of life and PTG. There results indicated that a relationship between quality of life and PTG was not significant r = .119, n = .143, p = .158 (*Table 6*

).

All other correlations between variables were not significant except social support and quality of life. The Pearson's correlation coefficient revealed there was a significant medium, positive relationship between social support and quality of life, r = .316, n = 143, p < .001. Therefore, indicating that as social support increases this is associated with an increase in quality of life *(Table 6*)

).

Table 6

Pearson's Correlation Analysis for Continuous Variables.

	Age	Social Support	Quality of Life	PTG
Age	-			
Social Support	034	-		
Quality of Life	.044	.316**	-	
PTG	.055	.401**	.119	-
37 44 1		1		

Note:** correlation significant at 0.01 level.

4.5. Regression Analysis (Appendix P)

Hypothesis 7: Age, social support, and quality of life will predict higher PTG levels.

A multiple linear regression was conducted to predict PTG from age, gender, social support, quality of life, psychological support, and time spent in education. The model predicted that the variables significantly predicted PTG, F(3, 139) = 9.209, p < .001, $R^2 = .148$. The R^2 value represents that the model explains 14.8% of the variance in PTG. This variance appears lower than other studies investigating predictors of PTG (Su & Chen, 2015). When looking at the scores more closely, it appears that social support was the largest and only significant contributing predictor of the model (*Table 7*).

Table 7

Multiple linear regression including all predictor variables.

Variables	Beta (β)	t	p-value	95% CI	95% CI	
				Lower	Upper	
(Constant)		.917	.361	-11.819	32.255	
Age	.069	.894	.373	170	.450	
Social support	.408	4.986	<.001*	.325	.752	
Quality of Life	013	162	.872	093	.079	

Note: CI = Confidence Intervals

* $p \le .05$

5. Discussion

The study aimed to investigate the demographic and psychosocial factors that may be associated with and predict PTG during the early recovery period following a stroke. It was expected that gender, psychological support, education would be positively associated with PTG, and quality of life, age and social support would be positively associated with PTG and would predict PTG.

5.1. Overall Findings

The research question aimed to explore how useful demographic and psychosocial factors were in predicting PTG in early stroke recovery. Two independent sample t-tests were conducted. No differences were found between gender and PTG, suggesting that both genders experienced similar levels of PTG in early recovery following a stroke. Additionally, no differences were found between participants who had psychological support after their stroke and participants who did not, suggesting that both groups experienced similar levels of PTG following a stroke. Further analysis was conducted, a bivariate correlation revealed that there were no significant relationships between either age or health-related quality of life and PTG. However, the correlation did reveal that social support was significantly and positively associated with PTG, therefore suggesting that as social support increases so will levels of PTG. A multiple regression revealed that the age, social support, time spent in education, psychological support, gender, and quality of life account for a small proportion of the variance in PTG (19.5%), however, the only significant contributing predictor of the model was social support. Therefore, suggesting that social support is important predicting factor in the development of PTG in early stroke recovery.

5.2. Social Support

The findings of this study align with existing evidence, indicating that social support has a medium strength positive association and is a significant predictor of PTG in early recovery following a stroke (Kelly et al., 2018). Social support may be important in the development of PTG for many reasons. Humans naturally compare themselves to others and have a natural instinct to be liked by others, feel a sense of belonging and to fit in (Festinger, 1957). This has been reflected by psychological research suggesting that basic needs such as love and belonging need to be met prior to self-actualisation. Social support may facilitate love and belonging through acceptance from the community which can support psychological well-being and promote psychological processing such

as PTG (Maslow, 1943; Festinger, 1957). It has been suggested through connections with other individuals can re-build self-esteem and reconnect with their old self in combination with exploring their new post-stroke self (Anderson et al., 2013). Social support can facilitate the process of PTG through providing a safe place for individuals to express their experiences and feelings to others, which is an essential aspect of the meaning-making process in the development of PTG (Almeida et al., 2022). Additionally, interactions with others may support individuals with positively reframing their experience with stroke facilitating cognitive restructuring, providing increased perceived coping resources and development of a more positive outlook (Lee et al., 2017; Robson et al., 2014; Allen et al., 2022; Thoits, 1986). These aspects are particularly important in stroke recovery as a lot of practical support may be required with any physical or cognitive difficulties the individual may experience, once again social support can support with meeting basic needs. Thus, it is important in the development of PTG in early recovery to consider the social supports around someone and how this may be influencing their rehabilitation.

5.3. Psychological Support

In contrast to the previous study investigating PTG in early recovery following a stroke, the current study explored the relationship between receiving psychological support and PTG (Henson et al., 2021). The results instead reflect that there were no differences in PTG scores between participants who received psychological support and those who did not nor was psychological support a predictor of PTG in early recovery of a stroke. These findings may link with the previous findings of Gleeson et al., (2022), suggesting that psychological support is effective dependent on the time and quality of the support. National Health Services (including stroke services) are very overwhelmed with long waiting lists and financial difficulties therefore it may not always be possible for services to offer structured psychological therapies for all (Gallacher et al., 2018). With these constraints some services have offered one psychological support appointment, as PTG is a complex process that requires a lot of processing and time this may not be enough support to facilitate PTG more than not receiving any psychological support (Zoellner & Maercker, 2006; Gallacher et al., 2018). Additionally, psychological support is only one aspect of support that might not address all the needs of the individual, such as physical rehabilitation, social support, financial stability which are crucial in the development of PTG, particularly in early recovery (Clarke & Forster, 2015). Therefore, it may suggest that an amalgamation of different support networks may be more beneficial in the development of PTG in early stroke recovery (Langhorne & Pollock, 2002). Moreover, individual differences are an important aspect in the development of PTG, people respond differently to traumatic events, such as stroke, based on their personality, coping

mechanisms and previous experiences (Taku et al., 2014). For instance, if they have other comorbid conditions prior to their stroke, they may already have established ways of coping and may not require psychological support to develop PTG (Smart, 2006). As PTG is on a continuum and specific to the individual it may be that some people naturally find their way to PTG in early recovery following a stroke without any formal support (Molina et al., 2014).

5.4. Age, Gender, and Education

The findings of the present study did not show any significant associations or predictions between age, level of education or gender and PTG in early recovery after a stroke. These findings contrast studies within the ABI evidence investigating demographic factors and PTG suggesting that these factors have an association with PTG following an ABI (Goldberg et al., 2019). The present study suggested that the potential growth following a stroke is not inherently influenced by these particular demographic factors (Grace et al., 2015; Allen et al., 2022). Therefore, despite a person's age, level of education or gender, they will have equal capacity for PTG to develop. These demographic factors may have not been associated with PTG in early recovery due to variances in cultural and societal influences (Kashyap & Hussain, 2018). Taku (2013) suggests that with different cultural norms and expectations of age and gender roles, this may influence individuals' beliefs and perceptions of growth and make it difficult for these variables to be clear predictors (Weiss et al., 2010). Furthermore, there may be methodological limitations which led to these insignificant results, it may be that PTGI might not capture the subtle difference across age, education, therefore making it difficult to assess whether these factors are clear predictors or have a positive association with PTG (Marziliano et al., 2020).

5.5. Health-Related Quality of Life

It could be argued from the findings of the present study that PTG is more influenced by social factors than by health status of the individual during early recovery (Senol-Durak et al., 2010). Health-related quality of life did not show any significant associations or predictions with PTG; therefore, it can be assumed regardless of health-related quality of life an individual has an equal capacity of developing PTG following their stroke (Sherratt & Worrall., 2021). These outcomes have been supported by previous studies in the literature base of PTG, that physical functioning and

health did not impact on levels of PTG, however, there was a high correlation between mental functioning and PTG (Alper, 2022). From the current study it is unclear as to the individuals psychological functioning in comparison with their physical functioning, it could be suggested that even if someone's physical functioning is poor their psychological functioning can be good (Salovey et al., 2000). Studies have discussed the concept of psychological flexibility as a protective factor in relation to PTG (Landi et al., 2022). It could be suggested that regardless of HRQOL the individual's level of willingness and level of psychological flexibility can support the development of PTG (Seidler, 2020). The process of psychological flexibility enables effective processing of distressing events and can facilitate engagement in self-reflective processes which are integral to the development of PTG (Boykin et al., 2020). It is thought that psychological flexibility is closely linked with constructs such as hope and optimism, therefore, positive outlook and psychological flexibility may be important factors in the development of PTG and perhaps explains why someone may have poorer quality of life and still have the same equal capacity to develop PTG as someone who has a higher quality of life (Kashdan & Rottenberg, 2010).

5.6. Early Recovery

The overall findings of the study support previous studies that in early recovery after a stroke, it can be expected that PTG will occur (Kelly et al., 2018; Grace et al., 2015). However, the level of PTG experienced may be dependent on the type of emotional and contextual supports around the individual (Henson et al., 2021). Whilst the study may have suggested that age, gender, quality of life, psychological support and education are not associated with or predict PTG, it is interpreted that they do not have a significant positive or negative relationship with PTG and do not directly advance or disadvantage development of PTG. There may be many reasons for the non-significant results in the study specific to early recovery. Firstly, early recovery can be emotionally distressing; therefore, it may be that this period is marked by intense negative emotions which can make it difficult to find meaning or perceive any growth during this time (Thomas et al., 2008).

Furthermore, the first six months to two years of stroke recovery can be a time of great uncertainty for individuals as they can have difficulties in determining their baseline health (Hope et al.,2019). Recovery specific for each person, every experience is different (Jones et al., 2008). Some people may be able to return to their normal lives or reach a baseline recovery by the 6 months, however, others may require further physical rehabilitations or other interventions that can make recovery a lengthy journey (Lipson et al., 2005). It may be that the medical and practical needs at this point supersede the psychological processing. Therefore, it may be very difficult for individuals to engage

in psychological processing as it can demanding and requires time and deep reflection. It may be that PTG requires these certain physical factors to align before psychological processing can occur. Lastly, in early recovery individuals may find acceptance difficult and be in the stage whereby they are trying to beat having a stroke, therefore, limiting the opportunities for PTG (Williams, 2023). With all complex factors interplaying in an individual's life in combination with other adjustment and contextual factors it may be difficult to interpret clear predictors of PTG during early recovery following a stroke.

5.7. Limitations

There may be difficulties with the sample population, it is unclear how representative the sample is compared to the general population of people who have experienced a stroke. The age of the sample (51.8 years old) is a lot lower compared to the average age in the UK stroke population (approximately 77 years old; NICE, 2022), meaning possible difficulties with generalising these results to the UK stroke population as there may be differences in experiences of PTG and clinical implications for younger and older populations. Participants were required to have a certain degree of cognition and language functioning to take part in the study, therefore, the sample may not truly represent the population of people who have experienced a stroke who experience cognitive and language difficulties. Additionally, the survey posed the difficulty of digital exclusion, although paper copies were handed out, all participants completed the online survey. Therefore, the results may be biased towards those who are able to have access/use digital technologies and may exclude those who do not have access to it. Furthermore, the survey did not gather information on the ethnicity or country where the participants were, therefore, limiting the opportunities to state the percentage of the sample from the UK and to generalise the findings to UK or global populations. Future researchers should aim to gather this data to help with understanding the UK stroke population further and for increasing generalisability of the findings of the research.

The study also struggled with methodological limitations. As the study was designed as a survey it required participants to be able to read and speak to communicate their answers to others. This potentially excluded participants who may have alexia and aphasia, which is approximately a third of the UK stroke population, therefore information for this large proportion of the population is missing from the study (Stroke Association, 2024). Additionally, the attrition rate for the study was large, therefore, it may be the survey was too long and may have required a lot of concentration and attention which can be fatiguing after a stroke. Importantly, PTG is a subjective experience whereby

individuals interpret growth in unique ways, using standardised measures to capture these differences can be very difficult in terms of validity of the results (Kashyap et al., 2018). Furthermore, PTG levels can fluctuate throughout recovery and may be influenced by the context around the person and confounding variables, therefore, it is difficult to generalise the results due to many other factors that may affect the development of PTG (Woolard et al., 2022). Moreover, PTG is defined as growth beyond the baseline, therefore, the measures are reliant on self-reporting which requires accessing retrospective memory (Thorburn, 2021). This can make it difficult to distinguish between perceived growth and actual growth and can be influenced by multiple factors such as mood, social desirability etc. Without knowing where someone was prior to the stroke, it is difficult to quantity how much they have grown (Sherratt & Worall., 2021).

The data analysis excluded missing data from 34 participants. The limitations with excluding the participants are that it reduces the sample size of the survey as well as excludes information from a proportion of the results, which may lead to a bias in the findings. Instead, imputation could have been used in order to replace the missing value with another value based on a reasonable estimate, therefore aiming to reduce the bias in the sample (Sterne et al., 2009).

6. Conclusion

In contrast to previous presumptions, research has found that individuals can experience positive changes following adversity which has been termed PTG. A stroke can be incredibly life-changing and have lasting psychological, cognitive, and physical effects, however, some research has indicated stroke survivors may experience PTG. Using a sample of stroke survivors in early recovery the study aimed to explore the association between age, gender, psychological support, education, social support, and quality of life with PTG. The study revealed that social support had a medium positive association with PTG in early recovery, whilst the other factors did not have any significant relationships with PTG. In terms of predictors of PTG, the results suggested there was a small variance in the factors that accounted for PTG (14.8%), therefore, PTG can occur in early recovery following a stroke. However, the only significant factor and the largest contributing factor to predicting PTG was social support. Therefore, indicating the importance of having social supports around individuals who have had a stroke. Thus, interventions in the future could explore more service developments of community integration and social support groups, such as peer group support which may facilitate the process of PTG.

7. Clinical Implications and Future Research

The research reflects the importance of social support in the develop of PTG in early recovery of stroke. It could be suggested that stroke support services may form a basis of this support (Sit et al., 2004). As stroke survivors are typically with services for a while with regular visits or inpatient stays, they start to build relationships with their team which could fill the gaps where social support may be lacking in early recovery (Northcott et al., 2016). Outside of the immediate team contact there may be limited resources for social support groups within the hospital context due to time, space and funding difficulties (Chen et al., 2021). In stroke services there can often be difficulties identifying when NHS clinical support ends and the integration of community support (Chouliara et al., 2014). It could be suggested that an improved approach could be a stepped care or tiered model that would include after receiving intense rehabilitation there is a clear pathway to community support whereby social support would be a priority within community interventions (Baker et al., 2021). This idea has been reflected by the NHS long term plan for Stroke Care which mentions improving post-hospital rehabilitation for stroke survivors, including psychological support (Alderwick & Dixon, 2019). This policy aligns with the National Stroke Strategy which recognises the fundamental importance of psychological pathways in rehabilitation and considering the psychological changes that occur after a stroke (HSE, 2022). Thus, it is important to consider the care pathways and ways of improving better access for support which enables psychological wellbeing not only during times of admission but within in the community as well.

It has been argued that using positive psychological interventions can improve PTG (Xu et al., 2016). Studies have suggested that a positive psychological approach to therapy can help develop PTG through clients being encouraged to learn new skills which facilitate more effective coping strategies, such as mindfulness, meditation, and relaxation techniques (Zoellner et al., 2014). There are yet to be studies exploring the relationship between positive psychological approaches and ABI or stroke (Cullen et al., 2018). However, studies exploring rehabilitation following a cancer diagnosis have suggested positive psychology interventions were correlated with PTG and reduced emotional distress and post-traumatic symptoms (Ochoa et al., 2017). Therefore, the findings from this study highlight the importance of considering a positive psychological approach with a stroke population and the importance of using interventions which are grounded in an empirical evidence base.

However, there are some cautions that should be considered in regard to using PTGI as an outcome measure in a clinical setting (Casellas-Grau et al., 2017). Using PTG as a standardised outcome

measure may be problematic in the sense that not everybody experiences PTG, therefore, individuals are able to have a positive recovery but not experience PTG (Zoellner et al., 2014). If there were to score lowly on the PTGI, this may invalidate the progress they have made. Moreover, the PTGI only focuses on five domains of growth, however, studies have suggested there are more domains to growth than the original model of PTG, therefore, it may be the current model of PTG limits exploring areas of growth which are not included in the PTGI (Silverstein et al., 2018).

There also needs to be considerations of how support may differ for older and younger people following stroke (Wolf et al., 2012). The focus of rehabilitation can vary for different ages, for example, for younger psychosocial support may include returning to work, support with finances, contact with employment centres and aiming to help them adjust back into their daily lives (Kirkevold et al., 2018). Whereas for older people who have experienced a stroke, psychosocial support interventions may focus on reducing isolation and loneliness and focus primarily on building social supports for them as studies have shown older people may struggle more with isolation than younger people (van Nimwegen et al., 2023).

7.1. Future Research

The current research did not consider the multi-disciplinary approach to rehabilitation after a stroke, it may be more beneficial for future research to have a more holistic approach to PTG in investigating predictors of PTG (Clarke & Forster, 2015). The study highlights the importance of considering the development of stepped/tiered care approach and the impact of post-hospitalisation care on the development of PTG (Baker et al., 2021). Additionally, it is important to consider the nuisance of recovery for each individual who has had a stroke and the difficulties in quantifying PTG, it may be that future research could gather qualitative data on when participants first started to notice the five domains of PTG in their recovery to help assess the development of PTG in early recovery of stroke (Silverstein et al., 2018). It may be the quantitative methodology may have not been able to pick up on the subtleties that qualitative methods may be able to (Gray et al., 2007).

8. References

Alderwick, H., & Dixon, J. (2019). The NHS long term plan. Bmj, 364

- Alexia Campbell Burton, C., Murray, J., Holmes, J., Astin, F., Greenwood, D., & Knapp, P.Frequency of Anxiety after Stroke: A Systematic Review and Meta-Analysis of Observational Studies. *International Journal of Stroke*, 8(7), 545-559. https://doi.org/10.1111/j.1747-4949.2012.00906.x
- Allen, N., Hevey, D., Carton, S., & O'Keeffe, F. (2022). Life is about "constant evolution": the experience of living with an acquired brain injury in individuals who report higher or lower posttraumatic growth. *Disability and Rehabilitation*, 44(14), 3479-3492. <u>https://doi.org/10.1080/09638288.2020.1867654</u>
- Almeida, M., Ramos, C., Maciel, L., Basto-Pereira, M., & Leal, I. (2022). Meaning in life, meaning-making and posttraumatic growth in cancer patients: Systematic review and meta-analysis. *Frontiers in Psychology*, 13, 995981. <u>https://doi.org/10.3389/fpsyg.2022.995981</u>
- Alper, H. E., Feliciano, L., Millien, L., Pollari, C., & Locke, S. (2022). Post-Traumatic Growth and Quality of Life among World Trade Center Health Registry Enrollees 16 Years after 9/11. *International Journal of Environmental Research and Public Health*, 19(15), 9737. <u>https://doi.org/10.3390/ijerph19159737</u>
- Amanda M. Ch'Ng, French, D., & Mclean, N.Coping with the Challenges of Recovery from Stroke. J Health Psychol, 13(8), 1136-1146. <u>https://doi.org/10.1177/1359105308095967</u>
- Ames-Sikora, A. M., Donohue, M. R., & Tully, E. C. (2017). Nonlinear Associations Between Co-Rumination and Both Social Support and Depression Symptoms. *The Journal of Psychology*, 151(6), 597-612. <u>https://doi.org/10.1080/00223980.2017.1372345</u>
- Anderson, S., & Whitfield, K. (2013). Social identity and stroke: 'they don't make me feel like, there's something wrong with me'. *Scandinavian Journal of Caring Sciences*, 27(4), 820-830. <u>https://doi.org/10.1111/j.1471-6712.2012.01086.x</u>
- Atler, K. (2016). The experiences of everyday activities post-stroke. *Disability and Rehabilitation, 38*(8), 781-788. <u>https://doi.org/10.3109/09638288.2015.1061603</u>

- Baker, C., Rose, M. L., Ryan, B., & Worrall, L. (2021). Barriers and facilitators to implementing stepped psychological care for people with aphasia: Perspectives of stroke health professionals. *Topics in Stroke Rehabilitation*, 28(8), 581-593. <u>https://doi.org/10.1080/10749357.2020.1849952</u>
- Barinaga, B. (1998). Stroke-Damaged Neurons May Commit Cellular Suicide. Science, 281(5381), 1302-1303. <u>https://doi.org/10.1126/science.281.5381.1302</u>
- Barskova, T., & Oesterreich, R. (2009). Post-traumatic growth in people living with a serious medical condition and its relations to physical and mental health: A systematic review. *Disability and Rehabilitation*, 31(21), 1709-1733. <u>https://doi.org/10.1080/09638280902738441</u>
- Boykin, D. M., Anyanwu, J., Calvin, K., & Orcutt, H. K. (2020). The moderating effect of psychological flexibility on event centrality in determining trauma outcomes. *Psychological Trauma: Theory, Research, Practice, and Policy, 12*(2), 193-199. <u>https://doi.org/10.1037/tra0000490</u>
- Boyle, C. C., Stanton, A. L., Ganz, P. A., & Bower, J. E. (2017). Posttraumatic growth in breast cancer survivors: does age matter? *Psycho-Oncology*, 26(6), 800-807. https://doi.org/10.1002/pon.4091
- Brennan, P. L., Holland, J. M., Schutte, K. K., & Moos, R. H. (2012). Coping trajectories in later life: A 20-year predictive study. *Aging & Mental Health*, 16(3), 305-316. <u>https://doi.org/10.1080/13607863.2011.628975</u>
- Brunborg, B., & Ytrehus, S. (2014). Sense of well-being 10 years after stroke. *Journal of Clinical Nursing*, 23(7-8), 1055-1063. <u>https://doi.org/10.1111/jocn.12324</u>
- Buchner, A., Erdfelder, E., Faul, F., & Lang, A. G. (2020). No title. G* Power: Statistical Power Analyses for Windows and Mac.Heinrich-Heine-Universität Düsseldorf,
- Calhoun, C. D., Stone, K. J., Cobb, A. R., Patterson, M. W., Danielson, C. K., & Bendezú, J. J. (2022). The role of social support in coping with psychological trauma: An integrated biopsychosocial model for posttraumatic stress recovery. *Psychiatric Quarterly*, 93(4), 949-970. <u>https://doi.org/10.1007/s11126-022-10003-w</u>

- Calhoun, L. G., & Tedeschi, R. G. (1998). Beyond Recovery From Trauma: Implications for Clinical Practice and Research. *Journal of Social Issues*, *54*(2), 357-371. https://doi.org/10.1111/j.1540-4560.1998.tb01223.x
- Cameron, T. M., Koller, K., Byrne, A., Chouliara, N., Robinson, T., Langhorne, P., Walker, M., & Fisher, R. J. (2023). A qualitative study exploring how stroke survivors' expectations and understanding of stroke Early Supported Discharge shaped their experience and engagement with the service. *Disability and Rehabilitation*, 45(16), 2604-2611. <u>https://doi.org/10.1080/09638288.2022.2102251</u>
- Casellas-Grau, A., Ochoa, C., & Ruini, C. (2017). Psychological and clinical correlates of posttraumatic growth in cancer: A systematic and critical review. *Psycho-Oncology*, 26(12), 2007-2018. <u>https://doi.org/10.1002/pon.4426</u>
- Chen, L., Xiao, L. D., Chamberlain, D., & Newman, P. (2021). Enablers and barriers in hospital-to-home transitional care for stroke survivors and caregivers: A systematic review. *Journal of Clinical Nursing*, 30(19-20), 2786-2807. <u>https://doi.org/10.1111/jocn.15807</u>
- Chouliara, N., Rebecca, J. F., Kerr, M., & Marion, F. W.Implementing evidence-based stroke Early Supported Discharge services: a qualitative study of challenges, facilitators and impact. *Clin Rehabil*, 28(4), 370-377. <u>https://doi.org/10.1177/0269215513502212</u>
- Clarke, D.,J., & Forster, A. (2015). Improving post-stroke recovery: the role of the multidisciplinary health care team. *Journal of Multidisciplinary Healthcare*, *8*, 433-442. <u>https://doi.org/10.2147/JMDH.S68764</u>
- Connell, J., Brazier, J., O'Cathain, A., Lloyd-Jones, M., & Paisley, S. (2012). Quality of life of people with mental health problems: a synthesis of qualitative research. *Health and Quality of Life Outcomes, 10*, 1-16. <u>https://doi.org/10.1186/1477-7525-10-138</u>
- Cramer, S. C. (2008). Repairing the human brain after stroke: I. Mechanisms of spontaneous recovery. Annals of Neurology, 63(3), 272-287. <u>https://doi.org/10.1002/ana.21393</u>
- Cullen, B., Pownall, J., Cummings, J., Baylan, S., Broomfield, N., Haig, C., Kersel, D., Murray, H., & Evans, J. J. (2018). Positive PsychoTherapy in ABI Rehab (PoPsTAR): A pilot randomised controlled trial. *Neuropsychological Rehabilitation*, 28(1), 17-33. <u>https://doi.org/10.1080/09602011.2015.1131722</u>

- Daniel, K., Wolfe, C. D., Busch, M. A., & McKevitt, C. (2009). What are the social consequences of stroke for working-aged adults? A systematic review. *Stroke*, 40(6), e431-e440. <u>https://doi.org/10.1161/STROKEAHA.108.534487</u>
- Durak, M., Senol-Durak, E., & Gencoz, T. (2010). Psychometric properties of the satisfaction with life scale among Turkish university students, correctional officers, and elderly adults. *Social Indicators Research*, 99, 413-429. <u>https://doi.org/10.1007/s11205-010-9589-4</u>
- Edmondson, D. (2014). An Enduring Somatic Threat Model of Posttraumatic Stress Disorder Due to Acute Life-Threatening Medical Events. *Social and Personality Psychology Compass*, 8(3), 118-134. <u>https://doi.org/10.1111/spc3.12089</u>
- Festinger, L. (1957). Social comparison theory. Selective Exposure Theory, 16, 401.
- Fredrickson, B. L., & Losada, M. F. (2005). Positive Affect and the Complex Dynamics of Human Flourishing. *American Psychologist*, 60(7), 678-686. <u>https://doi.org/10.1037/0003-066X.60.7.678</u>
- Gallacher, K. I., May, C. R., Langhorne, P., & Mair, F. S. (2018). A conceptual model of treatment burden and patient capacity in stroke. *BMC Family Practice*, *19*, 1-15. <u>https://doi.org/10.1186/s12875-017-0691-4</u>
- Gangstad, B., Norman, P., & Barton, J. (2009). Cognitive processing and posttraumatic growth after stroke. *Rehabilitation Psychology*, 54(1), 69-75. <u>https://doi.org/10.1037/a0014639</u>
- Gillen, G. (2005). Positive consequences of surviving a stroke. The American Journal of Occupational Therapy, 59(3), 346-350. <u>https://doi.org/10.5014/ajot.59.3.346</u>
- Gleeson, A., Curran, D., Simms, J., Dyer, K., Fletcher, S., & Hanna, D. (2023). The role of trauma, psychological therapy, and trauma appraisals in predicting posttraumatic growth. *Traumatology*, 29(4), 504-511. <u>https://doi.org/10.1037/trm0000393</u>
- Goldberg, L. D., McDonald, S. D., & Perrin, P. B. (2019). Predicting trajectories of posttraumatic growth following acquired physical disability. *Rehabilitation Psychology*, 64(1), 37-49. <u>https://doi.org/10.1037/rep0000247</u>

- Grace, J. J., Kinsella, E. L., Muldoon, O. T., & Fortune, D. G. (2015). Post-traumatic growth following acquired brain injury: a systematic review and meta-analysis. *Frontiers in Psychology*, 6, 1162. <u>10.3389/fpsyg.2015.01162</u>
- Gray, P. S., Williamson, J. B., Karp, D. A., & Dalphin, J. R. (2007). *The research imagination: An introduction to qualitative and quantitative methods*. Cambridge University Press.
- Hackett, M. L., Köhler, S., T O'Brien, J., & Mead, G. E. (2014). Neuropsychiatric outcomes of stroke. *The Lancet Neurology*, 13(5), 525-534. <u>https://doi.org/10.1016/S1474-4422(14)70016-X</u>
- Hartke, R. J., & Trierweiler, R. (2015). Survey of survivors' perspective on return to work after stroke. *Topics in Stroke Rehabilitation*, 22(5), 326-334. <u>https://doi.org/10.1179/1074935714Z.0000000044</u>
- Henson, C., Truchot, D., & Canevello, A. (2021). What promotes post traumatic growth? A systematic review. *European Journal of Trauma & Dissociation*, 5(4), 100195. <u>https://doi.org/10.1016/j.ejtd.2020.100195</u>
- Hochstenbach, J. B., den Otter, R., & Mulder, T. W. (2003). Cognitive recovery after stroke: a 2-year follow-up 11No commercial party having a direct financial interest in the results of the research supporting this article has or will confer a benefit upon the author(s) or upon any organization with which the author(s) is/are associated. *Archives of Physical Medicine and Rehabilitation*, 84(10), 1499-1504. <u>https://doi.org/10.1016/S0003-9993(03)00370-8</u>
- Hope, T. M., Friston, K., Price, C. J., Leff, A. P., Rotshtein, P., & Bowman, H. (2019). No title. *Recovery After Stroke: Not so Proportional After all?*,
- Huppert, F. A., Baylis, N., Keverne, B., & Fredrickson, B. L. (2004). The broaden–and–build theory of positive emotions. *Philosophical Transactions of the Royal Society of London.Series B: Biological Sciences*, 359(1449), 1367-1377. https://doi.org/10.1098/rstb.2004.1512
- IBM Corp. (2020). IBM SPSS Statistics for Windows, Version 27.0. Armonk, New York: IBM Corporation.

- Igoe, A., Twomey, D. M., Allen, N., Carton, S., Brady, N., & O'Keeffe, F. (2024). A longitudinal analysis of factors associated with post traumatic growth after acquired brain injury. *Neuropsychological Rehabilitation*, 34(3), 430-452. <u>https://doi.org/10.1080/09602011.2023.2195190</u>
- Jayawickreme, E., Infurna, F. J., Alajak, K., Blackie, L. E. R., Chopik, W. J., Chung, J. M., Dorfman, A., Fleeson, W., Forgeard, M. J. C., Frazier, P., Furr, R. M., Grossmann, I., Heller, A. S., Laceulle, O. M., Lucas, R. E., Luhmann, M., Luong, G., Meijer, L., McLean, K. C., . . . Zonneveld, R. (2021). Post-traumatic growth as positive personality change: Challenges, opportunities, and recommendations. *Journal of Personality*, 89(1), 145-165. https://doi.org/10.1111/jopy.12591
- Jennings, H., Slade, M., Bates, P., Munday, E., & Toney, R. (2018). Best practice framework for Patient and Public Involvement (PPI) in collaborative data analysis of qualitative mental health research: methodology development and refinement. *BMC Psychiatry*, 18, 1-11. <u>https://doi.org/10.1186/s12888-018-1794-8</u>
- Jeong, Y., & Kim, H. S. (2019). Post-traumatic growth among stroke patients: Impact of hope, meaning in life, and social support. *Korean Journal of Adult Nursing*, 31(6), 605-617. https://doi.org/10.7475/kjan.2019.31.6.605
- Johnson, L. M. (2013). Life after stroke: what may affect recovery.
- Johnston, M. V., Goverover, Y., & Dijkers, M. (2005). Community activities and individuals' satisfaction with them: Quality of life in the first year after traumatic brain injury. *Archives of Physical Medicine and Rehabilitation*, 86(4), 735-745. <u>https://doi.org/10.1016/j.apmr.2004.10.031</u>
- Jones, F., Mandy, A., & Partridge, C. (2008). Reasons for recovery after stroke: A perspective based on personal experience. *Disability and Rehabilitation*, 30(7), 507-516. <u>https://doi.org/10.1080/09638280701355561</u>
- Józsa, K., & Morgan, G. A. (2017). Reversed items in Likert scales: Filtering out invalid responders. Journal of Psychological and Educational Research, 25(1), 7.
- Kadri, A., Gracey, F., & Leddy, A.What Factors are Associated with Posttraumatic Growth in Older Adults? A Systematic Review. *Clinical Gerontologist*, 1-18. <u>https://doi.org/10.1080/07317115.2022.2034200</u>
- Kashdan, T. B., & Rottenberg, J. (2010). Psychological flexibility as a fundamental aspect of health. *Clinical Psychology Review*, 30(7), 865-878. https://doi.org/10.1016/j.cpr.2010.03.001

- Kashyap, S., & Hussain, D. (2018). Cross-Cultural Challenges to the Construct "Posttraumatic Growth". *Journal of Loss and Trauma*, 23(1), 51-69. <u>https://doi.org/10.1080/15325024.2017.1422234</u>
- Kelly, G., Morris, R., & Shetty, H. (2018). Predictors of post-traumatic growth in stroke survivors. *Disability and Rehabilitation*, 40(24), 2916-2924. <u>https://doi.org/10.1080/09638288.2017.1363300</u>
- Keppel, C. C., & Crowe, S. F. (2000). Changes to Body Image and Self-esteem following Stroke in Young Adults. *Neuropsychological Rehabilitation*, 10(1), 15-31. <u>https://doi.org/10.1080/096020100389273</u>
- King, D., Wittenberg, R., Patel, A., Quayyum, Z., Berdunov, V., & Knapp, M. (2020). The future incidence, prevalence and costs of stroke in the UK. Age and Ageing, 49(2), 277-282.
- Kitzmüller, G., Asplund, K., & Häggström, T. (2012). The long-term experience of family life after stroke. *Journal of Neuroscience Nursing*, 44(1), E1-E13. <u>https://doi.org/ 10.1097/JNN.0b013e31823ae4a1</u>
- Knight, G. P. (2018). A survey of some important techniques and issues in multiple regression. New methods in reading comprehension research (pp. 13-30). Routledge.
- Koenig, H. G., & Blazer, D. G. (1990). Depression and other affective disorders. *Geriatric medicine* (pp. 473-490). Springer.
- Kolokotroni, P., Anagnostopoulos, F., & Tsikkinis, A. (2014). Psychosocial Factors Related to Posttraumatic Growth in Breast Cancer Survivors: A Review. *Women & Health*, 54(6), 569-592. <u>https://doi.org/10.1080/03630242.2014.899543</u>
- Kouwenhoven, S. E., Kirkevold, M., Engedal, K., & Kim, H. S. (2011). Depression in acute stroke: prevalence, dominant symptoms and associated factors. A systematic literature review. *Disability and Rehabilitation*, 33(7), 539-556. <u>https://doi.org/10.3109/09638288.2010.505997</u>
- Landi, G., Pakenham, K. I., Mattioli, E., Crocetti, E., Agostini, A., Grandi, S., & Tossani, E. (2022a). Posttraumatic growth in people experiencing high post-traumatic stress during the COVID-19 pandemic: The protective role of psychological flexibility. *Journal of Contextual Behavioral Science*, 26, 44-55. <u>https://doi.org/10.1016/j.jcbs.2022.08.008</u>
- Landi, G., Pakenham, K. I., Mattioli, E., Crocetti, E., Agostini, A., Grandi, S., & Tossani, E. (2022b). Posttraumatic growth in people experiencing high post-traumatic stress during the COVID-19 pandemic: The 102

protective role of psychological flexibility. *Journal of Contextual Behavioral Science*, 26, 44-55. <u>https://doi.org/10.1016/j.jcbs.2022.08.008</u>

- Langhorne, P., & Pollock, A. (2002). What are the components of effective stroke unit care? *Age and Ageing*, *31*(5), 365-371. <u>https://doi.org/10.1093/ageing/31.5.365</u>
- Lanius, R. A., Terpou, B. A., & McKinnon, M. C. (2020). The sense of self in the aftermath of trauma: lessons from the default mode network in posttraumatic stress disorder. *European Journal of Psychotraumatology*, 11(1), 1807703. <u>https://doi.org/10.1080/20008198.2020.1807703</u>
- Lapadatu, I., & Morris, R. (2019). The relationship between stroke survivors' perceived identity and mood, selfesteem and quality of life. *Neuropsychological Rehabilitation*, 29(2), 199-213. <u>https://doi.org/10.1080/09602011.2016.1272468</u>
- Lavery, M. R., Acharya, P., Sivo, S. A., & Xu, L. (2019). Number of predictors and multicollinearity: What are their effects on error and bias in regression? *Communications in Statistics - Simulation and Computation, 48*(1), 27-38. https://doi.org/10.1080/03610918.2017.1371750
- Lee, D. S., & Ybarra, O.Cultivating Effective Social Support Through Abstraction. Pers Soc Psychol Bull, 43(4), 453-464. <u>https://doi.org/10.1177/0146167216688205</u>
- Lincoln, N. B., Kneebone, I. I., Macniven, J. A., & Morris, R. C. (2011). Psychological management of stroke. John Wiley & Sons.
- Linley, P. A., & Joseph, S. (2004). Positive change following trauma and adversity: A review. Journal of Traumatic Stress, 17(1), 11-21. <u>https://doi.org/10.1023/B:JOTS.0000014671.27856.7e</u>
- Lipson, D. M., Sangha, H., Foley, N. C., Bhogal, S., Pohani, G., & Teasell, R. W. (2005). Recovery from stroke: differences between subtypes. *International Journal of Rehabilitation Research*, 28(4), 303-308.
- Mackenzie, A., & Greenwood, N. (2012). Positive experiences of caregiving in stroke: a systematic review. *Disability and Rehabilitation*, 34(17), 1413-1422. <u>https://doi.org/10.3109/09638288.2011.650307</u>
- Marziliano, A., Tuman, M., & Moyer, A. (2020). The relationship between post-traumatic stress and posttraumatic growth in cancer patients and survivors: A systematic review and meta-analysis. *Psycho-Oncology*, 29(4), 604-616. <u>https://doi.org/10.1002/pon.5314</u>

Maslow, A. H. (1943). A theory of human motivation. pdf.

McKinlay, A. R., May, T., Dawes, J., Fancourt, D., & Burton, A. (2022). 'You're just there, alone in your room with your thoughts': a qualitative study about the psychosocial impact of the COVID-19 pandemic among young people living in the UK. *BMJ Open*, 12(2), e053676. <u>https://doi.org/10.1136/bmjopen-2021-053676</u>

Mental Health Act c.9 - https://www.legislation.gov.uk/ukpga/2005/9/contents

- Michael, C., & Cooper, M. (2013). Post-traumatic growth following bereavement: A systematic review of the literature. *Counselling Psychology Review*, 28(4), 18-33.
- Molina, Y., Jean, C. Y., Martinez-Gutierrez, J., Reding, K. W., Joyce, P., & Rosenberg, A. R. (2014). Resilience among patients across the cancer continuum: diverse perspectives. *Clinical Journal of Oncology Nursing*, 18(1), 93. https://doi.org/ 10.1188/14.CJON.93-101.
- Morris, P. L. P., Robinson, R. G., & Raphael, B. (1993). Emotional Lability after Stroke. Australian and New Zealand Journal of Psychiatry, 27(4), 601-605. <u>https://doi.org/10.3109/00048679309075822</u>

Morris, R. C. (2020). Psychological and emotional issues after stroke. Stroke in the Older Person, 399

National Clinical Guideline for Stroke for the UK and Ireland (2022) - national-stroke-strategy-2022-

2027.pdf (hse.ie)

- Northcott, S., & Hilari, K. (2018). "I've got somebody there, someone cares": what support is most valued following a stroke? *Disability and Rehabilitation*, 40(20), 2439-2448. <u>https://doi.org/10.1080/09638288.2017.1337242</u>
- Northcott, S., Moss, B., Harrison, K., & Hilari, K.A systematic review of the impact of stroke on social support and social networks: associated factors and patterns of change. *Clin Rehabil*, 30(8), 811-831. <u>https://doi.org/10.1177/0269215515602136</u>
- Nott, M., Wiseman, L., Seymour, T., Pike, S., Cuming, T., & Wall, G. (2021). Stroke self-management and the role of self-efficacy. *Disability and Rehabilitation*, 43(10), 1410-1419. <u>https://doi.org/10.1080/09638288.2019.1666431</u>

- Ochoa, C., Casellas-Grau, A., Vives, J., Font, A., & Borràs, J. (2017). Positive psychotherapy for distressed cancer survivors: Posttraumatic growth facilitation reduces posttraumatic stress. *International Journal of Clinical and Health Psychology*, 17(1), 28-37. <u>https://doi.org/10.1016/j.ijchp.2016.09.002</u>
- Peng, Z., & Wan, L. (2018). Posttraumatic growth of stroke survivors and its correlation with rumination and social support. *Journal of Neuroscience Nursing*, 50(4), 252-257. https://doi.org/<u>10.1097/JNN.00000000000371</u>
- Peppen, R. P. V., Kwakkel, G., S, W., Hendriks, H. J., Ph J Van, d. W., & Dekker, J.The impact of physical therapy on functional outcomes after stroke: what's the evidence? *Clin Rehabil*, 18(8), 833-862. <u>https://doi.org/10.1191/0269215504cr843oa</u>
- Peters, D. M., Jain, S., Liuzzo, D. M., Middleton, A., Greene, J., Blanck, E., Sun, S., Raman, R., & Fritz, S. L. (2014). Individuals With Chronic Traumatic Brain Injury Improve Walking Speed and Mobility With Intensive Mobility Training. *Archives of Physical Medicine and Rehabilitation*, 95(8), 1454-1460. <u>https://doi.org/10.1016/j.apmr.2014.04.006</u>
- Powell, T., Gilson, R., & Collin, C. (2012). TBI 13 years on: factors associated with post-traumatic growth. *Disability and Rehabilitation*, 34(17), 1461-1467. <u>https://doi.org/10.3109/09638288.2011.644384</u>
- Robinson, R. G. (2006). The clinical neuropsychiatry of stroke: Cognitive, behavioral and emotional disorders following vascular brain injury. Cambridge University Press.
- Robson Jr, J. P., & Troutman-Jordan, M. (2014). A concept analysis of cognitive reframing. *Journal of Theory Construction & Testing*, 18(2)
- Rosa, C. T., Zonta, M. B., Lange, M. C., & Zétola, V. d. H. F. (2023). Quality of life: predictors and outcomes after stroke in a Brazilian public hospital. *Arquivos De Neuro-Psiquiatria*, 81, 2-8.
- Russell, G., & Topham, P. (2012). The impact of social anxiety on student learning and well-being in higher education. *Journal of Mental Health*, 21(4), 375-385. <u>https://doi.org/10.3109/09638237.2012.694505</u>
- Salovey, P., Rothman, A. J., Detweiler, J. B., & Steward, W. T. (2000). Emotional states and physical health. American Psychologist, 55(1), 110-121. <u>https://doi.org/10.1037/0003-066X.55.1.110</u>

- Sarre, S., Redlich, C., Tinker, A., Sadler, E., Bhalla, A., & McKevitt, C. (2014). A systematic review of qualitative studies on adjusting after stroke: lessons for the study of resilience. *Disability and Rehabilitation*, 36(9), 716-726. <u>https://doi.org/10.3109/09638288.2013.814724</u>
- Sawyer, A., Ayers, S., Young, D., Bradley, R., & Smith, H. (2012). Posttraumatic growth after childbirth: A prospective study. *Psychology & Health*, *27*(3), 362-377. https://doi.org/10.1080/08870446.2011.578745
- Seidler, D. A. (2020). Examining Relations Among Positive and Negative Metrics of Psychological Flexibility and Positive and Negative Outcomes of Exposure to Trauma. Southern Illinois University at Carbondale.
- Sherratt, S., & Worrall, L. (2021). Posttraumatic growth following aphasia: a prospective cohort study of the first year post-stroke. *Aphasiology*, 35(3), 291-313. <u>https://doi.org/10.1080/02687038.2020.1787945</u>
- Silverstein, M. W., Witte, T. K., Lee, D. J., Kramer, L. B., & Weathers, F. W. (2018). Dimensions of Growth? Examining the Distinctiveness of the Five Factors of the Posttraumatic Growth Inventory. *Journal of Traumatic Stress*, 31(3), 448-453. https://doi.org/10.1002/jts.22298
- Sippel, L. M., Pietrzak, R. H., Charney, D. S., Mayes, L. C., & Southwick, S. M. (2015). How does social support enhance resilience in the trauma-exposed individual? *Ecology and Society*, 20(4) <u>http://www.jstor.org/stable/26270277</u>
- Sit, J. W. H., Wong, T. K. S., Clinton, M., Li, L. S. W., & Fong, Y. (2004). Stroke care in the home: the impact of social support on the general health of family caregivers. *Journal of Clinical Nursing*, 13(7), 816-824. <u>https://doi.org/10.1111/j.1365-2702.2004.00943.x</u>
- Smart, M. J. (2006). The role of emotional approach coping in facilitating post-traumatic growth after medical trauma. University of Leicester (United Kingdom).
- Starkweather, J. (2010). Categorical variables in regression: Implementation and interpretation. *Benchmarks* Online,
- Su, Y., & Chen, S. (2015). Emerging posttraumatic growth: A prospective study with pre- and posttrauma psychological predictors. *Psychological Trauma: Theory, Research, Practice, and Policy*, 7(2), 103-111. <u>https://doi.org/10.1037/tra0000008</u>

Tabachnick, B. G., Fidell, L. S., & Ullman, J. B. (2013). Using multivariate statistics. pearson Boston, MA.

- Taku, K. (2014). Relationships among perceived psychological growth, resilience and burnout in physicians. *Personality and Individual Differences*, 59, 120-123. <u>https://doi.org/10.1016/j.paid.2013.11.003</u>
- Tedeschi, R. G., & Calhoun, L. G. (1996). The Posttraumatic Growth Inventory: Measuring the positive legacy of trauma. *Journal of Traumatic Stress*, 9, 455-471.
- Tedeschi, R. G., & Calhoun, L. G. (2014). Expert companions: Posttraumatic growth in clinical practice. *Handbook of posttraumatic growth* (pp. 291-310). Routledge.
- Thoits, P. A. (1986). Social support as coping assistance. *Journal of Consulting and Clinical Psychology*, 54(4), 416-423. https://doi.org/10.1037/0022-006X.54.4.416
- Thomas, S. A., & Lincoln, N. B. (2008). Predictors of emotional distress after stroke. Stroke, 39(4), 1240-1245.
- Thorburn, J. M. (2021). No title. Psychological Recovery After Aneurysmal Subarachnoid Haemorrhage: The Role of Post-Traumatic Growth and Self-Compassion,
- Tod, D., Morrison, T. G., & Edwards, C. (2012). Evaluating validity and test-retest reliability in four drive for muscularity questionnaires. *Body Image*, 9(3), 425-428. <u>https://doi.org/10.1016/j.bodyim.2012.02.001</u>
- Tomich, P. L., & Helgeson, V. S. (2012). Posttraumatic Growth Following Cancer: Links to Quality of Life. Journal of Traumatic Stress, 25(5), 567-573. <u>https://doi.org/10.1002/jts.21738</u>
- Vahlberg, B., Cederholm, T., Lindmark, B., Zetterberg, L., & Hellström, K. (2017). Short-term and long-term effects of a progressive resistance and balance exercise program in individuals with chronic stroke: a randomized controlled trial. *Disability and Rehabilitation*, 39(16), 1615-1622. <u>https://doi.org/10.1080/09638288.2016.1206631</u>
- Weiss, T., & Berger, R. (2010). Posttraumatic growth and culturally competent practice: Lessons learned from around the globe. John Wiley & Sons.
- White, J. H., Attia, J., Sturm, J., Carter, G., & Magin, P. (2014). Predictors of depression and anxiety in community dwelling stroke survivors: a cohort study. *Disability and Rehabilitation*, 36(23), 1975-1982. <u>https://doi.org/10.3109/09638288.2014.884172</u>
- Williams, L. S., Redmon, G., Saul, D. C., & Weinberger, M. (2000). No title. *Reliability and Telephone Validity* of the Stroke-Specific Quality of Life (SS-QOL) Scale,
- Williams, L. S., Weinberger, M., Harris, L. E., Clark, D. O., & Biller, J. (1999). Development of a stroke-specific quality of life scale. *Stroke*, 30(7), 1362-1369.
- Woodman, P., Riazi, A., Pereira, C., & Jones, F. (2014). Social participation post stroke: a meta-ethnographic review of the experiences and views of community-dwelling stroke survivors. *Disability and Rehabilitation*, 36(24), 2031-2043. <u>https://doi.org/10.3109/09638288.2014.887796</u>
- Woolard, A., Bullman, I., Allahham, A., Long, T., Milroy, H., Wood, F., & Martin, L. (2022). Resilience and posttraumatic growth after burn: a review of barriers, enablers, and interventions to improve psychological recovery. *European Burn Journal*, 3(1), 89-121.
- World Stroke Organisation. "What we do, 2022". . <u>https://www.world-stroke.org/what-wedo#:~:text=The%20World%20Stroke%20Organization%20(WSO,leading%20cause%20of%20disability%20worldwide</u>.
- Wu, X., Kaminga, A. C., Dai, W., Deng, J., Wang, Z., Pan, X., & Liu, A. (2019). The prevalence of moderate-tohigh posttraumatic growth: A systematic review and meta-analysis. *Journal of Affective Disorders*, 243, 408-415. https://doi.org/10.1016/j.jad.2018.09.023
- Xu, X., Hu, M., Song, Y., Lu, Z., Chen, Y., Wu, D., & Xiao, T. (2016). Effect of positive psychological intervention on posttraumatic growth among primary healthcare workers in China: a preliminary prospective study. *Scientific Reports*, 6(1), 39189.
- Yu, Y., Peng, L., Chen, L., Long, L., He, W., Li, M., & Wang, T. (2014). Resilience and social support promote posttraumatic growth of women with infertility: The mediating role of positive coping. *Psychiatry Research*, 215(2), 401-405. https://doi.org/10.1016/j.psychres.2013.10.032

Zeltzer, L.Stroke Specific Quality of Life Scale (SS-QOL).

Zhao, L., Sun, Q., Guo, Y., Yan, R., & Lv, Y. (2022). Mediation effect of perceived social support and resilience between physical disability and depression in acute stroke patients in China: A cross-sectional survey. *Journal of Affective Disorders, 308*, 155-159. <u>https://doi.org/10.1016/j.jad.2022.04.034</u>

- Zimet, G. D., Dahlem, N. W., Zimet, S. G., & Farley, G. K. (1988). The Multidimensional Scale of Perceived Social Support. *Journal of Personality Assessment*, 52(1), 30-41. <u>https://doi.org/10.1207/s15327752jpa5201_2</u>
- Zoellner, T., & Maercker, A. (2006). Posttraumatic growth in clinical psychology A critical review and introduction of a two component model. *Clinical Psychology Review*, 26(5), 626-653. <u>https://doi.org/10.1016/j.cpr.2006.01.008</u>

Part Three: Appendices

Appendix A: Reflective statement

Selecting this research

My interest to conduct research into stroke stemmed from working in a brain injury unit during my Master's year of university. I had never quite understood the immense impact of a stroke on a person's life prior to working in the brain injury unit. I felt the pull to learn more about the impacts of stroke so I can help those on the ward as best I could, however, when researching the majority of literature focused on the negative impact of a stroke. As a person who has not had a stroke themselves the research engendered a sense of hopelessness and loss for me. This made me wonder how it would feel for a person who had a stroke to read/hear the literature base. I also considered the impact this research could have on professionals supporting individuals who have had a stroke. Whilst working on the unit I was astonished by the strength, determination, and positive changes in recovery by the individuals on the ward when their life had changed in a matter of hours. Now they had to navigate a mind and body they were not used to. This led me to thinking about how their strength and growth is developed. Consequently, I felt compelled to focus on strengths-based research as I felt that it could create a sense of hope for individuals who have had a stroke, and the professionals working with them.

Empirical

In researching the existing evidence base, the majority of research was qualitative, whilst qualitative research is beneficial in understanding each individual's experiences in depth these findings cannot be generalised to the large population of stroke survivors. Therefore, there appeared to be scope for quantitative research in considering predictors of post-traumatic growth. Particularly research investigating the early recovery period after a stroke appeared to be very limited, therefore it seemed important to explore this area further so that this research may inform rehabilitation strategies and services. However, I was aware that the sample size required for this research was large given the timeframe of this thesis, I anticipated that it may be more challenging to recruit participants within the early recovery time period as it was very specific. Moreover, I was aware that some of the charities that would be contacted to ask for support with recruitment had closed due to funding difficulties due to the COVID-19 pandemic, therefore this reduced the services I could approach for face-to-face completion of the survey.

Ethical Approval

During the ethical approval process, I was warned when receiving feedback from the ethics panel that the sample size may not be achievable in the given time of the study. This together with stories from trainees in previous years made me doubt the feasibility in the study. Therefore, I reduced some of my additional predictors so that the sample size could be reduced. This was a difficult decision as I had to omit certain predictors and choose which ones I thought were the most important and relevant to this study. Once discussing the new proposed predictors with members of staff, I remember feeling at ease when they had mentioned that the sample size was more achievable. When I had received ethical approval, I felt a sense of relief that I could start to begin data collection with few delays as I anticipated difficulties with achieving my sample size.

Recruitment and Data Collection

I recall feeling anxious and apprehensive about recruitment, I wondered if this was influence from the cohorts above me and the feedback from the ethics committee. I remember feeling incredibly relieved once the survey had 10 participants in the first day of launching, at this point I felt hope in achieving my sample size as people were completing the study. I felt incredibly supported by my supervisor at this time. At times during data collection, I did experience struggles with recruitment and a large attrition rate, this felt quite disheartening, especially given my concerns about the feasibility of the study. Whenever self-doubt would seep in, my supervisor would reassure me and normalise the process of recruitment being a long process that will consist of moments where you recruit many participants and times were you do not. My peak of the research project was reaching my sample size as I was in disbelief that I had actually achieved the goal.

Throughout the project there were multiple difficulties that occurred during recruitment and data collection. For example, I found it difficult at times to separate myself from "the therapist" and "the researcher" role. I would get comments on my posts online replying with the difficult experiences people have had and asking for support. I made it clear in the replies that I was a researcher and not a qualified therapist and gave support numbers and websites they could ask for support. However, I found it difficult at times to sit with some of these hard experiences and feeling helpless and hopeless. I wondered if this was countertransference from some of the experiences people were sharing with me. I was also aware of the difficulties with safeguarding online, there were times where I saw posts from individuals which were concerning to the safety for themselves. I felt an

immense pressure and expectation to do something about it, however, nearly all of the posts were anonymous. Consequently, I would contact the admin with my concerns and ask if they could put support numbers on the page so people could seek support if they wanted to. I recall feeling very naïve going into the project and not considering the emotional impact it would have on me, however, I would often take these feelings and concerns to my supervisor and discuss this further with them.

A particularly pivotal learning experience for me during this research has been the challenges of my own beliefs. On some of my post's individuals seemed less than pleased that I was conducting research looking at positive change and growth after a stroke. I feel that I perhaps naively did not anticipate the backlash from some of the population. However, it demonstrated my lens of wanting to help others but not quite acknowledging that some individuals may find it very difficult and hard to think about growth at the time and it may seem insensitive to suggest that this could happen when people are struggling. It may have been useful to acknowledge in the post that not everybody experiences positive changes. It also made me consider my own privilege of having a relatively able healthy body and taking concepts such as positive change for granted. This has stuck with me since these experiences and is something I will hold close and remind myself of.

Analysis

I found the process of statistical analysis incredibly humbling. I felt as if I had entered a world of so many choices of tests, rules and assumptions and it became difficult to focus on the research questions. I found myself extensively reading up on all the different types of regression models and correlation tests, although I had a plan in mind to do a multiple linear regression my self-doubt made this process very difficult. I recall, trying to do a hierarchical regression once because I was comparing myself to my peers who were doing the same analysis, however this did not fit my research questions. There were many times where I would run analyses that were not specific to the question as I feared my analysis was too simple. However, when speaking to my supervisor she reassured me that the complexity of the statistical analysis is not what makes a good research project, it is what we learn from the project. During running the regression, I had learned the intricacies and rules around categorical variables, this led me to learning more about statistics than I had anticipated. I recall feeling incredibly proud of myself that I had completed this by myself using a combination of different statistical analysis books and YouTube tutorials. Although, this process

was difficult I thoroughly enjoyed trying to figure out the world of statistics, it gave me hope and motivation to continue with the rest of the project.

Future Researchers

To potential researchers, I would highly recommend using online dissemination of your research. I was able to share the study globally with participants asking questions from Australia, South Africa, China, India etc, without this approach I do not think I would have reached my sample size within the timeframe of the project. It has also allowed my study to generalise not only to the UK but globally. However, there is a great importance in offering some face-to-face options as I am aware that the results may be biased towards those who experienced mild-moderate strokes as they are able to use computers. Offering face-to-face options can offering participants to take part if they are experiencing digital poverty or not able to use digital devices.

Write Up

I found the process of writing up this thesis very difficult to balance alongside the expectations of placement and balancing having a social and personal life. I at times felt overwhelmed and guilty writing up the research as I felt pressure to be able to do the research justice for the incredible stroke. I found myself in cycles of self-doubt which made it a struggle to continue with the write up. I would find myself feeling discouraged and lacking motivation due to fearing that it would not be good enough. However, when I did feel this way, I thought back to the wonderful stroke survivors I have had conversations with throughout this journey who inspired me with their strength and resilience and have motivated me to continue with this research, despite the challenges I have experienced along the way.

Systematic Literature Review

My systematic literature review was developed through research in the area of ABI and conversations with my supervisor. I was interested in social support after an ABI as studies had suggested that social support predicted PTG following an ABI. Therefore, I thought it would be useful to know how social support facilitated PTG. I thought this topic would link well with my empirical as the empirical was investigating social support in early recovery, therefore it would be interesting to see if maybe social support was a predictor of PTG and did that perhaps suggest that

social support functioned in the same way during early recovery. However, the empirical did not consider any qualitative data.

I recall feeling overwhelmed when completing my initial search and more than 1,000 studies came up. I remember feeling like climbing a mountain, however, once I started to start the process of reading the abstracts and titles the task felt a lot more achievable. The process of analysis was enthralling, I felt excited to think more in-depth about the data through the process of data extraction and the quality assessment. I enjoyed connecting all the themes from the papers and analysing the papers separately and as a whole. I wondered if this was associated with our reflexivity in clinical practice whereby, we collect information from many sources to help our understanding of a person, team or difficulty.

I thoroughly enjoyed completing the review, despite the difficulties that may have occurred. I am very grateful to have completed the review as it was a new type of research methodology I had not previously completed before. I feel proud that I was able to create something that links to my empirical surrounding post-traumatic growth and acquired brain injuries.

Choice of Journals

For both my empirical and literature review, I chose to write for the Journal of Disability and Rehabilitation. The reasoning for this decision was based on the key audience for the research. My research focused on rehabilitation and process within rehabilitation in early stroke recovery, additionally most of the key studies included in this thesis were published by this journal, therefore, it seemed an appropriate choice. I am hoping that that my research can inform the existing literature base, and practice through publication with this journal.

Final Thoughts

Words cannot describe how relieved and proud I feel as I am moving towards completing my research. After three years, I feel as though I have grown through developing my ideas, process and considering reflexivity in research. I have learned so much from this research that I hope will help inform my further practice as a future qualified Clinical Psychologist.

Appendix B: Epistemological statement

It is important to consider the ontological and epistemological beliefs held to consider the ideas underlying the study. This statement is to define ontology and epistemology and understand the researcher's stance within it.

Ontology is defined by the 'study of being', the nature of reality and what actually exists in the world (Moon and Blackman, 2014; Goertz & Mahoney, 2012). Ontology can support researchers in identifying how certain they can be about nature and the existence of the objects they are researching (Smith, 2012). The primary branches of ontology are realism and relativism (Field, 1982). Realism refers to the concept that there are universal truths and facts which can be discovered through exploration and are independent of the context they are found in (Bhaskar, 2013). In contrast a relativist refers to experiences being subjective and shift according to the person's interpretation of the world around them, thus it can be understood in many ways (Longhin, 2012).

Epistemology relates to the 'study of knowledge' and how it can be acquired (Sol, 2022). Epistemology is important to consider in research as it influences how researchers frame their research to search for knowledge and therefore influences choices of methodologies used (Collins & Stockton, 2018). Quantitative and qualitative approaches stem from two different philosophies and therefore have differences in regard to ontological and epistemological perspectives (Guba, 1987). Quantitative approaches derive from epistemology positivism which aligns with realism ontology, this holds that universal truths exist independent of human interpretations and there is only one truth (Sale et al., 2002). Positivism holds that the researcher and the objects which are being researched are separate entities thus there will be no influence from or to either entity (Sousa, 2010). Therefore, predictions and assumptions are based on quantitative methods. In contrast, qualitative approaches stem from a constructionist epistemology and a relativist ontology (Dieronitou, 2014). This holds that the only reality that humans known is represented by human thoughts, and reality is a separate entity of human thought but meaning or knowledge is always human construction (Crotty, 1998). The importance of constructionist research is in generating contextual understandings of a specific research area or problem (Best, 2017).

It has been argued that the fundamental differences between epistemological and ontological underpinnings are so idiosyncratic that they cannot be combined (Slevitch, 2011). However, other paradigm positions appear to suggest combining both qualitative and quantitative research

methodologies can be complementary (Haigh et al., 2019). Critical realism is a paradigm position in which incorporates both positivism and interpretivism (Bhaskar, 1975). Interpretivism refers to subjective understandings and social context that are constructed (Schwandt, 1994). Critical realism assumes that findings from research can provide information on what is happening in the world, however, acknowledges that the findings require further methods to understand the complexities of the interaction of factors that underly the findings (Zachariadis et al., 2013).

Whilst weighing my own stance on my beliefs, I discovered I do not subscribe to exclusively relativism or positivism. Rather, I could see the benefits of the differences in both approaches and explored how they may help me to answer the research questions. Thus, I found that I adopted a critical realist stance which underpins this thesis.

My thesis consists of two papers, the empirical paper which uses quantitative methods and the systematic review which included using qualitative methods. It was crucial in the development of the thesis that I subscribed to an approach that was specific to the research questions and my beliefs. A critical realist recognises the importance of both quantitative and qualitative methods as they can be helpful in answering different research problems (Bhaskar, 1975). Quantitative methods subscribe to discovering causal relationships and processes within a certain topic, in contrast qualitative methods explore novel themes and factors (Maxwell, 2004). Thus, quantitative methods were used in the empirical project to investigate where certain demographic and psychosocial factors predict post-traumatic growth following an ABI.

For my systematic literature review a thematic synthesis was conducted. As the review aimed to answer a research question which required collating qualitative data from the literature base with the purpose of extending the knowledge base, the database appeared to have limited data on quantitative studies that were relevant to the research question, therefore it appeared suitable to use this approach. It could be argued my approaches in the empirical project aligned more with positivism and my systematic review aligned more with a relativist stance, however, critical realism approach believes in using methods that align with the research question or problem (McEvoy and Richard, 2006).

In conclusion, a critical realistic perspective was subscribed for this thesis, which including using both qualitative and quantitative methods to answer different contexts of research questions.

References

Best, J. (2017). Constructionism in context. Images of issues (pp. 337-354). Routledge.

Bhaskar, R. (1975). Forms of realism. Philosophica, 15

- Bhaskar, R. (2013). Philosophy and scientific realism. Critical realism (pp. 16-47). Routledge.
- Collins, C. S., & Stockton, C. M.The Central Role of Theory in Qualitative Research. *International Journal of Qualitative Methods*, 17(1), 1609406918797475. https://doi.org/10.1177/1609406918797475
- Crotty, M. J. (1998). The foundations of social research: Meaning and perspective in the research process. *The Foundations of Social Research*, , 1-256.
- Dieronitou, I. (2014). The ontological and epistemological foundations of qualitative and quantitative approaches to research. *International Journal of Economics*, *2*(10), 1-17.
- Field, H. (1982). Realism and Relativism. *The Journal of Philosophy*, 79(10), 553-567. <u>https://doi.org/10.2307/2026317</u>
- Goertz, G., & Mahoney, J.Concepts and measurement: Ontology and epistemology. Social Science Information, 51(2), 205-216. <u>https://doi.org/10.1177/0539018412437108</u>
- Guba, E. G.What Have We Learned About Naturalistic Evaluation? *Evaluation Practice*, 8(1), 23-43. <u>https://doi.org/10.1177/109821408700800102</u>
- Haigh, F., Kemp, L., Bazeley, P., & Haigh, N. (2019). Developing a critical realist informed framework to explain how the human rights and social determinants of health relationship works. *BMC Public Health*, 19, 1-12. <u>https://doi.org/10.1186/s12889-019-7760-7</u>
- Longhin, L. (2012). The objectivist and relativist shift in epistemology: Objectivity and reliability in psychoanalysis. *The quality of the mind* (pp. 141-172). Brill. <u>https://doi.org/10.1163/9789401207621_007</u>
- Maxwell, J. A.Causal Explanation, Qualitative Research, and Scientific Inquiry in Education. *Educational Researcher*, 33(2), 3-11. <u>https://doi.org/10.3102/0013189X033002003</u>
- McEvoy, P., & Richards, D.A critical realist rationale for using a combination of quantitative and qualitative methods. *Journal of Research in Nursing*, 11(1), 66-78. <u>https://doi.org/10.1177/1744987106060192</u>

- MOON, K., & BLACKMAN, D. (2014). A Guide to Understanding Social Science Research for Natural Scientists. *Conservation Biology*, 28(5), 1167-1177. <u>https://doi.org/10.1111/cobi.12326</u>
- Sale, J. E., Lohfeld, L. H., & Brazil, K. (2002). Revisiting the quantitative-qualitative debate: Implications for mixed-methods research. *Quality and Quantity*, 36, 43-53. <u>https://doi.org/10.1023/A:1014301607592</u>
- Schwandt, T. A. (1994). Constructivist, interpretivist approaches to human inquiry. Handbook of Qualitative Research, 1(1994), 118-137.
- Slevitch, L. (2011). Qualitative and Quantitative Methodologies Compared: Ontological and Epistemological Perspectives. Journal of Quality Assurance in Hospitality & Tourism, 12(1), 73-81. https://doi.org/10.1080/1528008X.2011.541810
- Smith, B. (2012). Ontology. *The furniture of the world* (pp. 47-68). Brill. https://doi.org/10.1163/9789401207799_005
- Sol, K., & Heng, K. (2022). Understanding epistemology and its key approaches in research. Cambodian Journal of Educational Research, 2(2), 80-99.
- Sousa, F. J. (2010). Chapter 9 Metatheories in research: positivism, postmodernism, and critical realism. Organizational culture, business-to-business relationships, and interfirm networks (pp. 455-503). Emerald Group Publishing Limited. https://doi.org/10.1108/S1069-0964(2010)0000016012
- Zachariadis, M., Scott, S., & Barrett, M. (2013). Methodological Implications of Critical Realism for Mixed-Methods Research. *MIS Quarterly*, 37(3), 855-879. <u>http://www.jstor.org/stable/43826004</u>

Appendix C: Notes or Guideline for authors for the Systematic Literature Review &

Empirical Paper

Instructions for authors

Thank you for choosing to submit your paper to us. These instructions will ensure we have everything required so your paper can move through peer review, production and publication smoothly. Please take the time to read and follow them as closely as possible, as doing so will ensure your paper matches the journal's requirements.

This title utilises format-free submission. Authors may submit their paper in any scholarly format or layout. References can be in any style or format, so long as a consistent scholarly citation format is applied. For more detail see <u>the format-free submission section below</u>.

Contents

- About the journal
- Open access
- Peer review

•

- Preparing your paper

 - <u>Structure</u>
 - Word count
 - Format-Free Submission
 - Editing Services
 - o <u>Checklist</u>
- <u>Using third-party material in your paper</u>
- Declaration of interest statement
- <u>Clinical Trials Registry</u>
- <u>Complying with ethics of experimentation</u>
- <u>Consent</u>
- Health and safety
- <u>Submitting your paper</u>
- Data Sharing Policy
- Publication charges
- <u>Copyright options</u>
- <u>Complying with funding agencies</u>
- <u>My Authored Works</u>

About the journal

Disability and Rehabilitation is an international, peer reviewed journal, publishing highquality, original research. Please see the journal's <u>Aims & Scope</u> for information about its focus and peer-review policy.

From 2018, this journal will be online only, and will no longer provide print copies.

Please note that this journal only publishes manuscripts in English.

Disability and Rehabilitation accepts the following types of article: Research Articles, Reviews, Letters to the Editor, Case Reports, and Editorials. Systematic Reviews including meta-syntheses of qualitative research should be submitted as Reviews. All other types of Reviews will normally be considered as Perspectives in Rehabilitation.

Special Issues and specific sections on contemporary themes of interest to the Journal's readership are published. Please contact the Editor for more information.

Open Access

You have the option to publish open access in this journal via our Open Select publishing program. Publishing open access means that your article will be free to access online immediately on publication, increasing the visibility, readership and impact of your research. Articles published Open Select with Taylor & Francis typically receive 45% more citations* and over 6 times as many downloads** compared to those that are not published Open Select.

Your research funder or your institution may require you to publish your article open access. Visit our <u>Author Services</u> website to find out more about open access policies and how you can comply with these.

You will be asked to pay an article publishing charge (APC) to make your article open access and this cost can often be covered by your institution or funder. Use our <u>APC finder</u> to view the APC for this journal.

Please visit our <u>Author Services website</u> if you would like more information about our Open Select Program.

*Citations for articles published online 2018-2022. Data obtained on 23rd August 2023, from Digital Science's Dimensions platform, available at https://app.dimensions.ai **Usage in 2020-2022 for articles published online 2018-2022

Peer review

Taylor & Francis is committed to peer-review integrity and upholding the highest standards of review. For submissions to *Disability and Rehabilitation* authors are given the option to remain anonymous during the peer-review process. Authors will be able to indicate whether their paper is 'Anonymous' or 'Not Anonymous' during submission, and should pay particular attention to the below:

- Authors who wish to remain anonymous should prepare a complete text with
 information identifying the author(s) removed. Authors should upload their
 files using the 'double anonymous peer review' article types during submission.
 A separate title page should be included providing the full affiliations of all
 authors. Any acknowledgements and the Declaration of Interest statement
 must be included but should be worded mindful that these sections will be
 made available to referees.
- Authors who wish to be identified should include the name(s) and affiliation(s) of author(s) on the first page of the manuscript. Authors should upload their files using the 'authors made known to the reviewers' article types during submission.

Once your paper has been assessed for suitability by the editor, it will be peerreviewed by independent, double anonymous expert referees. If you have shared an earlier version of your Author's Original Manuscript on a preprint server, please be aware that anonymity cannot be guaranteed. Further information on our preprints policy and citation requirements can be found on our <u>Preprints Author Services page</u>. Find out more about <u>what to expect during peer review</u> and read our guidance on <u>publishing ethics</u>.

Preparing your paper

All authors submitting to medicine, biomedicine, health sciences, allied and public health journals should conform to the <u>Uniform Requirements for Manuscripts</u> <u>Submitted to Biomedical Journals</u>, prepared by the International Committee of Medical Journal Editors (ICMJE).

We also refer authors to the community standards explicit in the <u>American</u> <u>Psychological Association's (APA) Ethical Principles of Psychologists and Code of</u> <u>Conduct</u>.

We encourage authors to be aware of standardised reporting guidelines below when preparing their manuscripts:

- Case reports <u>CARE</u>
- Diagnostic accuracy STARD

- Observational studies <u>STROBE</u>
- Randomized controlled trial CONSORT
- Systematic reviews, meta-analyses PRISMA

Whilst the use of such guidelines is supported, due to the multi-disciplinary nature of

the Journal, it is not compulsory.

Structure

Your paper should be compiled in the following order: title page; abstract; keywords; main text, introduction, materials and methods, results, discussion; acknowledgments; declaration of interest statement; references; appendices (as appropriate); table(s) with caption(s); figures; figure captions (as a list).

In the main text, an introductory section should state the purpose of the paper and give a brief account of previous work. New techniques and modifications should be described concisely but in sufficient detail to permit their evaluation. Standard methods should simply be referenced. Experimental results should be presented in the most appropriate form, with sufficient explanation to assist their interpretation; their discussion should form a distinct section.

Tables and figures should be referred to in text as follows: figure 1, table 1, i.e. lower case. The place at which a table or figure is to be inserted in the printed text should be indicated clearly on a manuscript. Each table and/or figure must have a title that explains its purpose without reference to the text.

The title page should include the full names and affiliations of all authors

involved in the preparation of the manuscript. The corresponding author should be

clearly designated, with full contact information provided for this person.

Word count

Please include a word count for your paper. There is no word limit for papers submitted to this journal, but succinct and well-constructed papers are preferred.

Format-Free Submission

Authors may submit their paper in any scholarly format or layout. Manuscripts may be supplied as single or multiple files. These can be Word, rich text format (rtf), open document format (odt), PDF, or LaTeX files. Figures and tables can be placed within XIII the text or submitted as separate documents. Figures should be of sufficient resolution to enable refereeing.

- There are no strict formatting requirements, but all manuscripts must contain the essential elements needed to evaluate a manuscript: abstract, author affiliation, figures, tables, funder information, references. Further details may be requested upon acceptance.
- References can be in any style or format, so long as a consistent scholarly citation format is applied. For manuscripts submitted in LaTeX format a .bib reference file must be included. Author name(s), journal or book title, article or chapter title, year of publication, volume and issue (where appropriate) and page numbers are essential. All bibliographic entries must contain a corresponding in-text citation. The addition of DOI (Digital Object Identifier) numbers is recommended but not essential.
- The journal reference style will be applied to the paper post-acceptance by Taylor & Francis.
- Spelling can be US or UK English so long as usage is consistent.

Note that, regardless of the file format of the original submission, an editable version of the article must be supplied at the revision stage.

Alt Text

This journal is now including Alt Text (alternative text), a short piece of text that can be attached to your figure to convey to readers the nature or contents of the image. It is typically used by systems such as pronouncing screen readers to make the object accessible to people that cannot read or see the object, due to a visual impairment or print disability. Alt text will also be displayed in place of an image, if said image file cannot be loaded. Alt Text can also provide better image context/descriptions to search engine crawlers, helping them to index an image properly. To include Alt Text in your article, please follow our <u>Guidelines</u>.

Taylor & Francis Editing Services

To help you improve your manuscript and prepare it for submission, Taylor & Francis provides a range of editing services. Choose from options such as English Language Editing, which will ensure that your article is free of spelling and grammar errors, Translation, and Artwork Preparation. For more information, including pricing, <u>visit this website</u>.

Checklist: what to include

1. **Author details**. Please ensure everyone meeting the International Committee of Medical Journal Editors (ICJME) <u>requirements for authorship</u> is included as an

author of your paper. Please ensure all listed authors meet the <u>Taylor & Francis</u> <u>authorship criteria</u>. All authors of a manuscript should include their full name and affiliation on the cover page of the manuscript. Where available, please also include <u>ORCiDs</u> and social media handles (Facebook, Twitter or LinkedIn). One author will need to be identified as the corresponding author, with their email address normally displayed in the article PDF (depending on the journal) and the online article. Authors' affiliations are the affiliations where the research was conducted. If any of the named co-authors moves affiliation during the peer-review process, the new affiliation can be given as a footnote. Please note that no changes to affiliation can be made after your paper is accepted. <u>Read more on authorship</u>.

- 2. A structured **abstract** of no more than 200 words. A structured abstract should cover (in the following order): the *purpose* of the article, its *materials and methods* (the design and methodological procedures used), the *results* and conclusions (including their relevance to the study of disability and rehabilitation). Read tips on <u>writing your abstract</u>.
- 3. You can opt to include a **video abstract** with your article. <u>Find out how these</u> <u>can help your work reach a wider audience, and what to think about when</u> <u>filming</u>.
- 4. 5-8 **keywords**. Read <u>making your article more discoverable</u>, including information on choosing a title and search engine optimization.
- 5. A feature of this journal is a boxed insert on **Implications for Rehabilitation**. This should include between two to four main bullet points drawing out the implications for rehabilitation for your paper. This should be uploaded as a separate document. Below are examples:

Example 1: Leprosy

- Leprosy is a disabling disease which not only impacts physically but restricts quality of life often through stigmatisation.
- $_{\circ}$ $\,$ Reconstructive surgery is a technique available to this group.
- In a relatively small sample this study shows participation and social functioning improved after surgery.

Example 2: Multiple Sclerosis

- Exercise is an effective means of improving health and well-being experienced by people with multiple sclerosis (MS).
- People with MS have complex reasons for choosing to exercise or not.
- Individual structured programmes are most likely to be successful in encouraging exercise in this cohort.
- 6. **Acknowledgement**. Please supply all details required by your funding and grant-awarding bodies as follows: *For single agency grants*: This work was

supported by the under Grant . *For multiple agency grants*: This work was supported by the under Grant ; under Grant ; and under Grant .

- 7. **Declaration of Interest**. This is to acknowledge any financial or non-financial interest that has arisen from the direct applications of your research. If there are no relevant competing interests to declare please state this within the article, for example: *The authors report there are no competing interests to declare.* Further guidance on what is a conflict of interest and how to disclose it.
- 8. **Data availability statement.** If there is a data set associated with the paper, please provide information about where the data supporting the results or analyses presented in the paper can be found. Where applicable, this should include the hyperlink, DOI or other persistent identifier associated with the data set(s). <u>Templates</u> are also available to support authors.
- Data deposition. If you choose to share or make the data underlying the study open, please deposit your data in a <u>recognized data repository</u> prior to or at the time of submission. You will be asked to provide the DOI, pre-reserved DOI, or other persistent identifier for the data set.
- 10. **Supplemental online material.** Supplemental material can be a video, dataset, fileset, sound file or anything which supports (and is pertinent to) your paper. We publish supplemental material online via Figshare. Find out more about <u>supplemental material and how to submit it with your article</u>.
- 11. **Figures.** Figures should be high quality (1200 dpi for line art, 600 dpi for grayscale and 300 dpi for colour). Figures should be saved as TIFF, PostScript or EPS files.
- 12. **Tables.** Tables should present new information rather than duplicating what is in the text. Readers should be able to interpret the table without reference to the text. Please supply editable files.
- 13. **Equations**. If you are submitting your manuscript as a Word document, please ensure that equations are editable. More information about <u>mathematical</u> <u>symbols and equations</u>.
- 14. **Units.** Please use <u>SI units</u> (non-italicized).

Using third-party material in your paper

You must obtain the necessary permission to reuse third-party material in your article. The use of short extracts of text and some other types of material is usually permitted, on a limited basis, for the purposes of criticism and review without securing formal permission. If you wish to include any material in your paper for which you do not hold copyright, and which is not covered by this informal agreement, you will need to obtain written permission from the copyright owner prior to submission. More information on requesting permission to reproduce work(s) under copyright.

Declaration of Interest Statement

Please include a declaration of interest statement, using the subheading "Declaration of interest." If you have no interests to declare, please state this (suggested wording: *The authors report no conflicts of interest*). For all NIH/Wellcome-funded papers, the grant number(s) must be included in the disclosure of interest statement. <u>Read more on declaring conflicts of interest</u>.

Clinical Trials Registry

In order to be published in Disability and Rehabilitation , all clinical trials must have been registered in a public repository, ideally at the beginning of the research process (prior to participant recruitment). Trial registration numbers should be included in the abstract, with full details in the methods section. Clinical trials should be registered prospectively – i.e. before participant recruitment. The clinical trial registry should be publicly accessible (at no charge), open to all prospective registrants, and managed by a not-for-profit organization. For a list of registries that meet these requirements, please visit the <u>WHO International Clinical Trials Registry Platform</u> (ICTRP). The registration of all clinical trials facilitates the sharing of information among clinicians, researchers, and patients, enhances public confidence in research, and is in accordance with the ICMJE guidelines.

Complying with ethics of experimentation

Please ensure that all research reported in submitted papers has been conducted in an ethical and responsible manner, and is in full compliance with all relevant codes of experimentation and legislation. All papers which report *in vivo* experiments or clinical trials on humans or animals must include a written statement in the Methods section. This should explain that all work was conducted with the formal approval of the local human subject or animal care committees (institutional and national), and that clinical trials have been registered as legislation requires. Authors who do not have formal ethics review committees should include a statement that their study follows the principles of the <u>Declaration of Helsinki</u>.

Please ensure that all research reported in submitted papers has been conducted in an ethical and responsible manner, and is in full compliance with all relevant codes of experimentation and legislation. All original research papers involving humans, animals, plants, biological material, protected or non-public datasets, collections or sites, must include a written statement in the Methods section, confirming ethical approval has been obtained from the appropriate local ethics committee or Institutional Review Board and that where relevant, informed consent has been obtained. For animal studies, approval must have been obtained from the local or institutional animal use and care committee. All research studies on humans (individuals, samples, or data) must have been performed in accordance with the principles stated in the <u>Declaration of Helsinki</u>. In settings where ethics approval for non-interventional studies (e.g. surveys) is not required, authors must include a statement to explain this. In settings where there are no ethics committees in place to provide ethical approval, authors are advised to contact the Editor to discuss further. Detailed guidance on ethics considerations and mandatory declarations can be found in our Editorial Policies section on <u>Research Ethics</u>.

Consent

All authors are required to follow the ICMJE requirements and Taylor & Francis Editorial Policies on privacy and informed consent from patients and study participants. Authors must include a statement to confirm that any patient, service user, or participant (or that person's parent or legal guardian) in any type of qualitative or quantitative research, has given informed consent to participate in the research. For submissions where patients or participants can be potentially identified (e.g. a clinical case report detailing their medical history, identifiable images or media content, etc), authors must include a statement to confirm that they have obtained written informed consent to publish the details from the affected individual (or their parents/guardians if the participant in not an adult or unable to give informed consent; or next of kin if the participant is deceased). The process of obtaining consent to publish should include sharing the article with the individual (or whoever is consenting on their behalf), so that they are fully aware of the content of the article before it is published. Authors should familiarise themselves with our policy on participant/patient privacy and informed consent. They may also use the Consent to Publish Form, which can be downloaded from the same Author Services page.

Health and safety

Please confirm that all mandatory laboratory health and safety procedures have been complied with in the course of conducting any experimental work reported in your paper. Please ensure your paper contains all appropriate warnings on any hazards that may be involved in carrying out the experiments or procedures you have described, or that may be involved in instructions, materials, or formulae.

Please include all relevant safety precautions; and cite any accepted standard or code of practice. Authors working in animal science may find it useful to consult the <u>International Association of Veterinary Editors' Consensus Author Guidelines on</u> <u>Animal Ethics and Welfare and Guidelines for the Treatment of Animals in Behavioural</u> <u>Research and Teaching</u>. When a product has not yet been approved by an appropriate regulatory body for the use described in your paper, please specify this, or that the product is still investigational.

Submitting your paper

This journal uses Taylor & Francis' <u>Submission Portal</u> to manage the submission process. The Submission Portal allows you to see your submissions across Taylor & Francis' journal portfolio in one place. To submit your manuscript please click <u>here</u>.

By submitting your paper to *Disability and Rehabilitation* you are agreeing to originality checks during the peer-review and production processes.

The Editor of *Disability and Rehabilitation* will respond to appeals from authors relating to papers which have been rejected. The author(s) should email the Editor outlining their concerns and making a case for why their paper should not have been rejected. The Editor may choose to accept the appeal and secure a further review, or to not uphold the appeal. In case of the latter, the Editor of *Disability and Rehabilitation: Assistive Technology* will be consulted.

On acceptance, we recommend that you keep a copy of your Accepted Manuscript. Find out more about <u>sharing your work</u>.

Data Sharing Policy

This journal applies the Taylor & Francis <u>Basic Data Sharing Policy</u>. Authors are encouraged to share or make open the data supporting the results or analyses presented in their paper where this does not violate the protection of human subjects or other valid privacy or security concerns.

Authors are encouraged to deposit the dataset(s) in a recognized data repository that can mint a persistent digital identifier, preferably a digital object identifier (DOI) and recognizes a long-term preservation plan. If you are uncertain about where to deposit your data, please see <u>this information</u> regarding repositories.

Authors are further encouraged to <u>cite any data sets referenced</u> in the article and provide a <u>Data Availability Statement</u>.

At the point of submission, you will be asked if there is a data set associated with the paper. If you reply yes, you will be asked to provide the DOI, pre-registered DOI, hyperlink, or other persistent identifier associated with the data set(s). If you have selected to provide a pre-registered DOI, please be prepared to share the reviewer URL associated with your data deposit, upon request by reviewers.

Where one or multiple data sets are associated with a manuscript, these are not formally peer reviewed as a part of the journal submission process. It is the author's responsibility to ensure the soundness of data. Any errors in the data rest solely with the producers of the data set(s).

Publication charges

There are no submission fees, publication fees or page charges for this journal.

Color figures will be reproduced in color in your online article free of charge.

Copyright options

Copyright allows you to protect your original material, and stop others from using your work without your permission. Taylor & Francis offers a number of different license and reuse options, including Creative Commons licenses when publishing open access. <u>Read more on publishing agreements</u>.

Complying with funding agencies

We will deposit all National Institutes of Health or Wellcome Trust-funded papers into PubMedCentral on behalf of authors, meeting the requirements of their respective open access (OA) policies. If this applies to you, please tell our production team when you receive your article proofs, so we can do this for you. Check funders' OA policy mandates <u>here</u>. Find out more about <u>sharing your work</u>.

My Authored Works

On publication, you will be able to view, download and check your article's metrics (downloads, citations and Altmetric data) via <u>My Authored Works</u> on Taylor & Francis Online. This is where you can access every article you have published with us, as well as your <u>free eprints link</u>, so you can quickly and easily share your work with friends and colleagues.

We are committed to promoting and increasing the visibility of your article. Here are some tips and ideas on how you can work with us to <u>promote your research</u>.

Queries

Should you have any queries, please visit our <u>Author Services website</u> or contact us <u>here</u>.

Updated 12-11-2021

Appendix I: Empirical Non-Online Survey

Please answer ALL questions.

Eligibility

Please tick the boxes to indicate you have consented and agree with the following statements. You are able to continue with the study if you agree to the following statements. Please contact the researcher if you have any queries or would like anymore to support.

- □ I have read the study information.
- □ I understand what the study is about.
- \Box I had a stroke between 6 months and 2 years ago.
- □ I have had the opportunity to ask questions about the study.
- □ I understand that taking part is my choice and that I am free to stop at any point by stopping the questionnaire.
- □ I confirm I have had help completing this questionnaire and the person doing so is aware of the above consent criteria (Please skip the question if you have not had any help).
- □ I agree to take part in the study.

Demographics:

How old are you?

Appendix I: Continued

How do you identify your gender?



What is your Highest level of education?

Postgraduate

GCSE

A-Level

Undergraduate

None of the Above

XXII

Appendix I: Continued

Have you seen a psychologist for therapy since experiencing your stroke? If so, how long did you see them for?

I have read and understood the information above and consent to taking part in the study:

Yes

No

I confirm I have had help completing this questionnaire and the person doing so is aware of the above consent criteria.

Yes

No

Appendix I: Continued

Post-traumatic Growth Inventory

Appendix I: Continued

Appendix I: Continued

Appendix I: Continued

Appendix I: Continued

Appendix I: Continued

Debrief

Thank you for taking part in the study, we really appreciate your time!

If you require additional support at any point, please contact:

- Your GP
- Stroke Association Helpline: 0303 3033 100
- NHS Support: https://www.nhs.uk/service-search/other-services/Stroke-informationand-support/LocationSearch/391
- Headway: helpline@headway.org.uk or 0808 800 2244
- The Brain Charity: 0151 2982 999/ https://www.thebraincharity.org.uk/get-help/
- Different Strokes: 0345 130 7172 or 01908 317 618 or https://differentstrokes.co.uk/

If you have any further questions or queries please contact <u>a.reddy-2021@hull.ac.uk</u> (researcher) or

<u>E.Lewis@hull.ac.uk</u> (research supervisor).

Appendix J: Empirical Measures (PTGI)

Appendix K: Empirical Measures (Multidimensional Support Scale)

Appendix L: Empirical Measures (Stroke Specific Scale)

Appendix L: Continued

XXVII

Appendix M: Statistical Output (Independent T-Tests)



T-Test

	Gro	up Statistics									
	Psychologist_Input	Mean	Std. Deviation	Std. Error Mean							
PTGI Total	Yes	77 49.81	25.195	2.87	'1						
	No	66 48.15	24.655	3.03	5						
	Independent Samples Test Levene's Test for Equality of Variances t-test for Equality of Means										
					Significance			95% Confidence Diffe	Interval of the ence		
		F	Sig.	t	df	One-Sided p	Two-Sided p	Difference	Difference	Lower	Upper
PTGI Total	Equal variances assumed	.111	739	.395	141	.347	.693	1.654	4.185	-6.620	9.927
	Equal variances not assumed			.396	138.521	.346	.693	1.654	4.178	-6.607	9.914

XXVIII

Appendix N: Statistical Output (One-Way ANOVA)

					Descrip	tives				
PTGI To	otal									
						95% Confidence Interval for Mean		95% Confidence Interval for Mean		Between-
		N	Mean	Std. Deviation	Std. Error	Lower Bound	Upper Bound	Minimum	Maximum	Variance
GCSE		30	47.63	23.588	4.306	38.83	56.44	1	88	
A Level		21	50.05	20.193	4.406	40.86	59.24	14	85	
Underg	raduate	39	44.74	27.099	4.339	35.96	53.53	0	98	
Postgra	duate	47	52.64	26.445	3.857	44.87	60.40	1	105	
Total		137	48.90	25.113	2.146	44.65	53.14	0	105	
Model	Fixed Effects			25.186	2.152	44.64	53.15			
	Random Effects				2.152 ^a	42.05 ^a	55.75 ^a			-4.967

a. Warning: Between-component variance is negative. It was replaced by 0.0 in computing this random effects measure.

Tests of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
PTGI Total	Based on Mean	.957	3	133	.415
	Based on Median	.909	3	133	.439
	Based on Median and with adjusted df	.909	3	125.597	.439
	Based on trimmed mean	.957	3	133	.415

ANOVA

PTGI Total					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1406.363	3	468.788	.739	.531
Within Groups	84364.206	133	634.317		
Total	85770.569	136			

Appendix O: Statistical Output (Bivariate Correlation)

Descriptive Statistics

	Mean	Std. Deviation	N
Age	51.98	12.325	143
Gender	.29	.457	143
Education	2.75	1.149	137
Psychologist_Input	.54	.500	143
MDSS	60.41	18.831	143
QOL	141.37	47.003	143
PTGI Total	49.04	24.873	143

			Correl	ations				
		Age	Gender	Education	Psychologist_l nput	MDSS	QOL	PTGI Total
Age	Pearson Correlation	1	.070	145	211*	034	.044	.055
	Sig. (2-tailed)		.407	.090	.012	.691	.604	.513
	N	143	143	137	143	143	143	143
Gender	Pearson Correlation	.070	1	109	.073	.095	.058	.134
	Sig. (2-tailed)	.407		.205	.383	.257	.490	.111
	N	143	143	137	143	143	143	143
Education	Pearson Correlation	145	109	1	.251**	.190*	.259**	.058
	Sig. (2-tailed)	.090	.205		.003	.026	.002	.501
	N	137	137	137	137	137	137	137
Psychologist_Input	Pearson Correlation	211*	.073	.251**	1	.049	.018	.033
	Sig. (2-tailed)	.012	.383	.003		.563	.830	.693
	N	143	143	137	143	143	143	143
MDSS	Pearson Correlation	034	.095	.190 [*]	.049	1	.316**	.401**
	Sig. (2-tailed)	.691	.257	.026	.563		<.001	<.001
	N	143	143	137	143	143	143	143
QOL	Pearson Correlation	.044	.058	.259**	.018	.316**	1	.119
	Sig. (2-tailed)	.604	.490	.002	.830	<.001		.158
	N	143	143	137	143	143	143	143
PTGI Total	Pearson Correlation	.055	.134	.058	.033	.401**	.119	1
	Sig. (2-tailed)	.513	.111	.501	.693	<.001	.158	
	N	143	143	137	143	143	143	143

*. Correlation is significant at the 0.05 level (2-tailed). **. Correlation is significant at the 0.01 level (2-tailed).

Appendix P: Statistical Output (Multiple Linear Regression)



1	Regression	14566.343	3	4855.448	9.209	<.001 ^b			
	Residual	73287.405	139	527.248					
	Total	87853.748	142						
a. D	ependent Varia	able: PTGI Total							
b. Pi	b. Predictors: (Constant), QOL, Age , MDSS								

	Coefficients ^a												
Standardized Unstandardized Coefficients Coefficients 95.0% Confidence Interval for B					c	orrelations		Collinearity	Statistics				
Model		В	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	10.218	11.146		.917	.361	-11.819	32.255					
	Age	.140	.157	.069	.894	.373	170	.450	.055	.076	.069	.996	1.004
	MDSS	.538	.108	.408	4.986	<.001	.325	.752	.401	.390	.386	.898	1.114
	QOL	007	.043	013	162	.872	093	.079	.119	014	013	.897	1.115
a. De	pendent Var	iable: PTGI Tota	al 🛛										

Residuals	Statistics ^a
-----------	-------------------------

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	23.65	66.04	49.04	10.128	143
Std. Predicted Value	-2.507	1.679	.000	1.000	143
Standard Error of Predicted Value	2.063	5.952	3.716	.974	143
Adjusted Predicted Value	22.93	67.92	49.08	10.225	143
Residual	-61.605	43.840	.000	22.718	143
Std. Residual	-2.683	1.909	.000	.989	143
Stud. Residual	-2.738	1.957	001	1.005	143
Deleted Residual	-64.145	46.066	042	23.423	143
Stud. Deleted Residual	-2.804	1.978	002	1.009	143
Mahal. Distance	.153	8.548	2.979	2.044	143
Cook's Distance	.000	.077	.008	.012	143
Centered Leverage Value	.001	.060	.021	.014	143
a Donondont Variable: B	TCITatal				

a. Dependent Variable: PTGI Total









Appendix Q – Clinical Implications for SLR and Empirical

As requested by the Journal of Disability and Rehabilitation:

Systematic Literature Review Clinical Implications

- Social support facilitates development of Post-traumatic Growth.
- During rehabilitation consider the person's social needs as part of their goals.
- Specialist rehabilitation and community services may be able to facilitate PTG though relationships of shared experiences and group membership.
- Professionals can support the development of PTG by increasing social relationships through connection with the social world with meaningful activities.
- However, there are difficulties associated with social support, consider the impact this may be having on a person's rehabilitation.

Empirical Study

- Social support is a key predictor in the development of PTG in early stroke recovery, therefore clinicians should look out for this.
- Clinicians may fill the gaps of social support in early stroke recovery, therefore, it is important to consider the rapport and engagement with the patient.
- Professionals should consider a stepped care approach to help support transition from hospital to community support those priorities support groups.
- Positive psychological interventions may be useful in promoting PTG following a stroke and should be considered as part of rehabilitation.