The Role of Hope in those Recovering from an Acquired Brain Injury: Are Shame, Adaptive Guilt, Psychological Flexibility, Perceived Responsibility for Injury, and Injury Severity Predictors?
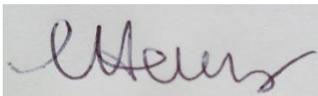
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THESIS PORTFOLIO: CANDIDATE DECLARATION

Title of degree programme	Professional Doctorate in Clinical Psychology
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Declaration and signature of candidate
I confirm that the thesis submitted is the outcome of work that I have undertaken during my programme of study, and except where explicitly stated, it is all my own work.
I confirm that the decision to submit this thesis is my own.
I confirm that except where explicitly stated, the work has not been submitted for another academic award.
I confirm that the work has been conducted ethically and that I have maintained the anonymity of research participants at all times within the thesis.
Signed: Date: 18th April 2024

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Contents

Thesis Abstract

The first paper is a literature review investigating the existing evidence base for the use of Compassion Focussed Therapy (CFT) for people who have had an Acquired Brain Injury (ABI). An ABI is an injury to the brain after birth but not related to degenerative conditions. A review of the literature was completed, and nine studies were included. The results suggest that CFT after an ABI leads to an increase in self-reassurance, self-esteem, and self-compassion. It also leads to reductions in anger, avoidance, emotional distress, self-hatred, self-criticism, depression, and anxiety. Limitations of the studies included small sample sizes and problems with validity and treatment fidelity. Clinical implications are discussed, including making adaptations to therapy. Paper two describes a quantitative study investigating the ability to predict hope after an ABI by using the variables of shame, adaptive guilt, perceived responsibility for the injury, injury severity and psychological flexibility. A total of 90 participants with an ABI were recruited to take part in the study. Multiple regression analyses were completed. The results suggest that lower levels of shame and injury severity and higher levels of adaptive guilt were significant predictors of higher levels of hope. Psychological flexibility and perceived responsibility for injury were not significant predictors of levels of hope. The findings suggest that it might be helpful to reduce levels of shame in order to increase hopefulness after an ABI, possibly by using CFT. Implications for clinical practice and recommendations for future research are provided. Paper three is an executive summary of the results. It has been developed with the use of feedback from service users and designed to be shared with people with an ABI and others that may be interested in the study.

Paper One: Literature Review

What is the Evidence for Compassion Focussed Therapy for an Acquired Brain
Injury? A Literature Review

Module Code: PSYC80734

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Abstract

A literature review was completed to explore the current evidence on the use of Compassion Focussed Therapy (CFT) with people who have experienced an Acquired Brain Injury (ABI). An ABI is an injury to the brain sustained after birth (i.e., traumatic injury, brain tumour, infection). Nine studies were included in the review following searches of electronic databases, citation lists and searching by author. A narrative synthesis of the results was completed. The findings suggest that CFT interventions after an ABI can lead to significant reductions in self-hatred, self-criticism, depression, anxiety, and a significant increase in self-reassurance. Other findings included clinically meaningful reductions in anger, avoidance, emotional distress and an increase in self-esteem and self-compassion. Eight of the studies were of moderate quality, and one was rated as poor. The studies were limited by small sample sizes, lack of clarity on treatment fidelity and had issues with validity, which could reduce the reliability of the results. Five studies included information on adaptations to CFT for use with people with an ABI, and common barriers to its implementation. More methodologically rigorous research is needed to further the evidence of the effectiveness of CFT for people who have experienced an ABI.

Keywords: acquired brain injury, compassion focussed therapy, adaptations, barriers.

Introduction

An acquired brain injury (ABI) is defined as brain damage caused after birth, that cannot be explained by a degenerative or congenital condition such as cerebral palsy or hydrocephalus (Turner-Stokes et al., 2015). The causes of an ABI include stroke, tumours, aneurysms, infections, or traumatic injuries such as those caused by blunt force trauma or road traffic accidents (Parker et al., 2018). In 2019/20, 356,699 people in the UK attended hospital for an ABI (Headway, 2022), which is likely to be underreported (Medical Research Council, 2022). Approximately 1.4 million people living in the United Kingdom have an ABI, with many needing support post ABI, such as physical or cognitive rehabilitation or help to live independently (Barber, 2019).

The effects of an ABI vary in severity and longevity and can include cognitive changes such as problems with memory, attention, executive functioning (i.e., decision making), slow or uncoordinated movement, or exacerbation or development of mental health difficulties or personality changes (Headway, n.d.). A systematic review of the prevalence of anxiety and depression found that participants with an ABI in the studies reviewed were more likely to experience anxiety and depression, particularly if they were present pre-injury (Scholten et al., 2016). Even a mild ABI can cause an increase in psychological distress and lower life satisfaction up to a year post injury and is associated with poor cognitive and functional outcomes, such as not regaining lost memory skills (Schneider et al., 2022). Kureshi et al. (2023) found that ABI survivors (who were all up to 12 months post injury) are up to 60% more likely to report chronic mental health conditions such as anxiety, depression, bipolar disorder, and phobias compared to non-injured controls.

Some constructs have been proposed as mediating factors in mental health conditions, one of which is compassion. Though not ABI specific, a systematic review investigating the relationship between self-compassion and mental health difficulties, particularly anxiety, depression, and stress (Macbeth & Gumley, 2012), found a large effect size across the studies for a relationship between self-compassion and mental health difficulties, suggesting that a reduction in self-compassion leads to higher levels of anxiety, depression, and stress.

Compassion

Gilbert (2010) defines compassion as a complex construct comprising noticing and being responsive to the emotions of others, showing empathy, and being motivated to reduce suffering, such as comforting someone in distress. Gilbert suggests that humans are driven by three different systems; the threat system, the drive system and the soothe system, which regulate one's needs and affect (Gilbert, 2010). According to Gilbert, the threat system helps one to survive by managing threats (i.e., vigilance in a dangerous environment), the drive system is concerned with goal seeking behaviours and task completion (i.e., being motivated to achieve success at work), and the soothe system encourages kindness to self, and rest (i.e., forgiveness of self or others) . The evolution of cognitive processes such as a socially constructed sense of self and ability to reflect are more complex and can work against the basic three systems; the discrepancies between them can cause mental health difficulties or a 'tricky brain' (Gilbert, 2014). Gilbert suggests that difficulties arise when the systems are out of balance, or the systems are over or underdeveloped due to early life experiences, such as not being taught how to self-soothe by a caregiver (Gilbert, 2010). Gilbert also suggests that self-compassion and compassion for others uses the same skills, such as the ability to understand one's own emotional state or the state of others (Gilbert, 2016).

Shame and Self-criticism Post ABI

Shame is defined by Karr et al. (2012) as an overwhelming self-conscious emotion pertaining to a feeling of perceived inadequacy. Evidence suggests that mental health difficulties caused by feelings of shame may be associated with a lack of connectedness to other people, as connectedness helps a person to feel cared for, thus experience more positive emotions (Joiner et al., 1999). People with ABI may experience a lack of connectedness due to relationship breakdown or withdrawal from social interactions post injury caused by shame (Freeman et al., 2015). Negative self-evaluations caused by pre-to-post injury changes (i.e., loss of independence due to physical impairments or disinhibition leading to embarrassing social situations) may lead to shame (Dowswell et al., 2000; Jumisko et al., 2005), increasing the likelihood of the individual being self-critical. Self-criticism post ABI is associated with depression and desire to return to pre-injury responsibilities, such as wanting to return to a job despite no longer having the cognitive capabilities to fulfil

the role (Ownsworth & Oei, 1998). Shame and self-criticism can perpetuate mental health difficulties if the person with an ABI perceives they are failing to return to their pre-injury version of self (Gracey et al., 2009).

Compassion Focussed Therapy

Compassion Focussed Therapy (CFT) was developed to increase self-compassion in those with high levels of shame and self-criticism due to the negative impact on their mental health (Gilbert & Proctor, 2006). CFT involves engaging in compassion focussed activities such as compassionate imagery, loving kindness meditations, compassionate letter writing and the practice of compassionate behaviour (showing kindness to self and others using words and behaviours) (Gilbert, 2009). As CFT is a relatively new therapeutic intervention, the evidence base is smaller than other forms of therapy. The earliest systematic review of CFT by Leaviss and Uttley (2015) found promising results for CFT in increasing psychological wellbeing and reducing mood problems in people with mental health diagnoses such as psychosis, depression, OCD, social anxiety. A further review added to the literature and suggested that CFT was particularly helpful when delivered as a group intervention lasting at least 12 hours (Craig et al., 2020). The review by Craig et al. (2020), however, acknowledged that some of the available research lacked sufficient power, did not use control groups and was not transparent about fidelity to the CFT model, suggesting that the results of the studies may have reduced validity. A recent review and meta-analysis, including six randomised controlled trials (RCTs), suggested that CFT demonstrated small to large effect sizes for an increase in self-compassion and self-reassurance, with reductions in self-criticism, fear of compassion and depression (Millard et al., 2023), though over half of the studies were critically appraised as unclear due to lack of information. The aforementioned reviews were not ABI specific, thus the aim of the current literature review is to explore the current evidence base, consider its efficacy, and any barriers to using CFT with the ABI population.

Method

The electronic databases searched were PsychArticles, PsychINFO, Google Scholar, Ethos, DART Europe, Science Direct and PubMED; searches took place between January 2023 and April 2023. Other studies were found by hand searching

through reference lists and finding authors' other publications using SCOPUS. Google Scholar was used, with only the first 300 articles checked according to recommendations (Haddaway et al., 2015). Search terms included "brain injur*" or "stroke" or "head inj*" or "traumatic brain injur*" or "mild brain injur*" or "TBI" or "ABI" or "MBI" AND "Compassion focussed therapy" or "CFT" or "compassion focu?ed therapy" or "compassion focused therapy" or "third wave therapies" or "compassion".

Inclusion Criteria

Inclusion criteria for this study were:

- The participants had experienced an acquired brain injury (injury to the brain sustained after birth not caused by congenital or degenerative conditions).
- Adults 18 years old and over.
- The use of compassion focussed therapy (individual or group interventions).

Exclusion Criteria

Exclusion criteria for this study were:

- Review articles.
- Non-English language publications (due to lack of translation services).

Publication Bias

In relation to reducing the risk of publication bias, the British Library EThOS database was also searched and yielded two unpublished theses. Both theses met the inclusion criteria and were thus included in the review.

Study Identification

A total of 28,216 articles were found at the primary stage of searching, and 1526 were screened by title and abstract after the removal of duplicates and extraneous Google Scholar results. Eleven articles were assessed for eligibility. An additional three articles were included from hand searching reference lists and searching SCOPUS. Of the 14 studies that were assessed for eligibility, five were excluded as they were not related to compassion focussed therapy. Nine papers

were included in the final review. See figure 1 for PRISMA flowchart for study identification (Page et al. 2021).

Figure 1

PRISMA Flowchart
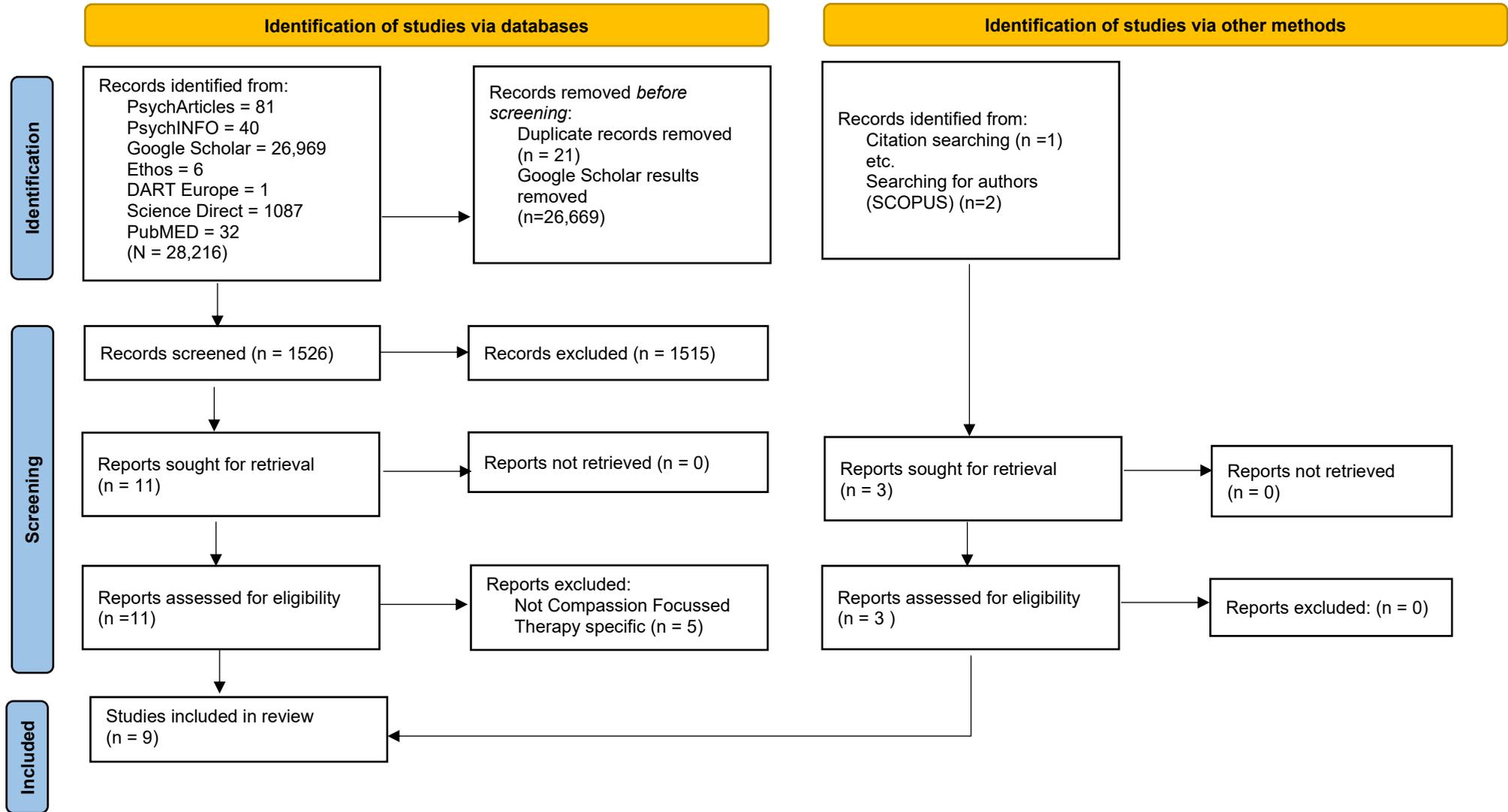
Critical Appraisal

Critical appraisal ensures that studies are assessed for their methodological quality, a key part of a literature review (Crowe & Sheppard, 2011). This review includes five case studies, three quasi-experimental studies and one mixed method study. They were critically appraised using an amalgamation of several tools devised by the Joanna Briggs Institute (JBI): checklist for quasi-experimental studies, checklist for case reports (JBI, 2020) and checklist for qualitative research (Lockwood et al., 2015) (See Appendix A). The JBI tools were chosen for their breadth of application and their inclusion of a tool to evaluate case reports, which are uncommon (Ma et al., 2020). The JBI tools have been revised to consider risk of bias at the outcome and results level, rather than just at the design level, which is more in line with modern psychological research (Barker et al., 2023). For example, noticing if a researcher selectively reports favourable results from a variety of analyses. Each study was individually rated, with each item was scored as 'Yes' (1 point), 'No' (0 points), '?' = 'Unclear' (0 points) or 'Not applicable'. Each total score was converted to a percentage score, with each band of percentage scores pertaining to a descriptor of quality; 'poor = less than 50%', 'moderate = 50-80%', or 'good = at least 80%' (Mbuzi et al., 2018). Each item that was not applicable was deducted from the total score for each study, so as not to affect the quality score. See Appendix A for table of critical appraisal results.

Results

Overview of Included Studies

Eight of the included studies were conducted in the United Kingdom, and one in Australia (Shields & Ownsworth, 2013).

Ashworth et al. (2011) recruited a single 23-year-old female with a severe TBI for a case study without a control to assess depression, anxiety, anger, and self-esteem after 24 weeks of individual CFT in a community neurorehabilitation service.

Ashworth (2014) conducted a single case study without a control of a 29-year-old male with a severe TBI in a community neurorehabilitation service. Though the intervention length was not reported, they assessed the impact of CFT on depression, anxiety, self-criticism, and self-reassurance.

Shields and Ownsworth (2013) completed 10 sessions of individual CFT/CBT to investigate CFT in a University Psychology Clinic in Australia with a single, female, 48-year-old stroke survivor without a control.

Ferguson (2020) recruited a single 35-year-old male TBI survivor from a private setting without a control. The intervention was 12 sessions of CFT (which followed 8 previous sessions of CBT).

Ashworth et al. (2015) employed a mixed methods design of repeated measures without a control group and qualitative interviews analysed using Interpretative Phenomenological Analysis (IPA) with 12 participants with ABI's from a community neurorehabilitation service.

O'Neill and McMillan (2012) used a repeated measures design with a control group and recruited 24 participants with a severe head injury (SHI) from community and inpatient neurorehabilitation services and charities. They measured change in empathy after a single 30-minute compassionate imagery task compared to a relaxation task.

Gallagher (2014) used a repeated measures design, recruiting 24 participants from community and inpatient neurorehabilitation services and charities. They assessed change in fear of self-compassion and motivation after a 20-minute preparatory video in preparation for a subsequent compassion focussed imagery task.

Campbell et al. (2019) used a repeated measures design with a control group to compare levels of compassion after compassion focussed imagery or relaxation tasks. They recruited 24 participants with SHI from community and inpatient neurorehabilitation services and charities.

Smith (2019) used a multiple baseline single case experimental design (SCED) with five participants (two females with TBI, 1 male with TBI and 2 males with ABI) recruited from charities, social media, private care services and by word of mouth. They investigated if online self-guided CFT increased self-compassion and decreased self-criticism.

Data Extraction

Information regarding the nine studies included in the review including aims, study design, participant characteristics, measures used, intervention, main findings,

strengths, limitations, and quality appraisal score and can be found in Table 1, study characteristics.

Table 1

Table of Brief Study Characteristics

Author/ Date/Location	Aims	Design	Participants	Measures	Intervention	Main Findings	Strengths	Limitations	Quality Score
Campbell et al., (2019). UK.	To determine which creates greater change in compassion, a brief compassion focussed imagery intervention or relaxation imagery. To improve empathy and self-reflection.	Between group repeated measures design with control group.	24 participants with severe head injury (SHI) from NHS community brain injury service, inpatient neurorehabilitation units and a charity.	Test of Premorbid Functioning (TOPF-UK) Wechsler, 2011) Symbol Digit Modalities Test (SDMT; Smith, 1982) Glasgow Outcome Scale (Wilson at al., 1998) Fear of Compassion Scale	Participants shown preparatory video and randomly allocated to 50-minute intervention.	Motivation increased pre to post preparation video. Non-significant changes on FOCS, STAI and PANAS. Non-significant changes between groups in EQ, SCS, RS and STAI.	Included HRV (non-self-report). Partial blinding and randomisation. Addressed limitations of O'Neill and McMillan – assessed motivation to change, used HRV.	Recruitment from different levels of mental health services.	77% Moderate.

				(FOCS; Gilbert et al, 2011) Motivation for Intervention Scale (MIS) (Ryan, 1982) State-Trait Anxiety Inventory (STAI short form; Marteau & Bekker, 1992) Empathy Quotient (EQ; Baron-Cohen & Wheelwright, 2004) Self-Compassion Scale (SCS;					

				Neff, 2003) Relaxation Scale (O'Neill & McMillan, 2012) Heart Rate Variability (HRV) Positive and Negative Affect Scale (PANAS; Watson et al., 1988).					
O'Neill and McMillan (2012). UK.	Does compassionate imagery increase empathy compared to relaxation.	Between group repeated measures.	24 participants with SHI and low empathy recruited from rehabilitation services	Basic empathy scale (Jolliffe and Farrington, 2006) Balanced Emotional Empathy Scale	Randomised to compassionate imagery or relaxation intervention. 30 minutes, practising breathing techniques, relaxation,	No significant effect of the intervention on EQ, SCS or RS scores.	Use of some cognitive tests. Randomisation.	Self-report measures. Single intervention. Did not assess motivation to change.	77% Moderate.

			and charities.	(Mehrabian, 2000). Weschler Test of Adult Reading (WTAR; Wechsler 2001) SDMT FOCS SCS EQ Relaxation measure.	and mental imagery.			Lack of injury detail. Assessor also provided intervention. Not full CFT.	
Ashworth et al., (2015). UK.	Naturalistic evaluation of CFT. To reduce anxiety, depression, self-criticism and increase self-soothing.	Mixed methods, self-report measures and qualitative interviews (IPA).	12 participants from a community neurorehabilitation service.	Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983). Forms of Self-criticism and self-reassurin	12 weeks of group CFT and 18 weeks of individual CFT sessions.	Significant reduction in hated and inadequate self, and significant increase in reassured self. Significant reductions in depression	Effect sizes included.	No measure of reliable change, or change in 'caseness'. Small sample size. Pre intervention measures were completed at beginning of	73% Moderate.

				g scale (FSCSRS; Gilbert et al. 2004).		and anxiety. Master themes = Psychological difficulties, a new approach, developing trust and safeness.		holistic rehabilitation, not pre the CFT group. Severe mental health excluded. No control group.	
Ashworth, et al., (2011) UK.	To develop self-validation and acceptance.	Single case study.	Female, 23 years old, SHI from TBI. In a community neurorehabilitation service.	Beck Anxiety Inventory (Beck et al., 1988) Beck Depression Inventory (Beck et al., 1996) Self-concept Questionnaire (Robson, 1989) State Trait	Neuropsychological assessment and rehabilitation (24 weeks).	Clinically meaningful reduction in depression and anxiety and increase in self-esteem. Reduction in anger.	Included Reliable Change Indices (RCI).	Not as rigorous as SCED. Confounding variables; medication use, prior experience of therapy. Not comprehensive use of CFT.	69% Moderate.

				Anger Expression Inventory (Spielberger, 1988).					
Ashworth, (2014). UK.	To reduce self-criticism and shame.	Single case study.	Male, 29-year-old, severe TBI, in a community neurorehabilitation service.	HADS Self-efficacy scale (Schwarzer & Jerusalem, 1995) FSCSRS.	CFT.	Significant reduction in self-criticism, anxiety and depression and increase in self reassurance. Increased socialisation, independence, and meaningful activity.	Neuropsychological assessment pre and post. Reasonable adjustments reported. RCI used.	HADS less reliable in ABI. Pre-existing therapeutic relationships. Weak generalisability.	63% Moderate.
Smith, (2019). UK.	To increase self-compassion and decrease self-criticism.	SCED.	Five participants. Two females (TBI), three	Patient Health Questionnaire 9 (PHQ-9; Kroenke	Five-week online CFT course.	No significant change at group level. Reliably	Multiple baseline design SCED.	Novel measure used. Small sample.	64% Moderate.

| | To explore impact of CFT on goal setting after ABI. | | males (1 TBI, 2 ABI). | et al., 2001) SCS FSCSRS Vividness of Imagery Question naire (Marks, 1973) Goal Attainme nt Scaling (Malec, 1999) Repeated outcome measure (novel). | | changed scores of self-compassio n and self-criticism for some participant s.

Small increase in goal directed behaviour. | Randomisat ion.

Reasonable adjustments reported.

RCI included.

Sufficient power. | Depression excluded.

Excluded severely impaired ABI.

Short intervention. | |
| Gallagher, (2014).

UK. | To increase effectivenes s of compassion focused imagery by reducing fear of self-compassion. | Repeated measure design. | 24 participan ts from communit y and inpatient neuroreh abilitation services and charities. | Measure of social deprivatio n
TOPF
SDMT
Extended GOS
PANAS
FOCS
MIS | 20-minute video and a short discussion about imagery. | Significant increase in motivation. | Effect sizes included.

Video borne from evidence base.

Representa tive sample. | Three novel measures used.

No control group. | 55% Moderate. |

				STAI short form Measure of knowledge of imagery intervention.					
Shields, C., and Ownsworth, T. (2013). Australia.	To evaluate CFT post stroke.	Single case design of integrated CBT/CFT approach.	48-year-old female. Stroke survivor in a University Psychology Clinic.	Everyday Memory Questionnaire Revised (Royle & Lincoln, 2008). Patient Competency Rating Form (Prigatano 1986) WAIS-IV (Wechsler, 2008), WMS-III (Wechsler, 1997)	Neuropsychological assessment. 10 sessions of CBT/CFT.	Clinically significant increase in self compassion, reduction in avoidance and emotional distress. Increase in self-confidence, socialisation, and independence.	Improvement maintained at follow up. RCI used. Inclusion of process data.	CFT with aspects of CBT and mindfulness.	64% Moderate.

				NART – II (Nelson & Willison, 1991), RBMT-E (Wilson et al., 1999) RAVLT (Rey, 1964), TEA (Robertson et al., 1994). Outcome Questionnaire (OQ-45.2: Lambert et al., 1996) Depression Anxiety Stress Scales (DASS-21: Lovibond &					

				Lovibond, 1995). Social Activities and Distress Scale (SADS: Watson & Friend, 1969) Appraisal of Threat and Avoidance Questionnaire (ATAQ: Riley et al., 2004) SCS-SF (Raes et al., 2011).					
Ferguson (2020). UK.	To understand the relationship between anxiety and self-criticism.	Single case.	Male, 35, TBI. Private client.	Quality of Life after Brain Injury (QOLBRI) (Truelle	12 sessions of CFT after 8 sessions of CBT.	Increase in QOL. Increase in independence, self-soothing,	Fear of self-compassion could have been mitigated against by	CFT intervention after CBT intervention. Did not measure	35% Poor.

				et al., 2010).		insight, mindfulness, got married, had a baby.	coming after CBT.	self-criticism and anxiety.	

Study Quality

Compassion Focussed Therapy is a new therapeutic intervention, as such the results of the studies must be critically appraised as a treatment modality in its infancy. The Rounsaville et al. (2001) stage model of therapies research suggests that new therapies progress through different stages to determine effectiveness. The model indicates that CFT is in the primary stage, consisting of feasibility and case studies with a lack of RCTs.

The quality assessment process identified the strengths and limitations of the included studies. Overall, eight studies were categorised as being of moderate quality (Ashworth, 2014; Ashworth et al., 2011; Ashworth et al., 2015; Campbell et al., 2019; Gallagher, 2014; O'Neill & McMillan, 2012; Shields & Ownsworth, 2013; Smith, 2019). One study was categorised as being of poor quality (Ferguson, 2020).

Sample

Four of the studies used a single case design or SCED (Ashworth et al., 2011; Ashworth, 2014; Ferguson, 2020, Shields & Ownsworth, 2013 and Smith, 2019). Perdices et al. (2006) argues that single case studies are as important as RCTs in contributing to the ABI evidence base, as they provide idiographic information on efficacy rather than diluting the effects by investigating group differences, are cheaper, are easier to complete and their pragmatic design yields clinically useful data. However, case studies have many limitations, including problems with a lack of generalisability and reproducibility (Margevičiūtė, 2012).

All the studies used the convenience sampling method, recruiting participants from community and inpatient neurorehabilitation services, brain injury charities, private care settings, social media, or word of mouth. This means that participants volunteered to take part in the research. This could cause self-selection bias as the sample may be more highly motivated individuals and thus may experience more positive treatment outcomes (Ryan et al., 2011), and they may also differ to the rest of the ABI population as lower levels of motivation, or apathy are common difficulties after an ABI (Worthington & Wood, 2018). This limits the generalisability of the results.

The recruitment of participants from community settings is helpful as there remain significant gaps in the research on community services for people with an

ABI, and the variety of settings more accurately captures the experiences of the heterogenous ABI population (Norman et al., 2023).

The studies that recruited 24 participants were deemed as adequate sample sizes for type of analysis according to Shapiro et al. (2007) (Campbell et al., 2019; Gallagher, 2014 and O'Neill & McMillan, 2012). Only one study was deemed to have a low sample size (Ashworth et al., 2015), suggesting that the study suffers from low power, meaning that results may be overinflated (Button et al., 2013). This problem can be prevented by the completion of power calculations, which helps to decide the sample size, though only two studies were explicit in their reporting of them (Gallagher, 2014 and Smith, 2019).

Four studies had a higher prevalence of males in their studies than females (Campbell et al., 2019; Gallagher, 2014; O'Neill & McMillan, 2012 and Smith, 2019;). The latter are more representative of and generalisable to the ABI population as males are more likely to sustain an ABI. In 2019/20 incidences of female brain injury increased by 28% (Headway, n.d.), so this should change in future samples for the results to remain generalisable.

Some studies excluded participants with severe mental health difficulties, suicidality, or alcohol misuse (Ashworth et al., 2015; Campbell et al., 2019; Gallagher, 2014 and Smith, 2019), which reduces the generalisability of the results to the ABI population who have co-occurring difficulties. Only two studies were explicit that they received informed consent from participants (Ashworth et al., 2015 and Gallagher, 2014); important given the potentially vulnerable ABI population. Acknowledgement of capacity was only evident in one study (Gallagher, 2014). Unfortunately, the exclusion of those who lack capacity is common in research, but it means that those without capacity are not informing the research and thus are unable to benefit from the results of the research (Smajdor, 2023).

Study Design

All studies were appropriate in design and four studies included randomisation and some blinding, which reduces the risk of bias (Ashworth, 2014; Campbell et al., 2019; O'Neill & McMillan, 2012 and Smith, 2019).

A common limitation in five of the studies was that the researcher provided the intervention (Ashworth, 2014; Ashworth et al., 2011; Gallagher, 2014; O'Neill & McMillan, 2012; Shields & Ownsworth, 2013). A clinician-researcher dual role can

lead to bias as their expectations can influence the study design, data collection or analysis; if they are aware of the aims of the study this may lead to the selection of more favourable results (Pannucci & Wilkins, 2010). Additionally, an existing relationship and therapeutic alliance with the researcher may lead to improvement regardless of the treatment modality (Baier et al., 2020), making it difficult to know how much of an impact CFT had on participants. This can be counteracted by using blinding or the use of an independent researcher, as employed by Ashworth et al. (2015).

Four of the studies took place in community neurorehabilitation services (Ashworth, 2014; Ashworth et al., 2011; Ashworth et al., 2015 and Shields & Ownsworth, 2013); this increases the risk of confounding variables as they may be receiving other therapeutic interventions from multidisciplinary professionals, making it difficult to determine if changes are solely attributed to CFT. Additionally, one study used CFT with CBT as an add on (Shields & Ownsworth, 2013), and two studies included participants that had accessed previous CBT or mindfulness therapy, increasing the risk of carry over effects and threatening the validity of the results (Ashworth et al., 2011 and Ferguson, 2020).

Four studies included reliable change index information (RCI) (Ashworth 2014; Ashworth et al., 2011; Shields & Ownsworth, 2013 and Smith, 2019). Use of an RCI formula means that change in scores can be more confidently attributed to the intervention rather than measurement error (Blampied, 2022). Only two studies reported effect sizes (Ashworth et al., 2025 and Smith, 2019), and no studies reported confidence intervals. Without effect sizes or confidence intervals it is difficult to ascertain how much CFT interventions reduced mental health difficulties (Thompson, 2007).

Six of the studies included follow up information (Ashworth et al., 2015; Campbell et al., 2019; Ferguson, 2020; O'Neill & McMillan, 2013; Shields & Ownsworth, 2013; Smith 2019). Follow up information is important to understand the maintenance of the effects of the study, and high attrition rates mean that the results may not be representative of the original sample that was recruited, therefore reducing the generalisability of the results (Miller & Hollist, 2007).

Outcome Measures

All studies used mostly validated outcome measures which is a strength, as it increases the validity of the results and increases the reproducibility of the studies (Ashworth, 2014; Ashworth et al., 2011; Ashworth et al., 2015; Campbell et al., 2019; O'Neill & McMillan, 2012; Shields & Ownsworth, 2013 and Smith, 2019). The FSCRS, (Gilbert et al., 2004) was used by three studies to measure self-criticism and self-reassurance but was not validated for use in the ABI population, potentially affecting the validity of the results (Ashworth, 2014; Ashworth et al., 2015 and Smith, 2019). The OQ-45.2 (Lambert et al., 1996a) used by Shields & Ownsworth (2013), a patient rated outcome measure of client progress through therapy, is also not validated for the ABI population. Two studies used novel outcome measures, so they are lacking in psychometric properties and their reliability and validity could be questioned (Gallagher, 2014 and Smith, 2019). Campbell et al. (2019) included a measure of Heart Rate Variability (HRV); a strength because this is not self-reported and cannot be impacted on by problems in reporting caused by a lack of insight, which is common after ABI (Neumann & Zupan, 2020). Only four studies measured anxiety and/or depression (Ashworth, 2014; Ashworth et al., 2015; Shields & Ownsworth, 2013 and Smith, 2019), which is important because if compassion were to mediate the relationship between these difficulties, then it could highlight a target for therapeutic intervention in mental health services where anxiety and depression are common.

Findings

Interventions

Seven studies were detailed in their descriptions of their interventions, including providing information on psychoeducation on the CFT model, learning to self-soothe and how to complete compassionate imagery exercises (Ashworth, 2014; Ashworth et al., 2011; Ashworth et al., 2015; Campbell et al., 2019; Gallagher, 2014; Shields & Ownsworth, 2013 and Smith, 2019). Gallagher (2014) included a link to the task used (Gallagher, 2014), and Shields & Ownsworth (2013) included a session-by-session description enabling replication of their interventions. O'Neill & McMillan (2012) did not provide detail on the compassionate imagery task used and

Ferguson (2020) provided limited detail on the intervention overall, thus transparency was lacking which reduces the reproducibility of the research.

Though detailed in its description of the intervention, Ashworth et al. (2011) did not provide information on the three-affect regulatory system during therapy (a key component of CFT), so it could be argued that it was not a comprehensive application of CFT, threatening treatment fidelity. Additionally, some of the studies involved trainee clinical psychologists (Gallagher, 2014; Shields & Ownsworth, 2013 and Smith, 2019), which also threatens treatment fidelity as they may not be qualified to use CFT.

Therapeutic Outcomes

The studies in the review varied in their aims and outcomes. Ashworth et al. (2011) found a clinically meaningful reduction in depression, anxiety and anger, and an increase in self-esteem according to a Reliable Change Index formula (RCI). Ashworth (2014) found a clinically meaningful reduction in self-criticism, anxiety and depression and an increase in self-reassurance according to an RCI formula. They also reported increased socialisation, independence, and meaningful activity, not captured by outcome measures but reported by the participant during sessions. Ferguson (2020) found an increase in quality of life, increased independence, a return to work and becoming a parent after CFT. Shields & Ownsworth (2013) found a clinically significant increase in self-compassion, reduction in avoidance behaviours and emotional distress, with gains maintained at three months follow up. Smith (2019) found no significant change at group level for self-compassion or self-criticism, with a small effect size, but found pre and post reliably changed increase of self-compassion and reduction in self-criticism on an individual level for some participants. O'Neill & McMillan (2012) found no significant effect of a 30-minute compassionate imagery task on levels of empathy, self-compassion, or relaxation. Campbell et al. (2019) was an extension of the O'Neill & McMillan (2012) study and increased the compassionate imagery task time to 50 minutes. Campbell et al. (2019) also found non-significant changes in self-compassion, fear of self-compassion, anxiety and relaxation and empathy. Gallagher (2014) found a significant increase in motivation for the imagery task, suggesting that it is useful to prepare people with an ABI to undertake CFT interventions if their motivation is low. Ashworth et al. (2015) found a statistically significant reduction in self-criticism,

anxiety, and depression with large effect sizes, meaning that CFT had a significant impact on those mental health difficulties for those participants. This study included qualitative data which yielded master themes of 'psychological difficulties', 'a new approach', and 'developing trust and safeness', which suggests the importance of mechanisms of change during interventions, such as developing a therapeutic relationship. This has been supported by results from case studies included in this review.

Challenges to Engaging with CFT

Though the ABI population is heterogenous, the studies highlighted shared challenges to engaging with CFT after an ABI. The most cited challenge was a fear of compassion (Campbell et al., 2019; Gallagher, 2014; O'Neill & McMillan, 2012 and Ferguson, 2020). For some people, their early life experiences and attachment relationships can lead to a fear of compassion, particularly for those who learned that with soothing emotions came unpleasant experiences (Gilbert et al., 2011). For those people, being exposed to compassion as an adult leads to activation of a threat response, meaning they are less likely to want to engage in compassionate exercises in therapy (Gilbert, 2009). This suggests that it may be a barrier to engaging with CFT. Gallagher (2014) recognised the importance of measuring fear of compassion and attempted to reduce it by using a preparatory video prior to a CFT exercise. The video was presented by a person with an ABI and provided psychoeducation on CFT, highlighted that some people might be "put off" by words like 'compassion' and 'nurture' and provided reassurance about the process of therapy. They found a non-significant reduction, so this suggests there may be other more effective approaches to reducing fear of compassion.

Other barriers to the use of CFT after ABI are post injury damage affecting brain functioning; localisation of brain function theory suggests that brain areas are responsible for certain functions, such as problem solving, and planning skills being found in the prefrontal cortex (Friedman & Robbins, 2022). Campbell et al. (2019) suggested that compassionate imagery exercises activate the frontal lobe of the brain, a common site of injury. This could mean that people with damage to their frontal lobes are biologically impaired and will not reap the same benefits of compassionate imagery as non-injured people. However, the theory of equipotentiality and neuroplasticity suggest that localisation of function is not definite

and stable, with the brain able to create new pathways around sites of damage (Jasey & Ward, 2019).

Self-criticism as a motivator is another challenge to the use of CFT after an ABI. Shields and Ownsworth (2013) indicated that self-criticism may be used as a motivator to return to a pre-injury state rather than accepting changes caused by ABI if a person recognises a discrepancy in their pre and post injury ability (e.g., reduced mobility or new memory problems). Gilbert et al. (2011) found that self-criticism was positively associated with fear of compassion for self, suggesting that people high in self-criticism fear self-reassurance and kindness to self. This suggests it would be useful to measure both self-criticism and fear of compassion before attempting a CFT intervention following ABI. Not all studies that measured self-compassion also measured self-criticism; of the three that did, two reported a significant reduction in self-criticism (and anxiety and depression) following CFT interventions (Ashworth 2014 and Ashworth et al., 2015). It could be hypothesised that people with an ABI who have accepted their current state of being may be more likely to benefit from CFT in reducing their levels of self-criticism, because they no longer have a motivation to strive for a different version of themselves. It could be useful to consider the person's level of acceptance of their abilities prior to beginning a CFT intervention.

Applicability to Clinical Practice

It is useful to consider the aspects of the interventions that can be applied to clinical practice. Three of the studies were group interventions (Ashworth et al., 2015; Campbell et al., 2019 and O'Neill & McMillan, 2013); one of the studies acknowledged that membership of the group alone could have had positive effects by counteracting some of the negative effects of social isolation which are common after ABI (Ashworth et al., 2015). This is important because some research suggests loneliness to be the strongest predictor of quality of life after an ABI (Salas et al., 2022).

Perhaps the most practical information yielded from the current studies are adaptations made for participants in the context of their ABI. Many studies included information on counteracting the effects of memory, attention, and fatigue in their individual studies. Some referenced ensuring that sessions were kept short, included breaks, were slowly paced, and included repetition of information to aid consolidation

(Ashworth, 2014; Ashworth et al., 2011; Gallagher, 2014). There was also information provided on the use of external memory aids such as mantra inscribed bracelets, digital reminders to complete work at home, audio recordings, written information sheets and videos (Ashworth, 2014; Ferguson, 2020; Gallagher, 2014; Shields & Ownsworth, 2013). Interestingly, the studies that included detailed information about adaptations to their interventions reported clinically significant results, suggesting that it is important to adapt CFT interventions for people with an ABI for them to be effective (Ashworth, 2014; Ashworth et al., 2011; Ferguson, 2020; Shields & Ownsworth, 2013).

Discussion

The aims of the review were to consider the current evidence base for CFT in the ABI population. The evidence base for CFT after an ABI is currently still within stage one of the stage model of behavioural therapies (Rounsaville et al., 2001), which means that RCT's are yet to be conducted. The methodological rigour of the studies must be considered within this context. The review included nine studies. Three of the studies demonstrated statistically significant results of reduction in self-hatred, self-criticism, depression, anxiety, and significant increase in self-reassurance and motivation to engage (Ashworth, 2014; Ashworth et al., 2015 and Gallagher, 2014); all of these studies were reviewed as being of moderate quality. Three studies found clinically meaningful reductions in depression, anxiety, anger, self-criticism, avoidance, emotional distress and increase in self-esteem and self-compassion according to Reliable Change Indices (Ashworth et al., 2011; Shields & Ownsworth, 2013 and Smith, 2019); these studies were also deemed to be of moderate quality. The use of Reliable Change Indices, mean that change in scores can be more confidently attributed to the CFT interventions rather than measurement error (Blampied, 2022). This adds to the existing literature on the effectiveness of CFT (Craig et al., 2020; Kirby et al., 2017; Leavis & Uttley, 2015 and Millard, 2023).

The review has highlighted some gaps in the current evidence base, including the exclusion of those with a severe mental health problem, severe cognitive impairments and those that lack capacity. Though these exclusions may speak to the nature of the recruitment methods or restraints (e.g., lack of resources available in thesis projects such as available clinicians to assess mental capacity), it reduces the generalisability of the results. The exclusion of people who lack mental capacity is a

wider issue within research, and whilst some argue that it can protect vulnerable people from harm, it also excludes a large minority of people from benefitting from the results of research in the long term (Smajdor, 2023).

A noticeable gap in the studies is the recognition of problems of lack of insight as a barrier to CFT, as it is common after ABI (Neumann & Zupan, 2020). Research suggests that those with partial self-awareness of own deficits present with more shame proneness that may increase as their understanding of their deficits and limitations increase (Fleming et al., 1998), suggesting that self-compassion may be most helpful for people with an ABI with at least partial insight. Those with no self-awareness are less likely to exhibit high levels of shame as there is not a discrepancy between their actual and perceived sense of self (Prigatano, 1999), so a CFT intervention to reduce the effects of shame may be unwarranted. Additionally, all of the studies used self-report measures which could be affected by lack of insight. This indicates that measures of insight completed by people that know the participants well are vital to include in future research investigating CFT in the ABI population and were missing in the studies included in the review.

Strengths and Limitations

Both a strength and a limitation of this review is the inclusion of grey literature, consisting of two thesis projects (Gallagher, 2014; Smith, 2019). Grey literature was included due to the lack of studies in the area of CFT in ABI, it also reduces the risk of publication bias and offers a contemporary view of the literature (Paez, 2017). However, it is a limitation because grey literature has not passed through a peer-review process, so the methodological quality is uncertain irrespective of the critical appraisal process (Adams et al., 2017).

Another limitation of the review is its lack of RCTs and higher quality pieces of research in evidencing the effects of CFT after an ABI. According to a hierarchy of evidence (Evans, 2003), many studies included in the review are typically identified as lower quality studies based on their design 'poor' (case studies, expert opinion), 'fair' (descriptive studies, before and after studies) though some are identified as 'good' (observational studies). Though it could be argued that the studies included in the review are not as methodologically rigorous, and as such not as valid, some researchers argue that naturalistic, effectiveness and cohort studies for types of therapy are more ecologically valid than the gold standard RCT's (Lambert, 2013).

A further limitation of the review is the use of a single rater. There was not enough time or resource to include an additional rater, but single raters of abstracts can miss up to 13% of relevant studies, increasing the risk of bias and human error (Gartlehner et al., 2020).

Clinical Implications

The studies reported some common barriers to implementation of CFT for the ABI population which have implications for therapy. The most identified potential barrier was fear of compassion. Though not unique to the ABI population, Gilbert et al. (2011) suggested that FOC is linked to self-criticism, which can be used as a motivator to return to a pre-injury state. This suggests that it would be useful to measure fear of compassion, self-criticism, and acceptance of current level of functioning prior to completing a CFT intervention after a brain injury (Shields & Ownsworth, 2013). A person experiencing a fear of compassion, high levels of self-criticism or lack of acceptance of their current level of functioning may require specific interventions to target those barriers to CFT before attempting a more intensive CFT intervention. Lack of empathy and impairments of social cognition were other common barriers to using CFT after an ABI. Importantly, the studies that used CFT to increase empathy did not find significant changes on outcome measures (Campbell, 2019; O'Neill & McMillan, 2012), suggesting that CFT may not be useful for improving empathy after an ABI.

Clinically, the studies often included information on adaptations made for participants. There were many commonalities; strategies to improve attention and techniques to avoid fatigue such as keeping sessions short, having breaks, and taking a slow pace (Ashworth, 2014; Ashworth et al., 2011; Gallagher, 2014). External memory aids were used such as bracelets with useful mantras, digital reminders to complete practice at home, written information sheets, audio clips and videos (Ashworth, 2014; Ferguson, 2020; Gallagher, 2014; Shields and Ownsworth, 2013). The studies that included detailed information about adaptations reported clinically significant results, highlighting the importance of using a person-centred approach in the application of CFT after an ABI for them to be effective (Ashworth, 2014; Ashworth et al., 2011; Ferguson, 2020; Shields & Ownsworth, 2013).

Future Research

According to the Rounsaville et al. model of evaluating effectiveness of therapies (2001), intervention studies should include measures of therapist competence. Only one study identified that the clinicians involved in the study had completed training in CFT (Ashworth et al., 2015), and two studies were transparent that the clinicians were unqualified trainee clinical psychologists (Gallagher, 2014; Smith, 2019). Therapist competence could be assessed in future studies using the Compassion Focused Therapy Therapist Competence Rating Scale (Horwood et al., 2020), alongside patient rated outcome measures and explicit reporting of therapist training (Fairburn & Cooper, 2011). This inclusion may help to move CFT evaluation into stage two of the model, the implementation of RCTs.

Other ways of furthering the evaluation of CFT include improving the methodological quality of the evidence; studies should include larger sample sizes and look to employ more randomisation and control groups, to increase the power and validity of the results. To be able to evidence the efficacy of CFT, future studies could evaluate interventions with high treatment fidelity or use complete interventions, rather than single tasks or interventions as part of wider rehabilitation programmes. This would improve the validity of the results, reduce the chance of Type 1 and Type 2 errors, and more confidently determine if CFT is effective or not (Karas & Plankis, 2016).

Only one of the studies explored the use of digital therapy (Smith, 2019). This is another area for future research given the emerging evidence that digital therapy may be as effective as face-to-face implementation (Prescott et al., 2022). However, a systematic review and meta-analysis suggested that pooled effect sizes for digital interventions were small and there were low rates of engagement due to technical problems (Garrido et al., 2019). The exploration of digital interventions is especially relevant as new methods of delivery are provided in health settings post-COVID 19.

In conclusion, there exists some tentative evidence of moderate quality of the effectiveness of the use of CFT after a brain injury. Future research must be conducted to improve the methodological rigour of the evidence.

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Appendix A

Critical Appraisal Tool/Table

JBI checklist criteria (potential bias and threat)	Studies								
	Campbell et al. (2019).	O'Neill and McMillan. (2012).	Ashworth et al. (2015).	Ashworth et al. (2011).	Ashworth (2014).	Smith (2019).	Gallagher (2014).	Shields and Ownsworth (2013).	Ferguson (2020).
1. Is it clear in the study what is the 'cause' and what is the 'effect' (i.e., there is no confusion about which variable comes first)? (causation/reverse causation).	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
2. Were the participants included in any comparisons similar? (selection bias).	Yes	Yes	Yes	N/A	N/A	Yes	Yes	N/A	N/A
3. Were the participants included in any comparisons receiving similar treatment/care, other than the exposure or intervention of interest? (history threat/systematic difference/ contamination bias).	?	?	No	N/A	N/A	No	?	N/A	N/A
4. Was there a control group? (measurement bias).	Yes	Yes	No	N/A	N/A	No	No	No	No
5. Were there multiple measurements of	No	No	No	No	No	Yes	No	No	No

the outcome both pre and post the intervention/exposure? (maturation threat, regression to the mean).									
6. Was follow-up complete, and if not, was follow-up adequately reported and strategies to deal with loss to follow-up employed? (attrition bias).	Yes	Yes	Yes	No	?	Yes	?	Yes	Yes
7. Were the outcomes of participants included in any comparisons measured in the same way? (instrumentation/testing effects threats).	Yes	Yes	Yes	N/A	N/A	Yes	Yes	N/A	N/A
8. Were outcomes measured in a reliable way? (detection/instrument/measurement bias).	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9. Was appropriate statistical analysis used? (performance/detection bias).	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10. Is there congruity between the stated philosophical perspective and the research methodology?	N/A	N/A	?	N/A	N/A	N/A	N/A	N/A	N/A
11. Is there congruity between the research methodology and the research	N/A	N/A	Yes	N/A	N/A	N/A	N/A	N/A	N/A

question or objectives?									
12. Is there congruity between the research methodology and the methods used to collect data?	N/A	N/A	Yes	N/A	N/A	N/A	N/A	N/A	N/A
13. Is there congruity between the research methodology and the representation and analysis of data?	N/A	N/A	Yes	N/A	N/A	N/A	N/A	N/A	N/A
14. Is there congruity between the research methodology and the interpretation of the results?	N/A	N/A	Yes	N/A	N/A	N/A	N/A	N/A	N/A
15. Is there a statement locating the researcher culturally or theoretically?	N/A	N/A	No	N/A	N/A	N/A	N/A	N/A	N/A
16. Is the influence of the researcher on the researcher and vice-versa, addressed?	N/A	N/A	Yes	N/A	N/A	N/A	N/A	N/A	N/A
17. Are participants and their voices adequately represented?	N/A	N/A	Yes	N/A	N/A	N/A	N/A	N/A	N/A
18. Is the research ethical according to current criteria or, for recent studies, and is there evidence of ethical approval by an appropriate body?	N/A	N/A	Yes	N/A	N/A	N/A	N/A	N/A	N/A
19. Do the conclusions drawn in the	N/A	N/A	Yes	N/A	N/A	N/A	N/A	N/A	N/A

research report flow from the analysis, or interpretation of the data?									
20. Were patient's demographic characteristics clearly described?	N/A	N/A	N/A	Yes	No	Yes	N/A	Yes	Yes
21. Was the patient's history clearly described and presented as a timeline?	N/A	N/A	N/A	Yes	No	No	N/A	Yes	No
22. Was the current clinical condition of the patient on presentation clearly described?	N/A	N/A	N/A	Yes	Yes	No	N/A	Yes	Yes
23. Were diagnostic tests or assessment methods and the results clearly described?	N/A	N/A	N/A	Yes	No	Yes	N/A	Yes	No
24. Was the intervention or treatment procedures clearly described?	N/A	N/A	N/A	Yes	Yes	Yes	N/A	Yes	No
25. Was the post-intervention clinical condition clearly described?	N/A	N/A	N/A	Yes	Yes	No	N/A	Yes	No
26. Were adverse events (harms) or unanticipated events identified and described?	N/A	N/A	N/A	No	No	No	N/A	No	No
27. Does the case report provide takeaway lessons?	N/A	N/A	N/A	Yes	Yes	No	N/A	Yes	No
Total (%) and quality rating.	7/9 (77%)	7/9 (77%)	14/19 (73%)	10/13 76%	7/11 (63%)	11/17 (64%)	5/9 (55%)	11/17 (64%) Moderate	6/17 (35%) Poor

	Mod erat e	Mod erat e	Mod erat e	Mod erat e	Mod erat e	Mod erat e	Mod erat e		

Appraisal Tool Key: 'Yes' = 1 point, 'No' = 0 points, '?' (unknown) = 0 points, 'N/A' = 0 points (with a point subtracted from the total possible score).

Paper Two: Empirical Paper

The Role of Hope in those Recovering from an Acquired Brain Injury: Are Shame, Adaptive Guilt, Psychological Flexibility, Perceived Responsibility for Injury, and Injury Severity Predictors?

Target Journal: Journal of Neuropsychology

The paper has been formatted according to guidelines for the target journal (See Appendix A).

Word count: 8152

Abstract

An acquired brain injury (ABI) is an injury to the brain that occurs after birth but is unrelated to congenital or degenerative conditions. It can lead to an array of difficulties including physical and mental health difficulties and an overall reduced level of functioning. Many people with an ABI benefit from engaging with goals-based rehabilitation services to aid their recovery. Research has explored the variables that can predict outcomes for people with an ABI. Hope is identified as a protective buffer against emotional distress, a predictor of self-worth, and has a positive impact on life satisfaction and goal achievement in other population groups (i.e. Multiple Sclerosis and cancer). The hypotheses were that adaptive guilt, perceived responsibility for injury, psychological flexibility, shame, and injury severity would predict levels of hope. No previous research has predicted hopefulness after an ABI. An online survey measuring the aforementioned variables was developed, and the data analysed using a multiple regression model. It was found that higher levels of adaptive guilt and lower levels of shame and injury severity were significant predictors of higher levels of hope. Perceived responsibility for injury and psychological flexibility were not found to be significant predictors of hope. This provides tentative evidence for the focus on shame reducing clinical interventions after an ABI, such as Compassion Focused Therapy (CFT). Future research could investigate the impact of related variables that may account for the remaining variance in the model, including empathy, insight, and social support.

Introduction

Acquired Brain Injury (ABI)

An ABI is usually defined as an injury to the brain caused by a single event that cannot be attributed to a congenital or degenerative condition and occurs after birth (Campbell, 2004). This includes incidents of traumatic brain injury caused by external force and non-traumatic injury caused by stroke, tumours, aneurysm, hypoxic brain injury and injury related to infections such as encephalitis or meningitis (Parker et al., 2018). Some people who experience the cumulative effect of multiple concussions (now labelled persistent post-concussive syndrome) may not be diagnosed with an ABI due to not reaching clinically significant cut off points on diagnostic measures, which suggests that the number of people affected by an ABI may be much higher (Serrano-Navarro et al., 2022). The long-term effects of an ABI vary in severity and can include fatigue, impaired communication, problems with mobility, executive dysfunction (problems with decision making and problem solving etc), memory difficulties, attentional difficulties and can cause or exacerbate existing anxiety and depression (Headway, 2022).

A systematic review of the literature found that people who had experienced an ABI can make good recoveries when provided with interventions such as psychoeducation and comprehensive goals-based rehabilitation programmes using a multidisciplinary team approach in both inpatient and community settings (Turner-Stokes et al., 2015). Data from 2019/20 indicates that 356,699 people attended hospital with an acquired brain injury in the UK (Headway 2022). A government research briefing estimated that in 2019 there were 1.4 million people living in the UK with a brain injury, many of whom will require physical or mental health interventions and will need financial or vocational support due to inability to work (Barber et al., 2019). Faulkner et al. (2021) found that there has been a shift in understanding within ABI research, with more current research proposing that more than half of individuals living with a mild ABI experience the after affects for significantly longer than historically believed (years rather than months), with a long lasting increase in anxiety, depression and other mental health difficulties and a reduction in functioning leading to reduction of quality of life (Carroll et al., 2014; James & Theodom, 2019;).

ABI research is important given the wide-ranging effects for the individual and the impact on their support networks. It is also a pertinent subject to research given that between March and June 2022 there was a call for evidence from individuals and families affected by ABI and charities and organisations who support them, in order to inform the government's first ABI strategy for supporting those affected (Department of Health and Social Care, 2022).

Hope

Given the significant impact of an ABI, it is important to identify what may be helpful in reducing some of the negative effects of the injury in helping individuals adjust to and/or recover. One such concept is that of hope. Snyder et al. (1991) suggest hope is "a positive motivational state that is based on a combination of successful *agency* thinking (using self-talk such as "I can do this") and *pathways* thinking" (planning to meet goals and improving self-confidence such as "I'll find a way to get there"). These forms of thinking are pertinent to the ABI population due to a focus on goals-based rehabilitation for recovery (Prescott et al. 2015). Research in other areas has found hope to be a protective factor against stress, depression, and suicidal ideation in groups such as cancer survivors, people with multiple sclerosis (MS) and those with epilepsy (Fischer et al., 2018; Ho et al., 2010; Pais-Rabero, et al. 2007), and in the general population (Huen et al., 2015). Hope is also a predictor of self-worth in burns victims (Barnum et al., 1998), and been shown to improve life satisfaction and goal achievement in spinal cord injury rehabilitation (Dorsett, 2010).

Research is lacking, though, in relation to hope in the ABI population. Peleg et al. (2009) found a significant negative moderate correlation between hope and depressive symptoms for people with an ABI. Additionally, a longitudinal study by Bright et al. (2013; 2020) found hope one year after a stroke contributed to positive recovery outcomes by improving motivation and by helping people to cope with uncertainty regarding their recovery. Given the high prevalence of mental health difficulties in the ABI population which leads to poor recovery outcomes (Faulkner et al., 2021; Nelson et al., 2019), it is important to understand what may predict hope after an ABI. While hope may buffer against some of the effects of an ABI, it is likely to be affected by other variables.

Shame

Another construct which could be related to a person's identity after an ABI is shame. Gilbert and Procter (2006) identified that there are two different aspects to shame: internal (negative self-evaluation) and external shame (perceived negative evaluation by others). Negative self-evaluations related to shame are centred around the entire self-identity ("I am a bad person"), rather than related to specific behaviours ("I did a bad thing"), which can lead to a person feeling worthless or inferior (Niedenthal et al., 1994). People who experience high levels of shame are more likely to have mental health difficulties such as anxiety and depression (Gilbert, 1997, 2003; Kim et al., 2011; Tangney & Dearing, 2014). Evidence suggests that depressive symptoms caused by feelings of shame can be explained by decreased social support (others withdrawing from a person) and the person themselves withdrawing from social interaction (Joiner et al., 1999), or a perceived reduction in social rank (Gilbert & McGuire, 1998). This may be exacerbated for people with an ABI who often experience embarrassment and lose relationships because they withdraw from others due to their reduced level of functioning and increased dependence on others (i.e. inability to drive, wash or dress self; Ambridge et al., 2020; Freeman et al., 2015; Jumisko et al., 2005). Shame has been found to be negatively correlated with hope in the cancer population (Shahvand & Sarafraz, 2020).

People may also feel shame when they are unable to meet their goals (Kohut, 1977). Theoretically, shame may be associated with difficulties in *pathways thinking* (the ability to plan to meet goals), resulting in lower levels of hope according to Snyder et al.'s hope theory (1991). As hope is a buffer against emotional distress and shame is common in many mental health conditions (Gilbert, 2009), it would be useful to understand if higher levels of shame are predictive of lower levels of hope. Clinically, understanding the relationship between shame and hope is important because shame and self-blame can be targeted within therapeutic interventions, such as Compassion-Focussed Therapy and Acceptance and Commitment Therapy. Thus, reducing levels of shame and self-blame may lead to higher levels of hope and more positive outcomes.

Adaptive Guilt

Although shame and guilt are often considered together clinically (Sheehy et al., 2019), they have been differentiated in the literature as related but separate. While shame is associated with negative evaluations of the self (Niedenthal et al., 1994; Tangney & Dearing, 2014), guilt is behaviour specific ("that thing I did was bad"; Tangney et al., 2007). A specific type of guilt is adaptive guilt. Adaptive guilt is associated with emotional distress but increases motivation to engage in restorative behaviours (i.e. making amends for a misdemeanour) and is negatively correlated with depression, anger, and aggression (Tangney & Dearing, 2014; Tilghman-Osborne et al., 2008). Another specific type of guilt called behavioural self-blame (BSB) can lead to healthy and functional coping behaviours following a traumatic incident, which fosters resilience and the motivation to avoid the situation reoccurring (Carnì et al., 2013). Guilt can be viewed as a negative emotion (Cavalera, et al., 2018). But guilt can also be associated with empathy and restorative behaviours within relationships (Leith & Baumeister, 1998). It could be hypothesised that adaptive guilt that leads to positive behavioural change after an ABI (such as apologising for a transgression and ensuring it does not reoccur) may be reflective of higher levels of pathways (planning to meet goals) and agency ("I will get there") thinking, or hope. Tangney & Dearing (2014) believed adaptive guilt to be a "hopeful, future oriented…experience". This suggests that it may be possible to predict hope by measuring levels of adaptive guilt.

Perceived Responsibility

Perceived responsibility related to injury has also been associated with positive clinical outcomes, adaptive coping styles and lower levels of depression for people who have sustained a life changing spinal-cord injury (Athelstan & Crewe, 1979). Schultz and Decker (1985) found perceived responsibility for spinal-cord injury was moderately negatively correlated with levels of depression. Warren et al. (1996) discovered that 12 months after a TBI (traumatic brain injury), blaming oneself for the injury was related to significantly increased life satisfaction and associated with acceptance of the post injury circumstances and adoption of healthy coping skills during rehabilitation. It could be suggested that people who are motivated to engage

with successful rehabilitation programmes have higher levels of hopefulness through agency and pathways thinking.

Psychological Flexibility

As adaptive guilt is associated with acceptance of experience (Manstead et al., 1989), so too is psychological flexibility (PF). Psychological flexibility is defined as the ability to adapt to situations in order to pursue goals in line with one's values and is associated with good psychological health (i.e. by accepting and not avoiding emotional distress; Kashdan & Rottenberg, 2010). Gloster et al. (2017) found that psychological flexibility moderated the relationship between stress and mental health difficulties, with higher levels of psychological flexibility associated with lower levels of anxiety and depression than those who had less psychological flexibility, even if they reported higher levels of stress. After an ABI, low levels of psychological flexibility are predictive of a higher number of post-concussion symptoms and poorer recovery outcomes, and an increase in PF is associated with a reduction in psychological distress (Faulkner et al., 2021). If the ability to think flexibly in order to meet goals (pathways thinking according to Snyder, 2002) is not present, it could suggest that lower levels of PF may be predictive of lower levels of hope. Clinically, psychological flexibility can be increased using ACT interventions, which has been found to be effective overall for people with an ABI (Whiting et al., 2015).

Severity of Brain Injury

It is also important to consider factors specific to the ABI population. It is a heterogenous group, but research suggests that higher injury severity is predictive of higher mortality rates and poorer recovery outcomes (Andriessen et al., 2011; Perel et al., 2008). The most used measure for establishing severity of an injury at point of admission and predicting functionality over time are the Glasgow Coma Scale (GCS) (Teasdale & Jennett, 1974) and Glasgow Outcome Scale (GOS) (Jennett & Bond, 1975). The GCS is used at the point of injury and assigns scores to eye movement, verbal, and motor responses, with scores of 13-15 representative of mild ABI, 9-12 as moderate, and scores less than eight rated as severe (Zangari et al., 2022). However, research suggests that the ability of the GCS to predict recovery outcomes may be reduced over time because GCS and GOS results were no longer correlated past five years post injury (Balestreri et al., 2004). It has also been suggested that

injury severity may not significantly relate to psychological distress, functional skills, and recovery outcome as early as 12 months post injury (Novack et al., 2001). For these reasons, GCS scores will not be included in the present study, but a self-report of injury severity is included to explore whether injury severity predicts levels of hope. Research in other injured populations suggest that an increase in injury severity is associated with lower levels of hope (Lu & Hsu, 2013), though this has not been empirically tested in the ABI population.

Aims and Hypotheses

Although the literature suggests that the aforementioned variables could play a role in a person's life after an ABI, and that hope may have a positive effect in buffering against psychological distress and improve recovery outcomes, there is yet to be a study that looks at the relationship of shame, adaptive guilt, injury severity, psychological flexibility and perceived responsibility for injury, and there is no current research that uses these variables in predicting hope after an ABI. The use of multiple regression to predict the effect of the variables of shame, adaptive guilt, psychological flexibility, and hope was chosen because these variables can be targeted in psychological interventions such as Compassion Focussed Therapy or Acceptance and Commitment Therapy.

Hypothesis: Hope will be predicted by higher levels of perceived responsibility, higher psychological flexibility and higher levels of adaptive guilt and lower levels of shame and lower levels of injury severity.

Method

Design

The study is a quantitative, online, cross-sectional design, utilising multiple regression analysis to determine predictors of hope. To determine the required number of participants needed for the study, a power calculation was undertaken (Soper, 2023). For a multiple regression analysis with five predictors (shame, adaptive guilt, perceived responsibility for the ABI, psychological flexibility, and injury severity), with power set at 0.8, alpha at 0.5, for a medium effect size (0.15), 91 participants were required. A medium effect size was indicated based on previous

research exploring the relationship between shame and guilt (Cândea & Szentagotai-Tătar, 2018).

Recruitment

Participants were recruited using online sources, advertising through social media using a personal account specifically created for this purpose and through word of mouth and third-party charities. The charities involved were Headway, Brain Injury Rehabilitation Trust (BIRT), Stroke Association, The United Kingdom Acquired Brain Injury Forum (UKABIF) and Encephalitis International, all of whom agreed to share a social media advertisement (See Appendix B). Some groups on social media that agreed to advertise the study were Brain Injury Awareness UK, Traumatic or Acquired Brain Injury Support Group, Brain Injury Support Group and Brain Injury Meeting Place Survivors, Families, Professionals, Researchers. The Stroke Association advertised to their own service user involvement panel, and to their local services across the UK.

Inclusion Criteria:

- Adults (18 and over) with an ABI. This was defined as those with an injury to the brain that is not hereditary, congenital, or degenerative, and was not caused by birth trauma. Some examples of the nature of an ABI include traumatic brain injury, stroke, encephalitis, anoxic/hypoxic injury, intracranial surgery, injury sustained by seizure disorders and aneurysms. Most research suggests that after an ABI the injured brain goes through a period of rapid change during the acute recovery stage, which then reduces over time and stabilises (Nudo, 2013).
- To avoid recruiting participants in their acute recovery stage, it was suggested that participants with a mild ABI do not take part if they are less than three months post injury (Ponsford et al., 2012). For those that have experienced a moderate to severe ABI, it was suggested that they do not take part if they are 12 months post-injury, due to the acute phase of recovery (Dikmen et al., 1990).

Exclusion Criteria:

- Participants with other neurological conditions such as Multiple Sclerosis, Parkinson's Disease, or a dementia, or those with a terminal illness (as this may influence their relationship with hopefulness).

- People that would require a translator (due to lack of funding).

- People who lack mental capacity.

Participant Characteristics

Ninety people with an ABI participated in the study (see Table 1). They mostly identified as female (70%) and they were aged from 20-79 years old (M = 50, SD = 12.74). The participants' ABI's occurred between one and 61 years ago (M = 12.73). Most participants had experienced encephalitis (37.8%); the second most common type of injury was TBI (35.6). Other types of ABI included stroke (11.1%), tumour (6.7%), aneurysm (4.4%), anoxic brain injury (1.1%), haemorrhage (1.1%). Two participants did not provide their type of ABI (2.2%).

Table 1

Sample Characteristics (n =90).

Demographic Characteristic	N (%)	M (SD) Range
Age (years)		50 (12.74) 20-79
Gender		
Female	63 (70%)	
Male	25 (27.8%)	
Non-binary	2 (2.2%)	
Time since ABI (Years)		12.73 (11.41) 1-61
Nature of ABI		
Encephalitis	34 (37.8%)	
TBI	32 (35.6%)	
Stroke	10 (11.1%)	
Tumour	6 (6.7%)	
Aneurysm	4 (4.4%)	
ABI type not specified	2 (2.2%)	
Anoxic Brain Injury	1 (1.1%)	
Haemorrhage	1 (1.1%)	

Abbreviations: n – number; % - percentage of participants; M – Mean; SD – standard deviation, TBI = Traumatic Brain Injury

Measures

Hope

The Adult Hope Scale (AHS; Snyder et al., 1991) measured hope in accordance with Snyder et al.'s (1991) theory of hope as a "positive motivational state based on an interactively derived sense of successful agency and pathways".

Agency is defined as the goal directed energy, and pathways thinking focuses on problem-solving in order to meet those goals. It is a 12-item scale using an 8-point Likert scale design using ratings from 1 = 'definitely false' to 8 = 'definitely true'. An example item from the agency subscale is, "I meet the goals that I set for myself". An example item from the pathways subscale is, "I can think of many ways to get out of a jam". Scores range from 8-64; scores of 40-48 are hopeful, 48-56 are moderately hopeful, 56 or higher represent high hope. The scale has good reliability (Cronbach α = 0.88) and has been validated for use with people who have had a brain injury (Creamer et al., 2009). The scale takes only a few minutes to complete. (See Appendix C).

Shame and Adaptive Guilt

The Test of Self-Conscious Affect 4 (TOSCA-4) by Tangney et al. (2008) is a scenario based self-report measure comprising 15 scenarios assessing features of shame and adaptive guilt. Respondents are asked to imagine themselves in each scenario and are provided with five different reactions and asked to rate the reactions according to how likely they are to experience them on a 5-point scale from "not likely" to "very likely". Scores are allocated between 0 and 4 for each item. Each response represents five different subscales which can be combined into a single shame 'score' and a single 'adaptive guilt' score ranging from 30-150, with higher scores reflective of higher levels of shame and adaptive guilt. An example of a scenario is, 'Imagine that you make plans to meet a friend for lunch. At five o'clock, you realise you have stood your friend up'. Participants must rate the likelihood of their having the following reactions: 'How likely is it that it would weigh on your mind, thinking about what happened?', 'How likely is it that you would feel like a lousy friend?', 'How likely is it that you'd feel so terrible you'd avoid their calls?', 'How likely is it that you'd make it up to your friend as soon as possible?', and 'How likely is it that you would think: "My friend should have reminded me?"'. When subscales are combined there is excellent internal consistency for both the shame scale α = .91 and adaptive guilt scale α = .89 respectively (Malouf et al., 2017). This study also found good reliability score (r = .64) for the shame scale and an excellent reliability score (r = .77) for the adaptive guilt scale. The scale takes approximately ten minutes to complete. (See Appendix D).

Psychological Flexibility

The Acceptance and Action Questionnaire Acquired Brain Injury (AAQ-ABI) (Whiting et al., 2015) is adapted from the AAQ-II (Bond et al., 2011) to assess psychological flexibility after an ABI. It is a nine item Likert scale, and participants are asked to rate each item according to how reflective it is of their experience on a scale of 0-4 (0= not at all true, 4 = very true). Example items are, "I stop doing things when I feel scared about my brain injury" and "I would give up important things in my life if I could make my brain injury go away". The range of scores are 0-36, with higher scores reflective of lower psychological flexibility. Psychometric properties of the AAQ-ABI show good reliability (Cronbach's α = 0.87) (Rauwenhoff et al., 2021). High correlation between the AAQ-II has been found (rs= .70, N= 75, p< .01) (Whiting et al., 2015). This measure takes a few minutes to complete. (See Appendix E).

Injury Severity

Due to a lack of appropriate existing measures, a scale measuring injury severity was created by adapting the Defence and Veterans Pain Rating Scale (Buckenmaier et al., 2013), which asks participants to consider the limitations that their difficulties place on their daily life (Blackburn et al., 2018). Participants were provided with the question 'Thinking about your brain injury, to what extent does your brain injury impact on your life? For example, is your concentration span shorter than it was, and does this mean you find it hard to read books/watch television/ watch films?'. Participants were asked to rate on a scale of 0-10, with '0=does not impact on my life at all', '5= barrier to some activities', '10=as bad as it could be, bed bound '. The descriptors were created with support from two clinician researchers. The scale includes colours and faces to indicate incremental increases in severity of impact of their ABI (from a green colour with a neutral facial expression indicating a low score, to a red colour accompanied by an extremely distressed facial expression indicating a high score of impact; all features that have been described as user friendly and accessible (Blackburn et al., 2018). Scores were categorised (mild = 1-4; moderate = 5-6; severe 7-10). Higher scores are reflective of higher impact of ABI (injury severity) on a person's daily life (See Appendix F).

Perceived Responsibility for ABI

Due to a lack of measures of perceived responsibility, a scale from 0-100 was given to participants to rate how much they perceive themselves responsible for their injury, with '0' reflective of no responsibility at all, and '100' indicative of feeling as responsible as possible for their injury (See Appendix G). This scale was used in a study by Ambridge et al. (2020), which explored the influence of perceived responsibility on shame after an ABI.

Procedure

Ethical approval for the study was granted by the Staffordshire University ethics committee on 10th May 2023 (See Appendix H for ethical approval letter). The study was advertised online; participants clicked on a link included in the advert which took them to a webpage on Qualtrics which included a link to the participant information sheet (See Appendix I). The information sheet included the purpose of the study, the procedure, potential benefits, risks of taking part, information regarding the participant's right to withdraw their data and sources of support. If they wished to take part in the study, they continued through to a consent form which they were required to sign before proceeding by clicking, 'I hereby give my consent to take part in the study' after reading a series of statements (See Appendix J). If they did not consent, they could not proceed to the next page. Participants were asked to provide demographic information (age, gender, nature of their ABI and month and year since ABI). Participants were then asked to complete the questionnaires, taking approximately 15 minutes to complete. At the end of the questionnaires, participants were offered a link leading to a debrief sheet, which again offered information regarding support (See Appendix K). The information, consent and debrief forms could be downloaded for participants to retain their own copies.

Data Analysis

Screening and Assumptions

Questionnaire data was collated in a spreadsheet. There was no missing data due to the use of forced response method of data collection. Data were transferred from the spreadsheet and analysed using IBM SPSS Statistics Version 29.

Normality checks were completed (See Appendix L). The assumptions were met for the multiple regression method. Data was checked for violations including multicollinearity between the variables, independence of residuals, evidence of outliers and violations of homoscedasticity, normality, and linearity (Field, 2017). Two outliers were identified but when running the data with and without these two outliers to check their influence on the data, they were not duly influential and thus were retained. The p plot of regression standardised residual did not show a completely normal distribution but did not violate normality enough to warrant correction (See Appendix M).

Analysis

The multiple regression analysis was conducted between the predictor (independent) variables (injury severity, perceived responsibility for injury, shame, adaptive guilt, and psychological flexibility) and the criterion (dependent) variable (hope). All predictor variables were inputted at the same time.

Results

Descriptive Statistics

The descriptive statistics for the study variables of perceived responsibility, injury severity, psychological flexibility, shame, adaptive guilt, and hope are in Table 2.

Table 2

Descriptive Statistics for the Study Variables.

Variable	Mean	Standard Deviation	Range
Perceived responsibility (0-100)	19.23	29.6	0-100
Injury severity	5.44	2.15	1-10
Psychological flexibility (AAQ-ABI)	18.76	14.6	3-141
Shame (TOSCA 4)	85.74	27.34	30-139
Adaptive Guilt (TOSCA 4)	123.56	25.32	31-150
Hope (AHS)	35.67	11.65	4-59

Correlations

Correlation analysis was completed (see Table 3). There was a significant weak negative correlation between hope and shame, with higher levels of shame associated with lower levels of hope ($r = -.21$, $p < .05$). A significant moderately

positive correlation was found between levels of hope and adaptive guilt, with higher levels of adaptive guilt associated with higher levels of hope ($r = .44$, $p < .001$). A significant but weak negative correlation was found between psychological flexibility and shame, with lower levels of psychological flexibility associated with higher levels of shame ($r = .25$, $p < .01$). There was also a significant but weak positive correlation found between shame and adaptive guilt, with higher levels of shame associated with higher levels of adaptive guilt ($r = .25$, $p < .01$). A weak negative correlation was approaching significance between psychological flexibility and injury severity ($r = .17$, $p = .052$), with lower levels of psychological flexibility associated with greater injury severity.

Table 3

Pearson's Correlations for Study Variables.

Variable	1	2	3	4	5	6
1.Hope	-					
2. Perceived Responsibility	.06	-				
3. Injury Severity	-.2	-.02	-			
4. Psychological Flexibility (AAQ-ABI)	-.12	.16	.17	-		
5. Shame (TOSCA 4)	-.21*	.06	.01	.25**	-	
6. Adaptive Guilt (TOSCA 4)	.44***	-.03	.09	-.01	.25**	-

Note. *$p < .05$; **$p < .01$; ***$p < .001$.

Multiple Regression

Multiple regression was completed using the predictor variables of perceived responsibility for the injury, injury severity, psychological flexibility, shame, and adaptive guilt, with hope as the dependent variable (see Table 4 and Appendix L). The predictor variables were all inputted simultaneously.

The regression was significant ($F (5, 84) = 9$, $p < .001$), accounting for 34.9% of the variance in levels of hope (31% when adjusted). The study hypotheses were partially met as shame ($\beta = -.34$, $p < .001$), adaptive guilt ($\beta = 0.52$, $p < .001$), and injury severity ($\beta = -.18$, $p < .05$) were significant predictors of hope. Adaptive guilt was the strongest predictor. However, perceived responsibility ($\beta = .01$, $p = .28$) and psychological flexibility ($\beta = -.02$, $p = .82$) were not significant predictors.

Table 4

Multiple Regression Analysis of Perceived Responsibility, Injury Severity, Psychological Flexibility, Shame, and Adaptive Guilt as Predictors of Hope.

	Multiple Regression					
	B	SE B	β	Sig.	95% CI	
					Lower	Upper
Constant (Hope)	23.1	6.15		<.001	10.82	35.3
Perceived Responsibility	.04	.04	.1	.28	-.03	.11
Injury Severity	-.1	.48	-.18	<.05	-1.95	-.02
Psychological Flexibility (AAQ-ABI)	-.02	.08	-.02	.82	-.17	.13
Shame (TOSCA 4)	-.14	.04	-.34	<.001	-.22	-.07
Adaptive Guilt (TOSCA 4)	.24	.04	.53	<.001	.16	.32

Note. B = unstandardised coefficient; SE B = standard error; β = standardised coefficient.

The multiple regression was re-run adding only the significant predictor variables, to improve the accuracy of the analysis (shame, adaptive guilt, and injury severity) (See Table 5 and Appendix M). The model was significant ($F_{(3,86)}$ = 14.75, p < .001), accounting for 34% of the variance in hope (31.7% adjusted). Shame (β = -.34, p <.001), adaptive guilt (β = .52, p < .001), and injury severity (β = .18, p <.05) were significant predictor variables, with adaptive guilt being the strongest predictor.

Table 5

Multiple Regression Analysis of Shame, Adaptive Guilt, and Injury Severity as Predictors of Hope.

	Multiple Regression					
	B	SE B	β	Sig.	95% CI	
					Lower	Upper
Constant (Hope)	23.67	6.1		<.001	11.56	35.77
Shame (TOSCA 4)	-.14	.04	-.34	<.001	-.22	-.07
Adaptive Guilt (TOSCA 4)	.24	.04	.52	<.001	.16	.32
Injury Severity	-1	.48	-.18	<.05	-1.94	-.05

Note. B = unstandardised coefficient; SE B = standard error; β = standardised coefficient.

Discussion

Research suggests that shame, adaptive guilt, psychological flexibility, injury severity and a person's perceived responsibility for the injury can impact a person's life after an ABI, and hope can protect against emotional distress and contribute to successful rehabilitation. The aims of the study were to determine if the aforementioned variables can predict how hopeful a person may be after an ABI.

The results partially supported the study hypothesis that levels of adaptive guilt, perceived responsibility, psychological flexibility, shame, and injury severity would predict levels of hope. The use of unvalidated outcome measures threaten the validity of the data regarding injury severity and perceived responsibility. The regression analysis suggests that lower levels of shame and injury severity and higher levels of adaptive guilt significantly predict higher levels of hope for a person after an ABI, with adaptive guilt being the strongest predictor variable. The variables of perceived responsibility and psychological flexibility were not significant predictors of hope.

Adaptive guilt as the strongest predictor of levels of hope after a brain injury is supported by previous research. Some research suggests that guilt after an ABI increases susceptibility to depression (Kennedy et al., 2007). However, Tangney et al. (2007) suggest that guilt consists of subtypes, with adaptive guilt associated with the motivation to engage with restorative behaviours such as anger management techniques and having increased empathy for others, and is negatively correlated with anxiety, depression, and aggression (Tilghman-Osborne et al., 2008). Conceptually, adaptive guilt is associated with engaging in restorative behaviours to make amends for transgressions (Bastin et al., 2016). It is possible that following an ABI, a person may engage in behaviours that are incongruent with their pre-injury self (i.e. being quick to temper), they may feel guilty and then engage in restorative behaviours (apologise and seek anger management) as a result of higher levels of hope ("My relationship will be ok"). It must be highlighted that the sample comprises mostly of people identifying as female, and previous research has found that females are more likely than males to report experiencing adaptive guilt (Lutwak et al., 2001), so it could be that the results are not generalisable to other sexes.

The second significant predictor variable was shame. Higher levels of shame were associated with lower levels of hope. This is consistent with the existing evidence base which suggests that shame is negatively correlated with hope in cancer populations (Shahvand & Sarafraz 2020). Hughes et al. (2020) found that discrepancies between pre-and-post injury self and perceiving the present self as negative were positively correlated with shame and predicted increased emotional distress and reduced quality of life. Theoretically, shame after an ABI could be explained by a person believing they are less worthy because they rely on others more due to new problems with cognitive impairment (i.e. short-term memory loss) or problems with activities of daily living (i.e. bathing and dressing) (Ambridge et al., 2020; Freeman et al., 2015; Jumisko et al., 2005). A relationship between reduction in functioning and shame is tentatively supported by the current study, as injury severity was a significant predictor; this would be useful to consider in future research. Kohut (1977) suggested that shame arises when people are unable to achieve their goals, which relates conceptually to agency and pathways thinking in Snyder's hope theory. Theoretically, if people are unable to achieve their goals after an ABI, they may experience more shame. This suggests that shame reducing interventions may be helpful during rehabilitation programmes, particularly if service users face barriers in achieving their goals.

The final significant predictor of levels of hope is injury severity. This is broadly in line with much research which associates increased injury severity with less favourable outcomes, functionality, and higher rates of mortality (Andriessen et al., 2011; Perel et al., 2008). It must be noted that the mean score on the severity scale was 5.44 (moderate ABI), and the mean age of the participants in the current study is 50 years old, with an average of 12.73 years since the time of the injury. Research suggests that prognosis can be poorer for those who are over the age of 40 years old when they sustain their ABI (Dhandapani et al., 2012), so it could be that the results of the study are reflective of the participants' age and injury severity and may not reflect the experiences of younger people with an ABI.

The evidence base is mixed regarding the ability to measure ABI severity and its associated effects. Though the GCS and GOS are used often in research, the GCS loses its ability to predict recovery over time (Balestreri et al., 2004) and the GOS is insensitive to change in mild ABI, leading to an inability to agree on the most appropriate measure of injury severity (Biester, 2013). The measure of injury severity

used in the current study was a novel measure created due to a lack of measures both extensive enough to capture the experience of a person with ABI and appropriate in its brevity due to the anticipated fatigue experienced by participants. The measure was adapted from the validated Defence and Veterans Pain Rating Scale (Buckenmaier et al., 2013). The measure included faces and colours to increase accessibility, but a major limitation is that it is a novel measure that has not been validated for use. This means that the scale may not measure what it intends to measure, and so the results may not be valid. As the measure uses only a single item, it could be that it does not capture the full breadth of psychological, physical, and social effects of an ABI, and the variability that could occur between them. Problems with measurement notwithstanding, Novack et al (2001) suggested that injury severity was not significantly associated with psychological distress or a person's ability to function in daily activities as early as a year post injury. This suggests that there may be other factors that are more important in predicting recovery from an ABI than severity of injury.

Psychological flexibility was not found to be a significant predictor of hope within the regression model. Though no research has explored the ability of psychological flexibility to predict hope, Faulkner (2021) found that psychological flexibility aids recovery after a mild ABI, and some research suggests that both constructs closely overlap (Doorley et al., 2020). However, the participants in the Faulkner et al. (2021) study had experienced mild ABI's or post concussive symptoms and were only approximately 8 weeks post recovery from their injuries, which differs greatly from the current study (with a mean severity score of moderate ABI and a mean time of 12.73 years since injury). It could be hypothesised that the difference in results could be explained by lower levels of insight and increased injury severity in the current study, as is supported by previous research (Morton & Barker, 2010). The AAQ-ABI measure used in the current study measures psychological flexibility (including acceptance) of the ABI; it could be that insight into difficulties is related to the ability to accept change in circumstances post injury, which may be useful to explore in future research. In the current study, a weak negative correlation was also found to be approaching significance between psychological flexibility and injury severity. The non-significant findings could also potentially be explained by a problem of measurement. The AAQ-ABI was developed from the AAQ II, which has been found to be highly correlated with measurements of

psychological distress, including 0.70-0.71 correlations with the Beck Depression Inventory (Doorley et al., 2020), which means that there is a potential for a confounding variable in the current study of emotional distress. As there was not a measure of wellbeing included in the current study it could be that low levels of psychological flexibility according to the AAQ-ABI are indicative of high levels of symptoms of anxiety, depression, and other forms of distress. To protect against this confounding variable, future research could include a validated measure of emotional wellbeing to reduce measurement error and improve the validity of the results.

Perceived responsibility for injury was not a significant predictor of levels of hope after an ABI and was not significantly correlated with any of the other study variables. The existing evidence base suggests that blaming oneself for a TBI can be associated with significantly increased life satisfaction and better recovery outcomes (Warren et al., 1996), so it was expected that perceived responsibility may be related to acceptance (psychological flexibility) and hopefulness in the current study, which was not the case. A previous study exploring the relationships between perceived responsibility and shame after an ABI (Ambridge et al., 2020) also found that it was not a significant predictor variable, though both studies used the same measure so this could be a result of measurement difficulties.

Strengths and Limitations

Three measures used in the study have good to excellent psychometric properties (AHS, AAQ-ABI, and TOSCA 4), which means that there can be more confidence and replicability in the data yielded. Two measures have been used in previous research with people with a brain injury (AHS and AAQ-ABI), so the results are more likely to be generalisable to the brain injured population.

A significant limitation of the study is its use of novel outcome measures. The measures of injury severity and perceived responsibility have not been validated for use, though the latter has been used in previous research in perceived responsibility for injury (Ambridge et al., 2020; Delahanty et al., 1997 and Schnyder et al., 2008). The use of a single item to explore a construct is vulnerable to item specific measurement error and the focus of the item may be too narrow (Boateng et al., 2018); this means that the experiences of all people with an ABI may not be captured, making the results less generalisable and valid. This suggests that one

cannot be as confident in the results, and conclusions drawn from the data must be seen as tentative.

Another limitation of the study is its use of self-report measures. Self-report questionnaires can be susceptible to response bias and may yield invalid results (Kreitchmann et al., 2019). Even though this was mitigated in part by the anonymous nature of the data, these benefits could have been lost by the use of forced response questionnaires, which does not allow for the omission of answers and so may not reflect the participants precise experience (Demetriou et al., 2015). It is also exacerbated by problems of insight, which are common after an ABI, and means that participants may provide incorrect answers (Neumann & Zapan, 2020).

The nature of recruitment and data collection means that the results of the study may not be generalisable to people with an ABI without access to the internet. However, the global nature of social media means that data collection was not limited to people living in the United Kingdom (UK), so could be more representative of the wider ABI population. Nationality information was not collected as part of the study, but correspondence with the principal researcher suggests that the study was advertised in countries outside of the UK. Advertisement through charity organisations also means that people without personal access to the internet may be supported to complete the surveys by professionals. Additionally, the current study excluded those without mental capacity; though this is common in ABI research, it disregards the experience of a significant proportion of the ABI population (Smajdor, 2023). Another limitation of collecting online data is the emerging threat of automated responses provided by artificial intelligence. Goodrich et al. (2023) suggest some ways to safeguard against this threat include looking for variability in the data (bots exhibit less variability than humans), look for patterns in responses (i.e. 10 responses being completed at 9.05am) and using a second researcher to mitigate against human error.

Clinical Implications

The study provides some tentative evidence that high levels of shame is a significant predictor of low levels of hope after an ABI. The research suggests that hope is an important buffer against stress, depression, and suicidal thoughts, which are all common after an ABI (Fischer et al., 2018; Ho et al., 2010; Pais-Rabero, et al. 2007), as such the increase in levels of hope may prove an important intervention

consideration. As such, hope, shame, guilt and injury severity may be noticed from initial assessment appointments; it would be useful for clinicians to understand how the service user may be affected by the different constructs and what the relationships may be between them. It could also be useful to include other people in initial assessment appointments to help to triangulate information and understand if there are problems of insight. Additionally, providing the person time by themselves once a therapeutic rapport has been built, might encourage them to discuss topics that they may find sensitive (i.e. shame and guilt). It may also be useful to consider how clinicians and friends, or family relate to hopefulness and find out how able they are to hold hope for the service user, including consideration of the barriers to hope. Bringing attention to hope and understanding the function of hope for a person with an ABI may provide a way to move away from a problem-focussed approach, which is common in mental health services.

As the results suggest that lower levels of shame may be associated with higher levels of hope, it may be useful to reduce feelings of shame where possible. The reduction of shame is targeted in CFT by the increase of compassion to self and others by increasing self-acceptance and the ability to self-soothe at times of distress (Gilbert & Proctor, 2006). There is a limited but growing body of literature suggesting that CFT may be helpful for people who have had an ABI, with statistically significant reductions in self-hatred, self-criticism, depression and anxiety, and a clinically meaningful increase in self-compassion, which all reduce feelings of shamefulness (Ashworth, 2014; Ashworth et al., 2015 and Shields & Ownsworth, 2013). CFT aims to reduce feelings of shame by bringing awareness to and changing critical self-talk and developing self-compassion through the use of mindfulness activities, compassionate imagery, compassionate letter writing and other activities (Gilbert, 2005). CFT can be used in 1:1 or as group interventions, or therapists could use CFT activities as part of their integrative work.

A potential barrier to the use of CFT is insight, as evidence suggests that people with an ABI with poor insight are not shame prone as they do not appreciate the true extent of their difficulties, but with an increase in awareness comes an increase in shame proneness (Fleming et al., 1998). It could be that CFT is most appropriate for people with at least partial insight, or that increasing insight takes place prior to the CFT intervention. Insight could be improved by allowing more time to pass, or by providing a person with an ABI strategies to improve awareness (by

being mindful of their performance, identify mistakes made and problem solve them; Mamman et al., 2022). However, with an increase in insight typically comes an increase in emotional distress, so it is important that people with an ABI are provided with the tools to cope with the distress (Hinkebein & Stucky, 2007).

Similarly, if higher levels of adaptive are associated with higher levels of hope, it is important to consider how to therapeutically approach adaptive guilt. Theoretically, for someone to experience adaptive guilt, they must have self-awareness regarding their transgressions and feel enough empathy to seek to repair any damage to a relationship (Tangney & Dearing, 2014). Thus, increasing insight and empathy may increase feelings of adaptive guilt.

Future Research

The regression analysis accounted for only 34% variance in predicting hope, suggesting that there are other variables that could explain the remaining variance in the model. Studies have suggested that areas of the brain activated during guilt include the anterior cingulate cortex, which is also activated during empathy (Lockwood, 2016). Reduced empathy is a common issue after an ABI (Jorna et al., 2021), with participants with ABI significantly more likely to have low empathy scores (70% of participants) compared with 31.8% of controls (DeSousa et al., 2010). Given they are both controlled by the same parts of the brain, it could be that higher levels of adaptive could be associated with higher levels of empathy. This also could mean that both are affected at the same time by damage caused by the ABI, but this would need to be corroborated by brain scans. Additionally, most of the current sample identified as female (70%), and a vast amount of evidence suggests that females show higher levels of empathy (Christov-Moore et al., 2014). Future research could include empathy as a predictor variable.

In both shame and adaptive guilt, the constructs are underpinned by relationships to the 'other', with shame related to self-evaluation (compared to others) and adaptive guilt related to appraisal of behaviour that can lead to engagement with restorative behaviours (with others) (Gevrekci & Çırakoğlu, 2017). Thus, there could be predictor variables such as social support that may account for the variance in the regression model, supported by an extensive evidence base on the positive effects of social support and community integration on quality of life and mental health (depression and anxiety) after an ABI (Pelletier & Alfano, 2000;

Proctor & Best, 2019; Stålnacke, 2007). Future research could explore the relationship between social support and hope.

A variable closely linked conceptually to the study variables is insight, a common challenge after an ABI (Jorna et al., 2021). There is a possibility that insight could interact with the study variables and may be a mediating factor. Previous research has found that people with an ABI who have no insight into their difficulties are less likely to experience shame because they do not appreciate the extent of the changes between their pre-and-post self, thus do not feel shameful about it (Prigatano, 1999). Future research could explore the role of insight, potentially as a mediator, by including clinician or carer reported measures alongside self-report measures to identify congruence.

Conclusion

In conclusion, the results suggest some tentative evidence that shame, adaptive guilt, and injury severity are significant predictors of levels of hope for a person after an ABI, though the use of novel outcome measures mean that the data on injury severity and perceived responsibility may not be valid. Previous research suggests that shame, adaptive guilt, and injury severity can interact with emotional distress and life satisfaction after an ABI. The evidence suggests that people who have had an ABI may benefit from a CFT intervention to target shame, though there may be some barriers, including problems of insight. Other variables that may be explored in future research include empathy, insight, and social support.

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Appendix A

Journal of Neuropsychology Submission Guidelines

Manuscript Categories and Requirements

- Research papers should be no more than 6000 words (excluding the abstract, reference list, tables, and figures).

Preparing the Submission

- **A short informative title.**
- **Abstract -** Abstracts for Research Papers should not exceed 250 words and should not have subheadings).
- **Include up to 7 keywords.**
- As papers are double-anonymous peer reviewed, the main text file should not include any information that might identify the authors.
- Main body: formatted as introduction, materials & methods, results, discussion, conclusion.
- References – this journal uses APA reference style; however, this will be taken care of by the typesetter.
- Tables (each table complete with title and footnotes). All abbreviations must be defined in footnotes. Footnote symbols: †, ‡, §, ¶, should be used (in that order) and *, **, *** should be reserved for P-values. Statistical measures such as SD or SEM should be identified in the headings.
- Figure legends: Legends should be supplied as a complete list in the text. Figures should be uploaded as separate files.
- Statement of Contribution.

General Style Points

For guidelines on editorial style, please consult the APA Publication Manual published by the American Psychological Association. The following points provide general advice on formatting and style.

- **Language:** Authors must avoid the use of sexist or any other discriminatory language.
- **Abbreviations:** In general, terms should not be abbreviated unless they are used repeatedly, and the abbreviation is helpful to the reader. Initially, use the word in full, followed by the abbreviation in parentheses. Thereafter use the abbreviation only.
- **Effect size:** In normal circumstances, effect size should be incorporated.
- **Numbers:** numbers under 10 are spelt out, except for: measurements with a unit (8mmol/l); age (6 weeks old), or lists with other numbers (11 dogs, 9 cats, 4 gerbils).

  Full details can be found at
  https://bpspsychub.onlinelibrary.wiley.com/hub/journal/17486653/homepage/forauthors.html

Appendix B

Social Media Advert

Brain Injury Research Opportunity

My name is Emily, and I am interested in finding out what can predict a sense of hopefulness for people after they have experienced a brain injury.

The study involves completing a questionnaire that will ask about your brain injury, experiences of working towards goals you have set and your experiences of shame, blame and adaptive guilt.

If you have had a brain injury and are interested in taking part in the study, please click on the link below which will give you more information. You can also request a paper copy of the questionnaire by emailing me.

https://staffordshire.qualtrics.com/jfe/form/SV_ebav1UMfqlsMdqC

Please contact Emily Hemming at h024852k@student.staffs.ac.uk if you have any questions about the study, would like more information or would like a paper copy posted to you.

Appendix C

Adult Hope Scale

(Developed by Rick Snyder, 1991. Reference: Gwinn, C. and Hellman, C. (2019) Hope Rising, How the Science of Hope Can Change Your Life. Morgan James Publishing).

Directions: Read each item carefully.
Using the scale shown below, please circle the number that best describes YOU.

Scale	
Definitely True	
Mostly True	
Somewhat True	
Slightly True	
Slightly False	
Somewhat False	
Mostly False	
Definitely False	

1. I can think of many ways to get out of a jam.

2. I energetically pursue my goals.

3. I feel tired most of the time.

4. There are lots of ways around any problem.

5. I am easily downed in an argument

6. I can think of many ways to get the things in life that are important to me

7. I worry about my health.

8. Even when others get discouraged, I know I can find a way to solve the problem

9. My past experiences have prepared me well for my future.

10. I've been pretty successful in life.

11. I usually find myself worrying about something.

12. I meet the goals that I set for myself.

1	2	3	4	5	6	7	8
1	2	3	4	5	6	7	8
1	2	3	4	5	6	7	8
1	2	3	4	5	6	7	8
1	2	3	4	5	6	7	8
1	2	3	4	5	6	7	8
1	2	3	4	5	6	7	8
1	2	3	4	5	6	7	8
1	2	3	4	5	6	7	8
1	2	3	4	5	6	7	8
1	2	3	4	5	6	7	8
1	2	3	4	5	6	7	8

Appendix D

TOSCA 4

Below are situations that people are likely to encounter in day-to-day life, followed by several common reactions to those situations.

As you read each scenario, try to imagine yourself in that situation. Then indicate how likely you would be to react in each of the ways described. We ask you to rate <u>all</u> responses because people may feel or react more than one way to the same situation, or they may react different ways at different times.
For example:

```
A.  You wake up early one Saturday morning.  It is cold and rainy outside.

a) You would telephone a friend to catch up on news.    1---2---3---4---5
                                                       not likely  very likely

b) You would take the extra time to read the paper.    1---2---3---4---5
                                                       not likely  very likely

c) You would feel disappointed that it's raining.       1---2---3---4---5
                                                       not likely   very likely

d) You would wonder why you woke up so early.          1---2---3---4---5
                                                       not likely   very likely
```

In the above example, you would rate ALL of the answers by circling a number.

For answer (a) you would circle a "1" if you wouldn't want to wake up a friend very early on a Saturday morning -- so it would be not at all likely that you would do that.

For answer (b) you would circle a "5" if you almost always read the paper if you have time in the morning (very likely).

For answer (c) you would circle a "3" if it's about half and half. Sometimes you would be disappointed about the rain and sometimes you wouldn't -- it would depend on what you had planned.

And for answer (d) you would circle a "4" if it you would probably wonder why you had awakened so early.

   Please do not skip any items -- rate all responses.

1. Imagine that you make plans to meet a friend for lunch. At 5 o'clock, you realize you stood your friend up.

not likely   very likely

a)   How likely is it that it would weigh on your mind, thinking about what happened?   1---2---3---4---5

b)   How likely is it that you would feel like a lousy friend?   1---2---3---4---5

c)   How likely is it that you'd feel so terrible you'd avoid their calls?   1---2---3---4---5

d)   How likely is it that you'd make it up to your friend as soon as possible?   1---2---3---4---5

e)   How likely is it that you would think: "My friend should have reminded me?"   1---2---3---4---5

2. While visiting a favourite relative, you accidentally break something you know is important to them.   not likely
very likely

a)   How likely is it that you would think about it over and over,   1---2---3---4---5
        wondering if you should replace it?

b)   How likely is it that you would feel like a loser?   1---2---3---4---5

c)   How likely is it that you would either fix it or get someone else to?   1---2---3---4---5

d)   How likely is it that you would think: "They should have put it   1---2---3---4---5
        in a safer place?"

e)   How likely is it that you would feel so worthless that you'd throw out the   1---2---3---4---5
        broken pieces and try to forget that it ever happened?

3. Imagine that you make a mistake at work and find out a new employee is blamed for the error.   not likely   very
likely

a) How likely is it that you would talk to your boss and tell what really happened? 1---2---3---4---5

b) How likely is it that you would feel sorry and wonder if you should speak up?   1---2---3---4---5

c) How likely is it that you would feel like a complete failure?   1---2---3---4---5

d) How likely is it that you would feel so awful that you would not want to face   1---2---3---4---5
        the new co-worker?

e) How likely is it that you would think the new employee probably deserved it?   1---2---3---4---5

4. You toss a bottle of water to your friend, and it accidentally hits them in the face.

                                                                                 not likely   very
likely

a) How likely is it that you would think maybe your friend needs   1---2---3---4---5
        to pay more attention?

b) How likely is it that you would apologize and make sure your   1---2---3---4---5
        friend feels better?

c) How likely is it that you would feel like a clumsy fool?   1---2---3---4---5

d) How likely is it that you'd feel like such a screw-up that you'd disappear at the 1---2---3---4---5
        first opportunity?

e) How likely is it that you would feel sorry and wish you had been more careful?   1---2---3---4---5

5. Imagine that you are driving down the road and hit a small animal.
                                                                                 not likely   very likely

a) How likely is it that you would think about it over and over,   1---2---3---4---5
        wondering if you could have avoided it?

b) How likely is it that you would think: "I'm a terrible person?"   1---2---3---4---5

c) How likely is it that you would drive slower next time?   1---2---3---4---5

d) How likely is it that you'd feel pained and avoid driving down that road?   1---2---3---4---5

e) How likely is it that you would think the animal shouldn't have   1---2---3---4---5
    been on the road?

6. You borrow your friend's car and accidentally put a dent in it while parking.
                                              not likely   very likely

a) How likely is it that you would worry about it and wonder if   1---2---3---4---5
    you should apologize?

b) How likely is it that you'd explain what happened to your friend   1---2---3---4---5
    and offer to pay or the damages?

c) How likely is it that you would feel like a horrible friend?   1---2---3---4---5

d) How likely is it that you'd return the car but would feel too awful   1---2---3---4---5
    to say anything?

e) How likely is it that you'd think that the car shouldn't be so big?   1---2---3---4---5

7. You are working with several other people on a rush job. You don't do your part and the job is late.   not likely   very likely

a) How likely is it that you'd feel so bad, you couldn't face your co-workers?   1---2---3---4---5

b) How likely is it that you would think that the others should   1---2---3---4---5
    have done more to help?

c) How likely is it that you'd feel like a failure?   1---2---3---4---5

d) How likely is it that you'd apologize to your co-workers and take responsibility?   1---2---3---4---5

e) How likely is it that it would bother you? You'd feel you let them down.   1---2---3---4---5

8. A group of tourists asks you for directions. After you have given them the directions, and they walk off, you realize the directions were wrong.
                                              not likely   very likely

a) How likely is it that you would run after them and help them find their way?   1---2---3---4---5

b) How likely is it that you would feel awful for having misled them?   1---2---3---4---5

c) How likely is it that you'd just want to sink into the floor and disappear?   1---2---3---4---5

d) How likely is it that you'd think: "It's not my fault they don't know   1---2---3---4---5
    where they're going?"

e) How likely is it that you'd think: "I'm so stupid, I can't do anything right?"   1---2---3---4---5

9. You borrow money from a good friend to help pay bills and promise to pay it back in a month. The next month you realize it will be a while before you can pay the friend back.
                                            not likely   very
likely

a) How likely is it that you'd feel really sorry about letting your friend down?   1---2---3---4---5

b) How likely is it that you would give up something you enjoy to   1---2---3---4---5
    save money to pay them back sooner?

c) How likely is it that you would feel like a loser?   1---2---3---4---5

d) How likely is it that you'd feel so bad it would be difficult just to be in   1---2---3---4---5
      the same room with them?

e) How likely is it that you'd think that it's your friend's fault for loaning money in   1---2---3---4---5
      the first place?

10. You are telling loud jokes at a party and say something that hurts a friend's feelings.

                                        not likely   very
likely

a) How likely is it that you would think: "My friend just doesn't have a sense   1---2---3---4---5
      of humour?"

b) How likely is it that you would apologize to them?   1---2---3---4---5

c) How likely is it that you'd feel bad about offending your friend? It would eat   1---2---3---4---5
      at you.

d) How likely is it that you'd slouch down in your chair and avoid   1---2---3---4---5
      eye contact for the rest of the night?

e) How likely is it that you'd feel like a jerk and wonder how you have   1---2---3---4---5
      any friends at all?

11. You forget to pick up your child from school one day. Your child waits and waits until finally the school calls you.

                                          not likely   very
likely

a) How likely is it that you would think that someone should have   1---2---3---4---5
      reminded you that day?

b) How likely is it that you would think: "I am a lousy parent who doesn't deserve   1---2---3---4---5
      to have children?"

c) How likely is it that you'd apologize and try to make it up to your child   1---2---3---4---5
      as soon as possible?

d) How likely is it that you'd feel very sorry for forgetting?   1---2---3---4---5

e) How likely is it that you would feel so bad, you'd avoid making eye contact   1---2---3---4---5
      with the teacher?

12. You forget your mother's birthday. She was expecting to hear from you.
                                      Not likely   very likely

a) How likely is it that you'd arrange a special birthday dinner to   1---2---3---4---5
      make up for your forgetfulness?

b) How likely is it that you would think: "I am a disgusting person?"   1---2---3---4---5

c) How likely is it that you'd feel terrible every time the phone rang but couldn't   1---2---3---4---5
      bring yourself to call her?

d) How likely is it that you would think that your mom expects too much?   1---2---3---4---5

e) How likely is it that you'd feel bad for disappointing her and would wonder   1---2---3---4---5
      how to make it up to her?

13. While staying at a friend's house, you leave the coffeemaker on and it catches on fire, causing a lot of damage.

not likely   very likely

a) How likely is it that you'd think: "They really should have bought a coffee pot that shuts off automatically?"   1---2---3---4---5

b) How likely is it that you'd feel like a worthless idiot?   1---2---3---4---5

c) How likely is it that you'd feel so horrible that you'd cut off all contact with your friend?   1---2---3---4---5

d) How likely is it that you would offer to clean up and repair the damage?   1---2---3---4---5

e) How likely is it that you'd obsess over it, wishing you had been more careful?   1---2---3---4---5

14. You promise to take care of your friend's dog while your friend is gone, and the dog runs away.

not likely   very likely

a) How likely is it that you'd feel so bad, you'd avoid the friend for months?   1---2---3---4---5

b) How likely is it that you'd think the dog should've been better trained?   1---2---3---4---5

c) How likely is it that you would feel upset for weeks because of the pain it caused your friend?   1---2---3---4---5

d) How likely is it that you would think: "I can't be trusted with anything important?"   1---2---3---4---5

e) How likely is it that you'd look for the dog for weeks, if necessary, to find it?   1---2---3---4---5

15. At a restaurant, you accidentally cause the waiter to trip, spilling food and drinks everywhere.

not likely   very likely

a) How likely is it that you would feel so sorry, worrying about the waiter and the mess?   1---2---3---4---5

b) How likely is it that you would feel like everyone is watching you and laughing?   1---2---3---4---5

c) How likely is it that you'd feel so stupid you'd excuse yourself to go to the bathroom, and keep on walking out the door?   1---2---3---4---5

d) How likely is it that you would think: "That waiter should watch where he or she is going?"   1---2---3---4---5

e) How likely is it that you'd help the waiter clean up the mess?   1---2---3---4---5
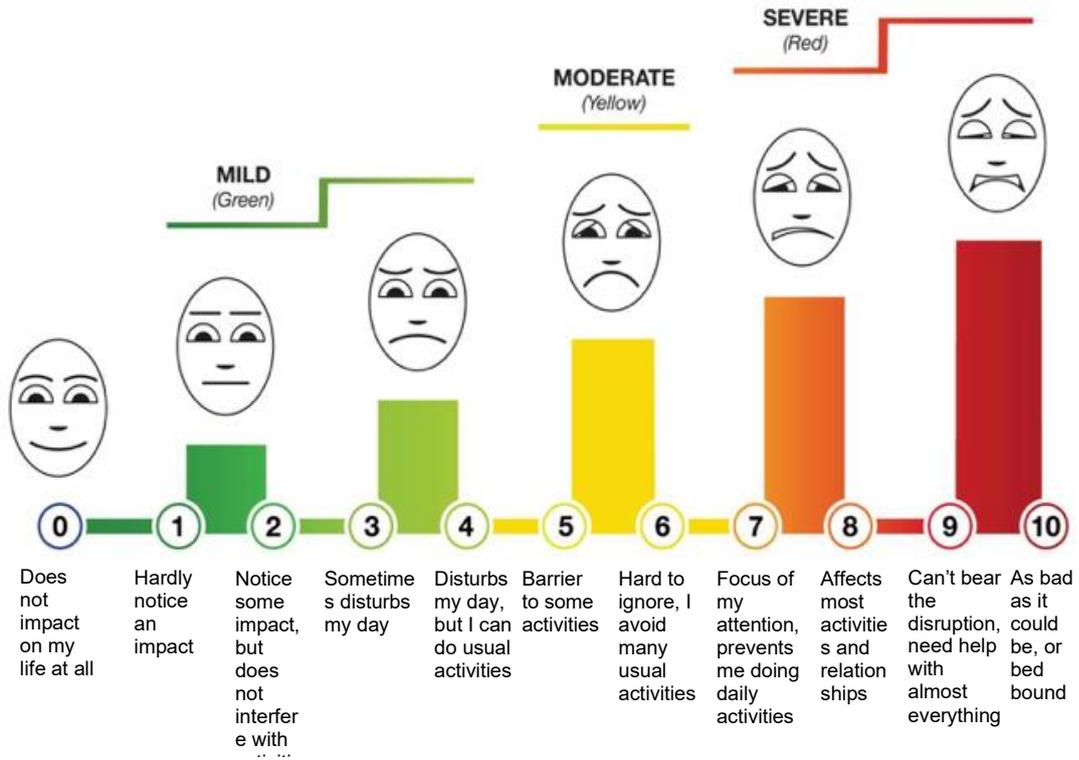
Appendix E

AAQ ABI

Acceptance and Action Questionnaire
Acquired Brain Injury (AAQ-ABI)

Read each sentence. Then, circle a number between 0-4 that tells <u>how</u>
<u>true</u> each sentence is for you

	Not at all true	A little true	Pretty true	True	Very True
1. I hate how my brain injury makes me feel about myself	0	1	2	3	4
2. I need to get rid of my anxiety about my brain injury	0	1	2	3	4
3. I stop doing things when I feel scared about my brain injury	0	1	2	3	4
4. My brain injury defines me as a person	0	1	2	3	4
5. I am moving forward with my life	0	1	2	3	4
6. I would give up important things in my life if I could make the brain injury go away	0	1	2	3	4
7. My worries and fears about my brain injury are true	0	1	2	3	4
8. Other people make it hard for me to accept myself	0	1	2	3	4
9. Most people are doing better than me	0	1	2	3	4

Appendix F

Severity of Injury Scale

0	1	2	3	4	5	6	7	8	9	10
Does not impact on my life at all	Hardly notice an impact	Notice some impact, but does not interfere with activities	Sometimes disturbs my day	Disturbs my day, but I can do usual activities	Barrier to some activities	Hard to ignore, I avoid many usual activities	Focus of my attention, prevents me doing daily activities	Affects most activities and relationships	Can't bear the disruption, need help with almost everything	As bad as it could be, or bed bound

Appendix G

Perceived Responsibility Scale

On a scale of 0-100 (0 = not at all responsible, 100 = fully responsible), how responsible do you feel for the brain injury?

_____

Appendix H

Ethical Approval Letter

School of Health, Science and Wellbeing

ETHICAL APPROVAL FEEDBACK

Researcher name:	Emily Hemming
Title of Study:	SU_22_252: The Role of Hope in those recovering from an Acquired Brain Injury: Are shame, adaptive guilt, psychological flexibility, perceived responsibility for injury and injury severity predictors?
Status of approval:	Approved

Thank you for addressing the committee's comments. Your research proposal has now been approved by the Ethics Panel and you may commence the implementation phase of your study. You should note that any divergence from the approved procedures and research method will invalidate any insurance and liability cover from the University. You should, therefore, notify the Panel of any significant divergence from this approved proposal. This approval is only valid for as long as you are registered as a student at the University.

You should arrange to meet with your supervisor for support during the process of completing your study and writing your dissertation.

When your study is complete, please send the ethics committee an end of study report. A template can be found on the ethics Blackboard site.

Signed: **Date: 10/05/2023**

Dr Jade Elliott

Ethics Co-ordinator
Psychology
School of Health, Science and Wellbeing

Appendix I

Participant Information Sheet

INFORMATION SHEET FOR PARTICIPANTS

Project Reference Number: ID: SU_22_252

Title of study

The Role of Hope in those recovering from an Acquired Brain Injury: Are shame, adaptive guilt, psychological flexibility, perceived responsibility for injury and injury severity predictors?

Invitation Paragraph

My name is Emily Hemming, and I am a Trainee Clinical Psychologist. I would like to invite you to participate in this research project which forms part of my Doctorate in Clinical Psychology postgraduate research. Before you decide whether you want to take part, it is important for you to understand why the research is being done and what your participation will involve. Please take time to read the following information carefully and discuss it with others if you wish. Please ask me if there is anything that is not clear or if you would like more information.

What is the purpose of the study?

A brain injury can influence a person's health, wellbeing, relationships, and daily lives. While some people recover quickly, others might live with the effects for a long time. Given how difficult the adjustment can be, it is useful to consider what may be helpful in supporting people. If a person is hopeful, it means they are less likely to experience depression or stress and can work towards goals that are important to them. Research suggests that some things that may affect hopefulness are shame, adaptive guilt, the severity of a person's injury, whether someone feels responsible for their injury and their psychological flexibility (being accepting of your experiences and being able to adapt to situations). This information can be helpful in supporting people with an ABI to become more hopeful.

Why have I been invited to take part?

You have been invited to take part because you identify as having had an acquired brain injury and are over the age of 18. This means that you have had an injury to the brain that is not from birth or a genetic condition. That includes people who have had a stroke, encephalitis, anoxic/hypoxic injury (caused by partial or total lack of oxygen to the brain), intracranial surgery, injury caused by seizure disorders, infections, aneurysms, or experienced trauma to the brain due to accidents, falls, car crashes or assaults. If your brain injury was mild, please only take part if you are at least 3 months post injury. If your brain injury was moderate to severe, please only take part if you are at least 12 months post injury.

Unfortunately, you are not eligible to take part in the study if you are under 18, have a degenerative condition (such as multiple sclerosis, Parkinson's Disease, or dementia), you

have a terminal illness, or if you require a translator. To take part you must have the mental capacity to make informed decisions regarding your participation.

What will happen if I take part?

If you would like to take part in the study online, please click on the link which will take you through to the Qualtrics survey. You will be asked to sign a consent form to take part. If you consent to take part, you will then click on a link to the survey. This survey will include questions which will ask you about your experience of hope, psychological flexibility, shame, adaptive guilt, the severity of your injury and you will be asked if you feel responsible for your injury. You will also be asked to provide your age and the gender you identify as. The entire survey will take approximately 15 minutes to complete. If you change your mind about taking part in the study, you can stop answering questions at any time during the survey by just closing the webpage. If you would prefer to complete the survey using a paper copy, please contact me at my university email address on h024852k@student.staffs.ac.uk and I can post a copy out to you with a stamped address envelope. After completing the questionnaires, you will see a participant debrief sheet. You can download both the information and debrief sheets to your device by clicking the available link.

The results of the online survey will be sent to me online. I will give them a code (i.e., first one will be number 1) and add the results to a password protected spreadsheet on my laptop. Paper copies will be anonymised, given a code, and added to the spreadsheet. The data will be analysed to see if hope can be predicted in a person's recovery from an ABI.

Do I have to take part?

No. Taking part is completely voluntary. You should only take part if you want to and choosing not to take part will not disadvantage you in anyway. Once you have read the information sheet, please contact us if you have any questions that will help you decide about taking part. If you take part in the online survey, you will be asked to tick a box to give consent to continue. If you request a paper copy, we will ask you to sign a consent form and you will be given a copy of this consent form to keep.

What are the possible benefits of taking part?

Whilst there are no direct benefits to taking part, some people find it an interesting and helpful process to share their views on topics that directly affect them. It is also hoped that the findings of this study will help to furthering an understanding of what might predict hopefulness after a brain injury.

What are the possible risks of taking part?

Although it is not expected that completing the survey will cause you to feel upset, given the nature of the questionnaires (asking you about your experience of your brain injury) this cannot be ruled out. If you do feel distressed as a result of the study, there is a list below of potential sources of support, and we would encourage you to access these should you need to:

Staffordshire mental health helpline: provide free emotional support to adults in Staffordshire who might be feeling upset or are worried about their mental health (or that of someone else). They can be contacted by phone on 0808 800 2234, via text on 07860 022 821 or using instant messaging on their website www.brighter-futures.org.uk

Samaritans: a UK wide charity provide free emotional support and signposting services to people struggling with difficulties related to their mental health. They can be contacted by telephone on 116 123 or via email at jo@samaritans.org. Some local branches may offer face to face advice, and they also offer a self-help app. More information can be found on www.samaritans.org

Headway: provide support specifically for those who have had a brain injury. They can be contacted on 0808 800 2244, and information on your local services can be found at www.headway.org.uk

Stroke Association: an organisation that supports those affected by stroke. There is a stroke helpline on 0303 3033 100. They have lots of information for stroke survivors and have contact details for local support in your area. https://www.stroke.org.uk

Do contact your GP if you feel that you require some support after completing the survey.

What if I change my mind about taking part?

You are free to withdraw at any point of the study, without having to give a reason. Withdrawing from the study will not affect you in any way. You can withdraw your data from the study up until February 2024 by emailing me. After which withdrawal of your data will no longer be possible due to analysis having already taken place.

If you choose to withdraw from the study, we will not retain any information that you have provided us as a part of this study.

What will happen to the results of the study?

A write up of the project will form a thesis held by Staffordshire University and will be submitted for publication in peer-reviewed journals. It may also be presented within professional forums such as conferences. The results of the study will be anonymised. Should you wish to see the result of the study, you can contact me via email address for a copy of an Executive Summary.

Data handling and confidentiality

Your data will be processed in accordance with the data protection law and will comply with the General Data Protection Regulation 2016 (GDPR).

The results of the survey will be received by me online. They will be assigned a code (the first one received will be numbered 1) and added to a password protected spreadsheet held in a separate folder in password protected university sharepoint according to University GDPR Policy. Data will only be shared within the research team (myself and my two research supervisors), and only with your consent. Physical copies of the survey will be digitised and securely destroyed. The spreadsheet will be deleted after 10 years. You can withdraw your information up until February 2024.

Data Protection Statement

Your data will be processed in accordance with the General Data Protection Regulation 2016 (GDPR).

The data controller for this project will be Staffordshire University. The university will process your personal data for the purpose of the research outlined above. The legal basis for

processing your personal data for research purposes under the GDPR is a 'task in the public interest'. You can provide your consent for the use of your personal data in this study by completing the consent form that has been provided to you.

You have the right to access information held about you. Your right of access can be exercised in accordance with the GDPR. You also have other rights including rights of correction, erasure, objection, and data portability. Questions, comments, and requests about your personal data can also be sent to the Staffordshire University Data Protection Officer. If you wish to lodge a complaint with the Information Commissioner's Office, please visit www.ico.org.uk.

Who should I contact for further information?

If you have any questions or require more information about this study, please contact me using the following contact details:

Emily Hemming (Trainee Clinical Psychologist): h024852k@student.staffs.ac.uk

If you prefer, you can contact my research supervisor, Dr Helen Scott (h.scott@staffs.ac.uk).

What if I have further questions, or if something goes wrong?

If this study has harmed you in any way or if you wish to make a complaint about the conduct of the study you can contact the study supervisor or the Chair of the Staffordshire University Ethics Committee for further advice and information:

Professor Nachiappan Chockalingam, Director of Research at Staffordshire University: n.chockalingam@staffs.ac.uk.

Dr Helen Scott, Study Supervisor and Research Director in Clinical Psychology at Staffordshire University: H.Scott@staffs.ac.uk.

Thank you for reading this information sheet and for considering taking part in this research.

Appendix J

Consent Form

RESEARCH PROJECT CONSENT FORM

Title of Project: The Role of Hope in those recovering from an Acquired Brain Injury: Are shame, adaptive guilt, psychological flexibility, perceived responsibility for injury and injury severity predictors?

Researcher: Emily Hemming

I have read and understood the information sheet.	Yes ☐ No ☐
I have been given the opportunity to ask questions, and I have had any questions answered satisfactorily.	Yes ☐ No ☐
I understand that my participation in this study is entirely voluntary and that I can withdraw at any time up until 1st February 2024 without having to give an explanation.	Yes ☐ No ☐
I consent that data collected could be used for publication in scientific journals or could be presented in scientific forums (conferences, seminars, workshops) and understand that all data will be presented anonymously.	Yes ☐ No ☐
I agree that data will only be used for this project, although the data may also be audited for quality control purposes.	Yes ☐ No ☐
I understand that my data will be sorted safely on a password protected computer (electronic data), or locked away securely (paper copies of data) for 10 years before being destroyed.	Yes ☐ No ☐
I hereby give consent to take part in this study.	Yes ☐ No ☐

_____   _____   _____
Name Participant (initial)   Date   Signature

_____   _____   _____
Name Researcher (print)   Date   Signature

Appendix K

Debrief Sheet

Title of project: The Role of Hope in those recovering from an Acquired Brain Injury: Are shame, adaptive guilt, psychological flexibility, perceived responsibility for injury and injury severity predictors?

Name of Researcher: Emily Hemming.

Thank you for taking part in this study. The sheet will provide you will full details of the study in which you participated.

The purpose of the study was to investigate predictors of hope following an acquired brain injury (ABI). The objective was to see if levels of shame, adaptive guilt, psychological flexibility, perceived responsibility for injury and the severity of a person's brain injury can predict how hopeful a person is.

Thank you again for taking part. If there is anything you would like to discuss in relation to this study, please feel free to do so by contacting the researchers. If you would like to withdraw your data, please speak to the researcher now or contact me later. The researcher has assigned your anonymity code on your information sheet. As your data is identified only by this code, you will have to quote it if you want your data to be destroyed later, so please take care not to lose this sheet.

If you feel distressed as a result of the study, there is a list below of potential sources of support, and we would encourage you to access these should you need to:

Staffordshire mental health helpline: provide free emotional support to adults in Staffordshire who might be feeling upset or are worried about their mental health (or that of someone else). They can be contacted by phone on 0808 800 2234, via text on 07860 022 821 or using instant messaging on their website www.brighter-futures.org.uk.

Samaritans: a UK wide charity provide free emotional support and signposting services to people struggling with difficulties related to their mental health. They can be contacted by telephone on 116 123 or via email at jo@samaritans.org. Some local branches may offer face to face advice, and they also offer a self-help app. More information can be found on www.samaritans.org.

Headway: provide support specifically for those who have had a brain injury. They can be contacted on 0808 800 2244, and information on your local services can be found at www.headway.org.uk.

Stroke Association: an organisation that supports those affected by stroke. There is a stroke helpline on 0303 3033 100. They have lots of information for stroke survivors and have contact details for local support in your area. https://www.stroke.org.uk

Do contact your GP if you feel that you require some support after completing the survey.

What if I have further questions, or if something went wrong?

If this study has harmed you in any way or if you wish to make a complaint about the conduct of the study you can contact the study supervisor or the Chair of the Staffordshire University Ethics Committee for further advice and information:

Professor Nachiappan Chockalingam, Director of Research at Staffordshire University: n.chockalingam@staffs.ac.uk

Dr Helen Scott, Study Supervisor and Research Director in Clinical Psychology at Staffordshire University: H.Scott@staffs.ac.uk

Appendix L

SPSS Output (5 Variables)

Casewise Diagnostics[a]

Case Number	Std. Residual	AdultHopeScale	Predicted Value	Residual
85	-3.529	4	38.16	-34.157

a. Dependent Variable: AdultHopeScale

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	4218.892	5	843.778	9.005	<.001[b]
	Residual	7871.108	84	93.704		
	Total	12090.000	89			

a. Dependent Variable: AdultHopeScale

b. Predictors: (Constant), TOSCAguilttotal, AAQABI, PerceivedResponsibility, InjurySeverity, TOSCAshametotal

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.591[a]	.349	.310	9.680	.349	9.005	5	84	<.001	1.798

a. Predictors: (Constant), TOSCAguilttotal, AAQABI, PerceivedResponsibility, InjurySeverity, TOSCAshametotal

b. Dependent Variable: AdultHopeScale

Histogram

Dependent Variable: AdultHopeScale

Mean = 4.66E-16
Std. Dev. = 0.972
N = 90
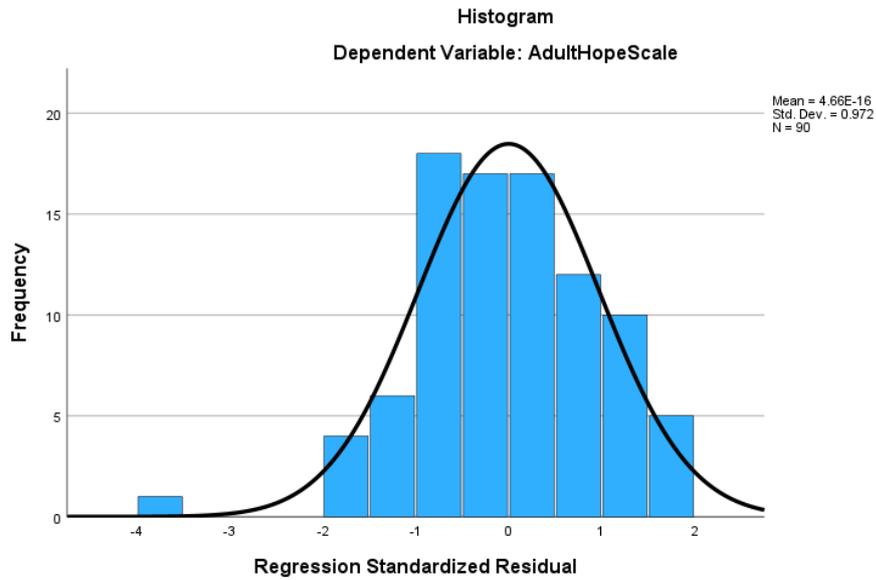
Coefficients^a

| Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	23.060	6.153		3.748	<.001	10.823	35.297					
	PerceivedResponsibility	.038	.035	.097	1.086	.280	-.032	.108	.057	.118	.096	.973	1.028
	InjurySeverity	-.984	.484	-.182	-2.031	.045	-1.947	-.020	-.202	-.216	-.179	.969	1.032
	AAQABI	-.017	.075	-.021	-.223	.824	-.165	.132	-.115	-.024	-.020	.886	1.128
	TOSCAshametotal	-.144	.040	-.339	-3.598	<.001	-.224	-.065	-.210	-.365	-.317	.875	1.143
	TOSCAguilttotal	.242	.042	.526	5.774	<.001	.159	.325	.444	.533	.508	.934	1.071

a. Dependent Variable: AdultHopeScale

Normal P-P Plot of Regression Standardized Residual

Dependent Variable: AdultHopeScale

Scatterplot

Dependent Variable: AdultHopeScale

Partial Regression Plot

Dependent Variable: AdultHopeScale

Partial Regression Plot

Dependent Variable: AdultHopeScale

Partial Regression Plot

Dependent Variable: AdultHopeScale

Partial Regression Plot

Dependent Variable: AdultHopeScale

Partial Regression Plot

Dependent Variable: AdultHopeScale
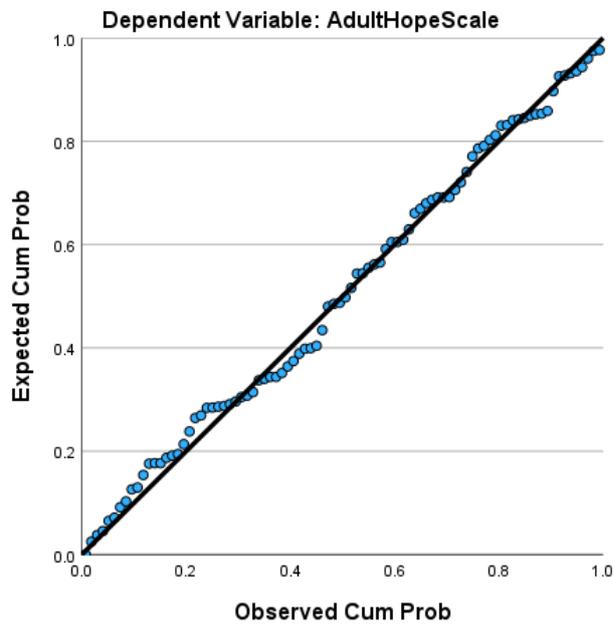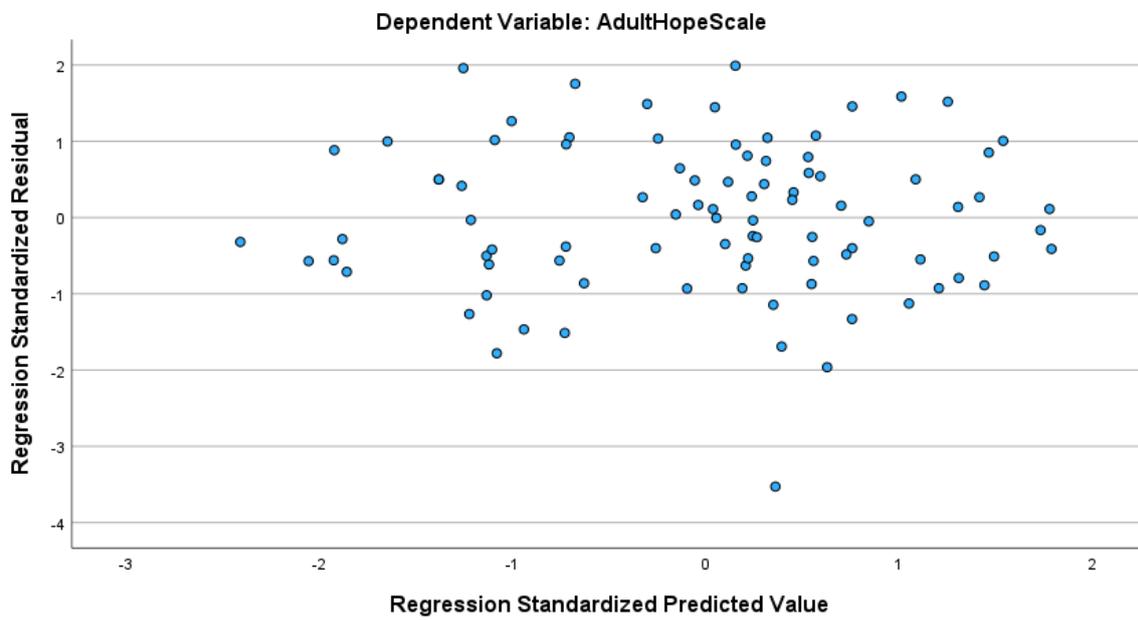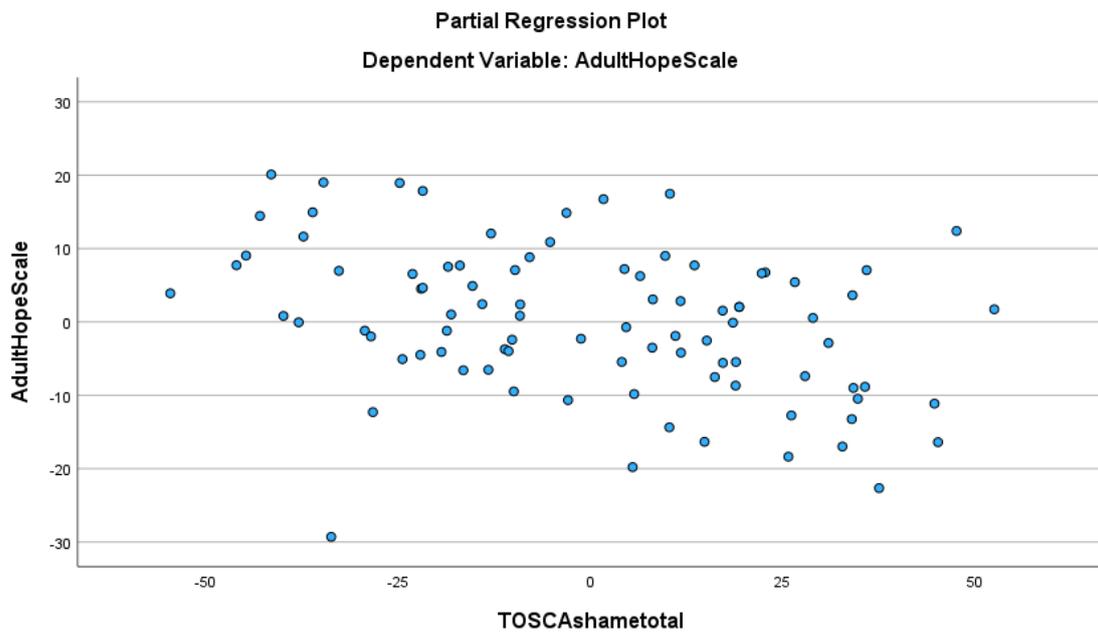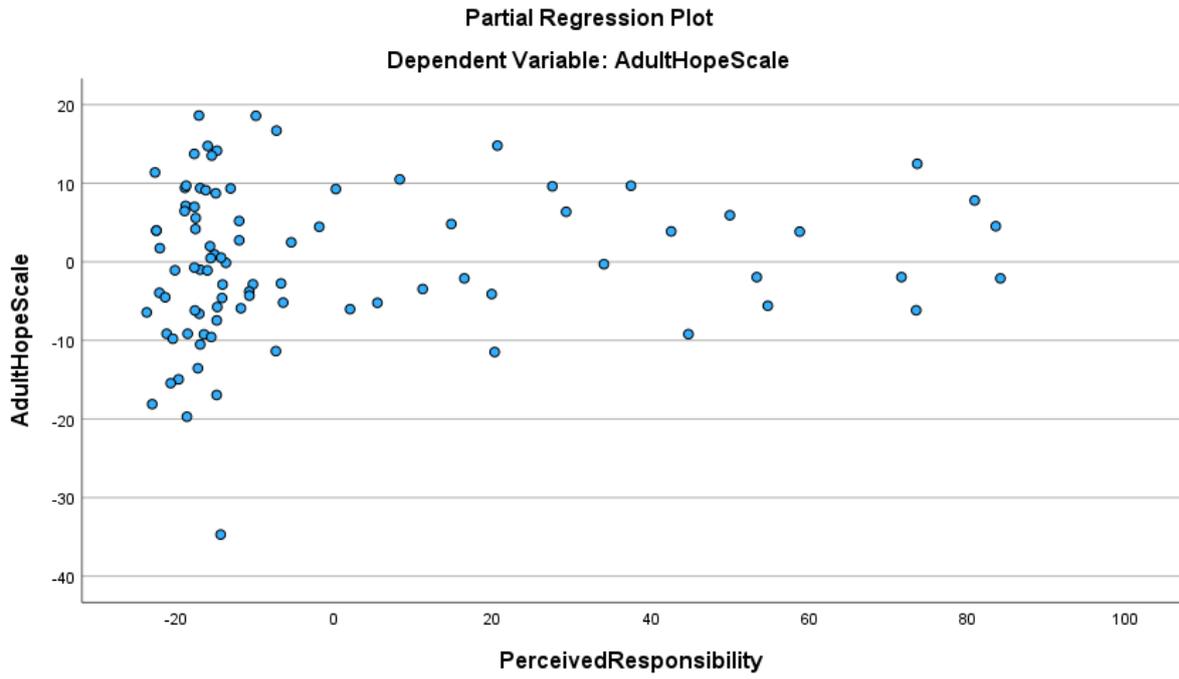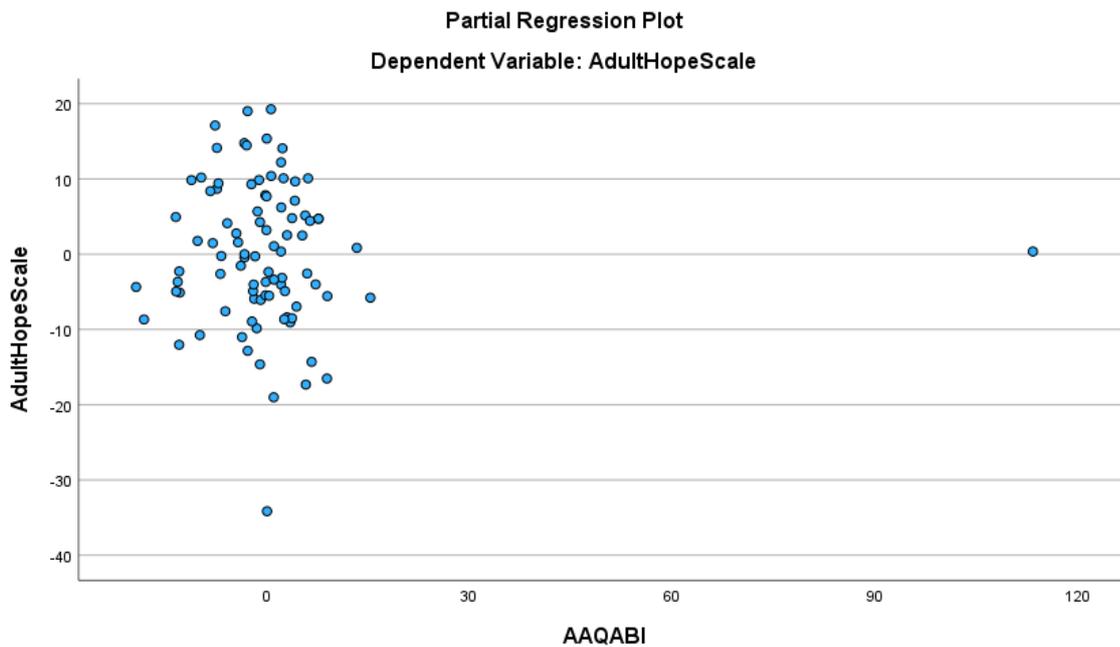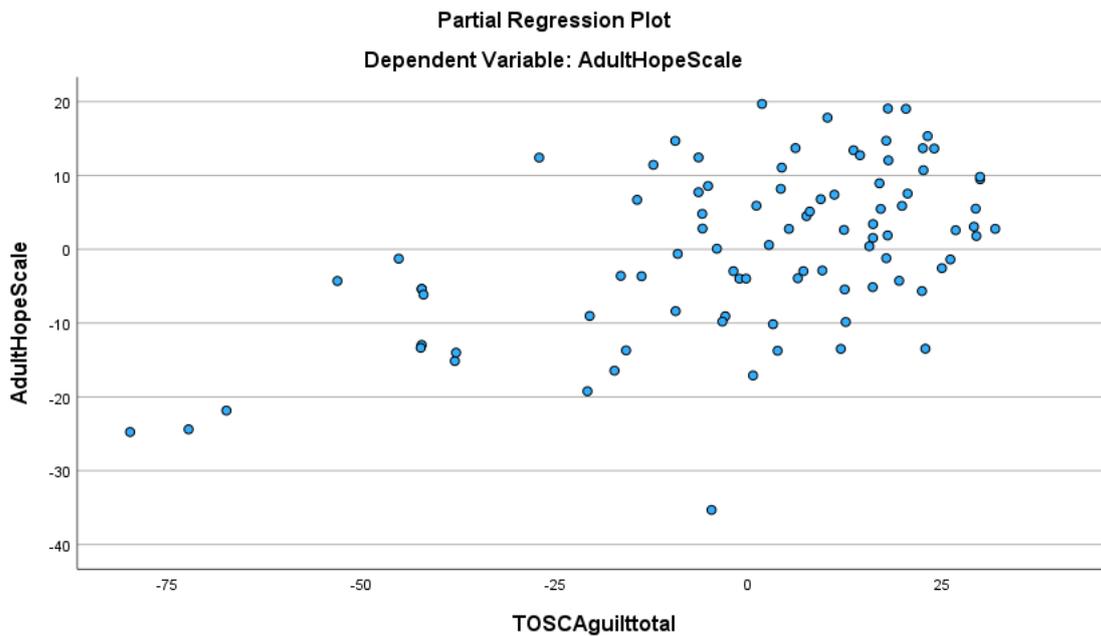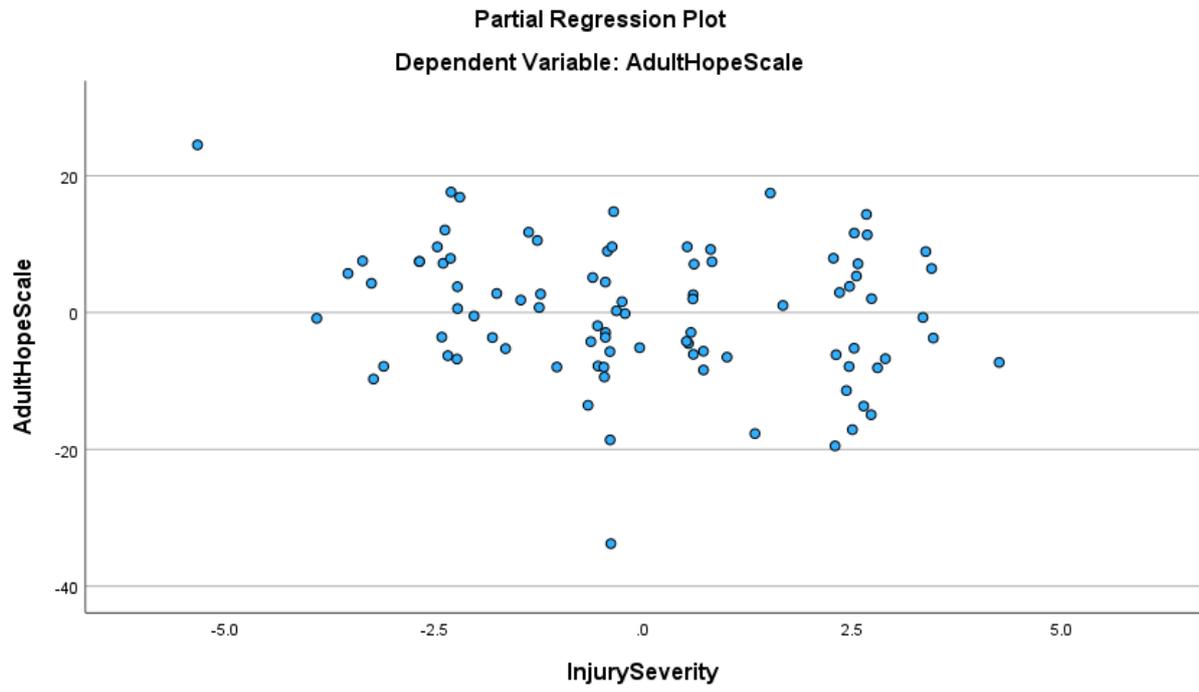
Appendix M

SPSS Output (3 Significant Variables)

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.583[a]	.340	.317	9.634	.340	14.753	3	86	<.001	1.794

a. Predictors: (Constant), TOSCAguilttotal, InjurySeverity, TOSCAshametotal

b. Dependent Variable: AdultHopeScale

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4107.913	3	1369.304	14.753	<.001[b]
	Residual	7982.087	86	92.815		
	Total	12090.000	89			

a. Dependent Variable: AdultHopeScale

b. Predictors: (Constant), TOSCAguilttotal, InjurySeverity, TOSCAshametotal
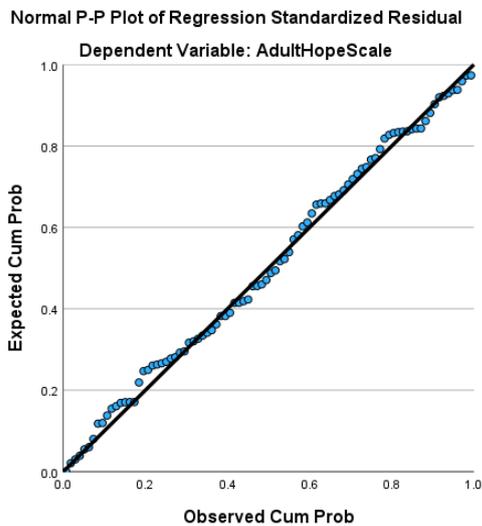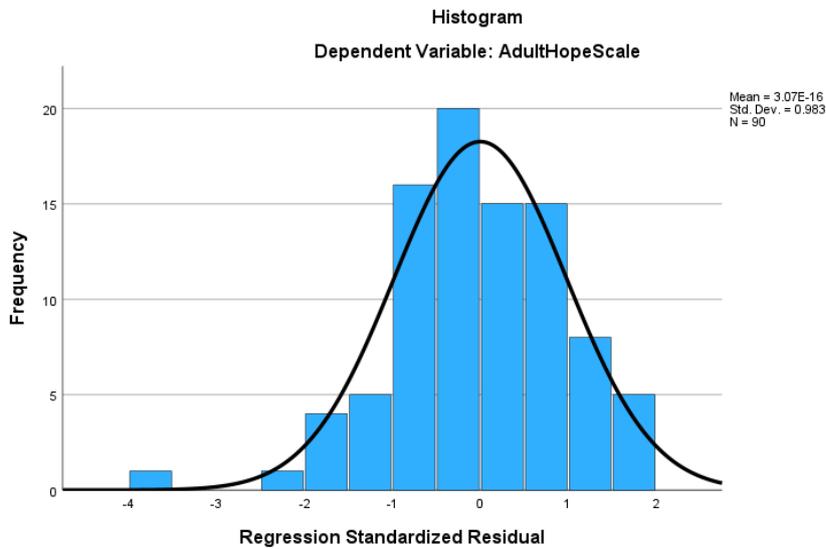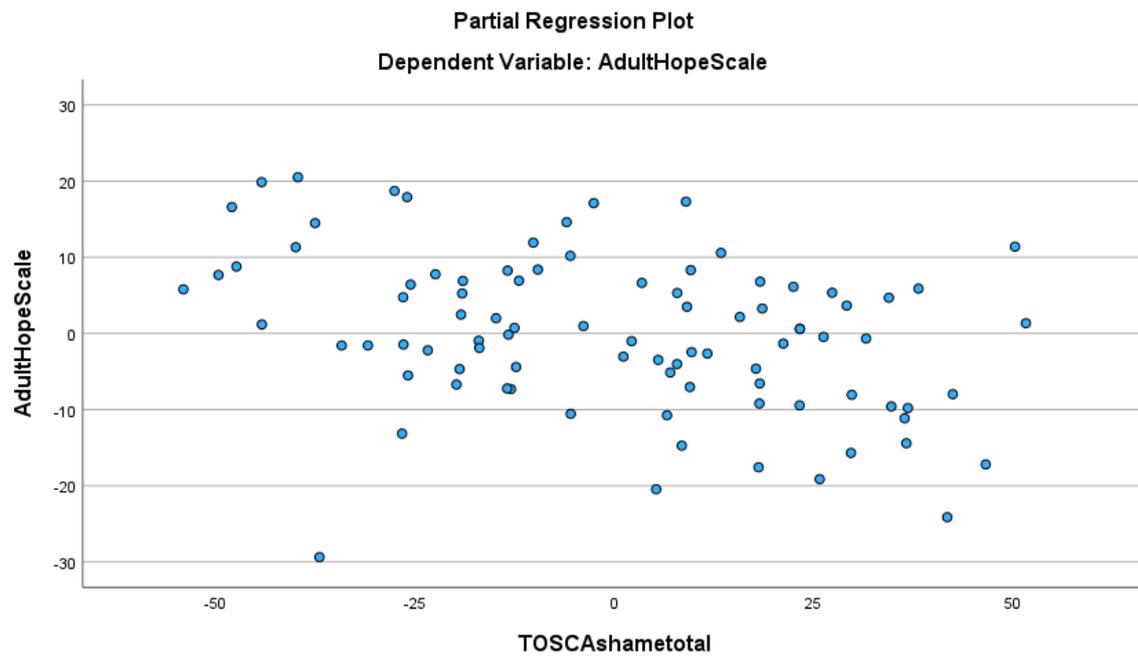
Casewise Diagnostics[a]

Case Number	Std. Residual	AdultHopeScale	Predicted Value	Residual
65	-2.046	21	40.71	-19.711
85	-3.602	4	38.70	-34.702

a. Dependent Variable: AdultHopeScale

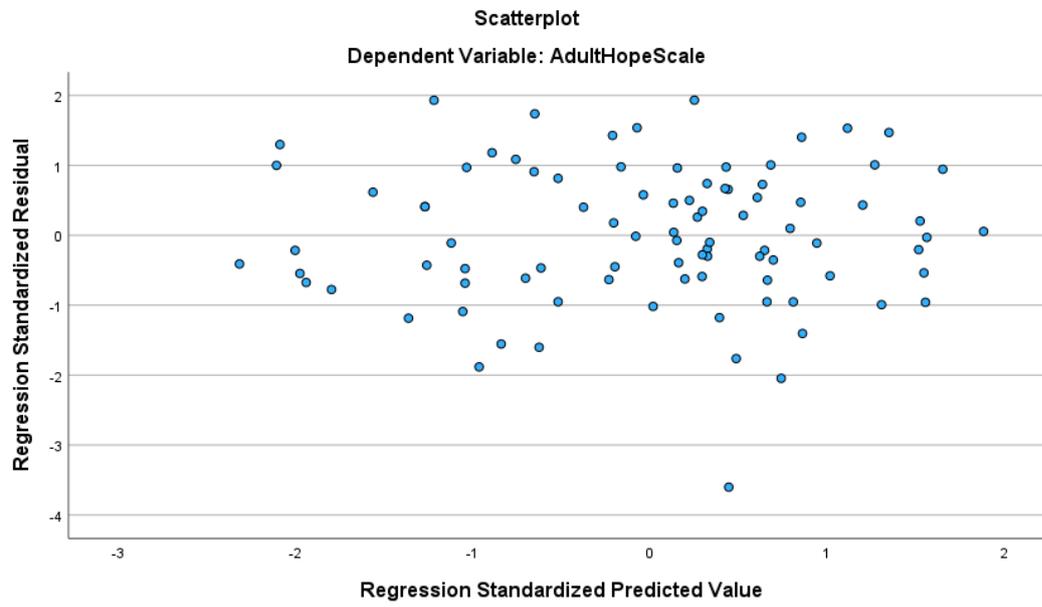**Coefficients**[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B Lower Bound	95.0% Confidence Interval for B Upper Bound	Correlations Zero-order	Correlations Partial	Correlations Part	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1	(Constant)	23.670	6.090		3.887	<.001	11.563	35.776					
	InjurySeverity	-.995	.475	-.184	-2.095	.039	-1.938	-.051	-.202	-.220	-.184	.999	1.001
	TOSCAshametotal	-.144	.039	-.337	-3.726	<.001	-.220	-.067	-.210	-.373	-.327	.938	1.066
	TOSCAguilttotal	.241	.042	.523	5.777	<.001	.158	.323	.444	.529	.506	.937	1.067

a. Dependent Variable: AdultHopeScale

Histogram
Dependent Variable: AdultHopeScale

Mean = 3.07E-16
Std. Dev. = 0.983
N = 90

Normal P-P Plot of Regression Standardized Residual
Dependent Variable: AdultHopeScale

Partial Regression Plot
Dependent Variable: AdultHopeScale

Partial Regression Plot
Dependent Variable: AdultHopeScale

Scatterplot
Dependent Variable: AdultHopeScale

Partial Regression Plot
Dependent Variable: AdultHopeScale

Paper Three: Executive Summary

The Role of Hope in those Recovering from an Acquired Brain Injury: Are Shame, Adaptive Guilt, Psychological Flexibility, Perceived Responsibility for Injury, and Injury Severity Predictors? An Executive Summary.

Word count: 1997

The Role of Hope in those Recovering from an Acquired Brain Injury

This is a summary of a research study looking at predicting hope after an Acquired Brain Injury (ABI), especially thinking about shame, adaptive guilt, injury severity, psychological flexibility, and perceived responsibility. This report is for people who have had an ABI and for anyone with an interest in this area. This report has been created with the help of service user feedback, which was much appreciated.

Background of the Research

Acquired Brain Injury (ABI)

An ABI is an injury to the brain that happens after birth and is not caused by a condition that gets worse over time, like dementia (Campbell, 2004). This includes injuries caused by accidents, stroke, tumours, bleeds on the brain or infections. Around 356,699 people went to hospital with an ABI in the UK in 2019/20 (Headway 2022). Around 1.4 million people are living in the UK with the effects of an ABI (Barber, 2019). People with an ABI live with problems such as fatigue, changes in their speech, problems moving around, problems with decision making and problem solving, memory changes, problems with their concentration levels and mental health problems (Headway, 2022). However, people with an ABI can make good recoveries, especially if they complete rehabilitation programmes where they set goals to achieve (Turner-Stokes et al., 2015).

Hope

For people with other conditions such as epilepsy, hope helps to lower stress, reduce depression, and reduce thoughts of suicide (Fischer et al., 2018; Ho et al., 2010; Pais-Rabero, et al. 2007). Hope improves life satisfaction and helps people to reach their goals (Dorsett, 2010). Mental health problems are common after an ABI (Faulkner et al., 2021), so it is important to think about how to reduce these difficulties. There is not much research in this area, and none predicting hope after an ABI. A main theory is that hope is a positive mental state caused by being able to plan to meet goals and having helpful thoughts ("I'll find a way to get there") and

having the energy to reach the goals (telling yourself "I can do this") (Snyder et al., 1991). This is important for people with an ABI in helping them to reach their goals (Prescott et al., 2015).

Shame

Shame includes internal shame (thinking that you are a bad person) and external shame (feeling that other people see you as a bad person) (Gilbert & Proctor, 2006). People with an ABI may avoid seeing people because they may feel ashamed that they need more help with things or cannot do the things they used to (i.e., drive or keep up with a conversation) (Ambridge et al., 2020). This can make depression worse (Joiner et al. 1999). People may also feel shame if they cannot reach their goals in recovery (Kohut, 1977). For people with other conditions like cancer, research has found that with more shame came less hope (Shahvand & Sarafraz, 2020). This has not been researched in people with an ABI. Knowing more about shame and hope is useful because shame can be reduced with some types of therapy, including Compassion Focussed Therapy (CFT) and Acceptance and Commitment Therapy (ACT).

Adaptive Guilt

Guilt is about actions ("I did a bad thing"). A type of guilt (adaptive guilt) can cause a person feeling guilty to feel upset, but this causes them to want to change their behaviour and ensure it does not happen again; which reduces feelings of depression and anger (Carnì et al., 2013; Tangney & Dearing, 2014; Tilghman-Osborne et al., 2008). Research suggests that guilt is linked to empathy and makes people more likely to want to save or improve their relationships (Leith & Baumeister, 1998). This is important after an ABI as relationship problems are common due to increased stress caused by a change in relationship status (i.e. a partner becoming a carer) (Laratta et al., 2021). Relationships are important for self-esteem and psychological wellbeing (Douglas, 2020), which can be affected after an ABI.

Perceived Responsibility

Taking responsibility for an injury may lead to better recoveries for people with other conditions such as spinal cord injuries (Athelstan & Crewe, 1979). Some research suggests that after an ABI, blaming yourself for the injury may be related to increased life satisfaction and acceptance of your new post-injury self (Warren et al. 1996). It could be that people who keep going with their rehabilitation programmes might be more hopeful.

Psychological Flexibility

Psychological flexibility is being able to adapt to situations in order to pursue goals and is associated with good mental health (i.e. by accepting and not avoiding emotional upset) (Kashdan & Rottenberg, 2010). After an ABI, low levels of psychological flexibility predict poorer recovery outcomes, and increased emotional distress (Faulkner et al., 2021). It could be that thinking flexibly helps to meet recovery goals ("I will find a way around this problem"), suggestive of higher levels of hope (Snyder, 2002).

Injury Severity

It is difficult to measure severity of an ABI. Most research uses the Glasgow Coma Scale (GCS) (Teasdale & Jennett, 1974) and Glasgow Outcome Scale (GOS) (Jennett & Bond, 1975), but they become less effective at predicting recovery outcomes over time (Balestreri et al., 2004). Some research suggests that injury severity does not predict emotional distress or recovery (Novack et al., 2001). Injury severity will be measured to understand if injury severity can predict hope.

Aims

The research suggests that hope, shame, adaptive guilt, perceived responsibility, psychological flexibility, and injury severity can affect a person after an ABI, but no research has looked at how they affect each other, or if hope can be predicted after an ABI.

Prediction

Hope will be predicted by higher perceived responsibility, higher psychological flexibility and higher adaptive guilt and lower shame and lower injury severity.
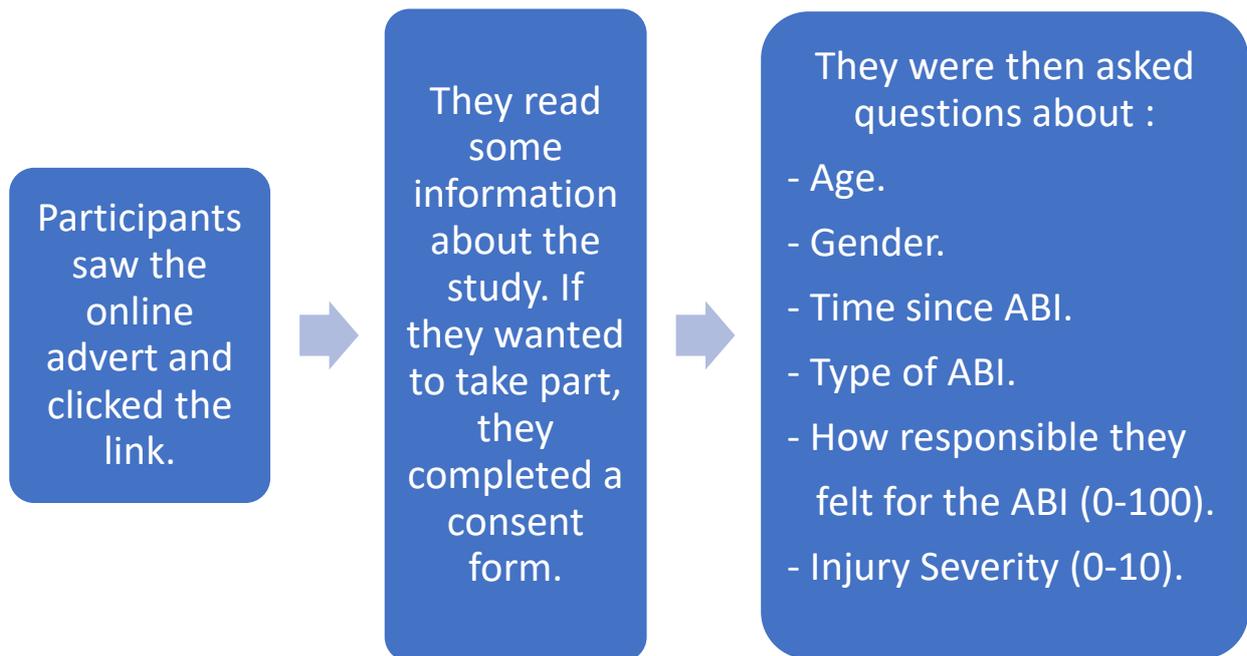
What Happened

The study was passed by an ethics panel at Staffordshire University.

How People Found out About the Study

The study was advertised online using social media by the main researcher's profile and through charities and support groups online. Recruitment happened from May 2023-January 2024.

| Who could take part?	Who could not take part?
- Adults with an ABI (18yrs+). - People with a mild ABI who were more than 3 months post-injury. - People with a moderate to severe ABI more than 12 months post injury (so they were not in the acute injury stage).	- People with chronic or terminal illness or degenerative conditions. - People who need a translator (due to lack of funds). - People who lack mental capacity to consent.

What Happened in the Study?

Participants saw the online advert and clicked the link.	They read some information about the study. If they wanted to take part, they completed a consent form.	They were then asked questions about : - Age. - Gender. - Time since ABI. - Type of ABI. - How responsible they felt for the ABI (0-100). - Injury Severity (0-10).

Participants were also given three questionnaires:

1. The Adult Hope Scale (AHS; Snyder et al., 1991): a 12-item questionnaire measuring levels of hope. An example question is 'I meet the goals I set for myself'.

2. The Acceptance and Action Questionnaire Acquired Brain Injury (AAQ-ABI) (Whiting et al., 2015): a 9-item questionnaire about psychological flexibility. Questions include, 'I stop doing things when I feel scared about my brain injury".

3. Test of Self-Conscious Affect 4 (TOSCA-4) by Tangney et al. (2008): 15 scenario-based questions where you must rate the likelihood of you having five different reactions to a given situation. For example, 'Imagine that you make plans to meet a friend for lunch. At five o'clock, you realize you have stood your friend up'.
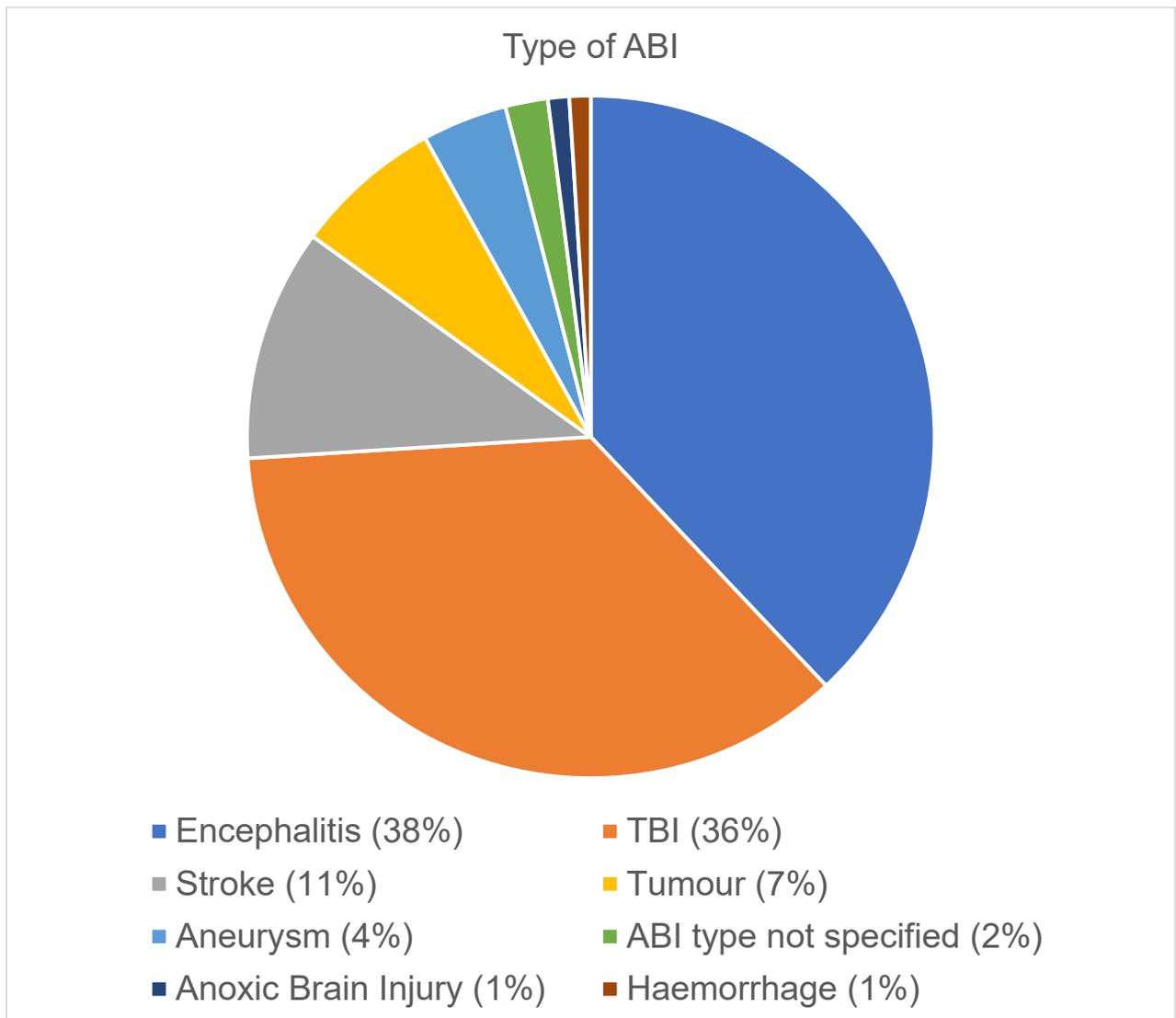
Who Took Part?

Ninety people with an ABI took part in the study. Sixty-three people identified as female, 25 as male and two as non-binary. They were aged from 20-79 years old. The participants' ABI's happened between one and 61 years ago.

Figure 1. Sex of Participants.
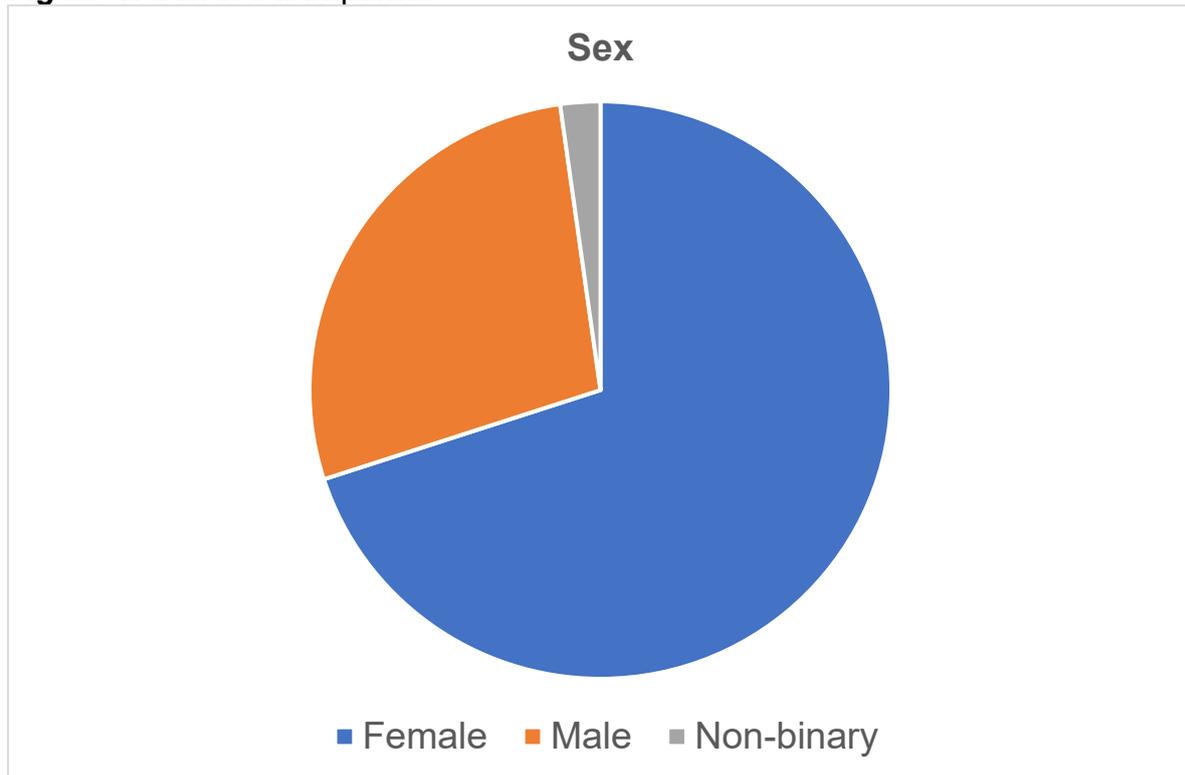
Most participants had experienced encephalitis (37.8%); the second most common type of injury was traumatic brain injury (35.6%). Other types of ABI included stroke (11.1%), tumour (6.7%), aneurysm (4.4%), anoxic brain injury (1.1%) and haemorrhage (1.1%). Two participants did not provide their type of ABI (2.2%).

Figure 2. Type of ABI.

Type of ABI

- Encephalitis (38%)
- TBI (36%)
- Stroke (11%)
- Tumour (7%)
- Aneurysm (4%)
- ABI type not specified (2%)
- Anoxic Brain Injury (1%)
- Haemorrhage (1%)

How was Data Analysed?

The results were analysed using a statistical test called multiple regression. This looks at how things have a relationship with other things, and if one can predict another, for example if shame can predict hope (Field, 2005). These things are called variables. If one has a significant impact on another, it is called a significant predictor variable.

Key Findings

The prediction was that hope will be predicted by higher levels of perceived responsibility, higher psychological flexibility, higher levels of adaptive guilt, lower levels of shame and lower levels of injury severity.

The prediction was partially correct; lower injury severity and lower levels of shame can predict higher levels of hope. Higher levels of adaptive guilt predicted higher levels of hope. Adaptive guilt was the strongest predictor of levels of hope, suggesting it is the most important variable. Perceived responsibility and psychological flexibility did not predict levels of hope.

What do the Results Mean?

The results mean that if a person feels their injury is less severe, they have lower levels of shame and feel more adaptive guilt, then they are more likely to be more hopeful.

Sometimes guilt can be seen as negative (Cavalera, et al., 2018). This study looked at something called adaptive guilt, which can be seen as helpful and encourages people to fix past mistakes (Bastin et al., 2016). Higher levels of adaptive guilt predict higher levels of hopefulness, it might be helpful to consider in therapy. If higher levels of shame mean lower levels of hope, it could be helpful to reduce levels of shame.

Recommendations

- For someone to feel adaptive guilt, they must first be aware of their actions and their consequences (self-awareness) and feel sorry enough that they want to make changes (empathy). It could be that increasing self-awareness and empathy may lead increase levels of adaptive guilt, and in turn hopefulness.
- There is a type of therapy that reduces shame called Compassion Focussed Therapy (CFT). CFT helps to reduce shame by helping us to be less critical

towards ourselves (Gilbert, 2009). The research on CFT after an ABI is limited but being added to. There is evidence to say it can be helpful (Ashworth, 2014).

Limitations of the Research

- Two of the questions in the study were not validated, which means that we cannot be sure that what they measure is correct. The questions were about perceived responsibility and injury severity.
- The study used what we call self-report questionnaires (which means that you answer the questions yourself). Sometimes these answers can be affected by things such as wanting to be viewed by the researcher in a positive light, and so the results may not be correct.
- The study was only advertised on the internet, so the results may not represent people who do not have access to the internet.
- People without mental capacity were not allowed to take part in the study, so the results found in this study may not represent their experiences.

Future Research

- Something related to adaptive guilt is empathy (imagining what someone else might be feeling or thinking and then acting with kindness; Reiss, 2017). Future research could consider the relationship between guilt and empathy after an ABI.
- Shame and adaptive guilt can be related to our relationships with other people, so the link between social support and hope may be interesting.
- Problems with self-awareness are really common after ABI and it may affect the other predictors (i.e. people with less insight have lower levels of shame). Future research could look at how insight affects the predictors, maybe by asking people who know the participants well and comparing their answers.

How the Results will be Shared

People who have taken part in the study were told that they could request a copy of this report from the researcher via email. The report will also be submitted to The Journal of Neuropsychology.

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