

The influence of self-compassion on perceived responsibility and shame following acquired brain injury

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Abstract

Primary objective

The purpose of this study was to investigate the influence of perceived personal responsibility for an acquired ABI (ABI) on shame, and whether self-compassion moderates this relationship. We hypothesised that people who perceived themselves to be responsible for their injury would have high levels of shame and poorer recovery outcomes.

Research design

A mixed-methods design was employed using both standardised measures and a series of open questions.

Methods and procedures

66 participants with ABI were included in the analysis. Data was analysed using descriptive statistics, correlations, multiple regression and thematic analysis.

Main outcomes and results

Significant relationships were found between self-compassion, shame, anxiety and depression, but perceived responsibility for ABI was not correlated with any examined variables. Due to issues with the measurement of responsibility, it was not possible to complete all proposed forms of analysis. The thematic analysis revealed the ways participants' injuries affected their perceived level of functioning, its consequences for sense of self, shame and self-compassion.

Conclusions

This study concluded that people with ABI might experience shame with respect to the injury's impact on functioning. Study limitations and implications for providing therapeutic interventions such as Compassion Focused Therapy and Acceptance and Commitment Therapy are discussed.

Keywords

Acquired ABI – third-wave – self-compassion – responsibility – shame

Introduction

The term ‘compassion’ describes the practice of understanding others’ distress with a desire to alleviate suffering, a process which can help people learn to care for themselves during distress (1; 2). However, when people experience negative events and distress, they tend to treat themselves less kindly than they would another in the same situation (3). People who experience shame due to fearing they are different from others can struggle to be self-compassionate, increasing sensitivity to criticism from the self and others and negatively

impacting psychological wellbeing (4). Skills of compassion form the basis of several third-wave psychological therapies (5; 9), including Compassion-Focused Therapy (CFT; 2), Acceptance and Commitment Therapy (ACT; 6) and Mindfulness-Based Therapies (e.g. MBCT; 7, 8). Third-wave therapies follow the first and second waves of thought-based psychological therapies developed in the 20th century, such as Behavioural Therapy and Cognitive-Behavioural Therapy (CBT). The third-wave movement defines a shift away from the cognitive focus on *what* we think and feel, to a focus on how we *relate* to what we think and feel (5).

Reduced self-compassion and high shame and self-criticism have been linked to poorer psychological wellbeing in various cancer populations (10, 11). Similar research has shown that blaming oneself for a breast (12), lung (13) or colorectal cancer (14) diagnosis is associated with poorer psychological wellbeing, stigma, shame, guilt and depression. These studies illustrate that shame and responsibility for illness or condition shame may equate to lower self-compassion, which has detrimental effects for psychological wellbeing (15).

In general, acquired brain injuries (ABI) can lead to self-criticism and lower levels of self-compassion (16; 17), and these individuals can respond well to CFT (18; 19; 20). However, no research has considered why self-compassion levels are lower, and whether this is linked to self-blame as seen in other health population. The degree to which an individual could be considered to have played a role in the acquisition of their injury can be considered on a continuum. For example, individuals with encephalitis from a viral infection may feel less responsible than an individual who acquired TBI during dangerous sports (22). Thus, in a similar way in which this has been shown in health samples, perception of causation of an

injury could influence subsequent psychological wellbeing, as in other health populations (12; 13; 14).

Findings of neurorehabilitation studies form a basis for these conceptions, where the importance of positive sense of self for adjustment and psychological wellbeing during ABI recovery is emphasised (23; 24), and discrepancies between pre and post-injury self can lead to problems with adjustment (25; 26). Lewington (27) and Jones and Morris (28) highlighted that it is difficult to adjust to receiving care from parents following ABI, part of which involves shame and self-criticism about being a “disappointment”. Participants in Jones & Morris’ study also found that directing blame towards a parent for an ABI led to increased psychological distress. And indeed, these adjustment processes can be affected by factors such as time since injury (24).

Other research indicates that a person is viewed less sympathetically if they are perceived to have contributed to their injury (22). An important link can be drawn here with a finding that being well-liked by others leads to positive self-evaluations (29), indicating the powerful impact of others’ judgements for sense of self. Interestingly, Hart et al (21) found that self-blame for injury was actually linked to reduced depression. This may illustrate that taking responsibility could be a coping mechanism, as doing so in a non-critical way may suggest the use of self-compassion techniques. Indeed, if an individual considers the process to be positive and something they could mentally and emotionally recover and grow from, they are more likely to retain their sense of self and wellbeing (30). Consequently, this study hopes to explore the importance and rehabilitation implications of encouraging self-compassion and acceptance at an appropriate time since injury and in the right stage of adjustment to manage expectations and possible shame, whilst also acknowledging strengths.

The present study

Literature suggests that self-compassion is a protective factor for psychological wellbeing and adjustment, and can reduce shame and self-criticism in ABI populations (18). The perceived responsibility a person has for their ABI may also impact shame and psychological wellbeing (21). Therefore, this study aimed to investigate whether self-compassion moderates the effect of perceived responsibility on shame in this population. Thus, self-compassion could be a protective mechanism against shame that results from responsibility - for injury. It also assessed the impact of these concepts on psychological wellbeing, including anxiety and depression, based on findings of previous research (17; 21; 26).

Lack of insight into one's difficulties post injury may serve as a protective factor by acting as a "buffer" to protect the patient from a potentially difficult reality (31; 32; 33) and this was therefore controlled for. Time since injury was also controlled for to consider the influence of stage of adjustment (24).

The definitions of abstract concepts such as self-compassion and shame can vary(34), making it difficult for standardised measures to accurately capture these ideas. Therefore, this study also included open questions for participants to explore these concepts and these were analysed using thematic analysis.

Research questions

The study investigated the following research questions;

1. Does self-compassion moderate the impact of PR on shame in ABI?; Hypothesised that as self-compassion increases, the impact of PR on shame would reduce, resulting in a significant interaction between self-compassion and PR.
2. Are there relationships between self-compassion, self-awareness, shame, perceived responsibility (PR) and anxiety and depression for people with ABI? (Hypothesised relationships illustrated in Table 1).
3. What are the experiences of self-compassion, shame and perceived responsibility for people following ABI?

	Shame	Perceived Responsibility (PR)	Self-Compassion	Self-Awareness	Anxiety & depression
Shame		Positive	Negative	Positive	Positive
Perceived Responsibility	Positive		<i>No prediction</i>	<i>No prediction</i>	Positive
Self-Compassion	Negative	<i>No prediction</i>		<i>No prediction</i>	Negative
Self-Awareness	Positive	<i>No prediction</i>	<i>No prediction</i>		Positive
Anxiety & Depression	Positive	Positive	Negative	Positive	

Table 1. *Visual representation of hypothesised relationships between variables*

Method

Participants and procedures

This study employed a cross-sectional design, collecting quantitative and qualitative data through self-report questionnaires. The dependent variable was shame, and the predictor variables were perceived responsibility, self-compassion, gender, time since injury and level of awareness into the impact of the injury on daily functioning. Approval for the study was granted by the London-Surrey NHS Research Ethics Committee.

Individuals with ABI took part in anonymous online (49) or paper-based surveys between September 2017 and February 2018. They were recruited from six National Health Service (NHS) Trusts, the Brain Injury Rehabilitation Trust (BIRT) and six voluntary and charitable ABI organisations across Yorkshire and Northern Lincolnshire. The researcher visited services to meet potential participants, assess inclusion criteria, collect informed consent and assist with questionnaire administration, or provide a digital link. Following survey completion, participants were debriefed by the researcher or shown a debriefing page.

The inclusion criteria specified that participants must: have experienced an ABI after the age of 18; have English as a first language; and currently be in contact with an active rehabilitation setting for their injury, or in contact with a community or voluntary service related to ABI.

Exclusion criteria included: diagnosis of a degenerative condition, learning disability or neurodevelopmental condition; lack of capacity to consent to take part in the study; lack of ability to comprehend or produce speech to levels necessary for the tasks; and diagnosis of Post-Traumatic Stress Disorder in relation to ABI.

Measures

Demographics

Information was collected about age, gender, relationship status, education, time since injury, contact with service type and length of service contact. Specific medical diagnoses were not collected because participants were recruited from largely community sources, and access to accurate medical records was not always available. The study also focused on participants' personal perspective into their condition, and therefore diagnosis was not collected as this was not directly related to hypotheses.”

Self-compassion

Self-compassion was measured using the Short Self-Compassion Scale (35), a shortened version of The Self-Compassion Scale developed by Neff et al (1). The SCS consists of 26 items related to self-kindness, mindfulness and common humanity. This scale has previously been administered to adults with ABI to measure the effectiveness of CFT interventions, and has high reliability ($\alpha = .93$; 37).

Self-awareness

The Awareness Questionnaire (AQ; 38) measured insight. This 17-item form uses a 5-point Likert scale to rate participants' degree of difficulty across several tasks and functions. Responses are compared to ratings of identical items by a friend or staff/family member, and discrepancy between the two scores indicated participants' self-awareness, with less awareness indicated by a larger discrepancy. The AQ has adequate construct validity

($p=.34-.39$), excellent internal consistency ($\alpha=.88$) and excellent to adequate test-retest reliability for the participant ($ICC=.80$) and other person forms ($ICC=.66$), respectively (39). The AQ has been used extensively with participants with ABI (40; 41).

Perceived responsibility

Participants were presented with the item “Please rate how much you think you are responsible for your brain injury on a percentage scale between 0-100, where 0 is not responsible at all, and 100 is fully responsible.” This design is similar to an investigation into the role of PR in the development of post-traumatic stress disorder (PTSD) for people with ABI following road traffic accidents (42; 43), and was chosen due to a scarcity of available PR in ABI measures.

Shame

The State Shame and Guilt Scale measured shame (SSGS) (45), a 15 item self-report measure of guilt, shame and pride. This measure has been used in a study which investigated shame in individuals with cancer (13). In young adult samples this measure had high internal consistency, test-retest reliability, and predictive and convergent validity (46).

Psychological well being

Psychological wellbeing was measured using the Hospital Anxiety and Depression Scale (HADS; 47), a 14 item self-report measure of anxiety and depression that has been used with people with ABI (18; 20), and has proven validity for the subscales (48).

Qualitative questions

The following questions were used to further explore participants' experiences of perceived responsibility, shame and self-compassion.

1. How positively or negatively do you view yourself following your injury?
2. How different is this to how you would have viewed yourself prior to your injury?
3. How kindly do you treat yourself?
4. How did your injury happen?
5. How responsible do you think other people were for any part of your injury happening?
6. How responsible do you think you were for any part of your injury happening?
7. What have been your biggest achievements or areas of growth/development since your injury?

Statistical analyses

Data was analysed using IBM SPSS Statistics version 24.0 for Windows. Descriptive statistics were used to analyse the demographic data, psychological wellbeing and the variance in level of perceived responsibility for injury. A significance level of 5% was used for all statistical tests.

Pearson's correlation coefficient was used to examine the correlational relationships between the predictor variables. Statistical comparisons were not carried out because PR was measured on a scale rather than allocating participants to defined groups of "responsible" and "not responsible".

Linear multiple regression analyses were completed to explore the degree to which the demographic and predictor variables could explain participants' scores of shame, and to

carry out a moderation analysis. The moderating effect of self-compassion was analysed by examining the change in R^2 when an interaction between PR and self-compassion was added to a multiple regression model containing PR, self-compassion, gender, time since injury and self-awareness. 46 of 66 participants (69.7%) completed the measure of self-awareness, and thus two regression analyses were fitted; one with the full range of data available, and one with participants with self-awareness data available.

Qualitative data was analysed using thematic analysis. The Braun and Clarke (50) analysis guidelines were followed to ensure data was of a good quality prior to theme development. Responses which were very limited or unrelated to the questions were excluded from theme development in the final analysis.

Results

Participant & descriptive characteristics

Demographic data is presented in Table 2. Of 66 participants, 1 (1.5%) participant provided only demographic information. Ages ranged from 18-65+ years, the largest age group being aged 45-54 (N=14; 21.2%). 32 (48.5%) were male, with a large number identifying as single (N=29; 43.9%) or married/in a domestic partnership (N=25; 37.9%). The time passed since injury ranged from less than 6 months (7.6%) to over 5 years (N=21; 31.8%). The majority of participants were recruited from community or voluntary settings (57.6%), with a similar number recruited from inpatient settings (N=12; 18.2%) and outpatient settings (N=11; 16.2%). A smaller number identified as belonging to both inpatient and community (N=1) and outpatient and community settings (N=4).

Demographic	Overall sample (N=66)
Age groups	
18-24 years	5 (7.6%)
25-34 years	10 (15.2%)
35-44 years	13 (19.7%)
45-54 years	14 (21.2%)
55-64 years	12 (18.2%)
65+ years	11 (16.7%)
Gender	
Male	34 (51.5%)
Female	32 (48.5%)
Relationship status	
Single	29 (43.9%)
Married/domestic partnership	25 (37.9%)
Widowed	3 (4.5%)
Divorced	7 (10.6%)
Separated	2 (3%)
Highest level of education	
GCSE (<i>General Certificate of Secondary Education – indicates participant left school aged 16</i>)	37 (56.1%)
A-Level (<i>Advanced Level – indicates participant left school aged 18</i>)	14 (21.2%)
University graduate degree	10 (15.2%)
University post-graduate/doctoral level degree	4 (6.1%)
Time since injury	
Less than 6 months	5 (7.6%)
6 months-1 year	12 (19.7%)
1-2 years	15 (22.7%)
2-3 years	4 (6.1%)
3-4 years	4 (6.1%)

4-5 years	4 (6.1%)
5+ years	21 (31.8%)
Participant setting	
Inpatient	12 (18.2%)
Outpatient	11 (16.7%)
Community/Voluntary	38 (57.6%)
Inpatient & Community/Voluntary	1 (1.6%)
Outpatient & Community/Voluntary	4 (6.1%)

Table 2. *Demographic characteristics of the overall sample*

Pearson's Chi Squared tests were carried out for the categorical variables (age, gender, relationship status, level of education and time since injury) to test for differences between participant settings, and revealed a significant difference between participants' setting and level of education ($p=.027$). There were no other relationships between setting and remaining demographic characteristics ($p>0.05$). A One Way ANOVA revealed that time since injury was not significantly different between settings ($F(4, 61)=1.267, p>0.05$).

Dependent & predictor variables

A Shapiro-Wilk test of normality revealed that anxiety ($p=.350$) and depression ($p=.118$) levels were normally distributed, while self-compassion, PR and insight were not normally distributed ($p<.001$). Scaled score means and corresponding standard deviations were calculated for all variables and can be found in Table 3. The level of shame (mean=11.51; SD=4.82) was higher for this sample than a normative sample of students without ABI, in which the mean was 6.71 (SD=2.60) (46), suggesting that participants in this study had higher levels of shame than people without ABI.

20 (30.3%) participants did not complete the AQ due to the need for another person to provide ratings, particularly for those recruited from voluntary or charitable organisations. An independent samples T-test revealed a significant difference between participants' setting and whether they completed the AQ ($p=0.003$). This indicated that participants recruited from inpatient and community settings were more likely to complete the AQ. 54.5% of participants rated themselves as 0% responsible for their injury, indicating a floor effect for this variable.

Variable	Mean (SD) score of overall sample
Shame (Shame subscale of SSGS)	11.51 (4.82)
Self-Compassion (SCS-SF overall)	5.69 (1.15)
Self-Awareness (AQ)	5.93 (6.01)
Responsibility	23.48 (32.89)
Anxiety (Anxiety subscale of HADS)	9.29 (5.24)
Depression (Depression subscale of HADS)	7.67 (4.09)

Table 3. Mean scores and standard deviation of each variable for overall sample

Are the variables related?

Relationships between the predictor variables were examined through Pearson's Product Moment correlation coefficient and are presented in Table 4. Due to the non-normal distribution of some predictor variables, bootstrapped P values are included. Shame was

significantly positively correlated with depression and anxiety, and shame was significantly negatively correlated with self-compassion.

	Shame	Perceived Responsibility	Self-Compassion	Self-Awareness	Anxiety	Depression
Shame (SSGS subscale score)	X	$r = -.054$ ($p=.725$)	$r = -.483^{**}$ ($p=001$)	$r = -.290^+$ ($p=.054$)	$r = .681^{**}$ ($p<.001$)	$r = .525^{**}$ ($p<.001$)
Perceived Responsibility	$r = -.054$ ($p=.725$)	X	$r = -.113$ ($p=.459$)	$r = -.156$ ($p=.308$)	$r = -.180$ ($p=.237$)	$r = -.320^*$ ($p=.032$)
Self-Compassion (SCS score)	$r = -.483^{**}$ ($p=.001$)	$r = -.113$ ($p=.459$)	X	$r = .235$ ($p=.121$)	$r = -.288^+$ ($p=.055$)	$r = .080$ ($p=.603$)
Self-Awareness (SAS discrepancy score)	$r = -.290^+$ ($p=.054$)	$r = -.113$ ($p=.459$)	$r = .235$ ($p=.121$)	X	$r = -.385^{**}$ ($p=.009$)	$r = -.155$ ($p=.309$)
Anxiety (HADS subscale score)	$r = 0.681^{**}$ ($p<.001$)	$r = -.180$ ($p=.237$)	$r = -.288^+$ ($p=.055$)	$r = -.385^*$ ($p=.009$)	X	$r = .548^{**}$ ($p<.001$)
Depression (HADS subscale score)	$r = .525^{**}$ ($p<.001$)	$r = -.320^*$ ($p=.032$)	$r = .080$ ($p=.603$)	$r = -.155$ ($p=.309$)	$r = .548^{**}$ ($p<.001$)	X

Table 4. Pearson's r inter-correlations and bootstrapped P values between the predictor variables.

****.** Correlation is significant at the .01 level (2-tailed).

*. *Correlation is significant at the .05 level (2-tailed).*

†. *Correlation is significant at the .1 level (2-tailed)*

A significant negative correlation was evident between self-awareness and anxiety, and a negative relationship at the .1 level ($p=.054$) was shown between shame and self-awareness, suggesting that the more insight a person had into their abilities, the greater the possibility of them experiencing shame. A negative relationship at the .1 level ($p=.055$) was demonstrated between anxiety and self-compassion; participants who felt anxious were less likely to be self-compassionate. .

A significant negative relationship was also found between PR and depression, though, no other significant relationships were found between PR and the main dependent variables. Finally, depression and anxiety were significantly positively correlated.

Is shame related to an individual's perceived level of responsibility for their injury, and is this relationship moderated by self-compassion?

An independent samples T-test examined potential differences between participants who did and did not complete the AQ, and revealed no significant differences between these groups for all variables ($p>.05$). As an aim of the study was to investigate the influence of self-awareness on the other variables, and there were no significant differences between participants who did not complete the AQ, the main model of regression included only the 46 participants who provided self-awareness information.

A multiple regression model investigated the association between shame, PR and self-compassion. The main predictor variables (self-compassion and PR) were centred, and

entered into a multiple regression model with shame, gender, time since injury and self-awareness. Gender was significantly associated with shame ($\beta=-4.425$, $SE=-1.041$, $t=-4.260$, $p<.001$), with females demonstrating more shame (mean female SSGS score=13.67, $SD=4.56$; mean male SSGS score=9.55, $SD=4.21$). No significant association was found between time since injury and shame (95% confidence intervals=-6.33, -1.91; $p>.05$).

A significant regression coefficient was found for self-awareness and shame ($\beta=-.190$, $SE=-.090$, $t=-2.102$, $p=.043$), indicating that as self-awareness decreased, (i.e. the discrepancy of the AQ increased) so did shame. The results also illustrated a significant regression coefficient for self-compassion and shame ($\beta=-1.615$, $SE=.515$, $t=-3.138$, $p=.003$). This demonstrates that as self-compassion levels increased, shame decreased. The regression coefficient for PR was not statistically significant ($\beta=-.003$, $SE=.017$, $t=-.158$, $p=.875$), meaning that PR did not share a relationship with any of the measured variables. The results from the regression model including all participant data illustrated similar results. A representation of the regression analysis is illustrated in Table 5.

	B	Standard Error	t	P Value	95% Confidence Interval
Gender	-4.115	1.096	-3.756	.001	(-6.340; -1.891)
Time since injury (Less than 6 months)	1.851	2.206	.839	.407	(-2.627; 6.329)
Time since injury (6 months – 1 year)	1.271	1.485	.856	.398	(-1.743; 4.286)
Time since injury (1 year – 2 years)	.128	1.423	.090	.929	(-2.761; 3.016)
Time since injury (2 years – 3 years)	6.680	3.481	1.971	.057	(-.207; 13.926)
Time since injury (3 years – 4 years)	1.885	1.872	1.007	.321	(-1.916; 5.686)
Time since injury (4 years – 5 years)	.011	2.522	.004	.997	(-5.109; 5.131)
Insight	-.190	.090	-2.102	.043	(-3.73; -.006)
Responsibility	-.003	.017	-.158	.875	(-.037; .032)

Self-compassion	-1.615	.515	-3.138	.003	(-2.660; -.570)
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Table 5. *Multiple linear regression of the relationships between shame and the predictor and control variables.*

Qualitative analysis

Thematic analysis was utilised to examine the responses of 42 (63.6% response rate) participants to the open questions. Of the participants who responded to the qualitative questions, 22 were female (52.4%). Four super-ordinate themes were identified with sub-ordinate themes in each: achievement and growth; sense of self; self-compassion; and functional impact of injury. These are shown in Table 6 with corresponding sub-ordinate themes and quotes. Three of the super-ordinate themes related to participants' experiences of themselves due to and following their injury, and one described areas of growth since injury.

Super-ordinate theme	Sub-ordinate theme	Description	Example quotes
Achievement & Growth	Physical achievements	Perceived achievements in physical and bodily abilities since injury	<i>'Learning to walk (with a frame or stick).'</i>
	Mental/ cognitive achievements	Perceived achievements in cognitive and mental abilities since injury	<i>'My memory is improving a little.'</i>
	Employment/ volunteering	Involvement in employment or voluntary roles since injury	<i>'Getting back to work and changing my job for a better one, and now playing and</i>

			<i>umpiring netball at the same level before I came.'</i>
	Acceptance & gratitude	Valuing ideas about acceptance and gratitude regarding injury	<i>'Huge acknowledgement and gratitude that I have been very lucky.'</i>
	Education	Educational achievements since injury	<i>'Doing Open University courses and learning sign language despite being told that I would never be able to learn anything.'</i>
	Independence	Improved sense of independence since injury	<i>'Living independently, relearning how to drive a car.'</i>
	Relationships & social	Improved relationships and involvement in communities since injury	<i>'Making lots of new friends.'</i> <i>'Going to the Headway meeting as I find it very stressful to meet people I don't know.'</i> <i>'Meeting others through my disability.'</i>
	No perceived achievements	Unclear what has improved or been an area for growth since injury	<i>'I don't feel I have achieved anything.'</i>
Sense of self	Change to self-worth & confidence	Loss or changes to self-worth and confidence as a result of injury	<i>'I feel worthless and like I'm causing more unnecessary stress and worry to my family.'</i>
	Sadness & shame	Sadness & shame about the implications the injury has had on life	<i>'I view myself badly now. Don't like the thought of having a stroke.'</i>

	Positive sense of self	Positive sense of self despite challenges caused by injury	<i>'I am slower but wiser after brain injury. I wouldn't want to go through it again but I am a better person for it. I accept my deficit and am positive.'</i>
	Motivation to improve	Feeling motivated to improve/make adaptations to help sense of self	<i>'I say "come on do this", try to push myself in physio to walk further and get more strength.'</i>
	Self-criticism	Presence of self-critical thoughts and beliefs about the injury and their role	<i>'I beat myself up a lot, I used to be able but now I'm not.'</i>
Self-Compassion	Struggling with self-compassion	Finding it hard to be compassionate towards the self	<i>'I'm hard on myself. It's a chore and feels like too much effort sometimes to even try and do something nice for myself.'</i>
	Strong self-compassion skills	Development of strong ability to be self-compassionate	<i>'I still value myself as a meaningful individual who has something to offer society.'</i>
	Striving for self-compassion	Making efforts to be more self-compassionate	<i>'Beginning to try to value myself for myself, rather than just external achievements.'</i>
	Compassion for others vs self-compassion	Finding it easier to be compassionate to others than the self	<i>'In my best moments I can be kind and compassionate, but I am generally more understanding towards others.'</i>

Functional impact of Injury	Cognitive abilities	Commenting on how the brain injury impacted cognitive abilities	<i>'It is like my thinking and memory aren't as fast as they used to be.'</i>
	Employment	Commenting on how the brain injury impacted employment	<i>'Before my car crash I was an active professional woman with a busy career in front of me so I was quite upbeat about myself.'</i>
	Confidence	Commenting on how the brain injury impacted the person's confidence	<i>'I was more confident and self-assured and took more risks.'</i>
	Independence	Commenting on how the brain injury impacted the person's level of independence	<i>'[I] have to rely on others to do things I can't do now.'</i>
	Mental Health	Commenting on how the brain injury impacted mental health difficulties	<i>'Unable to do things I could do before as I suffer with tiredness and anxiety when I go out or in large crowds.'</i>
	Physical abilities	Commenting on how the brain injury impacted physical abilities	<i>'I was a keen cyclist and used to push myself to do that. Did lots of walking and always took the longest route.'</i>
	Relationships /Social	Commenting on how the brain injury impacted relationships and social life	<i>'I am more insular, lacking confidence and more reluctant to socialize with other than with very close family and friends.'</i>
Responsibility	Feeling responsible in some way	Perceived view that the individual or another is personally	<i>'No one else involved at all.'</i>

		responsible for their injury in some way	
Shame & guilt	Shame and guilt about the role they or others may have played in their injury		<i>'It was one of those things. I also had a cancer but it is not how I planned my retirement and it is hard to cope with my devastation and the impact on my spouse.'</i>

Table 6. Super-ordinate themes and descriptions of corresponding sub-ordinate themes with example quotes, identified using thematic analysis of participants' responses (N = 42; 63.6% of total participants) to seven open questions."

Discussion

An initial hypothesis proposed that as PR increased, so would shame, anxiety and depression. The findings of this study largely did not support this hypothesis as PR was only significantly associated with depression, and not the main predictor and dependent variables. This therefore meant that the study was unable to carry out all of the proposed statistical analyses. There was a trend for shame, self-compassion and anxiety decreasing as PR increased, though not to a significant level. A potential explanation here is that responsibility is a difficult concept to capture through a single item, as it can have different implications depending on the type and causation of ABI. Indeed, Hart et al (21) illustrated that participants who could be considered objectively responsible for their injury were more likely to blame others. As authors did not make judgments on the level of responsibility, it is unclear whether the given levels of PR by participants would have been the same as how others would have judged their responsibility.

Moreover, some of these results were based on correlational analyses. It is important to highlight that while correlational and regression analyses can demonstrate relationships

between variables, causal effects cannot be detected. For example, good self-compassion skills could be the reason someone feels less shameful, or low shame may have contributed to an individual's ability to be self-compassionate.

This study asked participants to describe their experiences of ABI and PR, and inclusion criteria were made broad to consider the perspective of a wide range of ABI on perceived responsibility. As such, participants with particular types of ABI, such as those caused by involvement in fights, might be more likely to assume greater responsibility for injury. However, the study is unable to comment on the relationships between specific type of ABI and the variables as this information was not collected. As such, statistical comparisons between ABI types were not carried out, though further research might make use of this design.

There is a possibility that some participants viewed taking responsibility to be a positive experience which actually resulted in a *reduction* in shame and mental health difficulties, also shown by Hart et al (21). An association could be drawn here with the concept of "locus of control" (LOC), as people with "internal" LOC (who believe they have control over their own life; 52) are less likely to be depressed than people with "external" LOC (who attribute their lives as in control of others or concepts such as fate; 53). Studies examining LOC in ABI found an association between external LOC and depression and decreased quality of life (54; 55). Participants who blamed others for their injury in Hart et al's study (21) might therefore have had an external LOC, explaining high depression levels in this group. From this, taking responsibility could mean the person is acknowledging the control they have over their lives and ability to recover, perhaps bringing them closer to acceptance, resulting in less shame. This would explain the significant negative correlation

between PR and depression, as perhaps taking responsibility allowed participants to acknowledge their role, and use this as an experience from which to recover. However, it is important to highlight that trends between PR and the predictor and dependent variables were not significant, thus reliable conclusions cannot yet be drawn about this.

Shame was significantly positively correlated with anxiety and depression, supporting initial hypotheses and linking to previous findings that shame is associated with poorer psychological wellbeing (10, 11). This illustrates how people with ABI experience similar associations between shame and wellbeing as those without injuries, making it appropriate to use established shame-targeting psychological therapies. The finding that anxiety, and to a lesser extent shame (P value significant at the .1 level), increased with the self-awareness a participant had into their condition also supported initial hypotheses. This could indicate the protective nature of poorer self-awareness for difficult psychological experiences in ABI populations, as less insight into functioning makes it less likely for a person to perceive the injury's potential negative impacts (56). Toglia and Kirk (57) distinguished between insight and the psychologically motivated symptom of "denial", which functions to protect a person from stressors. It can be difficult to identify which process is at play, providing rationale for a thorough assessment of self-awareness for ABI psychological rehabilitation. However, as the AQ relies on another person to rate the participant, reliability may be affected due to difficulty establishing how well the person knew the participant. Additionally, participants who provided qualitative information were likely to have more insight to be able to provide in-depth descriptions about their experiences, making it difficult to incorporate the qualitative data into discussions about self-awareness.

Self-compassion was significantly negatively correlated with shame, and with anxiety at the .1 level, indicating partial support for correlational hypotheses. This showed that high self-compassion was associated with less shame and anxiety, providing evidence for the protective nature of self-compassion (1). This reinforces the suitability of therapies which target self-compassion to improve anxiety in ABI populations.

Qualitative data

A mixed-methods approach was chosen for this study to allow for exploration of participants' experiences of the variables that were difficult to fully capture by quantitative data collection alone. The thematic analysis emphasised that participants found it difficult to be self-compassionate ("I'm hard on myself") but easier to be compassionate towards others ("I am generally more understanding towards others"), a common occurrence across many populations (3). As such, it would be important to encourage skills of compassion for people with ABI, particularly focusing on compassion towards the self. A link could be drawn here with the theme of functioning, where participants illustrated how their injury had affected areas of their lives such as their cognitive abilities, employment, independence, evidenced by quotes such as "[I] have to rely on others to do things I can't now". Difficulties with self-compassion would likely contribute towards self-criticism about one's altered abilities following ABI, and explain correlations between self-compassion, shame and anxiety. This demonstrates the importance of having therapeutic conversations to explore a person's perception of themselves and their functioning following ABI, as presence of self-criticism about this could hamper recovery.

Another theme explored sense of self, as participants described how their sense of usefulness had changed following injury, illustrating further discrepancies between ideal and pre-injury selves. For example, some participants commented on the sadness they felt about their current self, “I view myself badly now”; and others described a sense of loss, “I feel worthless and like I am causing more unnecessary stress and worry to my family”. This could explain the higher than average levels of shame shown in the quantitative analysis, as participants struggled to be kind towards themselves about their altered abilities. Likewise, Gracey et al (24) highlighted the importance of having a positive sense of self for adjustment and recovery in ABI. This study therefore strengthens the validity of the available literature for targeting shame and sense of self during psychological therapy for adjustment in ABI rehabilitation.

Regardless, participants were readily able to describe their biggest areas of growth or achievement since injury to form the theme of “growth and achievement”, in areas of their lives such as physical achievements (“learning to walk”), mental achievements (“My memory is improving a little” and employment. This suggests that though participants acknowledged their difficulties and feelings of shame, they remained able to reflect on the positive aspects of their recovery. This also links back to the ‘Motivation to improve’ and ‘Positive sense of self’ sub-ordinate themes within “Sense of self”. Here participants described feeling able to retain a positive sense of self despite challenges, and be motivated to make the adaptations needed. This provides optimistic implications for the ability of people with ABI to consider their strengths and motivations, an important skill for approaches such as CFT and ACT which help individuals to focus on what is *within* their control to improve their wellbeing.

Limitations

This study relied on self-report, which can be susceptible to bias. The challenge of limited self-report questions was partly overcome through the collection of qualitative data. However, participants did not comment in depth to some questions, particularly those related to responsibility. Future research could use semi-structured interviews to allow the researcher to be adaptable with questioning and to allow greater depth from follow-up questions. Moreover, there are few available measures for self-compassion and shame, and these measures can differ in their definitions of the concepts and have not been used extensively with neurological populations. It was for this reason that a mixed-methods approach was chosen to allow exploration of the examined variables to capture further detail.

This study centred on responsibility for ABI, a new but important area with sparse literature. As responsibility is a difficult concept to capture and measure, adopting a mixed-methods approach was deemed the most effective way to explore this area. Regardless, the method of measuring PR was limited, which meant that all of the proposed statistical analyses could not be completed. Information about participants' type of ABI was not collected in this study, and as mentioned collecting this information may have allowed for further exploration of the relationships between the variables.

The researchers recognise that not all participants fully completed the self-awareness measure (AQ), which is limited in that a second party is needed to complete the questionnaire. Some participants were understandably unable to recruit a second person to fill this out, particularly those from community settings, meaning that the study has limited data for this variable which may affect the results. However, this measure has been widely recommended and used amongst brain injury populations to measure awareness, and it was

considered more important to use a valid measure to try to measure insight as best as possible, rather than eliminating this variable from the study.

It should also be acknowledged that participants may have interpreted the quantitative and qualitative questions about PR to be asking whether they intentionally “blamed” themselves. While responsibility should capture the objective role a person played in their injury, self-blame describes the subjective process of an individual believing and feeling guilty about the personal role they had in their injury causation (43). Responsibility does not always lead to self-blame; a person might be responsible for their injury but not blame themselves, or vice versa. This study managed this by asking participants to describe their experience of injury responsibility to consider subjective beliefs, and the majority of participants answered in depth which suggests understanding. However, some participants may have interpreted this question as self-blame, possibly impacting the validity of this measure. Further research could use semi-structured open-ended interview questions to further explore PR, and be flexible with questioning if there are misinterpretations.

Conclusions and future directions

This study is the first of its kind to explore the relevance of a person feeling personally responsible for ABI and their ability to practice self-compassion. It has given strength to the literature base that people with ABI experience shame, anxiety and depression, and also struggle to be kind to themselves. The thematic analysis revealed that participants had changes to their sense of self and worth potentially due to their injury changing their functioning, and had feelings of sadness and shame about this.

This study could not reliably conclude that responsibility directly contributed to shame and poorer psychological wellbeing in ABI populations. Despite this finding, there are

thoughts for further research into responsibility and ABI as this area is very new. Longitudinal designs could examine whether time since injury impacts responsibility and consider the role of responsibility in longer-term adjustment, similar to how Bennett et al (12) found that blaming oneself for cancer diagnoses negatively impacted adjustment processes. The statistical flexibility of the responsibility measure could be improved using a forced choice rather than rating scale, to avoid floor effects. Additionally, responsibility could have been explored deeper by asking open questions instead of asking participants to rate their PR.

More research could explore responsibility and LOC (54), and also explore if people feel they are viewed and treated differently by others since their injury, highlighting the implications of this for their own sense of self and wellbeing (22; 29). This could be broadened by studying shame and compassion levels of family members of individuals with ABI, and the implications for family therapy as part of psychological rehabilitation.

Overall, people with ABI likely experience shame and self-compassion in a unique way, due to the role the injury has played in their functioning. Therefore, a rationale is provided to use third-wave psychological approaches and therapies which encourage self-compassion and acceptance (9). This study also demonstrates the need to tailor these therapies to incorporate factors associated with difficulties adjusting to ABI, such as impact on sense of self and functioning, to make them appropriate for this population.

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Declaration of interest statement

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