Experiences of Posttraumatic Growth in Women Following Birth Trauma

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Thesis Overview

This thesis contains three chapters that detail the research completed by the author in partial fulfilment for the requirements of the degree of Doctor of Clinical Psychology (DClinPsy). The research aimed to consider the concept of posttraumatic growth in the context of birth trauma, and to understand approaches to facilitating experiences of growth using psychological intervention.

The first chapter presents a systematic review and meta-analysis summarising which psychological interventions are available to facilitate experiences of posttraumatic growth, and their effectiveness. Findings suggest that psychological interventions do facilitate posttraumatic growth in the short term, however these effects are not maintained at medium and long term follow-up. Many psychological interventions are designed with the aim to reduce symptoms of posttraumatic stress, depression, and anxiety, rather than to facilitate posttraumatic growth. Clinical implications of this are discussed.

The second chapter presents an empirical research study using qualitative methods to investigate experiences of posttraumatic growth in women following birth trauma. Seventeen women were interviewed and reported experiences of posttraumatic growth, such as: changes in their relationships with others, recognising new possibilities, feeling a sense of personal strength, and an appreciation for life. Differences in the ways that posttraumatic growth is experienced in the context of birth trauma and clinical implications of this are discussed.

The third chapter presents two press releases to disseminate research findings to lay audiences.

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Chapter 1: Psychological Interventions to Facilitate Posttraumatic Growth: A Systematic Review and Meta-Analysis

Summary

Background: Traumatic experiences are highly prevalent and whilst most research has considered interventions to reduce symptoms of posttraumatic stress disorder, less research has considered how posttraumatic growth can be facilitated by psychological intervention.

Objective: To conduct a systematic review and meta-analysis to: 1) summarise which psychological interventions are available to facilitate posttraumatic growth, 2) assess the effectiveness of interventions, and 3) consider which factors may impact on intervention effectiveness.

Method: A search for randomised control trials assessing the effectiveness of psychological interventions to facilitate posttraumatic growth was conducted in: PsycInfo, MEDLINE, EMBASE, and CINAHL. A random effects meta-analysis was conducted to assess intervention effectiveness and sub analyses investigated the impact of methodological (risk of bias and measure used to assess posttraumatic growth), participant (age, gender, and trauma type), and intervention (intervention type, format, and platform of delivery) characteristics on intervention effectiveness.

Results: Forty-two articles reporting on 51 unique interventions were identified by the systematic review. Forty-nine unique interventions were included in the meta-analysis. Psychological interventions facilitated posttraumatic growth and effects were most pronounced at short term follow-up and were most beneficial to women and people between age 26–50 years. There was no difference in effectiveness according to trauma type, methodological, or intervention characteristics.

Conclusions: Psychological interventions facilitate posttraumatic growth in the short term and most interventions aimed to reduce symptoms of posttraumatic stress disorder, anxiety, and depression. Future intervention studies could consider including additional therapeutic techniques proposed by the posttraumatic growth model to further facilitate experiences of posttraumatic growth.

Introduction

Traumatic Experiences

A traumatic experience can be defined as any event that has a detrimental impact to an individual in terms of their sense of safety and self, their ability to maintain relationships, and to regulate emotions (Perrotta, 2019). Traumatic experiences can vary in frequency, duration, intensity, and type, and can be experienced directly or vicariously. For example, a road traffic accident or natural disaster, illness, repeated exposure to abuse, poverty, or discrimination, or witnessing or learning about trauma experienced by others, are all traumatic experiences (American Psychiatric Association, 2022; World Health Organization, 2018). The prevalence of traumatic experiences is high, and estimates suggest that between 16–90% of the general population are exposed to at least one traumatic experience in their lifetime (Benjet et al., 2016; Kessler et al., 2017; Lewis et al., 2019; Mills et al., 2011). Variance in prevalence estimates across studies may be accounted for by the differences in methodological approaches to assessing and defining trauma, given that any event or experience may be interpreted as traumatic by one individual, but not by another.

Traumatic Experiences and Posttraumatic Distress

Responses to traumatic experiences vary in duration and intensity across individuals. Some people experience high levels of persistent distress and may report symptoms, or receive a diagnosis, of posttraumatic stress disorder (PTSD). The prevalence of PTSD is estimated at between 1–20% in the general population (Atwoli, Stein, Koenen & McLaughlin, 2015; Benjet et al., 2016; Kessler et al., 2017). Estimates may vary based on the criteria used to define PTSD, the country of research, and the nature of the trauma experienced. PTSD has been associated with a range of mental and physical health conditions (Flory & Yehuda, 2022; Scott et al., 2013; Spinhoven et al., 2014), a poorer quality of life (Pagotto et al., 2015), and increased use of health and social care services (Deykin, 2001). Thus, PTSD following trauma exposure poses substantial challenges to individuals, public health, and clinical practice (Kleber, 2019; Watson, 2019).

Posttraumatic Growth

Definition and Origins

The finding that most people will be exposed to trauma in their lifetime but only a small number of people will develop PTSD infers that there are differences in psychological

vulnerability to distress (Giummarra, Lennox, Dali, Costa & Gabbe, 2018). Posttraumatic growth is a psychological concept that may account for differences in vulnerability to distress following trauma exposure. Posttraumatic growth is defined as "positive psychological changes experienced as a result of the struggle with traumatic or highly challenging life circumstances" (Tedeschi, Shakespeare-Finch, Taku & Calhoun, 2018, p. 3). The idea that positive change occurs following adversity has been observed across cultures for centuries in religious and philosophical texts (Affleck & Tennen 1996). The concept was first observed in the psychological literature in the mid-90s in line with the 'Positive Psychology' movement, as researchers observed that people who had experienced trauma also reported positive changes. Several terms have been used to describe this phenomenon, including 'benefit finding' (Affleck & Tennen, 1996) and 'personal growth' (McFarland & Alvaro, 2000). The term 'posttraumatic growth' has dominated the literature (Tedeschi & Calhoun, 1995), arguably because of the development of the Posttraumatic Growth Inventory (PTGI: Tedeschi & Calhoun, 1996), a standardised questionnaire measure developed to operationally assess the concept.

Theoretical Underpinnings

The concept of posttraumatic growth has developed over time and Tedeschi and Calhoun have made several revisions to the model, drawing on findings from the growing body of literature (Calhoun et al., 2010; Tedeschi & Calhoun, 1995, 1996, 2004; Tedeschi, Park & Calhoun, 1998; Tedeschi et al., 2018). The most recent version of the model is displayed in Figure 1 (Tedeschi et al., 2018) and is based on the same principles as previous versions, with the addition of more comprehensive and cyclical relationships between processes. Posttraumatic growth can be understood both as a process and an outcome (Tedeschi et al., 2018). The process of posttraumatic growth is a subjective experience that evolves over time and encompasses emotional, cognitive, and behavioural changes (Joseph & Linley, 2005; Tedeschi et al., 2018). Experiences of posttraumatic growth can also be measured as an outcome using standardised measures such as the PTGI.

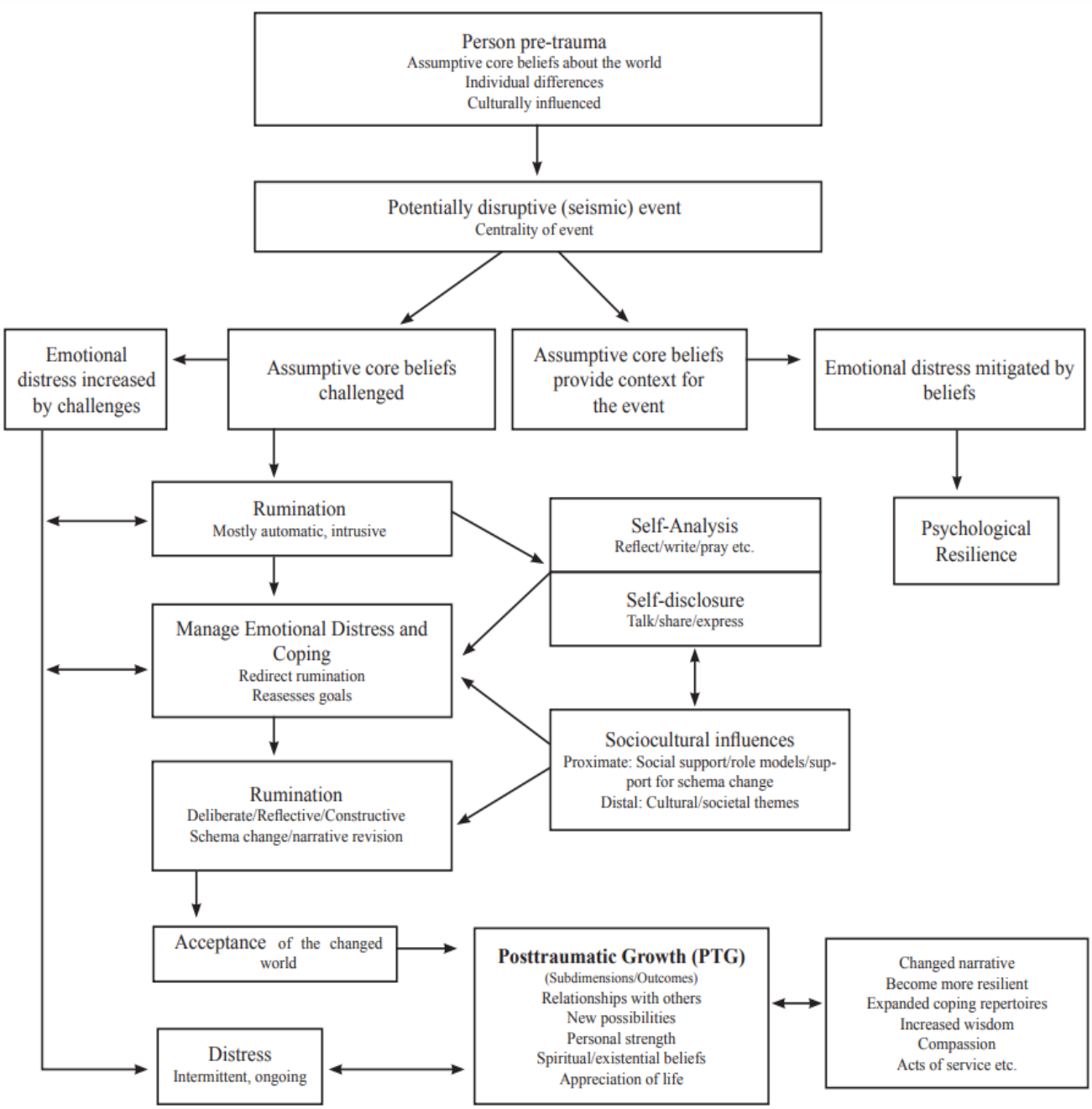


Figure 1. Tedeschi et al., (2018) model of posttraumatic growth.

The model reflects sequential stages of the process of posttraumatic growth, underpinned by cognitive, emotional, and behavioural theories. The model begins with pre-trauma conditions, which account for the assumptive core beliefs held by the individual, individual differences, and cultural influences. These pre-trauma conditions shape an individual's personality and view of the self, world, and others. The model acknowledges that traumatic and stressful events vary in their impact. Some traumatic and stressful events may be accounted for by existing schemas and beliefs which enable the individual to make sense of the event. Therefore, distress caused by the event is managed and the individual does not experience posttraumatic growth, as existing schemas and beliefs can adequately account for the event. However, when an individual experiences a traumatic or stressful even that cannot be accounted for by existing schemas and core beliefs, they enter the process posttraumatic growth.

The process of posttraumatic growth has been conceptualised using a metaphor of an earthquake (Janoff-Bulman, 1992). For growth to occur, a traumatic experience must be strong enough to 'shake the foundations' of the individuals core beliefs and assumptions about the world, leading to emotional distress (Calhoun & Tedeschi, 1998, p. 216). Just as in the aftermath of an earthquake where physical structures are rebuilt, posttraumatic growth can be achieved through cognitive rebuilding. Cognitive rebuilding refers to an individual leaving behind assumptions held about the world before the traumatic event, and building new meanings (Tedeschi & Calhoun, 2004). The process begins with rumination of automatic and intrusive thoughts about the traumatic event. The intrusive thoughts are likely to reflect the lack of fit between the traumatic event and the core beliefs the individual held about the world pre-trauma. To manage the distress that arises because of this dissonance, individuals will begin to explore their feelings through self-analysis or self-disclosure, facilitating insight and awareness about the traumatic experience and its impact. This process can be facilitated by sociocultural influences, such as the availability of social support that may be associated with feeling understood, belonging, and compassion. After managing emotional distress, individuals engage with a constructive and deliberate process of ruination as they recognise that beliefs and goals held pre-trauma no longer accurately reflect events that have occurred within their environment and therefore do not align with their understanding of the self, world, and others, following the trauma (Tedeschi, Calhoun & Groleau, 2015). In this process it becomes possible for the individual to formulate new beliefs, goals, and schemas that acknowledge the change in circumstances following the trauma and allow the individual to

rebuild their assumptions about the world (Tedeschi, Calhoun & Cann, 2007). This facilitates acceptance of the changed world and is associated with a reduction in distress and an increase in life satisfaction (Little, 1998). Importantly, growth does not occur because of trauma itself, but through the process of cognitive reconstruction as the individual makes sense of their traumatic experience and adapts to their new reality in the context of trauma (Coroiu et al., 2016; Harding et al., 2014; Joseph & Linley, 2006; Ramos & Leal, 2013; Tedeschi & Calhoun, 1996).

How is Posttraumatic Growth Experienced?

Posttraumatic growth may be experienced along several dimensions such as, feeling a greater sense of personal strength, experiencing more meaningful relationships, a greater appreciation for life, an openness to seeing new possibilities and priorities around what is important, and a change in existential and spiritual beliefs (Figure 1: Tedeschi & Calhoun, 2018). The PTGI was developed to measure growth along these dimensions and is widely used across studies that assess posttraumatic growth (Tedeschi & Calhoun, 1996). The development of this measure reflects a movement towards operationalising the term to measure the experiences of posttraumatic growth as an outcome in research. A recent meta-analysis found that the prevalence of moderate to high levels of posttraumatic growth after a range of traumatic experiences was 52.58% (Wu et al., 2019). It was also reported that women and people from younger age groups were more likely to experience posttraumatic growth than men or people from older age groups and this finding is reported consistently in the literature (Andysz, Najder, Merecz-Kot & Wójcik, 2015; Brandão, Brites, Nunes & Hipólito, 2020; Sim, Lee, Kim & Kim, 2015; Tedeschi & Calhoun, 2004; Tomita et al., 2017; Vishnevsky, Cann, Calhoun, Tedeschi & Demakis, 2010; Wu et al., 2019). Wu et al., (2019) included a range of traumatic event types such as acute illness, chronic disease, cancer, childbirth, violence, sexual abuse, road traffic accident, natural disaster, and professions with exposure to trauma and distress (e.g. first responders and veterans). This suggests that growth can be experienced across a range of traumatic and stressful event types but may be self-reported to a greater degree by women and young people.

Benefits of experiencing posttraumatic growth

Unlike PTSD, posttraumatic growth has several benefits for people who have experienced trauma and for health and social care systems (Figure 1). It is possible that the resources and skills that individuals use and develop in the aftermath of trauma can be applied to endure

future traumatic experiences (Gilbert, Pinel, Wilson, Blumberg & Wheatley, 1998; Tedeschi & Calhoun, 1996). In addition, the negative outcomes associated with PTSD may be the result of the way that trauma is processed. Both posttraumatic growth and PTSD involve cognitive processing in the form of ruminative thoughts about the trauma and assumptions that have been challenged as a result (Park, 2010; Tedeschi et al., 2015). In PTSD, ruminative thoughts focus on traumatic memories and have been associated with an increase in PTSD symptoms (Moulds, Bisby, Wild & Bryant, 2020). However, in posttraumatic growth, the individual moves away from traumatic memories and towards a process of making sense of the meaning of life following trauma. Thus, the appraised meaning and narrative of the traumatic event is transformed to a more positive one (Park, 2008). Although individuals may still experience some level of distress following trauma exposure, their outlook on the traumatic experience will reflect a process of growth rather than persistent and enduring distress. Indeed, evidence suggests that posttraumatic growth is associated with positive mental health outcomes, such as lower levels of depression, and positive wellbeing (Helgeson, Reynolds & Tomich, 2006). Through the process of posttraumatic growth, individuals may develop wisdom and psychological resilience, and this is supported by studies that report a positive correlation between wisdom and posttraumatic growth (Aldwin & Levenson, 2004; Linley, 2003; Webster, 2010; Webster & Deng 2015).

Relationship between posttraumatic distress and posttraumatic growth

Research into the relationship between posttraumatic growth and posttraumatic stress is conflicting. Three possible relationships have been identified within the literature (Dekel, Ein-Dor & Solomon, 2012; Dekel, Mandl & Solomon, 2011). The first proposed association suggests that posttraumatic growth and posttraumatic distress can be conceptualised as two ends of the same continuum. This association is supported by studies that find a negative association between posttraumatic growth and distress, such that individuals who report high levels of growth report lower levels of distress (Frazier, Colon, & Glaser, 2001; Johnson et al.,2007). This suggests an adaptive significance of posttraumatic growth following trauma (Frazier et al.,2001). Alternatively, some research evidence suggests that posttraumatic growth may co-occur with distress, expressed in either a linear (Butler et al., 2005; Hall et al., 2010; Taku, Calhoun, Cann, & Tedeschi, 2008) or curvilinear (Butler et al., 2005; Levine, Laufer, Hamama-Raz, Stein & Solomon, 2008; Solomon & Dekel, 2007) relationship. In line with this, it is suggested that posttraumatic distress is needed prior to growth to facilitate and maintain positive change following trauma (Tedeschi & Calhoun, 2004). This suggests that to

experience high levels of growth, an individual must experience a high level of distress following trauma. The final mode of association suggests that posttraumatic growth and distress are independent outcomes. Some studies find no significant association between growth and distress (Hobfoll, Tracy, & Galea, 2006; Maercker & Herrle, 2003; Salsman, Segerstrom, Brechting, Carlson, & Andrykowski, 2009). This suggests that posttraumatic growth may not be related to adjustment (Zoellner & Maercker, 2006). In summary, it is unclear from the available research evidence if posttraumatic growth and distress are part of the same continuum, overlap, or are distinct concepts (Dekel et al.,2011; Dekel et al.,2012). One limitation of the existing literature examining these relationships is the reliance on cross-sectional data and this contributes to the inconsistency reported across studies (Park & Helgeson, 2006).

Interventions to Facilitate Posttraumatic Growth

Given the benefits of posttraumatic growth, it seems relevant to consider how to facilitate growth following trauma exposure. Interventions for trauma usually aim to reduce symptoms of PTSD and associated mental health difficulties and have been widely researched. Effective psychological interventions include Eye Movement Desensitization and Reprocessing (EMDR) therapy, trauma and non-trauma focussed Cognitive Behavioural Therapy (CBT), exposure therapy, mindfulness, and interpersonal therapy (Coventry et al., 2020; Karatzias et al., 2019; Roberts, Kitchiner, Kenardy, Lewis & Bisson, 2019). These therapies are routinely used in clinical practice to reduce symptoms of PTSD, however the impact of these therapies on the process of posttraumatic growth is less well understood. In the posttraumatic growth model, Tedeschi and McNally (2011) propose five key elements for interventions to facilitate posttraumatic growth: 1) psychoeducation on trauma; 2) emotion regulation skills; 3) constructive self-disclosure; 4) the development of new narratives in line with themes of posttraumatic growth; and 5) an exploration of new life principles. Tedeschi and McNally emphasise the importance of attending to people's life experiences in terms of meaning, satisfaction, and fulfilment.

Two previous meta-analyses have considered the effectiveness of interventions for posttraumatic growth. A meta-analysis of published and unpublished randomised control trials reported that psychosocial interventions significantly facilitated posttraumatic growth with a small to medium effect size (Roepke, 2015). Studies in this meta-analysis considered any type of traumatic experience. A second meta-analysis of randomised control trials

reported that psychosocial interventions for people with cancer significantly facilitated posttraumatic growth with a medium effect size (Li et al., 2020). Both Roepke and Li et al., reported that included interventions were not specifically designed to facilitate posttraumatic growth, and that growth was reported as a secondary outcome, whereas primary outcomes assessed symptoms of PTSD or depression. Included interventions were based on principles of CBT, mindfulness, behaviour change, and expressive interventions such as psychotherapy or emotional disclosure.

There are several limitations to the previous meta-analyses that assess the effectiveness of interventions for posttraumatic growth. Firstly, Roepke's (2015) findings are based on a search of the literature from 2012, which is over 10 years old. The availability of peer reviewed research on posttraumatic growth has increased considerably in recent years and therefore the findings of this review may not reliably represent the current evidence base for available interventions. Secondly, only one database was searched, and this limits the scope of analysed literature. Thirdly, non-peer reviewed research was included and although no significant differences in bias were reported between published and unpublished research, studies that have endured the peer review process are preferable for obtaining reliable and valid syntheses of the literature. In Li et al., (2020), only studies that recruited participants who had recently been diagnosed with, received treatment for, or overcome, cancer, as a stressful or traumatic life event were included. Although these findings reflect a more current summary of the literature, the findings are limited to understanding how interventions facilitate posttraumatic growth in the context of cancer.

Aims of the Present Study

Given the variance in vulnerability to psychological distress following trauma exposure and the potential benefits of facilitating posttraumatic growth, this systematic review and meta-analysis aimed to summarise which psychological interventions are available to facilitate posttraumatic growth. It also aimed to assess the effectiveness of these interventions and to consider which factors impact on the effectiveness of interventions.

Method

Identifying Primary Studies

Search of electronic databases

A systematic search of the literature was carried out on 01 August 2022 using PsycInfo, MEDLINE, EMBASE, and CINAHL. The aim of the search was to obtain a comprehensive overview of the literature that considered the effectiveness of psychological interventions to facilitate posttraumatic growth. The search terms used to identify relevant studies are outlined in Table 1.

Table 1. *Search criteria.*

Construct	Terms	Method of search	Limits
Posttraumatic growth	"Posttraumatic growth" "PTG" "Personal growth" "Post-traumatic growth" "Post traumatic growth" "Benefit finding"	Title OR Abstract	English language
Psychological intervention	Intervention Program* Therap* Treatment* Counseling Counselling Peer support Psychotherap*	All search terms within a construct combined with OR	Human participants
Randomised control trial	Randomised control* trial Randomized control* trial RCT	Constructs combined with AND	No time limit imposed

Inclusion Criteria

The inclusion criteria are described in full in Table 2. Articles were included if: the participants had experienced any type of trauma prior to the study; the study assessed the effectiveness of a psychological intervention; posttraumatic growth was assessed using a formal outcome measure; the study design was a randomised control trial; the control condition was a waiting list or intervention with minimal psychological components; the study was peer reviewed and in English language.

Table 2. *Inclusion criteria.*

Inclusion/Exclusion criteria	Justification
Population Participants who have experienced any type of traumatic or stressful event prior to the study. No other restrictions were imposed.	The posttraumatic growth model suggests that people must have experienced adversity to experience growth. The model also states that any type of traumatic event or stressful life event can lead to posttraumatic growth, therefore any traumatic or stressful event was included. No other limits were imposed as it is not known how the effectiveness of interventions to facilitate posttraumatic growth may differ depending on age, gender, country, trauma type, or setting (e.g. hospital based or community).
Intervention Any psychological intervention, defined as an intervention based on a psychological model (e.g. cognitive behavioural therapy, acceptance and commitment therapy) or an intervention heavily based on psychological principles (e.g. cognitive restructuring, written reflection, mindfulness).	To explore the scope of psychological interventions available to facilitate posttraumatic growth. There are no guidelines for how best to facilitate posttraumatic growth psychologically, therefore any psychological intervention was included.
Comparison A control condition of either waiting list or treatment as usual with a minimal psychological component (e.g. education, information).	To compare the effectiveness of the intervention against receiving no intervention.
Outcome measure Posttraumatic growth must be assessed as an outcome of the intervention using a formal measure, such as the PTGI, the Benefit Finding Scale, etc.	To ensure that findings are reliable and valid and can be generalised to wider trauma populations.
Outcome data The studies are required to report either Means and Standard Deviations, F-Test statistics, Cohen's d effect size, an r effect size, or data that can be transformed into one of these statistical outcomes.	To ensure that outcomes can be calculated into an effect size for the meta-analysis.
Study design Randomised control trials only.	Randomised control trials provide the best quality of evidence.
Type of article Peer reviewed journal articles were included. The following article types were excluded: meta-analyses, theoretical papers, reviews, commentaries, clinical guidance, protocols, abstracts, unpublished dissertations non-outcome focused studies i.e. longitudinal, association studies, case studies, validation of psychometric scales, and qualitative papers.	Peer reviewed journal articles provide the outcome data needed for the meta-analysis whereas excluded articles do not.

The results of the systematic search are presented in Figure 2. The search yielded a total of 594 articles and 375 once duplicates were removed. These articles were then screened by title and abstract using the inclusion criteria. The most common reason for exclusion was that the article did not examine the effectiveness of a psychological intervention to facilitate posttraumatic growth following trauma (n = 138 at title screening and n = 87 at abstract screening). Full texts of the remaining 82 articles were then reviewed in more detail against the inclusion criteria. Thirty-four articles met the full inclusion criteria. Eight additional articles were identified through reference list searches of the included articles. Thus, 42 articles satisfied the criteria for inclusion within this meta-analysis.

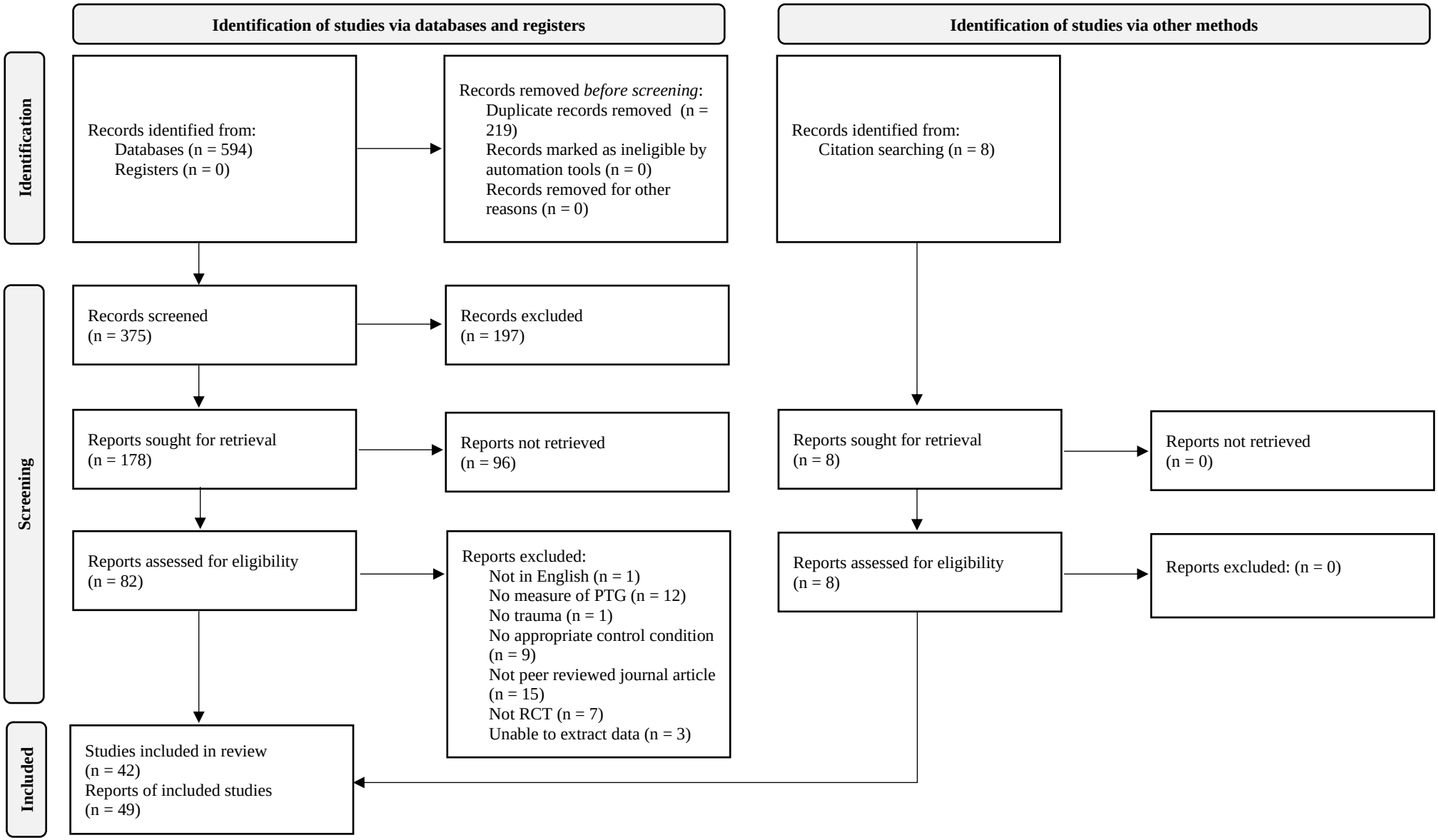


Figure 2. Results of the systematic search and the application of the inclusion criteria.

Data Extraction

All data were extracted by the author. It was anticipated that the intervention outcome would be reported as a mean or mean difference, a standard deviation, and sample-size for each of the intervention and control groups. Where standard deviations for each group were not reported individually, the pooled standard deviation was substituted. Where means or standard deviations were not reported, Student t or F statistics were transformed into estimates of Cohen's d if the sample size was reported. Where neither summary statistics nor t or F statistics were reported, effect sizes as calculated within the primary studies were considered. It should be noted that effect sizes as reported in primary studies were frequently calculated from data that had been adjusted for the association with one or more covariates. Such adjustments emphasise the idiosyncratic character of the reported effect and may result in dissimilarity with the effects reported within the other primary studies. The contribution of adjusted effect size to overall heterogeneity was examined empirically if problematic heterogeneity was identified in the random effects model.

Multiple reporting of outcomes can result from articles reporting the effectiveness of more than one type of intervention, the reporting of the effectiveness of the intervention on unique subgroups of participants, or from using multiple measures for a specific outcome. Where subgroups were non-overlapping (i.e., do not share participants in common) then these effects were included as separate effects within the meta-analysis. The inclusion of such effects does not have adverse effect on the calculation of the meta-analytic synthesis and associated confidence intervals. For example, Holtmaat et al., (2019) reported outcomes for two interventions aimed at facilitating posttraumatic growth and these were presented in the meta-analysis separately as 'Holtmaat et al., (2019) Meaning centred group psychotherapy' and 'Holtmaat et al., (2019) Supportive group psychotherapy'. Multiple effects reported in articles were included separately in this meta-analysis, with the 42 articles reporting 51 unique effects sizes from non-overlapping samples. As none of the reported effects were from overlapping samples, it was not necessary to correct the meta-analytic confidence intervals for the biasing effects of artificial inflation of the total sample (i.e., where overlapping samples would be counted two or more times).

Defining Problematic Variance

A study level effect is considered heterogeneous if it presents with variation from the meta-analysis synthesis that cannot be attributed to true variation in the distribution of effect in the

population. Heterogeneity can result from methodological variation in the studies, measurement error, or uncontrolled individual difference factors within the literature. Higgins I^2 is a commonly used measure of heterogeneity, with greater values of I^2 indicating variation in effect that cannot be attributed to true variation in the distribution of effect in the population. As there is considerable variation in methodologies of the primary studies that were used to calculate the meta-analytic synthesis, problematic heterogeneity was defined as a Higgins I^2 value greater than 75%. Where unacceptable or problematic heterogeneity is observed then the focus of the subsequent analyses will be upon the identification of the sources of heterogeneity between the estimates of posttraumatic growth in the primary studies.

Risk of Bias Assessment

A set of criteria were developed to assess any risk of bias within the literature. The criteria were adapted from the Cochrane Collaboration Risk of Bias Tool (Higgins et al., 2011) and the Risk of Bias Assessment Tool for Randomised Trials (Sterne et al., 2019). The current framework assesses risk of bias in seven domains: selection bias; performance bias; treatment fidelity; detection bias; statistical bias; reporting bias; and generalisation. The risk of bias in the seven domains and the criteria for low, unclear, or high risk is described in Table 3 and the application of these criteria are reported in Table 4. Table 4 contains a rating of the overall risk of bias for each study. This overall risk of bias index was calculated as the sum of the seven domains of risk of bias, with two points awarded for low risk of bias, one point awarded for unclear risk of bias and zero points for high risk of bias. Accordingly, the sum of the risk of bias could range from 0–14. The overall risk of bias was expressed as a percentage of the maximum total score.

Higgins et al., (2011) strongly recommend that risk of bias analyses is undertaken in preference to using quality scales, as quality scales conflate quality of reporting with the internal and external validity of the reported effects. In addition, this generic, or 'off-the-shelf", approach to assessing study quality does not include methodological, theoretical, and conceptual considerations specific to the topic of interventions for posttraumatic growth. Following Higgins et al., (2011) recommendations, the risk of bias tool developed to assess the internal and external validity of the outcome studies identified by the systematic review is specifically designed for studies examining interventions for posttraumatic growth. The framework assesses risk under the seven domains of risk of bias described in Table 3 and are applied to the data in Table 4.

Table 3. *Domains of risk of bias and the criteria for ratings of low, unclear, or high risk.*

Domain	Details	Risk of bias
Selection Bias	How representative is the sample?	**High risk** • Participants recruited from one location and source (e.g. a researcher or healthcare professionals place of work), procedure for recruitment unclear, convenience sample. • Small sample size, unlikely to be representative. • Group characteristics poorly described or not described at all. • Lots of exclusion criteria applied to the sample meaning that people eligible to participate in the study may be fundamentally different to those not eligible to participate within a given sample or trauma type. • Large number of people declined to participate, and reasons are poorly documented or are non-specific. • Participants were randomised to a condition, but the randomisations method is not provided or poorly explained. • Not possible to determine if groups were comparable at baseline due to lack of descriptive information, or groups fundamentally and significantly differ on several variables at baseline. **Unclear Risk** • Some features of high and low risk or not enough information provided to determine level of risk. **Low Risk** • Participants recruited from multiple locations and sources with limited bias and an appropriate sample size, procedure for recruitment well described and clear. • Characteristics of each group are clearly described. • Few exclusion criteria applied to the sample so likely to be representative. • Small number of people declined to participate and reasons for this were clearly provided with justifications. • Participants were truly randomised to a condition using an appropriate and well described method. • Groups were comparable at baseline, including all major confounding and outcome variables.
Performance Bias	Were efforts made to reduce differences between groups after randomisation?	**High Risk** • The intervention and control groups did not go through the same procedures leading up to the intervention. • The allocation sequence was not concealed from investigators and participants; therefore blinding was not achieved. **Unclear Risk** • Some features of high and low risk or not enough information provided to determine level of risk. **Low Risk** • The intervention and control groups went through the same procedures apart from the intervention(s) studied. • The allocation sequence was concealed from investigators and participants.
Treatment Fidelity	How reliable and valid was the administration of the intervention?	**High Risk** • Intervention protocol or features were poorly described and therefore cannot be easily replicated. • Treatment fidelity and quality not described or checked. • Poor adherence to the intervention protocol or deviations outlined but not justified. • Intervention does not seem to be valid, or there is no evidence base provided, or there is no rationale or literature provided for the development of a new intervention. • Intervention implemented by a facilitator that does not have a suitable level of experience or does not state who the intervention was implemented by.

Table 3. *Domains of risk of bias and the criteria for ratings of low, unclear, or high risk.*

Domain	Details	Risk of bias
		• Intervention did not appear to correspond to the intended treatment outcome. **Unclear Risk** • Some features of high and low risk or not enough information provided to determine level of risk. **Low Risk** • Intervention protocol or features well described. • Treatment fidelity and quality described and checked. • Adequate adherence to intervention demonstrated. • Valid intervention based on existing model or literature. • Intervention implemented by a facilitator with suitable level of experience. • Intervention clearly corresponded to the intended treatment outcome.
Detection Bias	Was the study design optimised to detect the effect in question?	**High Risk** • Research question and aims are unclear. • Study design does not seem appropriate to (or is unclear) to answer the question appropriately (e.g. limited consideration of, or inappropriate, sample, intervention, outcome measure, or control group). • Posttraumatic growth poorly defined as an outcome, or measures with limited reliability or validity used to measure posttraumatic growth. • Type of trauma experienced unclear or poorly defined. **Unclear Risk** • Some features of high and low risk or not enough information provided to determine level of risk. **Low Risk** • Clear research question and appropriate study design to answer the question (with consideration of an appropriate sample, intervention, outcome measure, and control group). • Posttraumatic growth clearly defined as an outcome measure, and a valid and reliable measure used to measure posttraumatic growth in participants who have experienced trauma. • Control group appropriate and clearly described, for example waiting list control or treatment as usual with a minimal psychological component. • Trauma experience clearly outlined and defined.
Statistical Bias	How appropriate are statistical methods and procedures?	**High Risk** • Analysed participants that completed intervention only, did not use intention-to-treat analysis. • No power analysis undertaken, or power analysis undertaken but the sample size suggested from this analysis was not achieved. • Inappropriate statistical methods used to report the outcomes. • Results for some or all outcomes not or poorly reported, report outcomes for intervention group only, do not report findings for outcomes at each time point. • High levels of attrition, missing or incomplete data, differential drop-out between the study groups that could have affected the results, reasons for drop-out not accounted for. **Unclear Risk** • Some features of high and low risk or not enough information provided to determine level of risk. **Low Risk** • Intention-to-treat analysis was used.

Table 3. *Domains of risk of bias and the criteria for ratings of low, unclear, or high risk.*

Domain	Details	Risk of bias
		• A power analysis undertaken, and the sample size suggested from this analysis was achieved. • Appropriate statistical methods used to report the outcomes. • Results were reported for each outcome, and in each study group, and at each follow-up interval (if applicable). • Low levels of attrition, no missing or incomplete data, and no differential drop-out between the study groups that could have affected the results, or drop-out accounted for, adequately adjusted for, or reported.
Reporting Bias	Is the reported data complete and free from bias?	**High Risk** • Evidence of selective reporting in favour of significant findings rather than reporting findings for all outcome measures. • Non-significant findings not adequately reported, e.g. only report that findings were 'non-significant' or 'p < .05'.rather than providing a specific statistical value. • A high number of participants did not complete the intervention in each group and the group sizes were not comparable post-intervention, drop-out during intervention poorly reported, or the impact of this on the data not explored. This may have resulted in systematic differences between groups in terms of who completed and who did not complete the intervention. **Unclear Risk** • Some features of high and low risk or not enough information provided to determine level of risk. **Low Risk** • Findings for all outcome measures are reported as outlined in the method. • Non-significant findings are reported and with specific statistical values. • Most participants completed the intervention in each group and the group sizes were comparable post-intervention, few participants were excluded or dropped out during the intervention stage and the impact of this on the data was explored, dropouts and exclusions were clearly reported and explained.
Generalisation	Can the research findings be applied to settings other than that in which they were originally tested?	**High Risk** • Inclusion and exclusion criteria for the study are restrictive and therefore the study sample is not representative of the general population of people who may have experienced trauma. • The outcomes and intervention are not important or relevant to the general population of people who have experienced trauma. • The study is missing relevant outcomes and information that are important for the general population of people who have experienced trauma, this may influence the reliability and validity of the outcome and conclusions. **Unclear Risk** • Some features of high and low risk or not enough information provided to determine level of risk. **Low Risk** • Inclusion and exclusion criteria for the study would not alter the outcomes reported in the study for the general population of people who have experienced trauma. • The outcomes and intervention are important to the general population of people who have experienced trauma. • The study includes all relevant outcomes and information that are important for the general population of people who have experienced trauma.

Table 4. Ratings of risk of bias. Red indicates high risk of bias, amber marks an unclear risk of bias and green is a low risk of bias.

Study name	*Selection Bias*	*Performance Bias*	*Treatment Fidelity*	*Detection Bias*	*Statistical Bias*	*Reporting Bias*	*Generalisability*	*Overall Risk of Bias*
Antoni et al., (2006)	Unclear risk	Low risk	Low risk	Low risk	Unclear risk	Low risk	Unclear risk	33%
Antoni et al., (2001)	Unclear risk	Unclear risk	Unclear risk	Unclear risk	Unclear risk	Low risk	Unclear risk	28%
Barron et al., (2021)	High risk	Unclear risk	Low risk	Unclear risk	Low risk	Low risk	High risk	28%
Bartl et al., (2018)	High risk	Unclear risk	Low risk	Unclear risk	Unclear risk	Unclear risk	High risk	25%
Burns et al., (2018)	High risk	Unclear risk	Unclear risk	Unclear risk	High risk	Unclear risk	Unclear risk	23%
Chambers et al., (2017)	Low risk	Unclear risk	Low risk	Unclear risk	Low risk	Low risk	Unclear risk	33%
Cruess et al., (2000)	High risk	Unclear risk	Low risk	Low risk	Unclear risk	Unclear risk	Unclear risk	28%
Groarke et al., (2013)	High risk	Unclear risk	Unclear risk	Unclear risk	Unclear risk	Unclear risk	Unclear risk	25%
Hawkes et al., (2014)	Unclear risk	Low risk	Low risk	Low risk	Unclear risk	Unclear risk	Unclear risk	31%
Heinrichs et al., (2012) Female	Unclear risk	Unclear risk	Low risk	Unclear risk	High risk	Unclear risk	High risk	25%
Heinrichs et al., (2012) Male	Unclear risk	Unclear risk	Low risk	Unclear risk	High risk	Unclear risk	High risk	25%
Holtmaat et al., (2019) Meaning centred group psychotherapy	Unclear risk	Unclear risk	Unclear risk	Low risk	Low risk	Unclear risk	Unclear risk	30%
Holtmaat et al., (2019) Supportive group psychotherapy	Unclear risk	Unclear risk	Unclear risk	Low risk	Low risk	Unclear risk	Unclear risk	30%
Huang et al., (2018)	Unclear risk	Low risk	Low risk	Low risk	Unclear risk	Low risk	High risk	31%
Kaiser et al., (2022)	High risk	Low risk	Unclear risk	Low risk	Unclear risk	Low risk	Unclear risk	30%
Kenne Sarenmalm et al., (2017)	High risk	Unclear risk	Low risk	Unclear risk	Low risk	Unclear risk	Unclear risk	28%
Knaevelsrud et al., (2010)	Unclear risk	Unclear risk	Unclear risk	Low risk	Unclear risk	Unclear risk	Unclear risk	28%
Köhle et al., (2021) Personal feedback	Low risk	Unclear risk	Unclear risk	Unclear risk	Unclear risk	Unclear risk	Unclear risk	28%
Köhle et al., (2021) Automated feedback	Low risk	Unclear risk	Unclear risk	Unclear risk	Unclear risk	Unclear risk	Unclear risk	28%
Kubo et al., (2019) patients	High risk	Unclear risk	Low risk	Low risk	Unclear risk	Low risk	Unclear risk	30%
Kubo et al., (2019) caregivers	High risk	Unclear risk	Low risk	Low risk	Unclear risk	Low risk	Unclear risk	30%
Látos et al., (2022)	High risk	Unclear risk	Unclear risk	Unclear risk	Unclear risk	Unclear risk	Unclear risk	25%
Liao et al., (2018)	Unclear risk	Unclear risk	Unclear risk	Unclear risk	Low risk	Unclear risk	High risk	27%
Norouzi et al., (2017)	Unclear risk	Unclear risk	Unclear risk	Low risk	Unclear risk	Unclear risk	Unclear risk	28%
Penedo et al., (2006)	Unclear risk	Low risk	Unclear risk	Low risk	Unclear risk	Unclear risk	Unclear risk	30%
Qian et al., (2021)	Low risk	Low risk	Unclear risk	Low risk	Unclear risk	Low risk	Unclear risk	33%
Rachyla et al., (2020)	Unclear risk	Unclear risk	Unclear risk	Unclear risk	Low risk	Low risk	Unclear risk	30%
Roepke et al., (2018)	Low risk	Unclear risk	High risk	Unclear risk	Low risk	Unclear risk	Low risk	30%
Rosenberg et al., (2018)	Unclear risk	Low risk	Unclear risk	Low risk	Unclear risk	Unclear risk	Unclear risk	30%
Slavin-Spenney et al., (2011) Active facilitator	High risk	Unclear risk	Unclear risk	Unclear risk	Low risk	Low risk	High risk	27%
Slavin-Spenney et al., (2011) Passive listener	High risk	Unclear risk	Unclear risk	Unclear risk	Low risk	Low risk	High risk	27%
Slavin-Spenney et al., (2011) Private spoken	High risk	Unclear risk	Unclear risk	Unclear risk	Low risk	Low risk	High risk	27%
Slavin-Spenney et al., (2011) Private written	High risk	Unclear risk	Unclear risk	Unclear risk	Low risk	Low risk	High risk	27%
Stanton (2005) Psychoeducational counselling	Unclear risk	Low risk	Low risk	Low risk	Unclear risk	Unclear risk	Unclear risk	31%
Stanton (2005) Peer modelling video tape	Unclear risk	Low risk	Low risk	Low risk	Unclear risk	Unclear risk	Unclear risk	31%
Üzar-Özçetin & Hiçdurmaz (2019)	Unclear risk	Unclear risk	Unclear risk	Unclear risk	Unclear risk	Low risk	Unclear risk	28%
Van der Spek et al., (2017) Meaning centred group psychotherapy	Low risk	Low risk	Low risk	Low risk	Unclear risk	Unclear risk	Unclear risk	33%
Van der Spek et al., (2017) Supportive group psychotherapy	Low risk	Low risk	Low risk	Low risk	Unclear risk	Unclear risk	Unclear risk	33%
Victorson et al., (2017)	Unclear risk	Low risk	Low risk	Low risk	Unclear risk	Unclear risk	Unclear risk	31%
Wagner et al., (2007)	Unclear risk	Unclear risk	Unclear risk	Unclear risk	Unclear risk	Low risk	Unclear risk	28%
Wagner et al., (2016)	Unclear risk	Low risk	Low risk	Low risk	Low risk	Unclear risk	Unclear risk	33%
Wang et al., (2021)	Unclear risk	Low risk	Low risk	Low risk	Unclear risk	Unclear risk	Unclear risk	31%
Wolever et al., (2010)	Unclear risk	Low risk	Unclear risk	Low risk	Low risk	Unclear risk	Unclear risk	31%
Ye et al., (2018)	Unclear risk	Unclear risk	Low risk	Low risk	Low risk	Low risk	Unclear risk	33%
Yun et al., (2013)	Unclear risk	Unclear risk	Unclear risk	Unclear risk	Low risk	Low risk	Unclear risk	30%
Yun et al., (2017a)	High risk	Unclear risk	Unclear risk	Unclear risk	Low risk	Unclear risk	Unclear risk	27%
Yun et al (2017b)	Low risk	Unclear risk	Unclear risk	Low risk	Low risk	Unclear risk	Unclear risk	31%
Zernicke et al., (2014)	Unclear risk	Low risk	Low risk	Low risk	Low risk	Low risk	Unclear risk	34%
Zhang et al., (2017)	Unclear risk	Low risk	Unclear risk	Low risk	Low risk	Unclear risk	Unclear risk	31%
Zhang et al., (2021)	Unclear risk	Low risk	Low risk	Low risk	Unclear risk	Low risk	Unclear risk	33%
Zoellner et al., (2011)	Unclear risk	Low risk	Unclear risk	Low risk	Unclear risk	Low risk	Unclear risk	31%

Selection Bias

Overall, selection bias was unclear; 28 studies were rated as unclear risk, 15 as high risk, and eight as low risk of bias. The unclear risk studies lacked enough information to categorise as high or low risk. The high risk studies applied several exclusion criteria to the sample (*N* = 8), did not explain how participants were randomised to a condition (*N* = 3), did not outline reasons for exclusion from the final sample (*N* = 4), reported that a large number of people invited to participate declined or did not meet the exclusion criteria (*N* = 4), recruited samples from the researchers places of work only (*N* = 3), did not explain recruitment procedures (*N* = 8), did not provide enough information at baseline to ensure the intervention and control groups were comparable, or groups were not comparable at baseline (*N* = 6), or groups differed significantly on posttraumatic growth scores at baseline (*N* = 8). The low risk studies recruited participants from more than one location and used more than one method (*N* = 4), clearly described recruitment procedures (*N* = 3), randomisation method (*N* = 6), and participant characteristics in each group at baseline (*N* = 5), applied few, but sufficient, exclusion criteria to ensure the study objectives could be met (*N* = 4), and provided a comprehensive summary of exclusions from the final sample (*N* = 2).

Performance Bias

Performance bias was predominantly unclear within the studies. Thirty-two studies were rated as unclear risk, and 19 studies were rated as low risk of bias. Most of the unclear risk studies did not provide any information on blinding procedures (*N* = 32) and so it was difficult to assess the level of performance bias. Studies that were rated as low risk explained how blinding was achieved (*N* = 16) and it was clear that participants in the control and intervention condition received the same treatment other than the intervention (*N* = 17).

Treatment Fidelity

This area of bias was mostly unclear. Twenty-eight studies were rated as unclear risk, 22 studies were rated as low risk, and one study was rated as high risk of bias. Studies with unclear risk did not mention treatment fidelity (*N* = 28) or did not provide sufficient information about who facilitated the intervention (*N* = 4). Studies with low risk clearly described the intervention aims and content, how treatment fidelity was checked, and that the study satisfied this check, provided information about who facilitated the intervention, and provided a sufficient evidence base for the intervention (*N* = 22). The study that was rated as

high risk of bias had technical difficulties with an online study and participants could not access part of the intervention for two weeks (Roepke et al., 2018).

Detection Bias

Most studies were rated as low risk of bias in this area. Twenty-eight studies were rated as low risk and 23 studies were rated as unclear risk. Studies rated as low risk provided a clear research question and were appropriately designed to answer this question in terms of the population, intervention, control, and outcome measure (*N* = 28). Low risk studies also clearly defined the outcome of posttraumatic growth and used a reliable and valid outcome measure to assess growth (*N* = 28) and length of follow-up ranged between short (≤5 months post-intervention: *N* = 16), medium (6-11 months post-intervention: *N* = 3), and long (≥12 post-intervention: *N* = 9) term. Studies that were rated as unclear risk did not define the type of trauma participants had experienced, or how recently (*N* = 5), provided limited information about the control condition (*N* = 6), or had poorly defined outcomes (*N* = 3). The length of follow-up for unclear risk studies ranged from short (≤5 months post-intervention: *N* = 17), medium (6-11 months post-intervention: *N* = 2), and long (≥12 post-intervention: *N* = 4) term.

Statistical Bias

Studies were mostly rated as unclear risk (*N* = 28) in this area, followed by low risk (*N* = 20), and high risk of bias (*N* = 3). Studies rated as low risk used intention-to-treat analysis (*N* = 10), or had no missing data (*N* = 6), completed a power analysis and achieved the sample size suggested by this analysis (*N* = 10), used appropriate statistical methods to report the outcomes (*N* = 14), accounted for attrition (*N* = 2), and reported findings for all groups at each time interval (if applicable: *N* = 3). Studies with unclear risk provided limited information to determine the extent of statistical bias. Studies with high risk of bias did not account for missing data in the analysis (*N* = 3), did not complete a power analysis (*N* = 2), or reported significant drop-out that is likely to have impacted the results (*N* = 2).

Reporting Bias

Most studies were rated as unclear risk of bias in this area (*N* = 30) and the remaining studies were rated as low risk (*N* = 21). Studies rated as low risk reported findings for all outcome measures as outlined in the method (*N* = 17), included non-significant results with specific statistical values (*N* = 16), intervention and control groups were comparable in size and

characteristics at follow-up (*N* = 9), and a small number of participants were excluded or dropped out during the process of intervention and reasons for this were explained (*N* = 7). The unclear risk studies lacked enough information to categorise as high or low risk.

Generalisability

For generalisability, most studies were rated as unclear risk (*N* = 40), some were rated as high risk (*N* = 10), and one study was rated as low risk of bias. The study rated as low risk of bias had very few exclusion criteria and therefore was relevant to a wider population of people who have experienced trauma (Roepke et al., 2018). Studies rated as high risk applied lots of exclusion criteria (*N* = 5), had a small sample size (*N* = 3), or were specific to a particular trauma type or population (*N* = 4).

Summary

Overall, there was a considerable risk of bias across the included studies and many studies were rated as unclear risk of bias across several risk criteria. No studies reported low risk across each risk of bias criteria, and 20 studies reported high risk of bias in at least one risk of bias criteria. Selection bias and generalisability criteria had the highest reported risk of bias. There was a notable unclear risk of bias across studies in generalisability, reporting bias, statistical bias, treatment fidelity, performance bias, and selection bias. This reflects the lack of specificity and clarity in the detail reported across studies and limits the interpretation of the data. Due to the low number of studies in this field, studies with unclear to high risk of bias were included. Consequently, the results of this meta-analysis should be interpreted with caution. However, the studies included are felt to be a representative summary of the research literature at present, and it is hoped that future studies will include higher quality research.

Results

Data analysis was conducted using the 'Metafor' (Viechtbauer, 2010) and 'Meta' (Schwarzer, 2015) packages for the R statistical programming language (R Core Team, 2021).

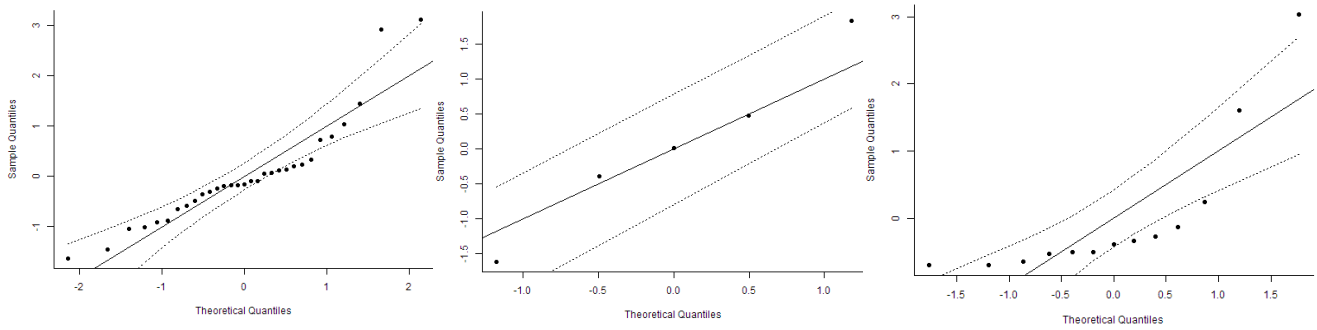
Studies Excluded due to Implausible Outcomes

Rachyla et al., (2020) and Üzar-Özçetin and Hiçdurmaz (2019) reported intervention effects of between 7 and 10 standard deviations improvement. These effect sizes were of a magnitude inconsistent with the plausible effects of a psychological intervention and therefore were not included in the meta-analysis (Table 5).

Selection of the Meta-Analytic Model

The distribution of primary study effects is shown in Figure 3. The between studies variance (tau^2) was calculated using the DerSimonian-Laird estimator.

As can be seen from Figure 3, there is some evidence of non-normality in the distribution of standardised mean differences within the primary studies. However, 95% of the effect sizes fall within the 95% confidence intervals for the expected normal values. Therefore, this indicates that the use of DerSimonian-Laird (i.e., random-effects model) estimate is an appropriate method for the calculation of the variation of the true effect.



Short term Medium term Long term

Figure 3. QQ plot of the distribution of standardised mean differences for posttraumatic growth reported within the primary studies.

Included Studies

The standardised mean differences for posttraumatic growth described in the primary studies are reported in Table 5. Forty-nine studies reporting a total of 4,234 participants were included in the meta-analysis.

Participant Characteristics

Participants had experienced a range of trauma types, including cancer (*N* = 33), drugs violence (*N* = 1), grief (*N* = 4), health related issues (*N* = 3), motor accidents (*N* = 1), and unspecified trauma, adversity, or PTSD (*N* = 7). Participants were mostly adults over the age of 25 years (*N* = 43) and few studies recruited participants aged 25 years or younger (*N* = 6).

Most studies reported on samples of mixed gender (*N* = 30), and some reported specifically on male (*N* = 5) or female (*N* = 14) participants only.

Intervention Characteristics

Interventions were based on a range of models including Acceptance and Commitment Therapy (ACT: *N* = 3), behaviour change (*N* = 7), Cognitive Behavioural Therapy (CBT: *N* = 17), expressive (*N* = 11), and mindfulness (*N* = 11). Interventions were facilitated mostly in community settings (*N* = 47), compared to hospital settings (*N* = 1), or a combination of community and hospital settings (*N* = 1). Interventions were facilitated on an individual basis (*N* = 11), in groups (*N* = 20), with couples (*N* = 3), self-directed (*N* = 12), or using a combination of these approaches (*N* = 3). Interventions were delivered face-to-face (*N* = 29), by teleconference or telephone (*N* = 4), online by website (*N* = 8), privately spoken or handwritten tasks (*N* = 3), or by a combination of these approaches (*N* = 5). Most of the studies aimed to reduce symptoms of PTSD (*N* = 27). Nine studies included intervention techniques that were more specifically targeted to facilitate posttraumatic growth, such as exploring the meaning of life following trauma (*N* = 3), managing expectations and preparing for the future (*N* = 2), and exploring experiences of growth following trauma (*N* = 4). There was insufficient information to determine the aims of 13 studies.

Methodology

To measure posttraumatic growth, most studies used the posttraumatic growth inventory (PTGI: Tedeschi & Calhoun, 1996: *N* = 37). Fewer studies used the PTGI – short form (Cann et al., 2010: *N* = 2), the Benefit Finding Scale (Tomich & Helgeson, 2004: *N* = 7), the Benefit Finding Scale for Children (Phipps, Long & Ogden, 2007: *N* = 1), the Silver Lining Questionnaire (Sodergren & Hyland, 2000: *N* = 1), or the Benefit Finding Scale adapted from the Positive Contributions Scale (Behr et al., 1991: *N* = 1). Posttraumatic growth was assessed at follow-up at various time points, including short (≤5 months post-intervention: *N* = 31), medium (6-11 months post-intervention: *N* = 5), and long term (≥12 post-intervention: *N* = 13).

Table 5. Characteristics of studies identified in the systematic review.

Author	*Study country*	*Trauma type*	*Total N*[1]	*Age (years) M (SD)*[2]	*Men N (%)*[2]	*Intervention type*	*Intervention duration*	*Implemented by*	*Setting*	*Format*	*Platform*	*Control condition*	*Measure of posttraumatic growth*	*Length of follow-up (months)*	*D*
Antoni et al., (2006)	America	Breast cancer	157	Intervention: 49.58 (9.11) Control: 50.83 (8.97)	0 (0)	Cognitive behavioural stress management	10 weekly 2 hour sessions	Postdoctoral fellows and trainee clinical psychologists	Community	Group	Face-to-face	Psycho-education session on stress	Benefit finding scale	12	0.219
Antoni et al., (2001)	America	Breast cancer	100	Intervention: 48.13 (8.97) Control: 52.09 (8.97)	0 (0)	Cognitive behavioural stress management	10 weekly 2 hour sessions	Postdoctoral fellows and trainee clinical psychologists	Community	Group	Face-to-face	Psycho-education session on stress	Benefit finding scale	9	0.258
Barron et al., (2021)	Brazil	Drugs violence	30	10.1 (1.70)	16 (53)	CBT coping skills programme	5 weekly 90 minute sessions	Social worker and teacher	Community	Group	Face-to-face	Usual care	PTGI	2 weeks	0.446
Bartl et al., (2018)	Germany	Prolonged grief	40	47.53 (14.72)	7 (14)	Prolonged grief CBT	20 weekly 50 minute sessions (5 additional optional sessions)	Psychologists with masters degree level training	Community	Individual	Face-to-face	Waiting list	PTGI	0	0.601
Burns et al., (2018)	America	Cancer	76	Intervention: 48.0 (17.2) Control: 46.9 (17.0)	Intervention: 14 (35) Control: 14 (38.9)	Exploration of current symptoms, guided visualisation, relaxation, breathing exercises	1 50 minute session	Certified music therapist	Community	Individual	Face-to-face	Discussion around music preferences and listening to preferred music	Benefit finding scale	0	0.417
Chambers et al., (2017)	Australia	Prostate cancer	189	Intervention: 70.19 (8.71) Control: 71.18 (8.43)	189 (100)	Mindfulness	8 weekly 1 hour 15 minute sessions	Not stated	Community	Group	Tele-conference	Usual care	PTGI	9	0.150
Cruess et al., (2000)	America	Breast cancer	34	45.65 (7.61)	0 (0)	Cognitive behavioural stress management	10 weekly 2 hour sessions	Postdoctoral fellows and trainee clinical psychologists	Community	Group	Face-to-face	Waiting list	Benefit finding scale	0	0.975

Groarke et al., (2013)	Ireland	Breast cancer	179	53.7 (10.2)	0 (0)	Cognitive behavioural stress management	5 weekly 3 hour sessions	Clinical psychologist	Community	Group	Face-to-face	Usual care	Silver Lining Questionnaire	12	0.124
Hawkes et al., (2014)	Australia	Colorectal cancer	295	6.3 (10.1)	221 (54)	ACT based health coaching	11 sessions over 6 months	Tertiary qualification in nursing, psychology, or health promotion	Community	Individual	Telephone	Usual care	PTGI	12	3.00
Heinrichs et al., (2012) Female	Germany	Breast cancer	66	52.2 (11.3)	0 (0)	CBT based relationships skills programme	4 bi-weekly 2 hour sessions	Therapist	Community	Couples	Face-to-face	Psycho-education session on cancer and distress	PTGI	12	0.011
Heinrichs et al., (2012) Male	Germany	Partner of an individual with breast cancer	66	52.7 (11.4)	72 (100)	CBT based relationships skills programme	4 bi-weekly 2 hour sessions	Therapist	Community	Couples	Face-to-face	Psycho-education session on cancer and distress	PTGI	12	-0.157
Holtmaat et al., (2019) Meaning centred group psychotherapy	Holland	Cancer	170+	Intervention: 59 (11) Control: 57 (10)	Intervention: 17 (30) Control: 6 (10)	Meaning centred group psychotherapy	8 weekly 2 hour sessions	Psychotherapist	Community	Group	Face-to-face	Usual care	PTGI	24	-0.144
Holtmaat et al., (2019) Supportive group psychotherapy				Intervention: 56 (9) Control: 57 (10)	Intervention: 7 (12) Control: 6 (10)	Supportive group psychotherapy	8 weekly 2 hour sessions	Psychotherapist	Community	Group	Face-to-face	Usual care	PTGI	24	0.00
Huang et al., (2018)	China	Lung cancer	23	Intervention: 57 (10.34) Control: 61.1 (4.61)	Intervention: 5 (38.50) Control: 5 (50.00)	Self-efficacy enhancing intervention based on motivational interviewing	6 15-40 minute sessions	Nurse	Inpatient and community	Individual	Face-to-face and telephone	Usual care	PTGI	3	0.397
Kaiser et al., (2022)	Germany	Prolonged grief	87	47.32 (14.01)	14 (16)	Grief therapy	2 self-scheduled 45 minute sessions per week, 10 structured independen	Psychologist	Community	Self-directed writing tasks with individualised feedback	Website	Waiting list	PTGI	0	0.289

							t writing tasks								
Kenne Sarenmalm et al., (2017)	Sweden	Breast cancer	114	57.2 (10.2)	0 (0)	Mindfulness based stress reduction	8 weekly 2 hour sessions plus 20 minute daily home tasks	Nurse	Community	Group	Face-to-face	Usual care	PTGI	0	0.677
Knaevelsrud et al., (2010)	Netherlands	PTSD	88	Intervention: 34.00 (11.5) Control: 36.00 (9.6)	Intervention: 8 (16) Control: 1 (4)	CBT writing assignments with regular tailored feedback	10 twice weekly 45 minute sessions	Trainee clinical psychologist	Community	Self-directed	Website	Waiting list	PTGI	0	0.727
Köhle et al., (2021) Personal feedback	Netherlands	Partner of individual with cancer	203+	Intervention: 56.97 (9.88) Control: 54.24 (11.03)	Intervention: 20 (29.9) Control: 20 (30.3)	ACT and self compassion based self-help intervention with individualised feedback	6 modules completed over 6-12 weeks, minimum requirement of 1-1.5 hours weekly	Masters psychology students	Community	Self-directed with peer support	Website	Waiting list	PTGI-SF	3	0.206
Köhle et al., (2021) Automated feedback				Intervention: 56.40 (11.15) Control: 54.24 (11.03)	Intervention: 20 (28.6) Control: 20 (30.3)	ACT and self compassion based self-help intervention with generic reflective feedback	6 modules completed over 6-12 weeks, minimum requirement of 1-1.5 hours weekly	Masters psychology students	Community	Self-directed	Website	Waiting list	PTGI-SF	3	-0.115
Kubo et al., (2019) patients	America	Cancer	72	Intervention: 59.3 (14.1) Control: 56.7 (14.7)	Intervention: 21 (37.7) Control: 10 (23.3)	Mindfulness based intervention via Headspace	Daily 10-20 minute sessions for 8 weeks	Mobile app	Community	Self-directed	Website	Usual care	PTGI	0	-0.077
Kubo et al., (2019) caregivers	America	Caregiver of individual with cancer	26	Intervention: 57.1 (17.4) Control: 58.2 (18.6)	Intervention: 8 (47.1) Control: 5 (35.7)	Mindfulness based intervention via Headspace	Daily 10-20 minute sessions for 8 weeks	Mobile app	Community	Self-directed	Website	Usual care	PTGI	0	0.024
Látos et al., (2022)	Hungary	Chronic renal failure	40	Intervention: 49.2 (9.89) Control:	20 (50)	Positive psychology	4 90 minute sessions	Psychology PhD students	Community	Individual	Face-to-face	Usual care	PTGI	12	0.665

				49.5 (10.62)											
Liao et al., (2018)	China	Cancer	56	Intervention: 61.07 (14.24) Control: 62.57 (14.15)	Intervention: 16 (53.33) Control: 14 (46.67)	Progressive muscle relaxation and five elements music therapy of Chinese medicine	8 weekly 40 minute sessions	Not stated	Community	Individual	Face-to-face	Progressive muscle relaxation and peaceful rest period	Benefit Finding Scale	0	0.637
Norouzi et al., (2017)	Iran	Breast cancer	20	38.8 (6.5)	0 (0)	Mindfulness based CBT	8 weekly 2.5 hour sessions	Postdoctoral level researcher	Community	Group	Face-to-face	Waiting list	PTGI	4	1.223
Penedo et al., (2006)	America	Prostate cancer	191	Intervention: 65.30 (7.77) Control: 64.87 (7.64)	191 (100)	Cognitive behavioural stress management	10 weekly 2 hour sessions	Masters psychology students and trainee clinical psychologists	Community	Group	Face-to-face	Psycho-education session on stress	29-item Benefit finding scale from the Positive Contributions Scale, modified for use in cancer	0	0.334
Qian et al., (2021)	China	Pregnancy termination due to foetal abnormality	100	30.06 (4.03)	0 (0)	Expressive writing with elements of CBT	3 sessions minimum 15 minutes on day of hospital admission, and one and two days post delivery	Trained researchers	Inpatient	Self-directed	Written	Usual care	PTGI (Chinese version)	1	2.001
Rachyla et al., (2020)*	Spain	Adjustment disorder	68	32.81 (10.60)	16 (25.4)	CBT, positive psychology, and mindful awareness based intervention	7-10 week duration	PhD students	Community	Individual	Website	Waiting list	PTGI	0	6.873
Roepke et al., (2018)	America	Adversity	120	Intervention: 43.95 (13.04) Control: 41.34 (12.40)	Intervention: 6 (10) Control: 16 (27)	Prospective writing with prompt to consider new opportunities in life	4 weekly 15 minute writing sessions	Not stated	Community	Self-directed	Website	Weekly online survey	PTGI	1	0.661

						following adversity									
Rosenberg et al., (2018)	America	Cancer	92	Age 12-17 years: N = 67 (73%) Age 18-25 years: N = 25 (27%)	52 (57)	Promoting resilience in stress management	4 bi-weekly 30-50 minute sessions, optional 5th session	Non-clinical college graduates	Community	Individual	Face-to-face	Usual care	Benefit Finding Scale for Children	6	0.40
Slavin-Spenney et al., (2011) Active facilitator	America	Unresolved trauma or stress	123[+]	22.00 (5.5)	39 (18)	Spoke to engaged therapist about stressful experience and related emotions who facilitated emotional expression	One 30 minute session	Psychology graduate students	Community	Individual	Face-to-face	Discussion around time management	PTGI	6 weeks	0.502
Slavin-Spenney et al., (2011) Passive listener						Spoke to a therapist about stressful experience and related emotions	One 30 minute session	Psychology graduate students	Community	Individual	Face-to-face	Discussion around time management	PTGI	6 weeks	0.531
Slavin-Spenney et al., (2011) Private spoken						Spoke about stressful experience and related emotions alone into a tape recorder	One 30 minute session	Psychology graduate students	Community	Self-directed	Spoken	Discussion around time management	PTGI	6 weeks	0.499
Slavin-Spenney et al., (2011) Private written			70			Wrote about stressful experience and related emotions alone in a journal	One 30 minute session	Psychology graduate students	Community	Self-directed	Written	Written exercises around time management	PTGI	6 weeks	0.102

Stanton (2005) Psychoeducational counselling	America	Breast cancer	399+	Intervention: 57.9 (10.3) Control: 59.4 (11.8)	0 (0)	Psychoeducational counselling	1 80 minute phone session, booklet, 2 week follow-up 30 minute phone call	Postdoctoral researcher	Community	Individual and self-directed	Booklet and telephone	Psycho-education booklet on caner and healthcare, emotions, and finances	PTGI	12	0.164
Stanton (2005) Peer modelling video tape				Intervention: 56.9 (11.4) Control: 59.4 (11.8)		Psychoeducation booklet and film to address life challenges	23 minute video and booklet	Postdoctoral researcher	Community	Self-directed	Booklet and video	Psycho-education booklet on caner and healthcare, emotions, and finances	PTGI	12	0.031
Üzar-Özçetin & Hiçdurmaz (2019)*	Turkey	Cancer	76	Intervention: 49.28 (7.06) Control: 48.65 (6.72)	Intervention: 19 (42.3) Control: 18 (41.0)	Structured empowerment programme	10 weekly 90-120 minute sessions	Postdoctoral researcher	Community	Group	Face-to-face	Usual care	PTGI	1	10.091
Van der Spek et al., (2017) Meaning centred group psychotherapy	Netherlands	Cancer	126+	Intervention: 58.6 (10.7) Control: 57.3 (10.4)	Intervention: 17 (30) Control: 6 (10)	Meaning centred group psychotherapy	8 2 hour weekly sessions	Psychotherapists	Community	Group	Face-to-face	Usual care	PTGI	6	-0.261
Van der Spek et al., (2017) Supportive group psychotherapy				Intervention: 55.5 (9.6) Control: 57.3 (10.4)	Intervention: 7 (12) Control: 6 (10)	Supportive group psychotherapy	8 weekly 2 hour sessions	Psychotherapists	Community	Group	Face-to-face	Usual care	PTGI	6	-0.108
Victorson et al., (2017)	America	Prostate cancer	31	Intervention: 71.2 (6.5) Control: 69.4 (7.1)	31 (100)	Mindfulness	8 weekly 2.5 hour sessions followed by a half day retreat	Trained mindfulness instructor	Community	Group	Face-to-face	Psycho-education booklet on mindfulness	PTGI	12	1.946
Wagner et al., (2007)	Germany, Austria, Switzerland	Prolonged grief	51	Intervention: 37.3 (11.7) Control: 37.9 (8.9)	Intervention: 4 (15.4) Control: 0 (0)	CBT based writing assignments	5 week period of 10 writing assignments	Therapists	Community	Self-directed	Email	Waiting list	PTGI	0	0.961
Wagner et al., (2016)	America	PTSD	34	37.10 (11.26)	10 (25)	CBT for PTSD	10 twice weekly sessions,	Not stated	Community	Couples	Face-to-face	Waiting list	PTGI	0	0.527

							followed by 5 weekly sessions								
Wang et al., (2021)	China	Breast cancer	122	>18	0 (0)	Expressive intervention facilitating self-disclosure	4 60 minute sessions within 1 month at different stages of treatment	Nurses	Community	Group	Face-to-face	Usual care	PTGI	1	0.372
Wolever et al., (2010)	America	Type 2 diabetes	56	53.0 (7.93)	13 (23)	Integrative health coaching	14 30 minute sessions (initial baseline call, 8 weekly calls, 4 bi-weekly calls, follow-up call 1 month later)	Researcher with masters level degree in psychology	Community	Individual	Telephone	Waiting list	Benefit finding scale	0	0.489
Ye et al., (2018)	China	HIV/AIDS	60	Intervention: 27.3 (3.3) Control: 27.6 (3.2)	100 (100)	Coping skills	4 weekly 2 hour sessions	Facilitators trained in the approach	Community	Group	Face-to-face	Waiting list	PTGI (subscale on spiritual change omitted as inappropriate for sample)	0	0.612
Yun et al., (2013)	South Korea	Cancer	70	Intervention: 56.1 (5.6) Control: 55.3 (7.3)	Intervention: 7 (20.6) Control: 8 (22.2)	Leadership and coaching for health intervention	8 weeks	Facilitators trained in the approach	Community	Group and individual	Face-to-face and telephone	Waiting list	PTGI	0	0.500
Yun et al., (2017a)	South Korea	Breast cancer	52	48.44 (8.16)	0 (0)	Mind subtraction meditation	Twice weekly 2 hour sessions for 8 weeks	Facilitators trained in the approach	Community	Group	Face-to-face	Psycho-education sessions on life and health management after cancer	PTGI (Korean version)	2	0.640

Yun et al (2017b)	South Korea	Cancer	206	50.68 (9.43)	42 (20.39)	Leadership and coaching for health intervention	4 hours of workshops, 16 30 minute sessions of individual tele-coaching over 24 weeks	Facilitators trained in the approach	Community	Group and individual	Face-to-face and telephone	Usual care	PTGI	12	0.333
Zernicke et al., (2014)	Canada	Cancer	62	Intervention: 58.00 (8.20) Control: 58.00 (13.00)	45 (72.58)	Mindfulness	8 weekly two hour sessions, guided 45 minute videos for home-practice, optional extended 5 hour retreat	Clinician	Community	Group	Tele-conference	Waiting list	PTGI	2	1.267
Zhang et al., (2017)	China	Breast cancer	58	46.10 (6.43)	0 (0)	Mindfulness based stress reduction	8 weekly 2 hour sessions, plus 45-45 minute home practice daily	Psychologist	Community	Group	Face-to-face	Usual care	PTGI (Chinese version)	3	2.050
Zhang et al., (2021)	China	Breast cancer	40	45.80 (7.36)	0 (0)	Guided self disclosure based on CBT	6 30 minute sessions from diagnosis to the fifth chemotherapy treatment	Nurses	Community	Group	Face-to-face	Usual care	Benefit finding scale (Chinese version)	6	0.989
Zoellner et al., (2011)	Germany	Motor vehicle accident	40	41.2 (10.7)	10 (50)	CBT for trauma	8-12 weekly sessions	Psychotherapists and trainee psychotherapists	Community	Individual	Face-to-face	Waiting list	PTGI	0	0.122

Notes:
[1] Total number of participants included in final analyses.
[2] Age and gender at baseline.
[+] One group of participants in the control condition are compared to more than one intervention type.
[*] Study is not included in the meta-analysis.

The Effectiveness of Interventions to Facilitate Posttraumatic Growth

A random effects models was calculated using the generic inverse variance method to assess the effectiveness of interventions to facilitate posttraumatic growth. Studies were analysed based on length of follow-up as short (*N* = 31), medium (*N* = 5), and long term (*N* = 13). In the short term, the random effects model suggested a weighted average posttraumatic growth of SMD = 0.5801 and a 95% confidence interval of between 0.4095 to 0.7475. This would be considered a moderate size of intervention effect (Figure 4). The medium and long term outcomes evidenced non-significant intervention effects favouring the intervention condition (medium term, SMD = 0.2544, 95% CI -0.0516 to 0.5604; long term, SMD = 0.4503, 95% CI -0.0317 to 0.9324).

In summary, these analyses report that interventions to facilitate posttraumatic growth are significantly effective in the short term, with a moderate effect size. There was no significant effect of intervention in the medium and long term.

A high level of heterogeneity was observed in the short and long term outcomes (short term, Higgin's I^2 = 72%; tau^2 = 0.1568, $p < 0.01$; long term, Higgin's I^2 = 96%; tau^2 = 0.7374, $p < 0.01$), suggesting that the effect sizes reported in the primary studies may be biased by the presence of uncontrolled and/ or confounding factors. Therefore, the subsequent analyses will consider sources of heterogeneity between the estimates of posttraumatic growth in the primary studies, and consider which factors impact on the effectiveness of interventions. Specifically, the impact of, influential studies, methodology (risk of bias and outcome measure for posttraumatic growth), participant characteristics (age, gender, and trauma type), intervention characteristics (intervention type, format, and platform), and publication and small study bias, will be explored in subsequent sub analyses.

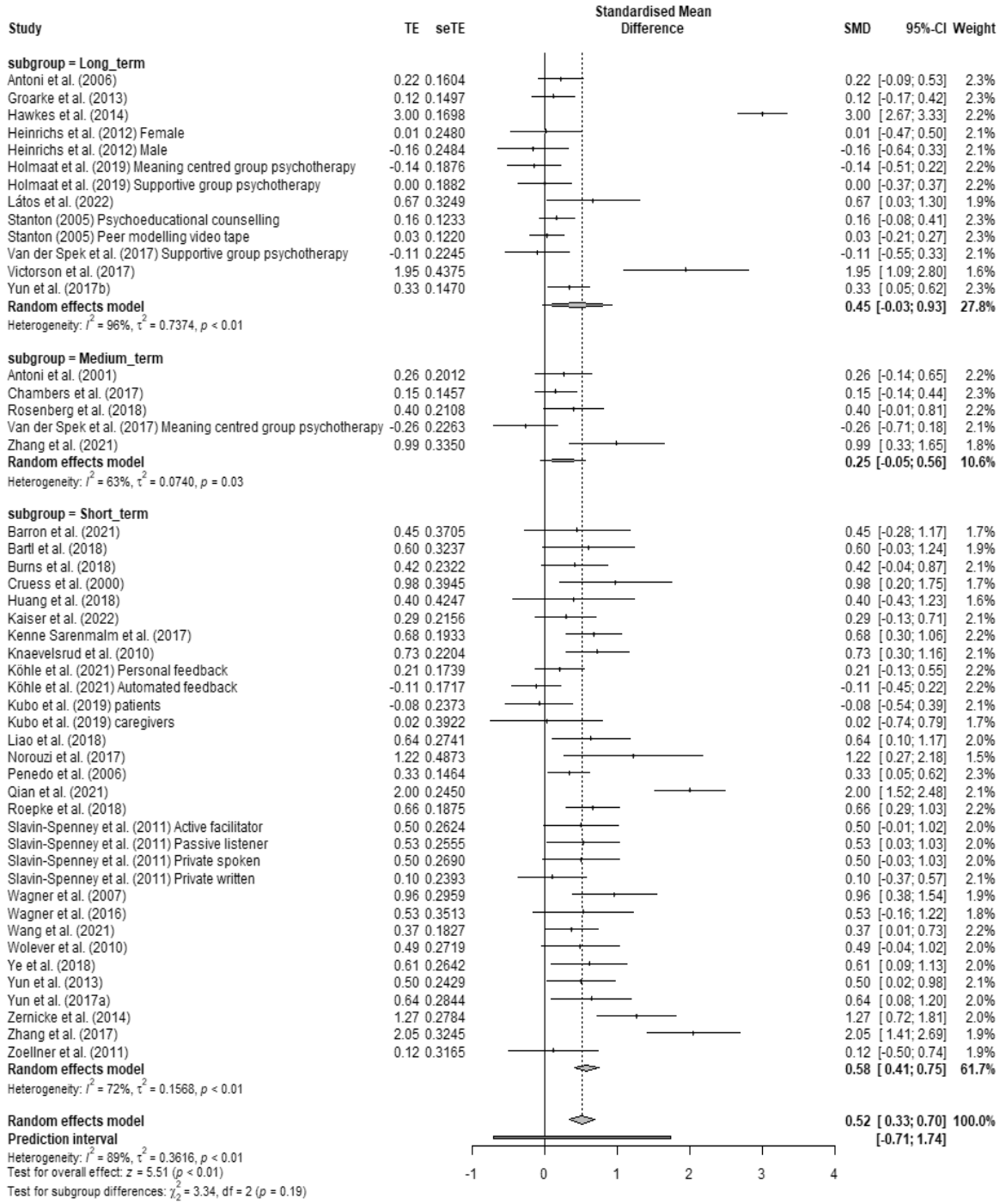


Figure 4. Forest plot of posttraumatic growth at short, medium, and long term follow-up.

The Impact of Influential Primary Studies

The impact of disproportionately influential studies was assessed using a 'leave-one-out' analysis, in which the random effects model was calculated with each of the primary studies removed in turn. The change in weighted average effect size (i.e. influence) and the change in heterogeneity (i.e. discrepancy) was recorded. The result of this analysis is presented on the Baujat plot (Baujat, Pignon, & Hill, 2002) in Figure 5.

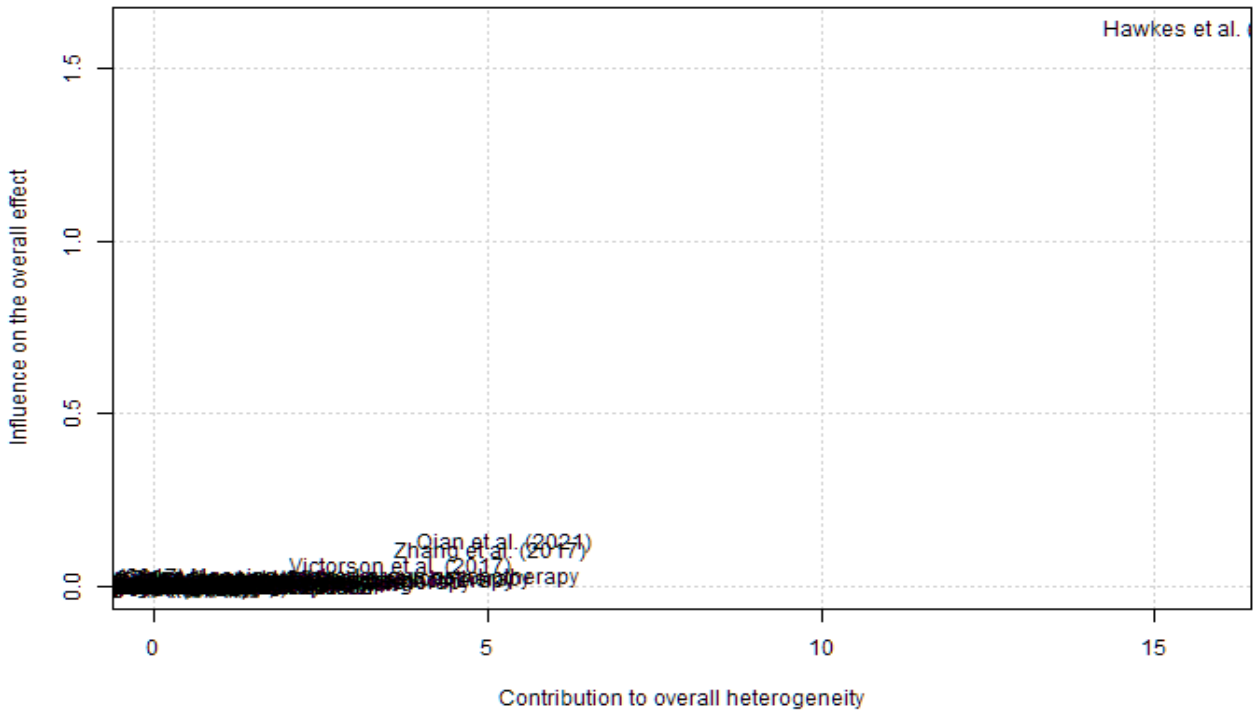


Figure 5. Baujat diagnostic plot of sources of heterogeneity. The vertical axis reports the influence of the study on the overall effect and the horizontal axis reports the discrepancy of the study with the rest of the literature.

As seen in Figure 5, the effect size reported by Hawkes et al., (2014) is disproportionately influential and discrepant with the existing literature. Accordingly, the random effects model was recalculated having removed Hawkes et al., (2014). The corrected random effects model reported a synthesis of posttraumatic growth SMD = 0.4334 (95% CI 0.3075 to 0.5593). The corrected random effects model (SMD = 0.4334) evidences an approximately 16.6% decrease relative to the uncorrected estimate (SMD = 0.52).

The study by Hawkes et al., (2014) was re-examined with a view to its removal from the weighted average effect size if severe risks of bias could be identified. However, no such risk of bias were identified and this study was retained within the weighted average effect size.

In summary, Hawkes et al., (2014) was an influential study that increased the overall heterogeneity and the influence on the overall effect size of the meta-analysis compared to other included studies. Hawkes et al., (2014) was not excluded from the meta-analysis as after re-examining the study, the recorded risk of bias was comparable to other included studies.

The Impact of Methodology on Intervention Outcomes

Study Level Risk of Bias

To assess the impact of study level risk of bias, a series of subgroup analyses were conducted on the study level estimates of posttraumatic growth for the risk of bias ratings of 'low risk' and 'any risk' (i.e. unclear risk and high risk of bias combined) for each of the seven types of methodological bias (Table 6).

Table 6. Assessing the impact of risk of bias

	Low Risk			Any Risk				
	Cohen's d	95% CI	Number of Studies	Cohen's d	95% CI	Number of Studies	X^2	P
Selection bias	0.3476	-0.0504; 0.7456	8	0.5513	0.3432; 0.7593	41	0.79	0.374
Performance bias	0.7366	0.3231; 1.1502	19	0.3445	0.2273; 0.4618	30	3.20	0.074
Detection bias	0.6217	0.3198; 0.9236	28	0.3553	0.2270; 0.4835	21	2.53	0.111
Treatment bias	0.5255	0.1721; 0.8789	22	0.4935	0.3187; 0.6684	27	0.03	0.874
Statistical bias	0.5162	0.3248; 0.7075	19	0.5065	0.2346; 0.7784	30	0.00	0.954
Reporting bias	0.5101	0.2837; 0.7365	19	0.5208	0.2641; 0.7774	30	0.00	0.951
Generalisability bias	0.6613	0.2937; 1.0288	1	0.5121	0.3249; 0.6994	48	0.50	0.479

Risk of performance bias evidenced a trend towards significant differences in the estimates of posttraumatic growth, with lower levels of bias being associated with higher estimates of posttraumatic growth. This suggests that the inclusion of studies that are at risk of performance bias tended to decrease the estimate of the difference between intervention and control conditions. When only low risk studies are considered, the weighted average difference between the intervention and control conditions was d = 0.7366 (95% CI 0.3231 to

1.1502). The comparison between low risk and any risk of performance bias studies is shown in Figure 6.

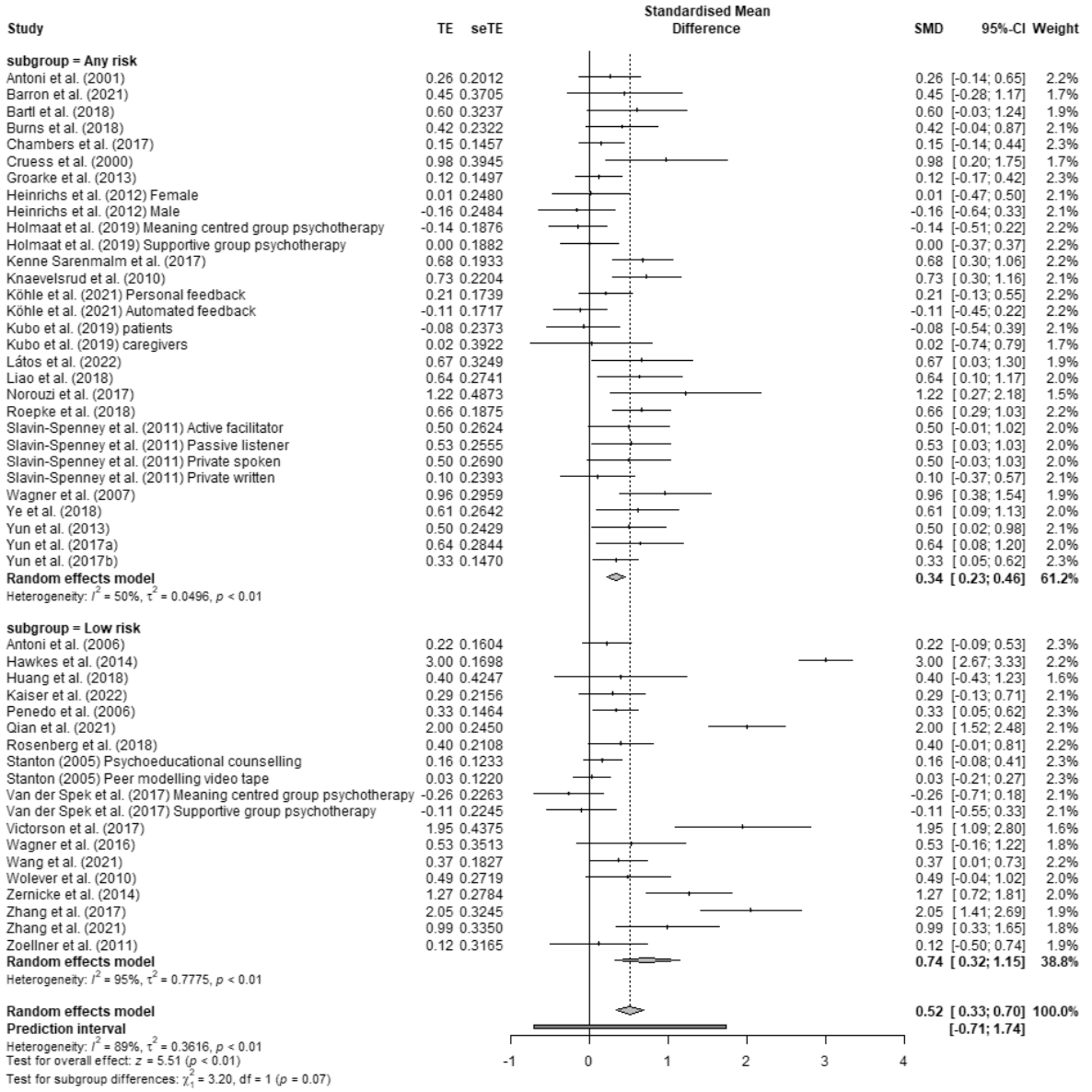


Figure 6. The impact of study level risk of performance bias

Measure of Posttraumatic Growth

To explore the impact of the type of measure selected to assess posttraumatic growth on intervention outcomes, study level intervention effects from each of the measures of posttraumatic growth were compared (Figure 7). It was not possible to compare the measures of posttraumatic growth in the short, medium, and long term as there were not enough differences in measure types across the range of time points. The difference in intervention effect across the type of posttraumatic growth measure was approaching significance in favour of the PTGI, the Benefit Finding Scale, and the Benefit Finding Scale from the Positive Contributions Scale ($X^2 = 9.89$, $p = 0.08$). However, it should be noted that the Benefit Finding Scale for Children, the Benefit Finding Scale from the Positive Contributions Scale, and the Silver Lining Questionnaire were each used to measure posttraumatic growth by only one study, and the PTGI-SF was used by only two studies. Therefore, the results should be interpreted with caution.

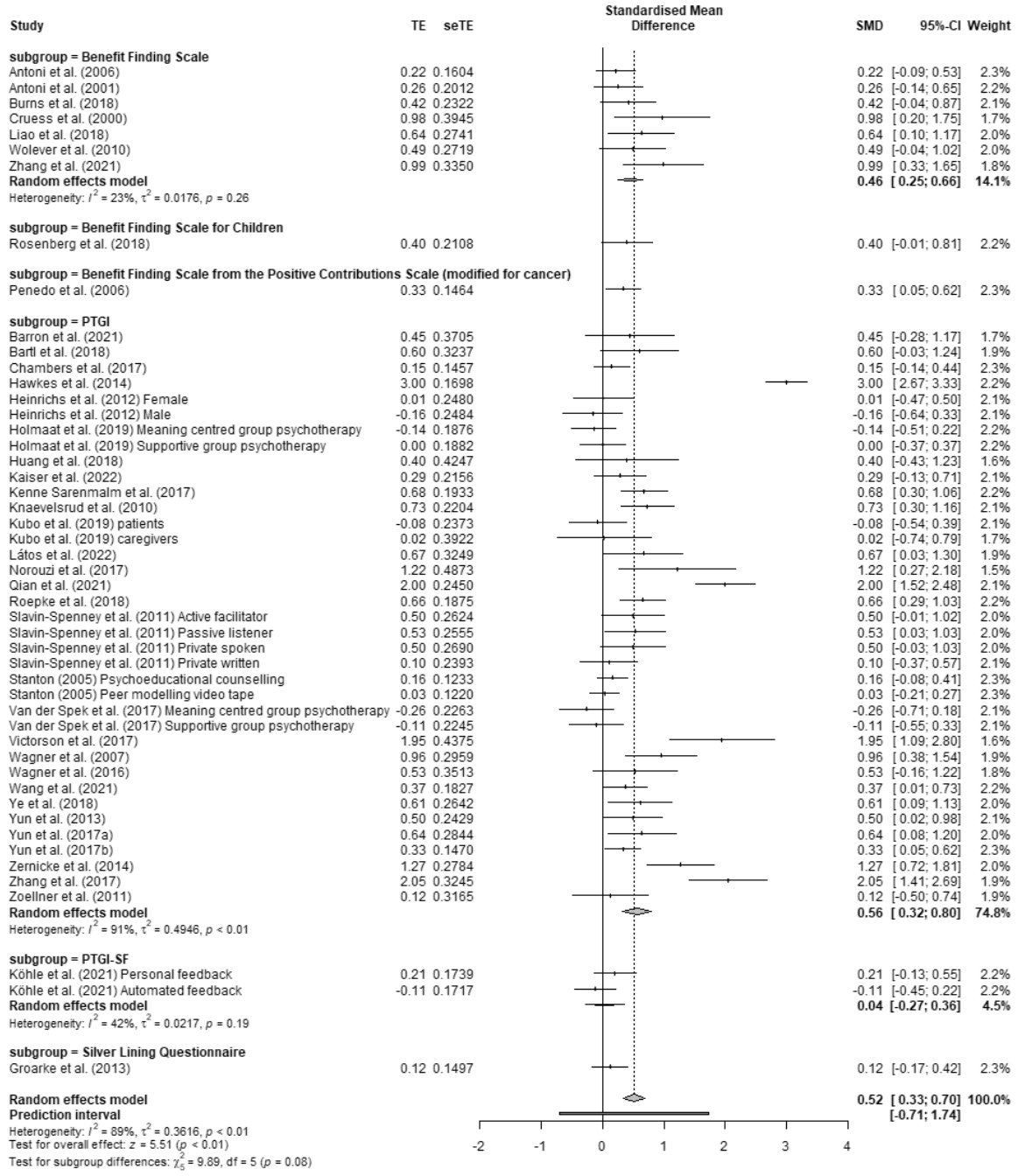


Figure 7. The impact of posttraumatic growth measure on intervention outcomes.

Summary of the Impact of Methodology

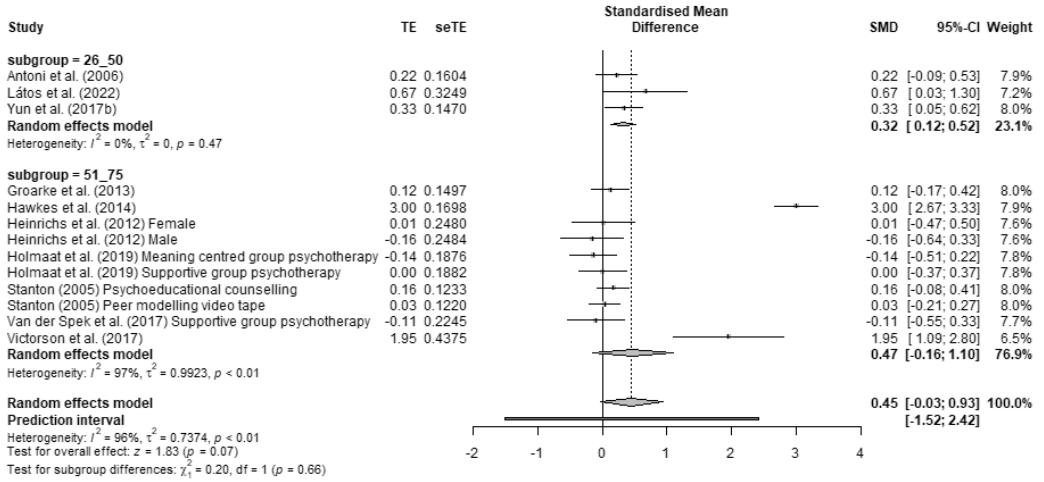
Sub analyses to explore the impact of methodology were completed to consider sources of heterogeneity, and to consider how methodological factors such as risk of bias and measure of posttraumatic growth may impact the effectiveness of interventions to facilitate posttraumatic growth. Analyses to assess the impact of study level risk of bias found no significant effect of risk of bias on the estimate of posttraumatic growth. Of note, there was a trend towards significance for risk of performance bias, such that including studies with a high risk of performance bias reduced the estimate of intervention effectiveness. This may explain some of the heterogeneity observed in the meta-analysis. Analyses to explore the impact of the outcome measure used to assess posttraumatic growth found no significant difference in the effectiveness of interventions to facilitate posttraumatic growth. There was a trend in the direction of significance favouring the PTGI, the Benefit Finding Scale, and the Benefit Finding Scale from the Positive Contributions Scale. However, these findings should be interpreted with caution, given that the distribution of studies across each outcome measure type was disproportionate, thus reducing the reliability and validity of findings.

The Impact of Participant Characteristics on Intervention Outcomes

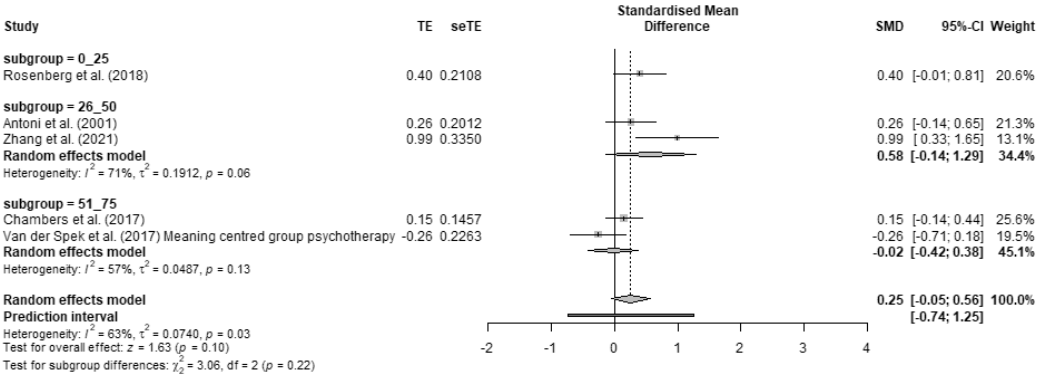
Age

Study level intervention effects of young (age 0-25 years), middle aged (age 26-50 years), and older (age 51-75 years) samples were compared (Figure 8). One study was omitted from this analysis as no specific mean or range of age was provided (Wang et al., 2021). A significant difference in intervention effect, favouring the middle aged sample was observed in the short term ($X^2 = 6.27$, $p = 0.04$) but not in the medium term ($X^2 = 3.06$, $p = 0.22$) or the long term ($X^2 = .20$, $p = 0.66$). It should be noted that in the medium term, only two studies reported on samples in middle and older age categories, and only one study reported on samples in young age categories, which reduces confidence in the robustness of the estimate of intervention outcome for age in the medium term.

Long term



Medium term



Short term

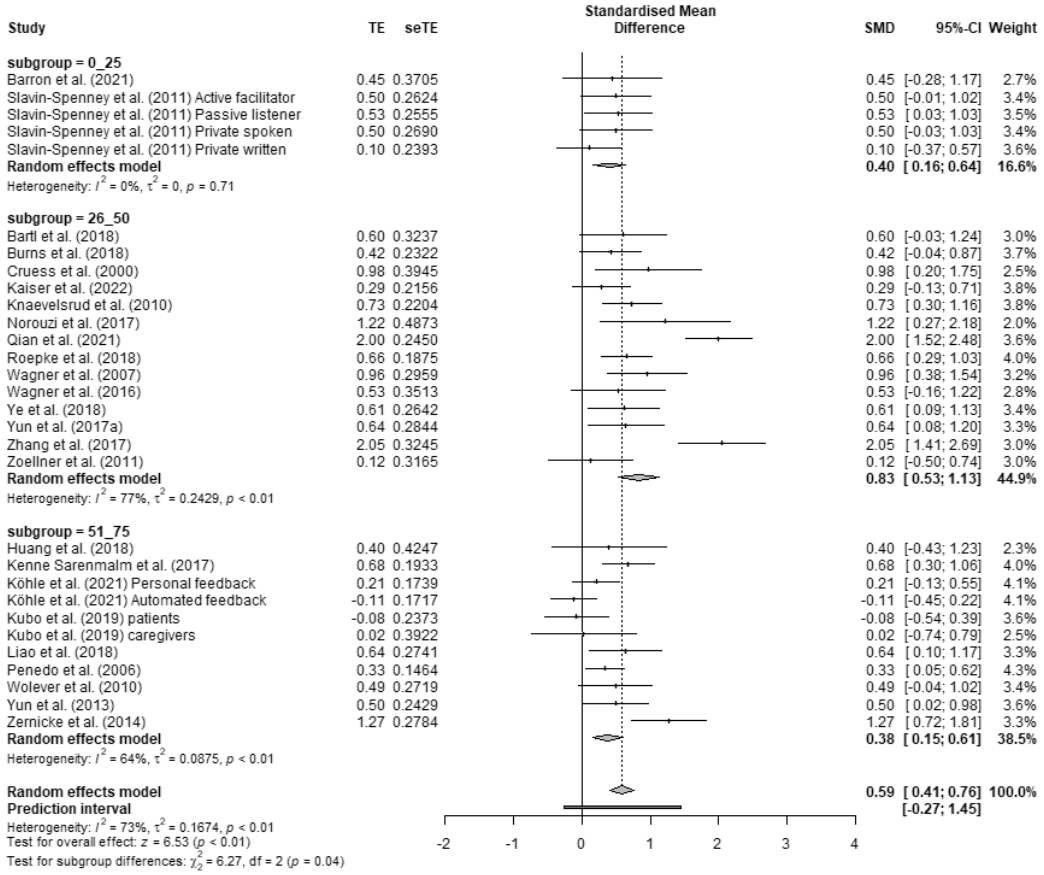


Figure 8. The impact of age on intervention outcomes in the short, medium, and long term.

Gender

Study level intervention effects from male only samples were compared with intervention effects reported in female only samples (Figure 9). A significant difference in intervention effect, favouring the female only samples, was observed in the short term ($X^2 = 5.55$, $p = 0.02$), but not in the medium term ($X^2 = 1.18$, $p = 0.28$), or the long term ($X^2 = 0.5$, $p = 0.48$). It should be noted that only two studies reported male only samples in the short and long term, and only one study in the medium term, which reduces confidence in the robustness of the estimate of intervention outcome for males.

Long term

Medium term

Short term

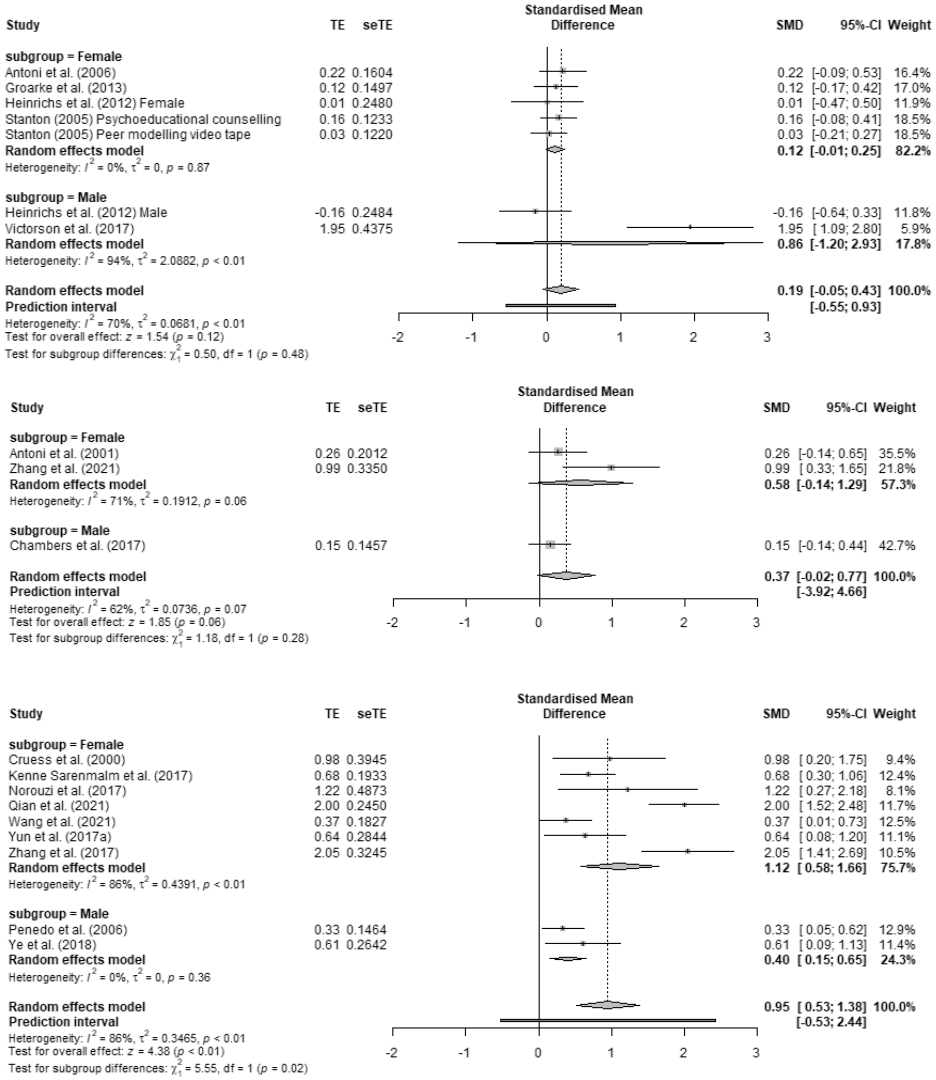


Figure 9. The impact of gender on intervention outcomes in the short, medium, and long term.

Trauma Type

To further explore the impact of trauma type on intervention outcomes, study level intervention effects from each of the trauma types were compared (Figure 10). Trauma categories were defined as cancer (*N* = 33), drugs violence (*N* = 1), grief (*N* = 4), health related issues (*N* = 3), motor accidents (*N* = 1), and unspecified trauma, adversity, or PTSD (*N* = 7). It was not possible to compare trauma type in the short, medium, and long term as only studies assessing cancer were reported in the medium term, and only studies assessing cancer and one study on health were reported in the long term. There was no significant difference in intervention effect across the trauma types ($X^2 = 3.07$, p = 0.69).

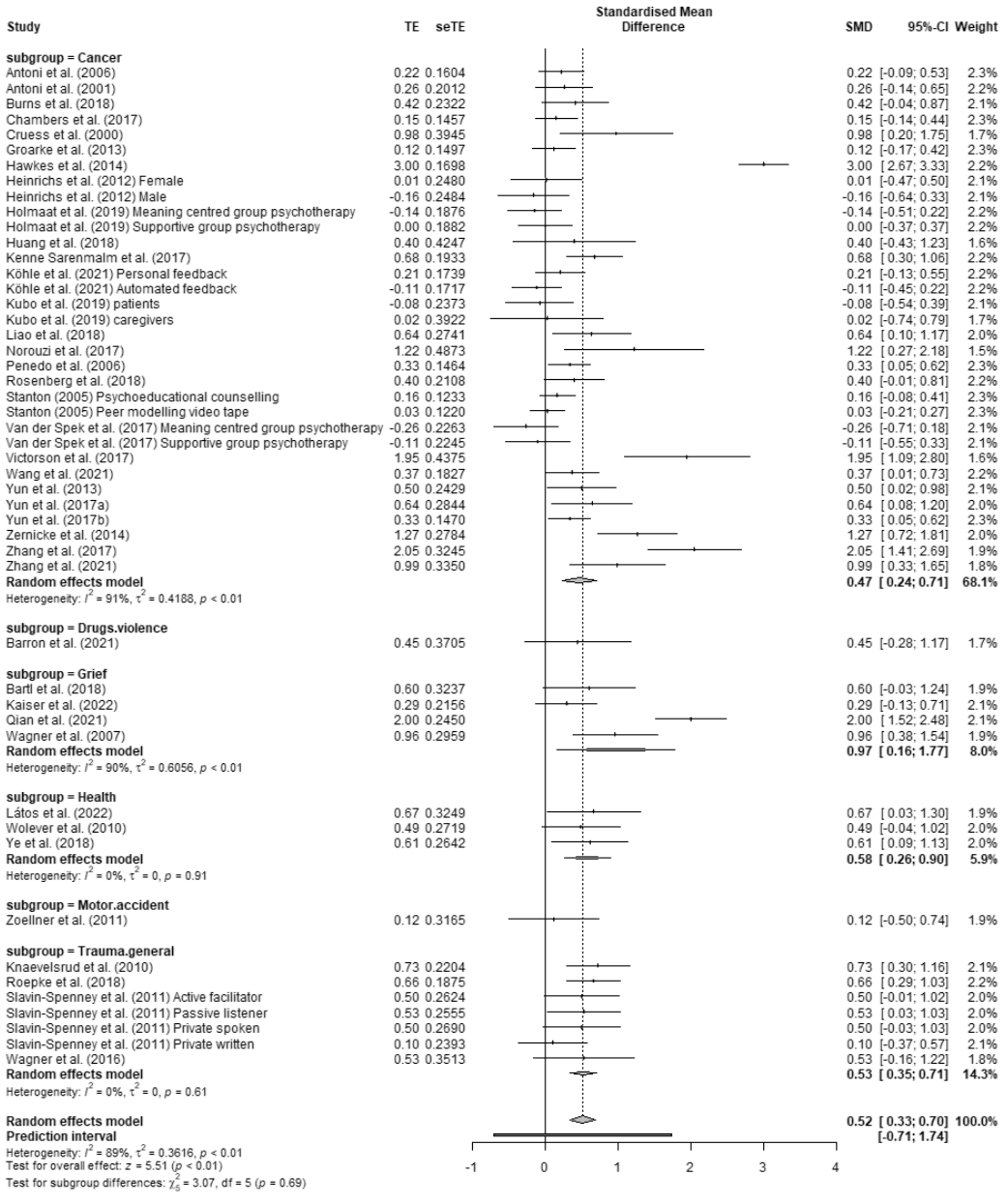


Figure 10. The impact of trauma type on intervention outcomes.

Summary of the Impact of Participant Characteristics

Sub analyses to explore the impact of participant characteristics were completed to consider sources of heterogeneity, and to consider how participant characteristics such as age, gender, and trauma type may impact the effectiveness of interventions to facilitate posttraumatic growth. In terms of age, interventions for posttraumatic growth are more effective for people in the middle aged category in the short term. There was no difference in intervention effectiveness across age in the medium or long term. These findings should be interpreted with caution given the small and disproportionate number of studies included across age categories in the medium and long term. In terms of gender, interventions for posttraumatic growth are more effective for women in the short term. There was no difference in intervention effectiveness across gender in the medium or long term. These findings should be interpreted with caution given the small and disproportionate number of studies included across gender in the medium and long term. For trauma type, there was no significant difference in the effectiveness of interventions to facilitate posttraumatic growth. Notably, the most common trauma type in studies included in the meta-analysis was cancer and this has implications for the reliability and validity of the findings reported in the meta-analysis.

The Impact of Intervention Characteristics on Intervention Outcomes

Intervention Type

Study level intervention effects for each intervention type were compared (Figure 11a). Intervention types were categorised by the model that the intervention was based on as follows: ACT (N = 3), behaviour change (N = 7), CBT (N = 17), expressive (N = 11), and mindfulness (N = 11). When intervention type was analysed at all time points, there was no significant difference in intervention effect across the intervention types ($X^2 = 4.15$, $p = 0.25$: Figure 11a). There was no significant difference in intervention effect across the intervention types in the short term ($X^2 = 1.70$, $p = 0.64$: Figure 11b). In the medium term, a significant intervention effect favouring CBT was observed ($X^2 = 6.33$, $p = 0.04$: Figure 11b), however this finding should be interpreted with caution given that CBT interventions were compared with only one study in the mindfulness category and one study in the expressive category. In the long term, a significant effect favouring behaviour change interventions and mindfulness interventions was found ($X^2 = 21.93$, $p < 0.01$: Figure 11b). However, this finding should be interpreted with caution, given that Hawkes et al., (2014) was an influential study, and only one study reported on a mindfulness intervention in the long term.

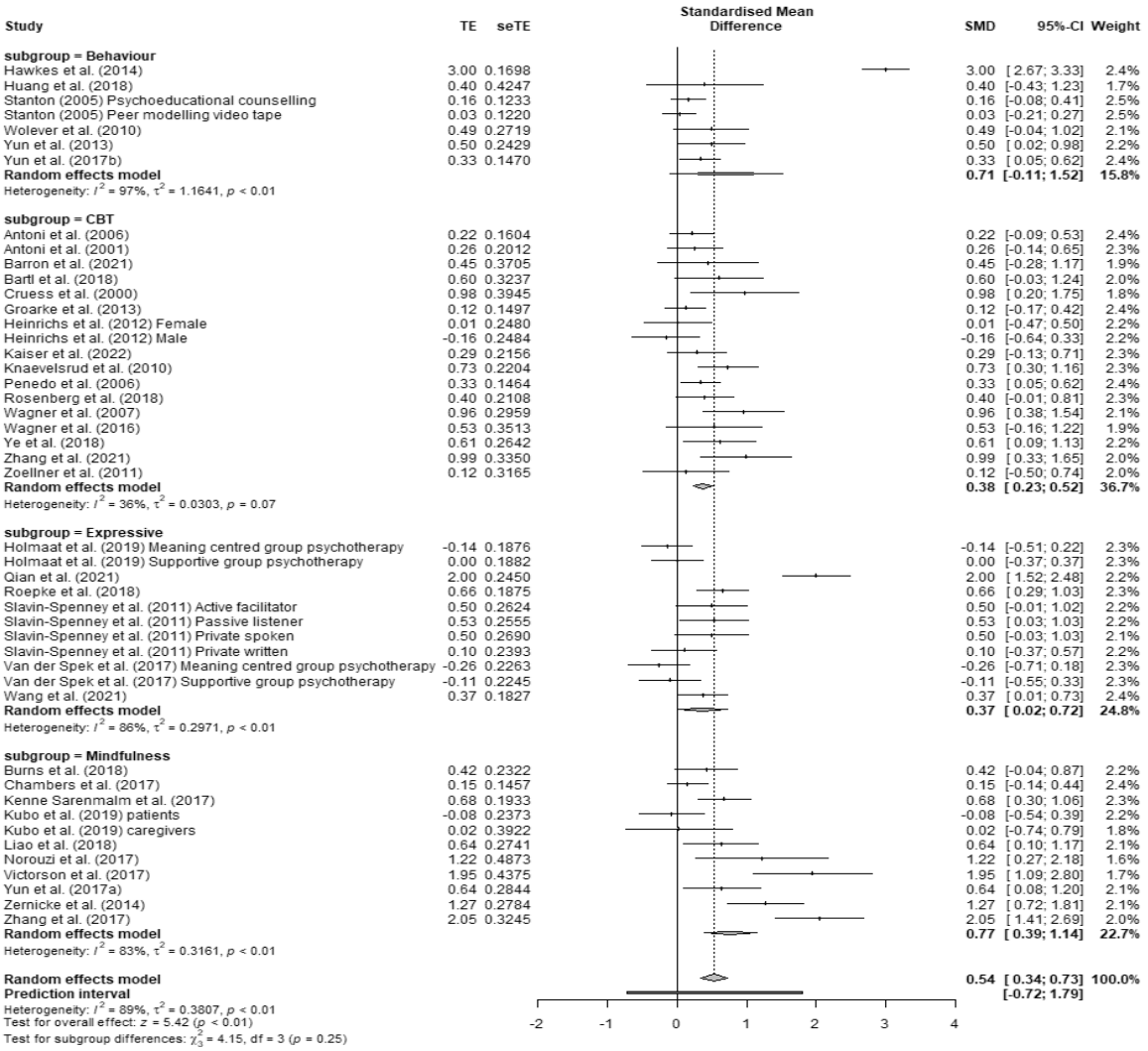
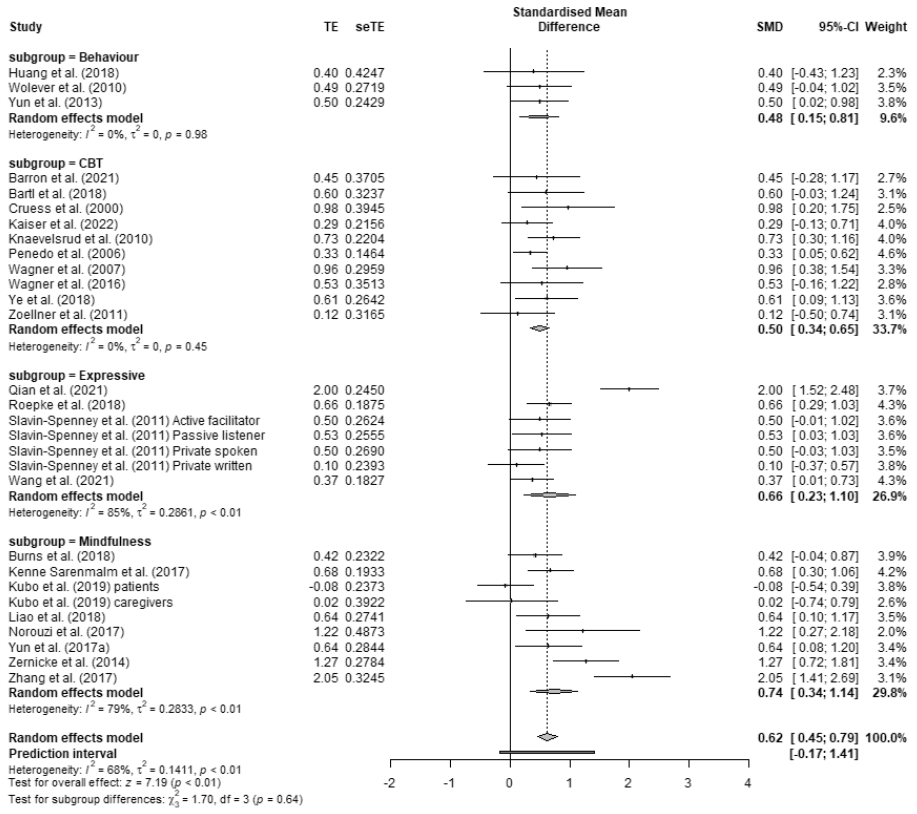
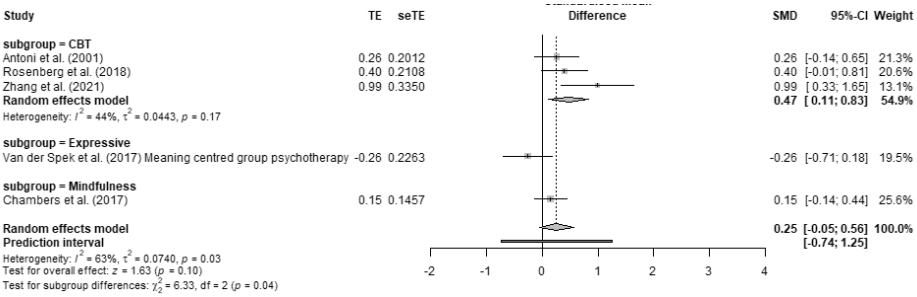


Figure 11a. The impact of intervention type on intervention outcomes.

Short term



Medium term



Long term

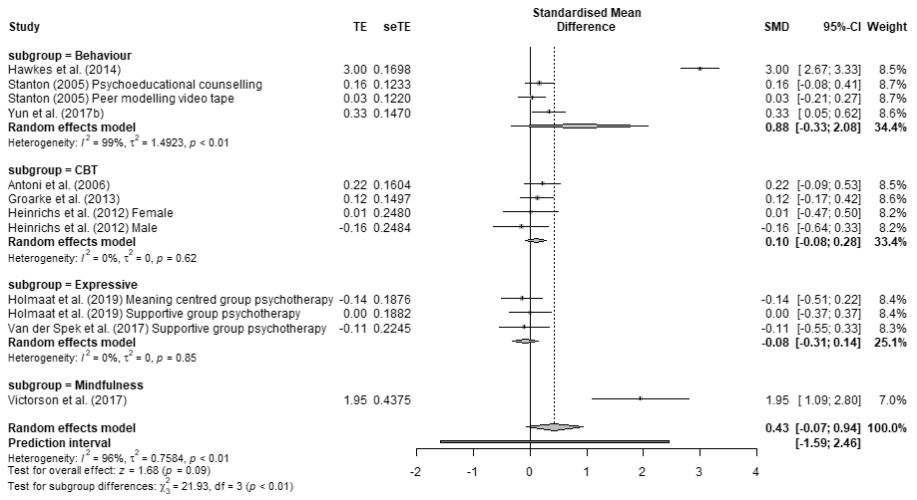


Figure 11b. The impact of intervention type on intervention outcomes in the short, medium, and long term.

Intervention Format

Interventions were delivered in various formats across studies, including on an individual basis (*N* = 11), in groups (*N* = 20), with couples (*N* = 3), self-directed (*N* = 12), or using a combination of these approaches (*N* = 3). Study level intervention effects for each intervention format were compared. There was no significant difference in intervention effect across the format of delivery at all time points (X^2 = 6.75, p = 0.15: Figure 12a), or in the short (X^2 = 3.45, p = 0.48: Figure 12b), medium (X^2 = .37, p = 0.54: Figure 12b), or long term (X^2 = 5.53, p = 0.24: Figure 12b).

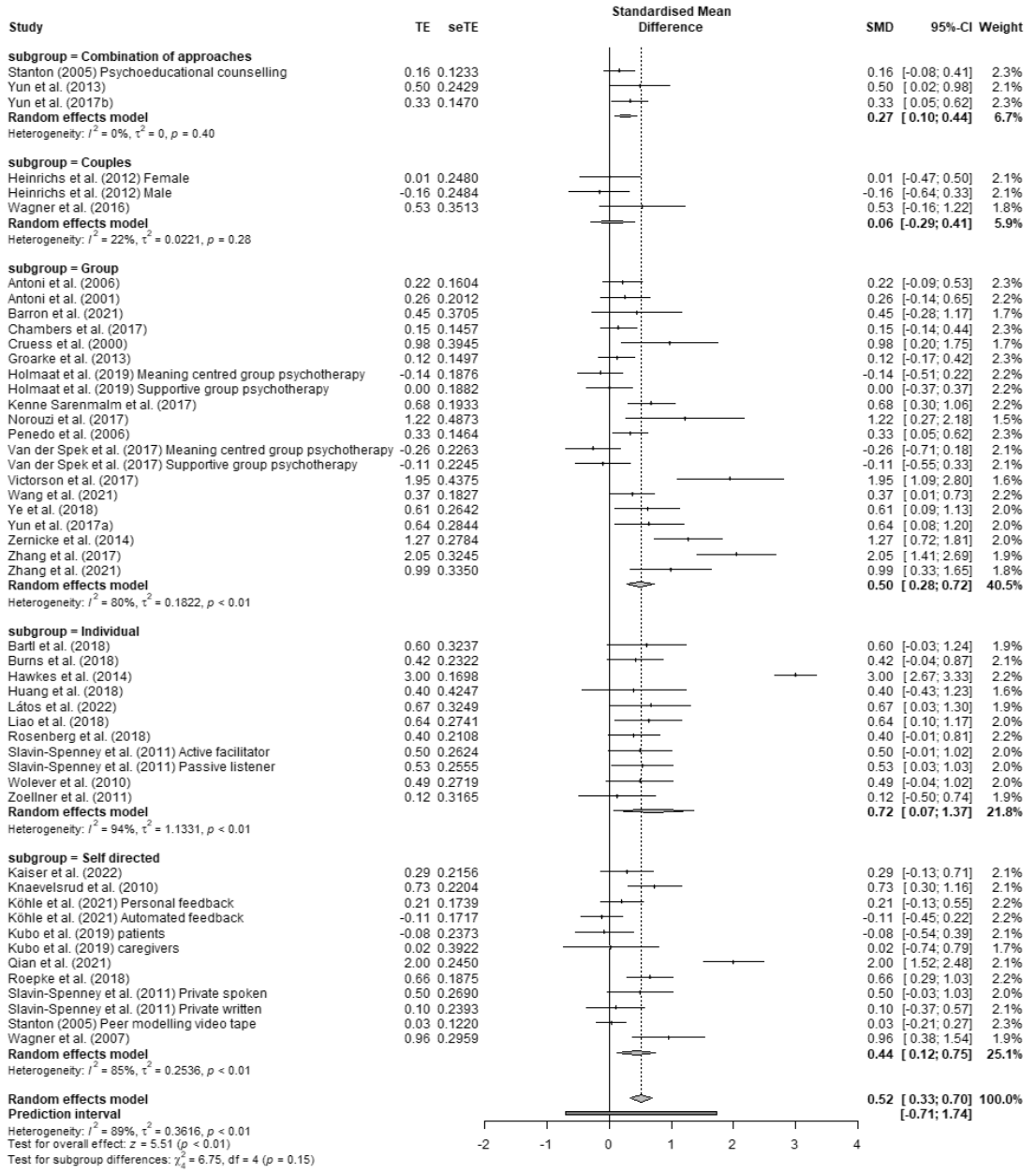
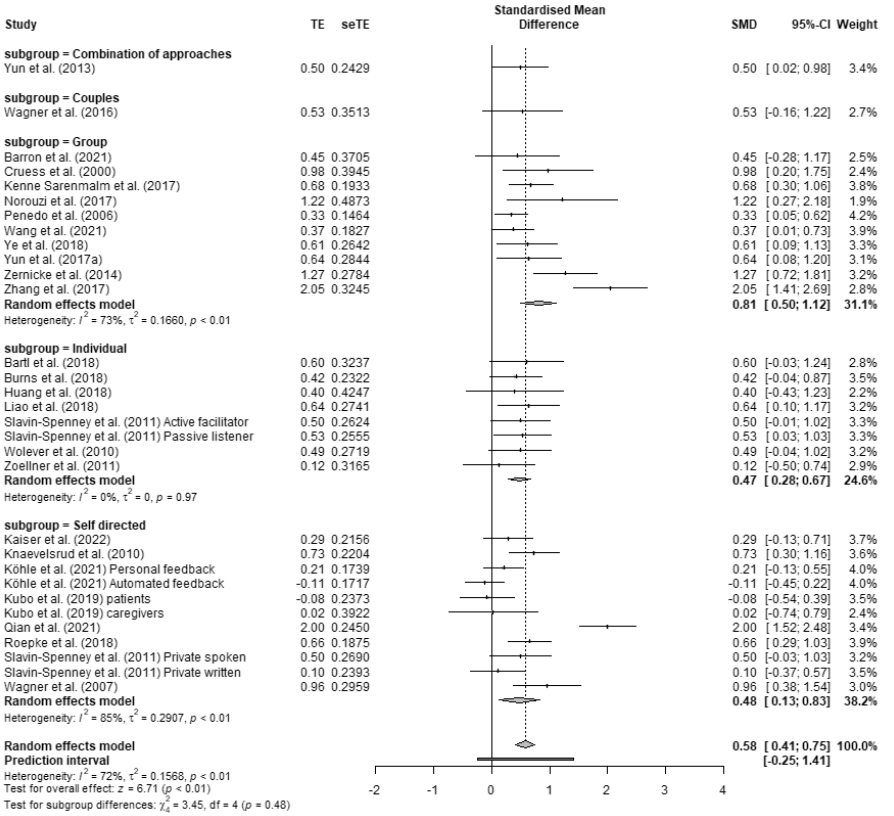
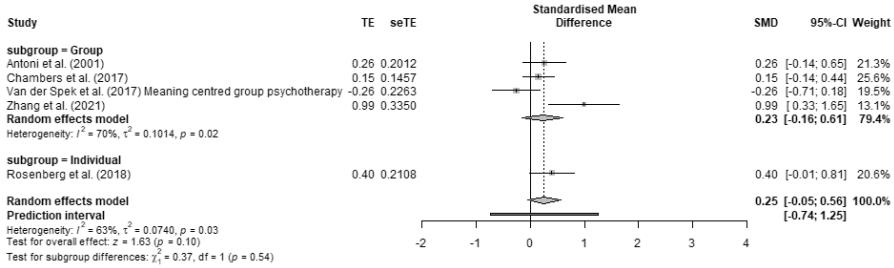


Figure 12a. The impact of intervention format on intervention format.

Short term



Medium term



Long term

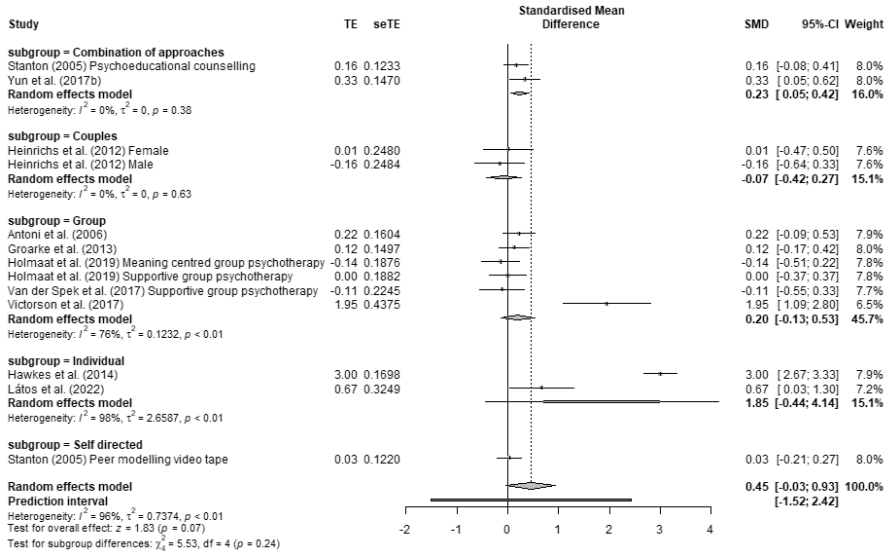


Figure 12b. The impact of intervention format on intervention outcomes in the short, medium, and long term.

Intervention Platform

Interventions were delivered using a range of platforms across studies, including face-to-face (*N* = 29), by teleconference or telephone (*N* = 4), online by website (*N* = 8), privately spoken or handwritten tasks (*N* = 3), or by a combination of these approaches (*N* = 5). Study level intervention effects for each platform for intervention were compared. There was no significant difference in intervention effect across the intervention platform at all time points, (X^2 = 6.47, p = 0.17: Figure 13a), or in the short term (X^2 = 4.05, p = 0.40: Figure 13b), and medium term (X^2 = .34, p = 0.56: Figure 13b). In the long term, there was a significant intervention effect in favour of interventions delivered in the format of teleconference or telephone (X^2 = 237.95, p < .01: Figure 13b). However, there was only one study in this category and this study was found to be influential (Hawkes et al., 2014).

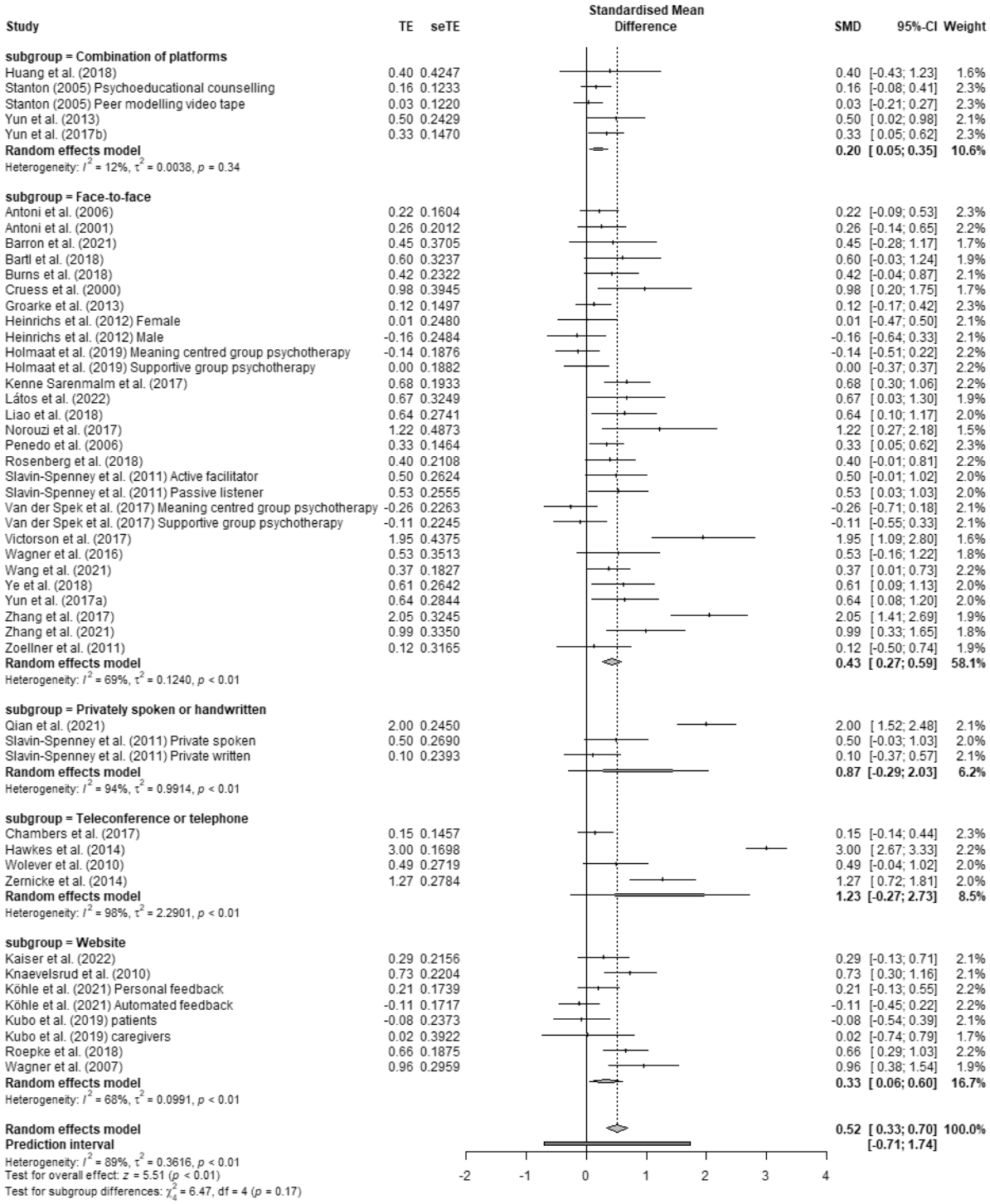
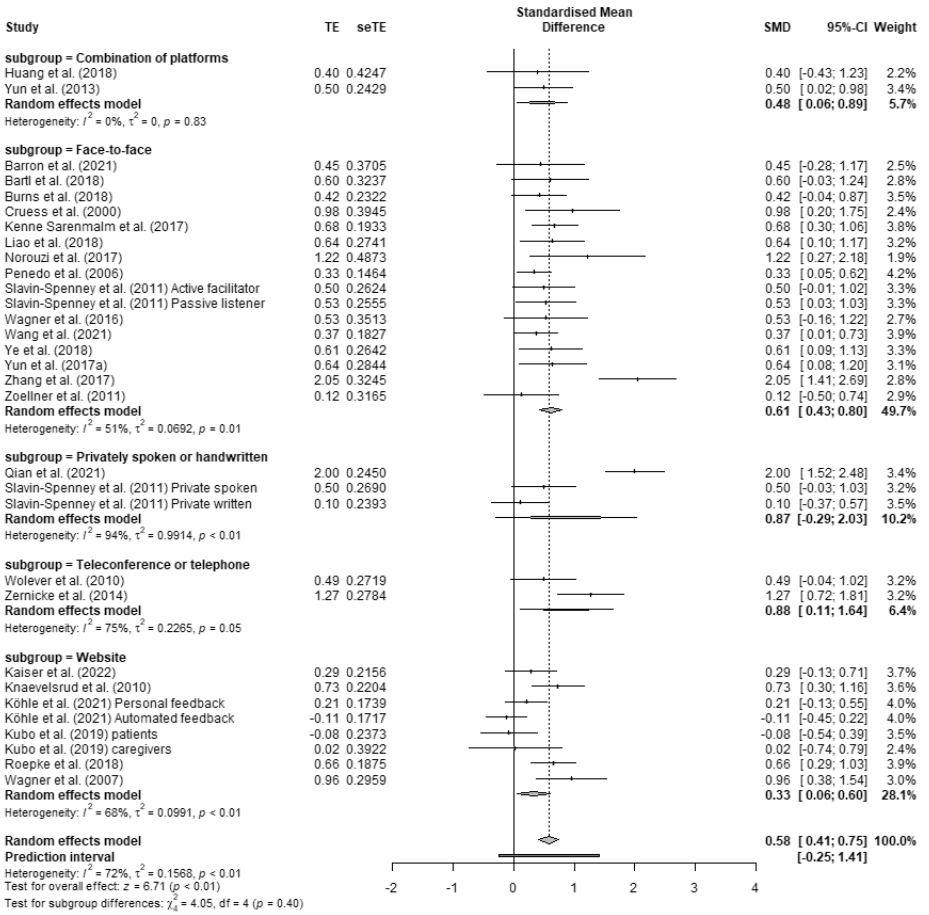
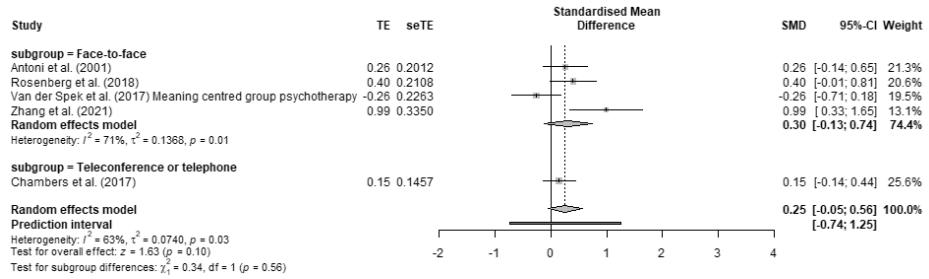


Figure 13a. The impact of intervention type on intervention platform.

Short term



Medium term



Long term

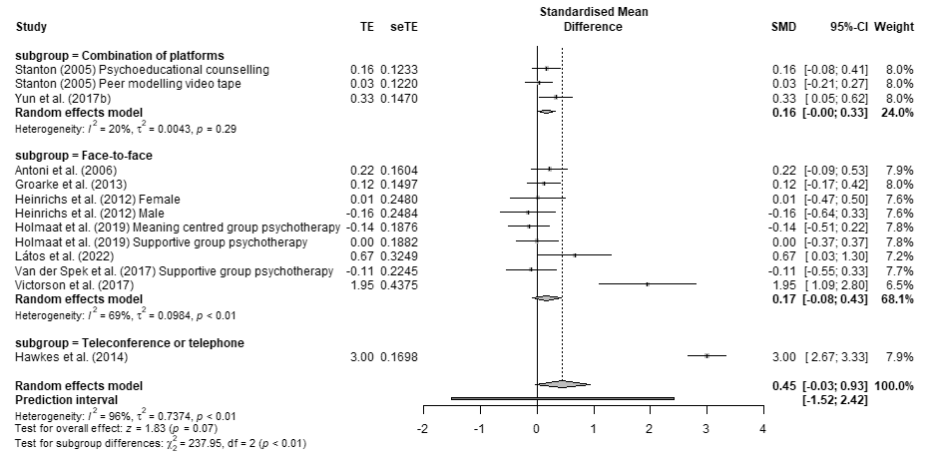


Figure 13b. The impact of intervention platform on intervention outcomes in the short, medium, and long term.

Summary of the Impact of Intervention Characteristics

Sub analyses to explore the impact of intervention characteristics were completed to consider sources of heterogeneity, and to consider how intervention characteristics such as intervention type, format, and platform may impact the effectiveness of interventions to facilitate posttraumatic growth. In summary, there was no significant difference of intervention type on intervention effectiveness across all timepoints, or at short term follow-up. In the medium term, CBT was the most effective intervention type to facilitate posttraumatic growth. In the long term, behaviour change and mindfulness intervention types were most effective at facilitating posttraumatic growth. These findings should be treated with caution given that the distribution of studies across categories of intervention type are disproportionate and effects are likely overestimated by a study of influence (Hawkes et al.,2014). In terms of intervention format, there was no significant difference in intervention effectiveness based on intervention format across all timepoints, or at short, medium, or long term follow-up. Finally, for intervention platform, there was no significant difference in intervention effectiveness based on platform across all timepoints, or at short, or medium term follow-up. At long term follow up, teleconference or telephone interventions were most effective at facilitating posttraumatic growth, however this finding should be interpreted with caution given that studies across categories at long term follow up were disproportionately distributed and results may be driven by the influential study Hawkes et al., (2014).

The Impact of Publication and Small Study Biases

Publication bias is caused by the tendency for statistically significant results to be published and the resistance to publish papers with non-significant results. Small study bias is the tendency for studies with smaller sample sizes to show greater variability in their measurement of posttraumatic growth. These biases can be identified in a funnel plot, which plots the magnitude of the study's intervention effect (i.e., the importance of the study in the synthesis) and estimates the studies deviation from the meta-analytic average (i.e., the discrepancy of the study within the literature). If there is an absence of publication bias, the effects from the studies with small sample sizes which show greater variability will scatter more widely at the bottom of the plot compared to studies with larger samples at the top which will lie closer to the overall meta-analytic effect, creating a symmetrical funnel shape. If there is an absence of studies in the area of the plot associated with small sample sizes and non-significant results, then it is likely there is some publication bias leading to an

overestimation of the true effect. The funnel plot of intervention effect is presented in Figure 14.

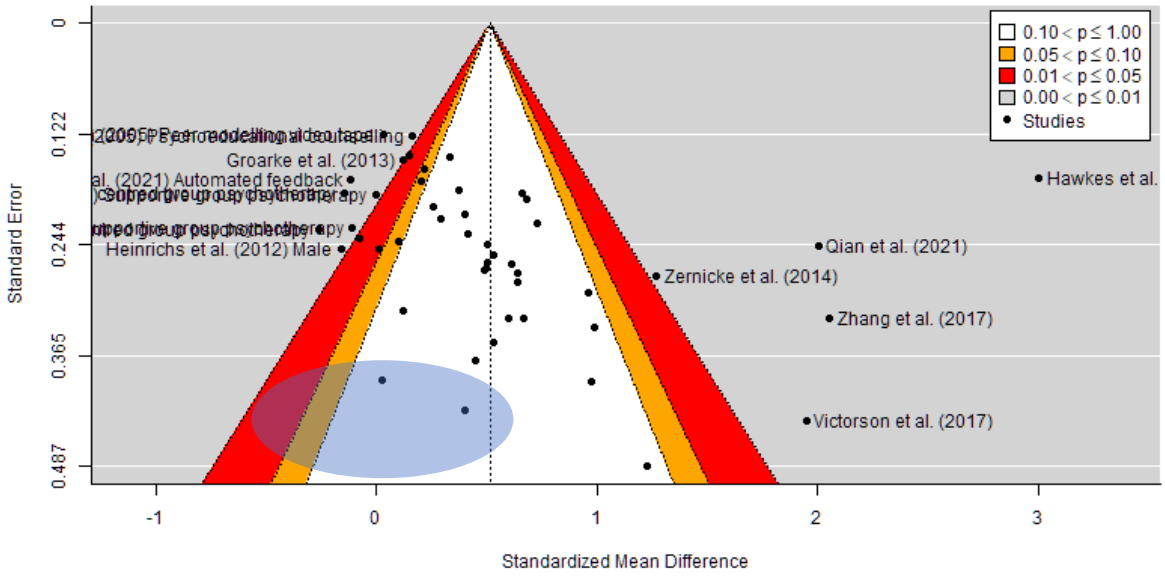


Figure 14. Funnel plot of the effects reported in the included studies. The 95% confidence interval of the expected distribution of standardised mean differences is shown as an inverted "funnel". The area associated with the null hypothesis is shaded in blue.

As seen from Figure 14, there is clear evidence of heterogeneity in the measurement of posttraumatic growth. However, there is no clear evidence of publication bias in the distribution of posttraumatic growth, in that, there are studies within the area associated with the null hypothesis (shaded in blue in Figure 14). This conclusion is supported by a statistical test of funnel plot as symmetry (Eggars t = 1.78, p = 0.08). Accordingly, no correction for publication bias was undertaken.

Rosenthal (1979) describes the calculation of a failsafe number; this method calculates the number of non-significant results which would need to be included in the meta-analysis for the overall effect to be non-significant (p > .05). This procedure suggests that 3,847 studies would be required to reduce the observed treatment effect to non-significance, suggesting that the observed estimate of posttraumatic growth is robust to studies missing due to publication bias.

In summary, these findings suggest that although there is evidence of heterogeneity in the measurement of posttraumatic growth across studies, there is no clear evidence for publication bias.

Discussion

This systematic review and meta-analysis aimed to summarise which psychological interventions are available to facilitate posttraumatic growth, and to assess their effectiveness. The systematic search for randomised control trials identified 42 articles reporting the effectiveness of 51 interventions for posttraumatic growth. Most of these interventions did not specifically aim to facilitate posttraumatic growth, and many focussed on reducing symptoms of PTSD, depression, and anxiety using CBT interventions. Findings from the meta-analysis suggest that psychological interventions are effective at facilitating posttraumatic growth and the reported effect size was medium. When posttraumatic growth was measured shortly after intervention completion, posttraumatic growth was higher in the intervention group compared to the control group. This effect was not maintained at medium and long term follow-up. Methodological approach, participant characteristics, and intervention characteristics varied across studies and were further explored to determine their impact on the effectiveness of the intervention. In the short term, interventions were most effective at facilitating posttraumatic growth for people aged 26-50 years, and for women, however these effects were not maintained at medium and long term follow-up. CBT interventions were most effective in the medium term, however CBT interventions were compared to one mindfulness and one expressive type of intervention only, which limits the reliability of the analysis. Likewise, interventions delivered by telephone or teleconference were most effective in the long term, however only one influential study was included in this category in the long term. These findings should be interpreted with caution given the small number of studies included in these analyses. There was no difference in the effectiveness of the intervention based on trauma type, intervention type (at short and long term follow-up), intervention format, intervention platform (at short or medium term follow-up), or outcome measure to assess posttraumatic growth.

The finding that interventions for posttraumatic growth are most effective in the short term is consistent with previous literature (Roepke et al., 2015; Wu et al., 2019). This finding has previously been interpreted to reflect that the effects of interventions for posttraumatic growth are not maintained over time. Strategies to maintain or increase therapeutic benefits over time have been proposed, such as the addition of follow-up sessions, ongoing expressive writing tasks post-intervention, or a more specific focus on growth in interventions. However, more evidence is needed to consider how beneficial these additions may be (Roepke et al.,

2015). These findings are also consistent with the critique of interventions that aim to reduce medical symptoms associated with PTSD. In the short term, these interventions enable people to reengage with daily functioning, however individuals are not supported to live beyond symptom reduction and to achieve longer term and sustained benefits across multiple areas of life (Tedeschi & McNally, 2011).

Another explanation for the short term effectiveness of interventions to facilitate posttraumatic growth is that, over time, people in the control group experience posttraumatic growth spontaneously in the absence of receiving an intervention. Indeed, longer length of time since trauma exposure is one factor that has been associated with higher self-reported posttraumatic growth (Husson et al., 2017; Liu, Wang, Li, Gong & Liu, 2017; Zhou & Wu, 2016). Time provides a space for people to engage with cognitive restructuring processes such as deliberate rumination and hence, posttraumatic growth (Hirooka, Fukahori, Taku, Togari & Ogawa, 2017). This may account for the observed reduction of intervention effectiveness over time. However, the literature surrounding posttraumatic growth and time is conflicting and implicates a role for the level of distress following trauma (Helgeson et al., 2006). Some research suggests that growth increases over time as individuals cognitively accommodate their trauma and appraise and reappraise the significance of this event and its impact on their life (Joseph & Linley, 2005). This trajectory is often found in people diagnosed with chronic illness. In contrast, some evidence suggests that the level of posttraumatic growth experienced is impacted by trauma severity, such that the more severe a trauma is, the more likely core beliefs are to be severely challenged, resulting in more deliberate rumination and hence greater posttraumatic growth (Calhoun & Tedeschi, 2001). However, there is also evidence that posttraumatic growth decreases over time and this may relate to a decrease in the intensity of the impact of the trauma (Amiri et al., 2021; Meyerson, Grant, Carter, & Kilmer, 2011; Phipps et al., 2007). Much of the research on posttraumatic growth is based on cross-sectional data and more longitudinal research is needed to track the trajectories of growth over time.

In terms of the methods used to assess posttraumatic growth, a trend in the direction of significance in favour of the PTGI was found. This should be interpreted with caution given that most studies used the PTGI as an outcome measure compared to any other type of measure for posttraumatic growth. A previous review by Roepke (2015) reported no difference in intervention effect on reported posttraumatic growth based on the selected

outcome measure. Posttraumatic growth is widely assessed in the literature using self-report measures, such as those included in the present review. Such measures have received some criticism around the extent to which actual growth, that reflects a new understanding and outlook on life after processing a traumatic experience, is measured. It is possible that self-report measures capture perceived growth, which relates to an individual reporting, without truly experiencing, posttraumatic growth. Perceived growth enables the individual to avoid, and cope, with the painful emotions and threat created by the impact of the traumatic experience through a process of denial (McFarland & Alvo, 2000). Evidence suggests that self-reported posttraumatic growth is also associated with a range of positive mental health outcomes, including lower self-reported depression, improved wellbeing, and better quality of life, and this suggests the concept is important to consider in terms of the process of adjustment following trauma exposure (Helgeson et al., 2006; Vishnevsky et al., 2010).

The finding that people of younger age received the most benefit from an intervention to facilitate posttraumatic growth in the short term is in line with previous research (Wu et al., 2019). Self-reported posttraumatic growth is higher for people of younger age (Andysz et al., 2015; Brandão et al., 2020; Sim et al., 2015; Tomita et al., 2017). People in late adolescence or early adulthood may be developing their self and world view and therefore may be more open to the possibility of this view changing through the experience of posttraumatic growth (Sawyer, Ayers & Field, 2010). On the other hand, children may not have the cognitive capacity to experience posttraumatic growth, and people of older age may have fixed ideas about their view on the world that are less amenable to change (Tedeschi & Calhoun, 1996, 2004; Liu et al., 2017). Alternatively, older people may not report posttraumatic growth following trauma exposure because they may have experienced adversity earlier in life which may have led to the development of coping skills, wisdom, and alternative views of the self and world that accommodate trauma (Wu et al., 2019).

The finding that women received the most benefit from interventions to facilitate posttraumatic growth in the short term is also in line with previous research. Gender differences in responses to traumatic events have been widely reported in the literature with women often reporting higher levels of distress and being more likely to meet diagnostic criteria for PTSD (Olff, 2017; Olff, Langeland, Draijer & Gersons, 2007) but also exhibiting higher levels of posttraumatic growth (Helgeson et al., 2006; Jin, Xu & Liu, 2014; Vishnevsky et al., 2010). Calhoun and Tedeschi (2013) suggest that higher levels of initial

distress may be associated with a greater upheaval of an individual's assumptive world, thus, a greater requirement for engagement in cognitive reprocessing and higher levels of posttraumatic growth. In addition, it is possible that women engage in reflection more than men and this is an important process for developing an awareness of positive change along the dimensions of posttraumatic growth (Tolin & Foa, 2008). Differences in coping styles are also reported amongst women and men, and women are more likely to engage in emotion focussed coping strategies which may facilitate acceptance, and have been associated with greater posttraumatic growth (Jin et al., 2014; Konaszewski, Kolemba & Niesiobędzka, 2021; Tedeschi & Calhoun, 2004).

This meta-analysis found no difference in the effectiveness of interventions based on trauma type. Trauma in identified studies included cancer, health related issues, drugs violence, grief, motor accidents, and unspecified trauma, adversity, or PTSD. Past literature on the prevalence of posttraumatic growth after trauma is mixed. Some research suggests that the prevalence of growth is higher amongst people who experience trauma indirectly, such as emergency service professionals, or carers of people who are unwell, or for people who experience a one-off traumatic event, such as a road traffic accident, compared to continuous or repeated experiences of trauma (Kira et al., 2013; Wu et al., 2019). The findings from the current meta-analysis suggests that interventions can facilitate posttraumatic growth following a range of trauma types.

The intervention type, format, or platform of delivery did not have an impact on the effectiveness of facilitating posttraumatic growth. This is in line with one previous meta-analysis (Roepke et al., 2015), however another meta-analysis reported that mindfulness interventions were more effective than other types of intervention for people with cancer (Li et al., 2020). Li and colleagues acknowledge that this finding is not in line with the wider literature and suggested that mindfulness interventions could help people with cancer to maintain awareness of the present moment, rather than engage with unhelpful thoughts. Few interventions included in this review were specifically designed to facilitate posttraumatic growth and most aimed to reduce symptoms of PTSD, low mood, or anxiety. Some interventions contained elements proposed by the posttraumatic growth intervention model (Tedeschi & McNally, 2011) that may facilitate posttraumatic growth, such as psychoeducation on trauma or the trauma experience (Látos et al., 2022), emotion regulation skills (Látos et al., 2022), constructive self-disclosure (Qian et al., 2021; Wang et al., 2021),

the development of new narratives or meanings in line with themes of growth (Bartl et al., 2018; Holtmaat et al., 2019; Látos et al., 2022; Qian et al., 2021; Rosenberg et al., 2018; Van der Spek et al., 2017), an exploration of new life principles (Látos et al., 2022; Qian et al., 2021; Roepke et al., 2018; Rosenberg et al., 2018; Zoellner et al., 2011), or preparing for the future (Bartl et al., 2018; Wang et al., 2021). The two studies identified by the systematic search but excluded from the meta-analysis due to unusually large effect sizes contained similar themes for intervention in line with those suggested by the posttraumatic growth model (Rachyla et al., 2020; Üzar-Özçetin & Hiçdurmaz, 2019). Overall, the findings suggest that interventions based on any psychological model, facilitated in any format, and delivered by any platform, facilitate posttraumatic growth.

Clinical Implications

The current findings have implications for individuals, clinical practice, theory, and research.

Implications for Individuals

The finding that psychological interventions facilitate posttraumatic growth in the short term suggests that people are able to process their experience, appraise new meanings and narratives to make sense of life, and experience positive psychological change, following trauma (Park, 2008). Experiencing posttraumatic growth has been associated with a lower level of depression, positive wellbeing, enhanced wisdom, and increased psychological resilience (Aldwin & Levenson, 2004; Helgeson, et al., 2006; Linley, 2003; Webster, 2010; Webster & Deng 2015). In addition, the resources and skills individuals use and develop by manging their emotional distress and processing their trauma can be applied to future traumatic or distressing situations, meaning individuals are more able to cope with adversity (Gilbert et al., 1998; Tedeschi & Calhoun, 1996). Thus, effective interventions to facilitate posttraumatic growth have several benefits to individuals who have experienced trauma. Interventions were most effective for women and people between the ages of 26-50 years, and this has implications for who may benefit most from interventions and experience posttraumatic growth (Jin et al., 2014; Wu et al., 2019).

Implications for Clinical Practice

The findings suggest that considering the impact of trauma beyond the immediate experience of distress and negative outcomes is important in clinical practice. Individuals can experience posttraumatic growth following trauma and this ought to be considered in psychological

assessment and formulation to strengthen holistic and person-centred approaches to intervention. The present findings suggest that interventions to facilitate posttraumatic growth are effective in the short term, however the methodological limitations of studies included in the meta-analysis have implications for the generalisability of the findings and have implications for future research. Interventions primarily aimed to reduce symptoms of PTSD, depression, and anxiety. Therefore, it does not seem appropriate to recommend the use of interventions to facilitate posttraumatic growth at present. Further research is needed on interventions that are specifically designed to facilitate posttraumatic growth and that are based on the principles outlined by Tedeschi and McNally (2011). It is possible that psychological interventions that combine principles of the posttraumatic growth model with symptom reduction are most effective for facilitating posttraumatic growth (Leamy, Bird, Le Boutillier, Williams & Slade, 2011; Luthar, Cicchetti & Becker, 2000; Roepke et al., 2015; Tedeschi & McNally, 2011). Such interventions align with the concept of recovery from trauma and distress which has become a priority for clinical services in recent years and encompasses a range of dimensions related to growth. A recent systematic review identified five integral recovery processes: connectedness, hope, identity, meaning, and empowerment (CHIME Framework: Leamy et al.,2011). Healthcare policy emphasises the importance of these processes to be implemented in mental healthcare services in the UK (HM Government, 2011) and internationally (Slade, Amering & Oades, 2008; World Health Organisation, 2013) to improve quality of life following trauma. This framework aligns with the concept of posttraumatic growth and reflects a shift away from medicalised clinical priorities of symptom reduction and functional restoration (Palmquist, Patterson, O'Donovan & Bradley, 2017). Thus, it seems important to increase awareness among healthcare professionals of posttraumatic growth as a potential outcome of trauma. Additional research on such interventions can support the development of recommendations for interventions to promote recovery from trauma, and to facilitate posttraumatic growth in the future.

In the absence of evidence-based interventions, clinicians may integrate techniques to facilitate posttraumatic growth within traditional therapeutic approaches for trauma. This may overcome some of the limitations of existing interventions for trauma, including high dropout rates and limited efficacy in reducing self-reported levels of distress (Steenkamp, Litz, Hoge & Marmar, 2015). A range of techniques to facilitate growth have been identified. However, the timing and use of these techniques must be carefully considered as posttraumatic growth is likely to be inhibited by clinicians who attempt to move people toward understandings that

they have not yet internally experienced. The clinician's role is to provide a safe therapeutic space for the person to provide an account of, process, and make sense of, their trauma. It is important for clinician's to be attuned to the persons stage of processing and to work within the persons framework of understanding of their traumatic experience. As people articulate ways in which their trauma has led to meaningful change, clinicians may label these experiences as growth to increase the salience of these meanings. It is necessary to allow people to verbalise their own experiences, as clinicians commenting on experiences of growth if the person is still highly distressed, or experiencing intrusive rumination, is likely to increase distress and leave the person feeling their experience of trauma has been undermined or misunderstood. If appropriate, some people may benefit from a 'little push towards growth' in which clinicians encourage people to notice aspects of growth experienced throughout the struggle of processing trauma. This may be further supported by shifting the focus of therapy away from the traumatic experience and towards the process of making sense of the experience and the clients understanding of life following the trauma. Group interventions may be particularly beneficial as peers are able to share similar traumatic experiences and relate to one another with empathy and compassion, while learning and considering new perspectives. Collectively, these therapeutic techniques may enable the individual to engage with the process of developing new beliefs, goals, and schemas that account for their changed views about the self, world, and others in the aftermath of their traumatic experience (Calhoun & Tedeschi, 2013; Tedeschi & Calhoun, 1995; Tedeschi et al., 2015). The use of these techniques maximises the potential for posttraumatic growth to occur within existing intervention approaches and therefore align with recovery principles, the CHIME framework, and NHS values of providing person centred interventions (HM Government, 2011; Leamy et al., 2011; Tedeschi & Calhoun, 2014).

Implications for Theory and Research

The finding that psychological interventions facilitate posttraumatic growth has important theoretical implications for the relationship between PTSD and posttraumatic growth. Indeed, interventions that primarily aimed to reduce symptoms of PTSD also facilitated experiences of posttraumatic growth which is in line with Tedeschi et al., (2018) model of posttraumatic growth, that suggests some level of distress is needed to experience posttraumatic growth. Interventions that sufficiently reduce emotional distress may enable people to move towards processes of deliberate rumination and acceptance that leads to experiences of posttraumatic

growth. People who remain highly distressed are unlikely to move into these later stages proposed by the model, and hence may remain highly distressed following trauma. Therefore, this supports the hypothesis that PTSD is needed to experience positive change following trauma (Butler et al., 2005; Hall et al., 2010; Levine et al., 2008; Solomon & Dekel, 2007; Taku et al., 2008), and that emotional distress must be managed before posttraumatic growth can be experienced. In addition, the finding that interventions to facilitate posttraumatic growth are effective in the short term, but not the medium or long term, has implications for the process of experiencing posttraumatic growth. It is possible that growth can be experienced spontaneously over time without the need for psychological intervention. While interventions may enable people to engage with the process of managing emotional distress and providing a space for deliberate rumination earlier, perhaps if people are able to engage with this process without intervention, it may not be necessary to provide interventions to facilitate growth.

Most studies included in the meta-analysis scored poorly on the risk of bias tool and overall scores ranged from 23–34% with a large number of studies rated as unclear risk of bias. This reflects the poor quality of reporting specific methodological details and creates difficulty in reliably assessing risk of bias. This has implications for the generalisability of the present findings; however, this reflects the current state of the evidence base for interventions to facilitate posttraumatic growth. Future research should consider approaches to minimise risk of bias in order to more reliably assess the effectiveness of interventions for posttraumatic growth.

Most of the studies included in the meta-analysis were interventions for people with cancer or other health related conditions. This limits the generalisability of findings to people with traumatic experiences related to physical health and reflects how posttraumatic growth is widely explored in this context within the literature (Casellas-Grau, Ochoa & Ruini, 2017; Grace, Kinsella, Muldoon & Fortune, 2015; Roepke, 2015). Several included studies did not specify the type of trauma experienced by participants and no studies considered the impact of multiple traumatic experiences. This reflects methodological issues with the way that trauma is reported in the literature. Trauma is highly subjective in nature and some individuals may interpret events and experiences as traumatic, whereas others may not. This presents further methodological challenges with measuring traumatic experiences. Future research ought to provide further clarity around the nature of traumatic experiences to

increase the reliability and validity of findings and to enable the findings to better inform approaches to understanding and working with trauma in clinical practice. Very few studies reported on specific types of trauma that were not in the context of physical health related issues, such as drugs violence, grief, and motor accidents. Including these additional unspecified and non-health related types of trauma in the meta-analysis enabled further sub analyses to be completed to explore how the effectiveness of interventions to facilitate posttraumatic growth may be effected based on the type of trauma experienced.

Strengths and Considerations

This systematic review and meta-analysis has several strengths. The results are based on a comprehensive search of the literature across a range of databases and include a range of methodological approaches, intervention types, and participant characteristics. This facilitated an exploration of factors that are associated with more effective outcomes for interventions to facilitate posttraumatic growth. All included interventions are randomised control trials which are considered to provide the highest quality of evidence to assess clinical effectiveness (Lilienfeld, McKay & Hollon, 2018). Posttraumatic growth was measured at a range of follow-up times across the studies which enabled a comparison of the effectiveness of psychological interventions over time. Although risk of bias was high across all included studies, this was accounted for in analyses.

This review has some limitations. First, there was considerable between article heterogeneity, which is to be expected when examining the effectiveness of a range of psychological interventions (Stanley, Carter & Doucouliagos, 2018). Risk of bias was assessed by one reviewer; however the risk of bias assessment criteria were clearly defined and were based on published criteria. The systematic review and meta-analysis could have been strengthened by a second reviewer for the process of study identification, data extraction, and the risk of bias assessment. The age range within young, middle, and older age categories were limited to the available approaches to recording and classifying age in research articles. Some of the sub analyses were based on small numbers of studies, with one study included in some categories. These findings should be interpreted with caution, given that the fewer the number of studies in a synthesis, the more susceptible weighted averages are to be influenced by idiosyncratic features of the samples in particular studies. Finally, it is possible that the search terms did not adequately capture all relevant literature, given that eight additional studies were identified through reference list searches. The use of more comprehensive search terms, for

example including the term ‘psychological’, could overcome this issue. This may have implications for the validity of the findings, as some relevant studies may have been missed.

Summary

This systematic review and meta-analysis reports that psychological interventions facilitate posttraumatic growth in the short term, and it is possible that over time, people who have experienced trauma are able to process their traumatic experience and hence posttraumatic growth occurs without intervention. Future intervention studies could usefully incorporate different therapeutic techniques that may directly facilitate posttraumatic growth in addition to symptom reduction of PTSD, low mood, and anxiety to determine the effectiveness of this approach in clinical practice. Further research is needed before any recommendations can be made on the use of interventions to facilitate posttraumatic growth.

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Chapter 2: Experiences of Posttraumatic Growth in Women Following Birth Trauma

Summary

Background: Birth trauma is highly prevalent, and research typically focusses on negative outcomes for mother and baby. Although many women report significant levels of distress after birth trauma, not all women meet the criteria for PTSD, and for some women, distress reduces over time. Posttraumatic growth is a psychological concept that may account for the variation in reported levels of distress and suggests that positive psychological change can be experienced following trauma. Although posttraumatic growth has been widely researched, limited research has considered experiences of growth in the context of birth trauma. Experiencing growth has a range of benefits for individuals and healthcare systems and may have implications for the provision of care following birth trauma.

Objective: The current research aims to understand women's experiences of posttraumatic growth following birth trauma.

Method: Seventeen women completed one-to-one interviews to explore their experiences of posttraumatic growth following birth trauma. Interview data were analysed using Template Analysis.

Results: Women reported experiences of posttraumatic growth along four higher order themes, including: changed relationships, new possibilities, personal strength, and appreciation for life. Several new sub-themes were identified relevant to the context of birth trauma, including: *ending unhealthy relationships; trusting my instincts; and supporting other women who have experienced birth trauma*.

Conclusions: Women can experience posttraumatic growth after birth trauma. Implications for the way that healthcare professionals understand responses to trauma and provide care to women who have experienced birth trauma are discussed.

Introduction

Defining Birth Trauma

Childbirth is a significant life event that is often associated with feelings and expectations of enjoyment, pleasure, and excitement (Delmore-Ko, Pancer, Hunsberger & Pratt, 2000). However, childbirth can involve many changes and challenges that may be perceived as stressful and estimates suggest that between 9-50% of women report childbirth to be traumatic (Beck, Watson & Gable, 2018; O'Donovan et al., 2014; Prinds, Hvidt, Mogensen & Buus, 2014). Birth trauma is a subjective experience and there has been some inconsistency in approaches to defining and measuring the concept (Beck, 2004). A recent concept review proposed that birth trauma can be defined as a childbirth that has involved events or care that have caused distress or disturbance to the mother, and this distress has outlived the immediate experience (Greenfield, Jomeen & Glover, 2016).

Outcomes Following Birth Trauma

Research on psychological adjustment after birth trauma has focussed on negative outcomes. For example, women who experience birth trauma are more likely to report difficulties with their mental health (Dekel, Stuebe & Dishy, 2017; O'hara & McCabe, 2013), physical health (Taghizadeh, Irajpour & Arbabi, 2013), and relationships (Garthus-Niegel et al., 2018), and with breastfeeding (Beck & Watson, 2008) and tokophobia in subsequent pregnancies (Kottmel et al., 2012; Nieminen, Stephansson & Ryding, 2009). Some evidence suggests that poor maternal mental health increases the risk of poor parent-infant interactions and may have an adverse effect on bonding, attachment, and socio-emotional and cognitive development (Garthus-Niegel, Ayers, Martini, von Soest & Eberhard-Gran, 2017; Parfitt, Pike & Ayers, 2014). However, findings are conflicting, and a recent review concluded that there is inconsistent evidence for the negative impact of maternal distress on outcomes for mothers and their infants (Cook, Ayers & Horsch, 2018).

Birth Trauma and Distress

Although many women report a traumatic birth experience, not all women will meet the criteria for posttraumatic stress disorder (PTSD). In a sample of 866 women, 80.1% reported a medically traumatic event, however only 3.1% met the criteria for PTSD 24 weeks post-partum (Alcorn, O'Donovan, Patrick, Creedy & Devilly, 2010). This suggests that medically traumatic events during birth do not lead to PTSD in all cases and highlights the need to

consider other factors. A meta-analysis that considered additional factors reported that negative subjective birth experiences, a lack of support, and dissociation during birth were most associated with PTSD (Ayers, Bond, Bertullies & Wijma, 2016). This suggests that women's interpretations of their birth experience and other contextual factors can influence distress. In addition, many women do not meet the threshold for PTSD but may experience significant symptoms of trauma. In a sample of 400 women, 2% of women met the criteria for PTSD and 10.5% were classified as experiencing subclinical posttraumatic stress six weeks post-partum. At 12 month follow-up, 2.4% of women met the criteria for PTSD and 5.5% of women were experiencing subclinical posttraumatic stress. The authors concluded these findings to suggest that diagnostic categories may not sufficiently capture women's experiences of distress, and that experiences of birth trauma may be best understood as a continuum (White, Matthey, Boyd & Barnett, 2006). Evidently, many women experience different levels of distress after birth trauma, and level of distress may be influenced by other factors.

Posttraumatic Growth

Posttraumatic growth is a concept that may account for differences in reported levels of distress across women following birth trauma. The concept refers to the notion of positive psychological change after experiencing a challenging or traumatic event. The traumatic or highly stressful event will have significantly challenged the adaptive resources of the individual, their understanding of the world, and their place within it (Tedeschi & Calhoun, 2004). The process of posttraumatic growth has been conceptualised using a metaphor of an earthquake (Janoff-Bulman, 1992). For growth to occur, the traumatic event must be strong enough to 'shake the foundations' of the individuals core beliefs and assumptions about the world (Calhoun & Tedeschi, 1998). The distress of the trauma does not disappear but coexists with the growth. Just as in the aftermath of an earthquake where physical structures need to be rebuilt, posttraumatic growth is achieved through cognitive rebuilding to enable the individual to come to terms with their traumatic experience. In this process, an individual re-examines their core beliefs to build new meanings and leave behind basic assumptions they held about the world before the traumatic event (Tedeschi & Calhoun, 2004). Immediately after the traumatic event, this re-examination is experienced as intrusive thoughts that are likely to reflect the lack of fit between the traumatic event and the beliefs the individual previously held about the world. Repeatedly experiencing these intrusive thoughts can lead

the individual to recognise that their beliefs no longer accurately reflect events that have occurred within their environment. They may recognise that beliefs once held are no longer valid, and life goals held before the traumatic event may no longer be attainable or relevant (Tedeschi, Calhoun & Groleau, 2015). As they recognise that beliefs previously held do not fit with the reality, or their understanding, of their world following the trauma, it becomes possible for the individual to formulate new beliefs, goals, and schemas. These new beliefs acknowledge the change in circumstances following the trauma and allow the individual to rebuild their assumptions about the world (Tedeschi, Calhoun & Cann, 2007). This process is referred to as purposeful cognitive engagement and becomes possible once initial levels of emotional distress are reduced and the individual can recruit adaptive coping mechanisms. Purposeful cognitive engagement is accompanied by a reduction in distress and an increase in life satisfaction (Blevins & Tedeschi, 2022).

Relationship Between Posttraumatic Distress and Posttraumatic Growth

The association between posttraumatic growth and posttraumatic stress is unclear. One hypothesis is that the two can be conceptualised as two ends of the same continuum. This association is supported by studies that find a negative association between posttraumatic growth and distress, such that individuals who report high levels of growth report lower levels of distress (Frazier, Colon, & Glaser, 2001; Johnson et al., 2007). This implies an adaptive significance of posttraumatic growth following trauma (Frazier et al., 2001). Alternatively, some evidence suggests that posttraumatic growth may co-occur with distress, expressed in either a linear (Butler et al., 2005; Hall et al., 2008; Taku, Calhoun, Cann, & Tedeschi, 2008) or curvilinear (Butler et al., 2005; Levine, Laufer, Hamama-Raz, Stein & Solomon, 2008; Solomon & Dekel, 2007) relationship. In line with this, it is suggested that posttraumatic distress is needed prior to growth to facilitate and maintain positive change following trauma (Tedeschi & Calhoun, 2004). This suggests that to experience high levels of growth, an individual must experience a high level of distress. The final mode of association suggested is that posttraumatic growth and distress are independent outcomes. Some studies find no significant association between growth and distress (Hobfoll, Tracy, & Galea, 2006; Maercker & Herrle, 2003; Salsman, Segerstrom, Brechting, Carlson, & Andrykowski, 2009) and this suggests that posttraumatic growth may not be related to adjustment (Zoellner & Maercker, 2006).

Benefits of Experiencing Posttraumatic Growth

Despite uncertainty about the relationship between posttraumatic growth and stress, experiencing growth following trauma has several benefits to individuals and health and social care systems alike. Posttraumatic growth is part of a coping process, in which individuals build new meanings that enable the traumatic event to be accepted and understood. The process involves the development of resources and skills which can equip individuals to manage difficult experiences and maintain wellbeing in the future (Gilbert, Pinel, Wilson, Blumberg & Wheatley, 1998; Tedeschi & Calhoun, 1996). Developing these skills may help people to manage their distress without the need to access mental health services. Conversely, people who experience distress are more likely to access services and experience negative mental health outcomes. There is some evidence for the effectiveness of psychological interventions to facilitate posttraumatic growth, however evidence is limited and suggests that posttraumatic growth may be experienced in the short term after interventions (Chapter 1: Meta-analysis). Recent literature highlights the importance of encompassing both distress and growth in models of, and interventions to address, trauma (Christopher, 2004; Zoellner & Maercker, 2006). Therefore, it is important for healthcare professionals to consider a range of responses to trauma, including posttraumatic growth.

How is Posttraumatic Growth Experienced?

Experiences of posttraumatic growth have been explored in a range of traumatic circumstances, including with veterans (Mark, Stevelink, Choi & Fear, 2018; Park, Lee, Kim & Kim, 2021; Wu et al., 2019), emergency response workers (Kang et al., 2018), cancer (Casellas-Grau, Ochoa & Ruini, 2017; Marziliano, Tuman & Moyer, 2020), chronic illness (Adams, 2015), natural disasters (Manove, Poon, Rhodes & Lowe, 2021), carers (Ni, Ly, Wu & Wang, 2023), mental health (Slade et al., 2019), refugees (Abraham, Lien & Hanssen, 2018), and unemployment (Waters & Strauss, 2016). Common themes have been identified around how people make sense of their trauma and experience growth, leading to the development of the posttraumatic growth inventory (PTGI) which is a questionnaire measure designed to assess growth quantitatively along five domains: appreciation of life; more meaningful interpersonal relationships; an increased sense of personal strength; changed priorities or new possibilities; and a change in existential and spiritual life (Cann et al., 2010; Tedeschi & Calhoun, 1996; Tedeschi, Cann, Taku, Senol-Durak & Calhoun, 2017; Tedeschi

& Calhoun, 2004). This measure has been validated in a wide range of contexts and encompasses experiences of posttraumatic growth.

Posttraumatic Growth Following Birth Trauma

Research on the experience of posttraumatic growth following a traumatic childbirth is limited (McKenzie-McHarg et al., 2015). A recent review identified 13 quantitative studies that reported that women experience posttraumatic growth following birth trauma (Brandão, Brites, Nunes & Hipólito, 2020). However, these studies have several limitations, for example, considerable variation in approaches to defining birth trauma with one study using medical criteria to determine if the birth was traumatic, rather than considering the mothers perspective (Nishi & Usuda, 2017). This is problematic given the subjective nature of birth trauma and also that medically defined trauma has been associated with varying levels of distress (Alcorn et al., 2010; Greenfield et al., 2016). In addition, 12 of these studies used the PTGI to assess experiences of posttraumatic growth, despite the measure not having been validated in the context of birth trauma. It is possible that experiences of growth are different in this context, given that expectations around childbirth are typically positive and usually result in the birth of a child and a new role as a parent, whereas other types of traumatic events are viewed negatively.

Two qualitative studies have explored women's experiences of posttraumatic growth following birth experiences. Black and Sandelowski (2010) assessed posttraumatic growth in women and their partners who had received a diagnosis of severe foetal abnormality. Eighteen out of 25 participants reported some experience of growth along themes within the PTGI and relating to others was the most consistent, earliest, and prolonged theme of positive change reported. Findings suggest that growth is possible, however the sample was specific to foetal abnormality. Beck and Watson (2016) considered posttraumatic growth in 15 women following birth trauma and found themes of growth, including: opening oneself up to a new present; improved relationships; stronger faith; and developing new professional and personal goals. These findings suggest that growth is possible in the perinatal context. However, this study used written accounts to explore experiences of growth and it may be that women connect to their experiences in different ways through interview. Although written accounts have many advantages, it can be more difficult for participants to build rapport and connect with the researcher to share their experience. It is also more difficult to

ask follow-up questions, clarify meanings, recognise distress, and gain information from visual and verbal cues, thus limiting the richness of the data (Handy & Ross, 2005).

Aims of the Present Study

In summary, birth trauma is highly prevalent and empirical research has largely focussed on negative outcomes (Dekel et al., 2017; O'hara & McCabe, 2013). Reported levels of distress following birth trauma vary considerably across women and posttraumatic growth may account for this variation (Tedeschi & Calhoun, 2004). There is some evidence to suggest that posttraumatic growth can be experienced by women in the context of birth trauma, however there are several limitations with existing research findings (Beck & Watson, 2016; Brandão et al., 2020; Black & Sandelowski, 2010). Notably, past research is heavily influenced by the PTGI which has not been validated in the context of birth trauma, and as experiences of posttraumatic growth after birth trauma may differ considerably from those of people who have experiences other types of trauma, further research is needed to understand how women make sense of the meaning of life following birth trauma and their experiences of posttraumatic growth. Furthermore, it is important for healthcare professionals to have a comprehensive understanding of the range of possible responses to trauma and their role in supporting an individual to experience growth (Christopher, 2004; Zoellner & Maercker, 2006). In turn, this understanding may support women to process their experiences of growth without the need to access secondary mental health services, improve care for women who have experienced birth trauma, and contribute to the development of psychological interventions that are specific to birth trauma. Therefore, this research aims to understand more of women's experiences of posttraumatic growth following birth trauma.

Method

Design

A qualitative design was used to explore experiences of posttraumatic growth in women following birth-trauma. Data were collected using one-to-one interviews at one time point and were analysed using Template Analysis.

Ethical Approval

Ethical approval was obtained from the University of Birmingham STEM Ethical review Committee (Appendix 2).

Expert by Experience Consultation – Co-Production

An Expert by Experience (EbE) employed by a local NHS trust and with personal lived experience of birth trauma was recruited to consult on the research project. As part of their job role, they advise on the development of research with local healthcare services and provide peer support to women accessing mental health services during the perinatal period. The EbE shared their views on the topic of the research, key considerations for engaging with this group of people, and commented on the recruitment process, participant materials, and interview schedule.

Participants

Inclusion and Exclusion Criteria

Full details of inclusion and exclusion criteria are presented in Table 1. Women were eligible to participate if they: subjectively reported a traumatic childbirth, had experienced posttraumatic growth because of their traumatic childbirth, were not accessing mental health services for support following birth trauma at the time of participation, were over 18 years of age, and English speaking.

Table 1. Full details of inclusion and exclusion criteria for participants

Inclusion criteria	Rationale
Subjectively reported experience of a traumatic childbirth	Subjective reporting of trauma was important given that individual experiences of birth trauma differ (Greenfield et al., 2016). There were no limitations on the type of birth experienced (e.g. caesarean section, assisted delivery, vaginal delivery, etc.) or specific birth events (e.g. perineal tear, episiotomy, etc.)
Subjectively reported experience of posttraumatic growth because of the traumatic childbirth	This study aims to explore experiences of posttraumatic growth therefore it was important that women felt they had experienced growth.
Not accessing mental health services for support relating to birth trauma at the time of participation in research	Women accessing mental health services for support relating to birth trauma are likely to be distressed by their experience and therefore are unlikely to be experiencing posttraumatic growth. Women who had accessed mental health services for support with their birth trauma prior to study participation were eligible to participate to explore how support from services may facilitate posttraumatic growth.
Age 18 years and above	Women were required to be at least 18 years of age to be able to consent to participate in the research. There was no upper age limit for participation.
English speaking	To engage with an English-speaking interviewer at interview.
No time limit was imposed on time since traumatic childbirth	No time limit on time since trauma was imposed given that there is no clear guidance in the literature on length of time for posttraumatic growth to occur (Janoff-Bulman, 2004; Linley & Joseph, 2004).
No limit was imposed on number of traumatic childbirth experiences	There is limited research evidence examining the impact of multiple traumatic experiences and their impact on posttraumatic growth.
Exclusion criteria	**Rationale**
Perinatal loss or complications during pregnancy that were known to influence the health of the baby at birth	Women who have experienced perinatal loss or who had expected the health of their baby to be affected at birth are likely to have had significantly different experiences to women who have a healthy baby following their birth trauma and were therefore not eligible to participate.

Recruitment

The research study was advertised on social media by the Birth Trauma Association (Appendix 1). Thirty women expressed an interest in participating in the study, and 22 participants consented to participate. Two participants did not meet the eligibility criteria and three participants could not be contacted; therefore 17 participants completed interviews and were included in the study (Figure 1).

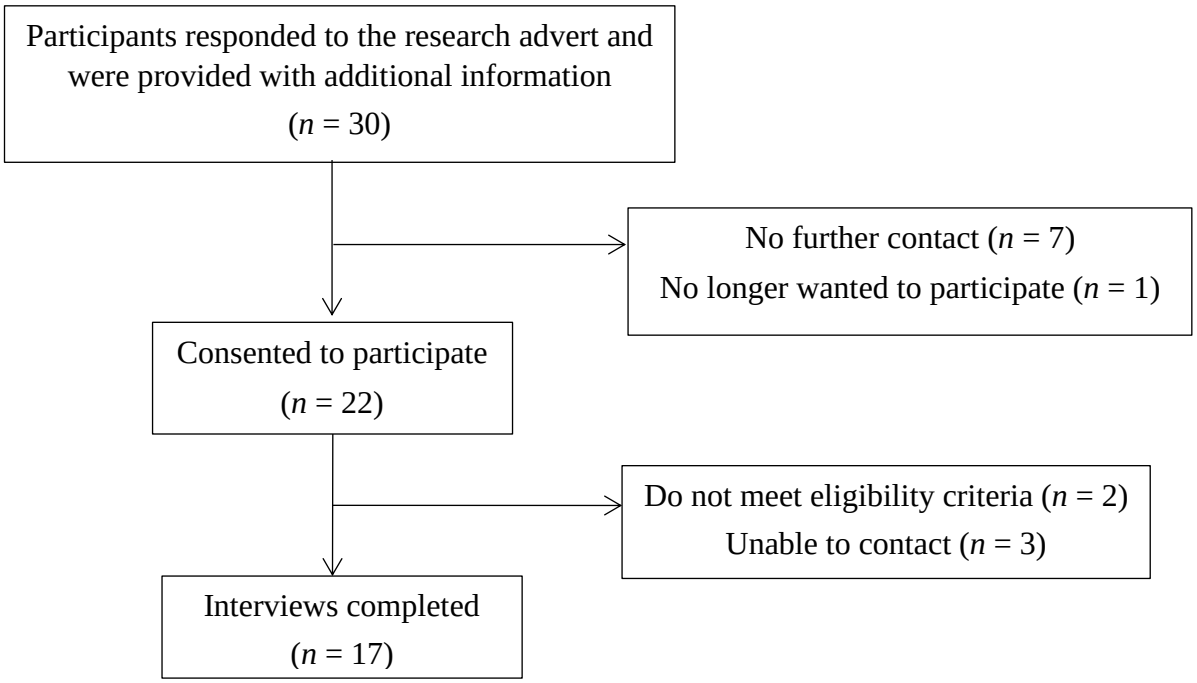

Figure 1. Participant recruitment process

Participant Characteristics

Participant characteristics are summarised in Table 2. The ages of women at interview ranged from 25 to 44 years and time since birth trauma ranged from four months to 17 years. Type of delivery was mixed and included vaginal (*N* = 4), unplanned caesarean (*N* = 13), and forceps (*N* = 4). Participants were from a range of ethnic backgrounds including mixed (*N* = 2), white British (*N* = 13), Indian (*N* = 1), and mixed Arab and white British (*N* = 1). Many women had a single experience of birth trauma with the delivery of their first (*N* = 12), second (*N* = 1), or third (*N* = 1) baby, and several women had multiple experiences of a traumatic childbirth (*N* = 3). Nearly all women had previously received some form of mental health support related to their traumatic childbirth experience (*N* = 14).

Table 2. Participant characteristics

Participant pseudonym	Age at interview (years)	Time since birth trauma (years)	Type of delivery	Ethnicity	Birth trauma experiences	Previous mental health support
Adriana	36	4	Vaginal	Mixed background	First baby	Yes
Louise	44	13	Vaginal	White British	First baby	Yes
Kimberly	38	13, 10, 7	Unplanned caesarean x3	White British	Second, third, and fourth baby	None
Eileen	41	13	Vaginal	White British	First baby	Yes
Elizabeth	41	9	Vaginal	White British	Second baby	Yes
Emily	25	2	Unplanned caesarean	White British	First baby	Yes
Hannah	32	4 months	Unplanned caesarean	Mixed Arab and White British	Third baby	None
Natasha	38	2	Forceps	White British	First baby	Yes
Bethany	29	3, 1	Unplanned caesarean x2	White British	First and second baby	Yes
Nicole	33	5 months	Unplanned caesarean	White British	First baby	Yes
Maryam	39	7	Forceps	Indian	First baby	Yes
Lauren	32	1	Unplanned caesarean	White British	First baby	Yes
Maria	43	17	Forceps	White British	First baby	Yes
Samantha	35	3, 6 months	Unplanned caesarean x2	Mixed Background	First and second baby	None
Megan	35	2	Forceps	White British	First baby	Yes
Chloe	25	4	Unplanned caesarean	White British	First baby	Yes
Katie	27	3	Unplanned caesarean	White British	First baby	Yes

Procedure

Women expressed an interest in participating in the study by emailing the lead researcher whose details were provided on the study advert. Participants were emailed the information sheet (Appendix 3), and a link to complete a screening questionnaire (Appendix 4) to assess eligibility. Once women had completed the screening questionnaire and were deemed eligible to participate, the researcher provided an opportunity for the participant to ask questions. A link to a consent form was then provided for participants to complete (Appendix 5). Once the consent form had been completed, the researcher arranged a time for the participant to complete the interview. On completion of the interview, participants were emailed a debrief sheet (Appendix 6). Participants did not receive compensation for participation.

Data Collection

Demographic information was collected using the eligibility questionnaire. Interviews followed a semi-structured schedule and participants were asked about their traumatic birth experience and positive changes they had experienced following birth trauma (Appendix 7). The open questions allowed participants to reflect on their experiences and are suitable for qualitative analysis. Interviews were completed over video call between June and August 2022, lasted between 40–60 minutes, and were audio recorded. The quality of interviews over video call have been found to be comparable to face-to-face interviews (Gray, Wong-Wylie, Rempel & Cook, 2020). After the interviews, data were transcribed verbatim by the lead researcher. Participants had the right to withdraw without explanation and at any time, up to the point of data analysis. A distress protocol was developed in the event that the researcher had any concerns about the participant and their wellbeing throughout their participation in the study (Appendix 8). This protocol was not used as there were no concerns throughout the process. Participants names were replaced with pseudonyms to maintain anonymity. Data were stored on the University of Birmingham's research data store.

Analysis

Epistemological and Ontological Position

Data were analysed using Template Analysis, a form of thematic analysis that analyses qualitative data using a template of coded themes, developed from existing literature, that are applied to the data (Brooks, McCluskey, Turley & King, 2015). This approach was selected as posttraumatic growth is a well-established concept that has been widely researched and

common experiences of posttraumatic growth are documented within the literature (Tedeschi & Calhoun, 2004). Template Analysis is not aligned with any particular epistemology or ontology and therefore was adapted to the philosophical underpinnings of the current research (Braun & Clarke, 2020). Broadly, an underpinning of critical realism was taken, which assumes that the concept of posttraumatic growth exists independent of the observer and can be accessed through research. However, it is also acknowledged that posttraumatic growth is a concept that is socially constructed and may differ based on the nature of the trauma experienced, the individual's interpretation of their experience, the researcher's own assumptions and experiences, or indeed the social context of the interview (Braun & Clarke, 2020; Lyons & Coyle, 2021).

Developing the Template

Template Analysis uses a 'top-down' approach as an initial template is developed based on themes identified by existing literature. The template is then applied to a qualitative dataset to examine how well the themes defined by existing literature fit the data. New versions of the template are developed and refined to achieve a final template that represents commonalities across the datasets. This approach to analysing qualitative data is appropriate for research examining concepts that have a large existing evidence base, and for exploring such concepts in new contexts. Posttraumatic growth has not been sufficiently examined qualitatively in the context of birth trauma, and existing quantitative studies are limited by the use of the PTGI to explore experiences of posttraumatic growth. Template Analysis can be applied to large sets of data to compare the commonality of experiences across a large number of participants (Brooks et al.,2015).

Analysis followed the steps outlined by Brooks et al., (2015). An initial template of a-priori codes was developed based on existing literature, such as the themes of posttraumatic growth identified by qualitative studies on experiences of posttraumatic growth following birth trauma, which typically use the PTGI to measure experiences of growth. Therefore, the initial template closely reflected the dimensions of the PTGI and consisted of five higher order themes (Appendix 9). The initial template was revised after it had been applied to five sets of interview data. There are no specific guidelines around when to refine the template; the researcher uses their judgement, in consultation with the wider research team, to ensure that the template captures the experiences reported by participants in the data (Brooks et al., 2015). The author, supervisor, and qualitative peer support group felt that a revision of the

initial template after it had been applied to five sets of interview data was appropriate. This was sufficient to check the reliability and validity of the template to identify key themes in the data, and represented approximately one third of the total data, thus allowing for a more refined version of the template to be applied to the remaining data. Revisions were made by considering which higher order themes in the initial template were reflected in the interview data, and by identifying new emerging themes that were not included in the template. This included the introduction of sub themes as women shared how they experienced posttraumatic growth. The template was revised accordingly, and the second version of the template was then applied to the remaining 12 sets of interview data. The template continued to be refined and revised as existing themes were redefined, new themes emerged, and themes were removed, creating the third version of the template. The fourth template was created by applying the third version of the template to all interview datasets as they were re-reviewed, leading to final revisions. The fifth and final template was then developed by reflecting on the themes identified by women across interviews and reviewing the process of posttraumatic growth outlined by Tedeschi et al., (2018). This led to some themes being removed from the final template as they reflected experiences of processing trauma, rather than experiences of positive changes in life representative of posttraumatic growth. The final template best represents the themes related to how women experience posttraumatic growth and is organised into higher order themes, which capture different themes across the datasets, and sub themes, which share the same central organising concept as the higher order theme but focus on specific elements of this higher order theme. Each version of the template can be found in Appendix 9.

At each stage of analysis, the researcher recorded the number of women that shared experiences of posttraumatic growth under each higher order and sub theme. This provided information on the frequency of which themes relating to posttraumatic growth were most commonly experienced by women.

Statement of Reflexivity

The author was aware that their personal experiences of posttraumatic growth and birth trauma may influence their interpretation of the data. The author was previously employed within a perinatal mental health team and has supported women who have experienced distress following a traumatic childbirth. The author also has close friends who have been affected by birth trauma and therefore acknowledges that these experiences may have

influenced the authors perception and interpretation of experiences of birth trauma shared by women in interviews. The author is also aware of their personal interest and belief in the value of positive psychology in clinical practice and how this may have influenced their interpretation of experiences to reflect posttraumatic growth. The author was aware of how theoretical dispositions may have influenced their interpretation of the data; a search of the literature on posttraumatic growth had been completed during the development stages of this research and therefore the author had a comprehensive understanding of common experiences of posttraumatic growth and the dimensions along which growth is typically measured. This knowledge may have biased the development of the initial template, such that the template was closely aligned to existing themes of experiences of posttraumatic growth in the literature. However, in Template Analysis, the initial template is guided by existing literature and subsequent versions of the template are modified based on the themes arising in interview data. As the author went through the process of refining subsequent versions of the template, they were mindful that decisions around themes were not solely guided by the existing literature base on posttraumatic growth.

Rigour of Analysis

Quality control and reflexivity checks were completed to account for researcher bias in the analysis by using independent scrutiny of analysis, audit trail, and a reflexive diary. Independent scrutiny was used at each stage of analysis. For each version of the template, the research supervisor and colleagues in the peer research support group independently coded subsections of interview data using the template at each stage of development. This facilitated discussion around which themes were easy to apply to the data and aspects of the data that did not fit into the existing template. These discussions led to modifications of the template at each stage and therefore increased the reliability and validity of the template. An audit trail was completed throughout the analysis to record the process of developing templates. This documented the researchers' reflections on key themes and decisions on changes made to the template at each stage, and how the templates were used to interpret the data. Finally, a reflexive diary was completed throughout all stages of the research, including the research development, participant recruitment, screening, interviews, transcription, analysis, and interpretation. These processes enabled the researcher to question and reflect on all aspects of the research, including any assumptions made about the data based on expectations from

existing literature and personal experiences and biases, and to be explicit about the process of coding the interview data and the justification for this.

Results

Four higher order themes were identified in relation to experiences of posttraumatic growth: *relating to others; new possibilities; personal strength; and appreciation for life.* Table 3 summarises the higher order and sub themes identified in the final template and provides a brief description of each sub theme. The most commonly experienced sub themes included *3.1 feeling stronger* (*N* = 14), *2.3 supporting other women* (*N* = 12), *2.2 self-improvement* (*N* = 10), *2.1 trust my instincts* (*N* = 9), and 3.*3 coping with other difficulties* (*N* = 9). These sub themes fall under the higher order themes of new possibilities and personal strength.

Some of the themes identified in the template mapped onto themes identified by the existing literature, and some themes were new and specific to the context of birth trauma (Appendix 10).

Table 3. Summary of higher order themes and sub themes.

Higher order theme	Sub theme	Description of sub theme	Number of women reporting relevant experiences
1. Relating to others	1.1 Improved relationships	Improved relationships with others as a result of processing the traumatic experience.	4
	1.2 Emotional expression	Increased willingness to share and express emotions with others.	4
	1.3 Accepting help	Being more open to asking for and accepting, practical and emotional support.	5
	1.4 Less judgmental	Less judgmental towards others, greater understanding of the importance of kindness and compassion, especially towards other new Mums.	8
	1.5 End unhealthy or unbalanced relationships	Confidence to end unhealthy or unbalanced relationships after feeling let down by others.	5
2. New possibilities	2.1 Trust my instincts	Increased confidence in trusting own instincts, advocating for needs, and asserting clear boundaries around making choices for self and family.	9
	2.2 Self-improvement	Self-improvement by starting new careers, businesses, or further education.	10
	2.3 Supporting other women	Supporting other women who have experienced birth trauma through a career in maternity services, research, business, or a voluntary role.	12
3. Personal strength	3.1 Stronger	Feeling strong and empowered after going through and processing a traumatic experience.	14
	3.2 Depend on myself to manage trauma	Using personal strength to create change in life as trauma is processed.	5

	3.3 Coping with other difficulties	While processing trauma, women developed skills and strategies to manage trauma which have been applied and used in other difficult situations in life.	9
4. Appreciation for life	4.1 Positive outlook on life	Outlook on life has become more positive and an appreciation of life itself.	7
	4.2 Changed priorities	Sense of what is important in life has changed through processing birth trauma.	
	4.2.1 Parenting	Changed attitudes towards parenting with a focus on happiness, wellbeing, and the view that 'life is too short'.	7
	4.2.2 Worry less	Worry less about little things and let go of worries that don't matter.	4
	4.2.3 Prioritise self-care	A shift towards prioritising self-care and recognising that is not selfish.	6

Higher Order Theme One: Relating to Others

Women reported changes in their relationships and the ways in which they relate to others along five sub-themes: *improved relationships; emotional expression; accepting help; less judgmental;* and *ending unhealthy or unbalanced relationships*.

1.1 Improved Relationships

Some women reported that their relationship with their partner improved and that they felt able to have open discussions about their birth trauma.

> Adriana: I really share, I don't hide my feelings, I don't hide, you know issues, or if we do, then we both have issues as a couple. Even if it's really painful, I know how important it is to talk, we will have this hard conversation. It was really good to bring us together and so he can understand how I'm feeling, and I could understand how he was feeling… made me realize that yeah, we're very good together.

> Natasha: It was very difficult… it was just me, my husband, and this tiny little baby. But we just sort of lent on each other… it's helped me view my husband in a different way, I think he views me in a different way.

Adriana highlights the importance of communication and emotional expression with her partner to better understand one another's experience. She acknowledges that this felt difficult, but it was important for many women to feel that their partner heard and understood their experience and provided emotional support rather than avoiding difficult conversations. This facilitated a sense of closeness in their relationship. Natasha reflects on how she and her husband depended on one another for support and how her view of her husband has changed. Together these quotes reflect a positive shift in the dynamic of the relationship beyond the immediate experience of trauma and reflect posttraumatic growth.

1.2 Emotional Expression

Some women reflected on a shift in their willingness to express their emotions and valued having a space to talk about their trauma.

> Kimberly: I think I'm definitely more open to talking and I think encouraging others to do the same. I know it helped me… to get it into some kind of order… the things I tell other people are because I experienced it.

Kimberly reflects on how she feels more open to talking about her experience and how this helped her to process her trauma and express her emotions. Kimberly works in a maternity service and her growth is reflected in the way that she encourages other women to express their emotions because of her own experience.

1.3 Accepting Help

There was a theme around being more open to asking for or accepting, practical help and emotional support from other people.

> Emily: Before I had my little boy, I would never ask for help from anyone. I was very much like, I'll do it myself, whereas now, like my Mum… says if you're struggling, you text me and say I need help now. Whereas before I would literally just have got on with it and not really bothered and probably sunk into a deeper depression, whereas now if I need help, I know there's people there, for me, and I will ask for it instead of hiding away from it, which is a big change for me.

Previously, Emily would '*just get on with it'* or '*hide herself away'* rather than ask for help when she was finding things difficult, which had a negative impact on her mental health. Since her trauma, there has been a clear shift in Emily's openness to accept help. This was a key theme that featured throughout Emily's narrative and seemed to facilitate her experience of posttraumatic growth in other areas.

1.4 Less Judgmental

Nearly all women felt more compassion and empathy for others, acknowledging that *'people can often be going through massive things, and you've got no idea'* (Maria). Many women reflected on how important it is to be kind and to be less judgmental, especially towards other Mums.

> Nicole: I think I am definitely less judgmental of parents in particular, well mothers in particular. I don't think I was overly judgey in the first place, but I just think now when I see mums doing anything, I just think, you do what you need to do, like you just need to do, you know, you don't know what someone's been

through, like, actually everyone's just living their own life and like walking their own paths.

Lauren: I also have a far greater grasp of empathy, and not that I always had empathy, but I have far greater respect and time for kindness, which comes to the self-compassion thing as well. And its shared humanity, isn't it, and it's understanding that, that like, trauma is trauma, whatever that looks like for you… someone can fall over in the street and graze their knee and it could be trauma for them, given what's going on, so it's given me a greater sense of humanity.

Women reported that they could *'relate a lot more to what it actually feels like'* (Samantha) to experience trauma and the negative impact it has on mental health. Many women expressed concern for other new Mums, especially when they have experienced birth trauma, and wanted to provide support. Nicole reflects on how Mums are often judged, but recognises that Mums just do what they need to do to get by. This reflection was generalised to other people as Nicole says *'you don't know what someone's been through'* and therefore accepts that people are managing life however they can. Compassion and kindness and the value of enacting this to others and oneself featured throughout Lauren's narrative. Lauren acknowledged that trauma looks different for everyone, and we can never know everything about other people's circumstances, therefore it is important to be humane.

1.5 Ending Unhealthy or Unbalanced Relationships

Many women felt let down by other people at the time of their trauma and this enabled them to recognise who is there to support them. These experiences gave women the confidence to end relationships that were unhealthy or unbalanced.

Maryam: I take help when it's given and it's never necessarily now from the people around me that I expect it from… There was a lot of let-down expectations, so I have let go of expectations... Now my ties with people, family, friends, have all changed. I'm nice to everyone, but my circle has changed, the people I surround myself with.

Natasha: I don't have the same tolerance as I did for negativity from people, so I've probably cut off friends that I didn't really feel like it was a balanced friendship… if I'm going to socialize with people, I've got to really want to socialize with them.

Women reported less tolerance for negativity and unbalanced relationships. This led some women to *'transform'* their lives and end relationships with partners and friends that did not *'sit right'* (Lauren), which links to the higher order theme of new possibilities. Maryam reflects on how she did not receive the help and support she expected from people at the time of her trauma. She managed her disappointment with this by letting go of her expectations and by surrounding herself with people that she can depend on. Likewise, Natasha reflects on how she only invests in relationships that she values and has ended unbalanced relationships.

Higher Order Theme Two: New Possibilities

Women saw new possibilities because of their trauma. Three sub-themes were identified: *trust my instincts; self-improvement;* and *supporting other women who have experienced birth trauma*.

2.1 Trust my Instincts

Nearly all women reported growth in their confidence to trust their instincts and advocate for their needs by asserting clear boundaries when making choices about what is best for themselves or their families. This felt like an important theme for women and impacted how some women navigated subsequent birth experiences.

> Louise: I just trusted my instinct that for my second birth, a c-section was right for me… that's absolutely not what they [gynaecologists] thought. They didn't take into account my trauma and how it had impacted my life after... But this time I felt I was strong enough and able to articulate myself and advocate for what I wanted in this scenario… I knew that actually, this was right for me.

> Bethany: I feel like since my experience, I have a much deeper understanding of the fact that other people aren't always right when it comes to you and your body. And that doesn't mean that I'm always cynical, but it does mean that I ask a lot more questions… I expect a lot more of the people around me in terms of how I'm treated and when I, if I feel listened to, and I suppose occasionally that can come across as a bit demanding, but I think in the right scenarios at the right time, it can be very useful having that confidence to say, I didn't think you're listening to me, and that's not right.

> Katie: I naively thought, you know it will be fine, these guys are professionals, they would only ever do what is right for you… If I were to have any more kids, I would be like, don't tell me what to do, whereas before I'd be like oh you can't say that to a professional, and you know I'll be bothering them, or I don't want to be the difficult patient. Whereas now I'm like, if I want a home birth, I'm having a home birth… I've got those boundaries in place, and I know how to sort of stand my ground. Whereas I didn't really know how to do that before… you have your partner and your friends who can say things for you, but no one's gonna advocate better for you then yourself… I know now what I will put up with and what I won't put up with. Whereas before it was relying on other people and their opinion, now it's like the only person that knows best about yourself is yourself… I think I've just realised that it's okay to stand up for yourself and make your own choices. It's also okay to say no.

Women reflected on how they trusted and allowed professionals to make decisions for them even though this went against their instinct and preferences at the time. There was a sense that prior to their trauma, challenging professionals was not considered acceptable, and that at the time of their trauma, women felt that professionals did not listen. Bethany and Katie provide some insight into the challenges of advocating for your needs in healthcare and used language such as '*demanding'*, '*bothering'*, or '*difficult'* to convey how they thought they may be perceived by professionals. Women seemed to regret not asserting their needs and through processing their traumatic experience have now reflected that this has taught them to trust their instincts and have confidence in their decision, even if this differs from the opinions of others who may not consider how the trauma has impacted their lives. Since their trauma, women shared that they have, and will, advocate for their needs differently to ensure that they receive the care they require. For example, Bethany reflected on how she asks more questions and has the confidence to express her views and ensure that they are listened to. Katie reflected on how she has educated herself on these issues and has the confidence to assert her boundaries and say no, recognising that she knows best about her own needs. Collectively, these quotes around women trusting their instincts relate to the higher order theme around relating to others. Many women felt let down by professionals and the decisions that were made, and these quotes reinforce these changed views around relationships with professionals and others.

2.2 Self-improvement

Several women made self-improvements by starting new careers, businesses, or enrolling at university.

> Emily: I was working a dead-end job and wasn't really going anywhere in my life, and I sat in the bath one night and kind of had a realization and I applied to university. So, I just finished my first year of university. And I kind of have the vibe of: a) life is short, and b) I want to give my son, the best life, and like in my eyes, he didn't have the best start because I was so poorly… so you know he can and not have to worry about new trainers, or anything like that, because I've done something that he can be proud of.

> Hannah: So I've got a job now which I wouldn't have done, I don't think, which I'm happy about… I feel like I need to do something with my life.

> Bethany: I feel like [my trauma] could have turned me into a control freak, but I think I've channelled it quite well in terms of just motivating myself to just do what I need to do. Like I've started a business … And yeah, potentially that [birth trauma] has you know, helped me to pursue my new business goals and stuff, so yeah. And it just, I think it's just generally been motivating and in terms of you know, just carrying on and wanting to do better.

Women reflect on how their traumatic experiences have motivated them to '*do something*' with their lives and make self-improvements to benefit themselves and their families. Emily has enrolled at university to become qualified in a new career and reflects on the implications this will have in the future, such as financial security and feeling proud of her achievements. Bethany reflects on how she felt out of control at the time of her birth trauma and how she has channelled her need to feel in control into starting a business. There is a sense that their traumatic experiences have motivated women to '*want to do better'* through the realisation that '*life is short'*. For Emily, this motivation may also come from feelings of guilt around how her birth trauma may have affected her son.

2.3 Supporting Other Women

Nearly all women felt that it was important to support other women who had experienced birth trauma. Some women have pursued a career that enables them to support others,

whereas other women provide support informally or through a voluntary role. This theme was common across narratives and seemed to be an experience of posttraumatic growth that many women valued.

> Katie: It's really annoying… this happens so often… I was just like why is this still happening, what can we do to change it... I've always wanted to be a midwife but never got round to it… now I'm at uni. After I had my baby, I trained in something called three-step rewind, so it's like a… technique to lift like feelings of trauma... And so I set my own business up to do that. And once I finish uni I'd love to go into some sort of specialist role as a midwife in trauma care… I want to do all of this, because trauma is so sh** and care is so sh** everywhere... that experience [birth trauma] was the motivating factor to go and do all these amazing things.
>
> Samantha: I feel quite energized by this sort of lack of support. I feel like it's actually atrocious that, people who, women who go through an experience like mine… that there isn't any kind of trauma support… No one I know, and none of the Mum's I know are sort of accessing weekly therapy or whatever for themselves… so I decided to offer it myself, so I've set up a business doing trauma therapy for people with birth trauma.
>
> Chloe: I am now a peer support worker in a perinatal mental health team… this job was not, you know, it never crossed my mind, I didn't think that I would ever go down this path… when I did get the job it was like okay, this is where my life is sort of heading. And I have done some volunteering work in the past for pandas as well, their closed Facebook group.

Many women have pursued careers in academia, healthcare, and by setting up a business to support other women who have experienced birth trauma. The inadequate care that Katie and Samantha received after their trauma and the realisation that birth trauma continues to happen left them feeling '*angry'* and *'frustrated'* and seems to have been very powerful in motivating them to support other women. Katie enrolled at university to gain further training to provide this support and Samantha created a business to address a fundamental gap in the provision of therapy. Chloe reflects that her decision to become a peer support worker was guided by her own experience of birth trauma and that she never expected to go down this path in life. She

also reflects on informal experiences of supporting women by volunteering for a birth trauma charity.

> Emily: I'm kind of a big advocate for mental health now… whenever it's like maternal mental health or anything like that I'm always putting a post on [Facebook]. And I've actually had quite a few women message me and say you know, actually my birth wasn't great, and we'll sit and talk about it... and I usually do most of the talking because obviously not everyone's ready to talk about it. I'm like, I can talk about it, they might feel more comfortable knowing actually she struggled too, so she's going to understand where I'm coming from… I think, had I not had the trauma… I wouldn't have been the mental health advocate I am.

Emily informally supports other women and reflects on how she uses her experience to enable others to feel comfortable to talk about their experiences. She has become an advocate for mental health and speaks about her activity on social media, such as posting to increase awareness of maternal mental health. Across all the quotes in this sub-theme, there is the suggestion that had women not experienced their birth trauma, they would not have been motivated to support other women in this way. This reflects how women have processed their traumatic experience and have recognised significant inadequacies in maternity care. Rather than remaining highly distressed by their experience, women have shifted to wanting to do something about this inadequacy to prevent other women having similar traumatic experiences, and hence this provides another example of how women experience posttraumatic growth.

Higher Order Theme Three: Personal Strength

The third higher order theme was increased feelings of *personal strength,* especially in relation to *coping with difficult situations,* given what many women overcame with their birth trauma. Women also felt strong enough to *depend on themselves to make changes* and get their needs met.

3.1 Stronger

All women felt strong and empowered after their traumatic birth experience. Most women reflected that if they can get through their birth trauma, they can get through anything.

> Adriana: It just made me feel like, not that I'm strong, but, it's just, it was so hard and it took me so many years to feel like myself again that I just feel really, really strong, I feel strong, and I feel like, I don't know, I have control over my life, even when things go really bad.

> Natasha: I do think that when you've been through a traumatic experience and you can reflect upon that, you can actually turn it around and reframe it that, actually, this is something, even though it was horrible, it was really bloody powerful as well, a powerful experience, so yeah, I think, I think I've come out of it stronger, definitely I feel much stronger now, and mentally stronger and physically.

> Nicole: I feel a lot braver. And I feel like, if I can go through that, then I can, oh it's making me feel a bit emotional, that if I can do that, then I can do anything … Yeah, I feel, I just feel, yeah braver, and more sort of empowered, and just such a respect for women, like women are awesome.

> Megan: I feel really powerful. And I wouldn't ever, I mean, I wouldn't ever have described myself in that way before that event, you know before that marker in time, I was actually a very shy, timid person and I just feel really powerful.

In these quotes, women use words such as '*strong'*, '*powerful'*, '*brave'*, and '*empowered'* to reflect feelings of personal strength. Women acknowledge how difficult it was to get through their trauma, and how empowered they feel to have got to where they are now. Natasha reflects that this strength is both mental and physical and Adriana reflects on how this strength gives her a sense of control over other aspects of her life when things are difficult. Collectively, these quotes reflect how women's view of themselves and what they are able to cope with has shifted, which reflects posttraumatic growth.

3.2 Depend on Myself to Manage Trauma

Women reflected on new perspectives of their personal strength and how they have learned to depend on themselves to create change in their lives and overcome trauma.

> Elizabeth: There's nothing that anybody else really can do to help you to kind of process it. You've got to do it yourself, like there is no easy way around it, or if you walk around it, then you know it bites you in the ass again. Like, you've got to go through it, so that you can come out the other side kind of thing.

Elizabeth learned that she needed to process her trauma in her own way and that other people could not help with this. She reflects on how difficult this was and how she had to engage with processing her trauma to experience growth.

> Samantha: This sense of actually, we get thrown, like thrown stuff at us and ultimately, it's how you respond to those things that is going to affect what your life is going to feel like and your experience, and I guess I am a firm believer in that experiences are valuable in and of themselves, even if they're not pleasant.

Samantha shares her thoughts around difficult experiences being valuable and suggests that responses to difficult experiences can affect how life feels. She has chosen to view her traumatic experience as a way to learn about herself and the way that she copes with difficulties. This reflects Samantha's experience of posttraumatic growth as she has applied this view to other difficult and traumatic situations in her life.

> Maryam: I can't go to other people for answers and that's what I learned from being let down with each referral. I'm expecting other people to fix me. Well, what can I do to support myself if it's not out there? One, grab support where it is available and, two, support myself… I have to continue to work on myself all the time and do a lot of self-worth work… yeah, it was stepping out of victim mentality, and also understanding that you have to help yourself… in the end, it comes down to you, no matter how deep you're in it.

For some women, the realisation that they could depend on themselves to manage their trauma was related to their experiences of being let down by others. Maryam acknowledges that her expectation for other people to '*fix'* her placed her in a '*victim mentality'*. She reflected on her decision to take support if it was available from others, but also to support herself, and this enabled her to step out of this mentality. Collectively, the quotes in this sub-theme reflect a shift towards women depending on themselves to facilitate change, process their trauma, and experience posttraumatic growth. There is a sense from the quotes that had women not experienced their trauma, they would not have developed this sense that self-

dependence is possible, or that traumatic experiences can be a valuable learning experience. These reflections relate to themes around ending unhelpful relationships and wanting to support other women who have been through birth trauma. For many women, professionals and people who were expected to be there and provide support were not, hence women have grown to pursue careers to support other women and depend on themselves to facilitate growth.

3.3 Coping with Other Difficulties

Through processing their trauma, women developed resources and skills that can be applied to other difficult situations.

> Louise: I've been able to use those coping skills, I can tap into those when another life event has kicked off, and I don't know, it's sort of the whole process and the healing process that helped me… Having those tools… has helped me to get through other difficult times with healthcare professionals, they help me to deal with things.

> Emily: I can deal with things a lot better than I used to be able to. And I think a lot of that stems from having to deal with something so traumatic and so life changing that it's kind of made me think now, well actually if I can deal with that, then I can deal with the little things that would normally bring me down.

Louise uses the coping skills and resources that she developed when processing her trauma to get through other difficult situations. Likewise, Emily feels able to deal with other difficult situations more effectively and her traumatic experience puts other things into perspective. These reflections reinforce the theme around feelings of self-reliance to overcome difficult situations. These quotes demonstrate how women have been able to draw upon the resources and coping skills they recruited to manage the emotional distress of, and process, their traumatic childbirth experience, and apply these to other aspects of life. There is the sense that if women hadn't developed these resources and coping skills, getting through other difficult times would have been more challenging.

Higher Order Theme Four: Appreciation of Life

The fourth higher order theme was around how women's views on life have changed. Sub-themes included *a positive outlook on life* and *changed priorities*.

4.1 Positive outlook on life

Women reflected that their outlook on life has become more positive and that they appreciate life itself, as well as the things and the people in their life.

> Emily: My outlook on life now is completely different to what it was when I went in… So I kind of took on a role of like life is short, and therefore you need to kind of kind of get on with it… I think I can take that resentment and turn it into something positive, rather than dwelling over it all the time.

> Megan: I feel like I don't want to miss a second with my children now, I miss them when they go to sleep, I just look at their changing faces all the time, and I suppose I think, you know, I wouldn't have seen any of this had I, you know, not survived that moment in time, and I just feel really appreciative of being able to see them both and see that change… And, yeah just really appreciative of being every day really, living very much in the moment with them… I suppose I just feel very grateful that I kind of got through that.

Most women reflected on feeling '*grateful in general'* (Kimberly) for the life that they have and that they survived their traumatic birth. Megan reflects on how lucky she feels to be alive, and this reflects how women's experiences have led them to '*appreciate the fragility of life'* (Kimberly). Megan is grateful that she can watch her children grow up and tries to live in the moment which reflects a shift in her way of living and thinking about life from before her traumatic experience. Emily speaks about her new outlook on life and thoughts that life is short and how important it is to do the things that you want to do. She acknowledges that she has some feelings of resentment about her trauma, but that she is reframing this to be positive, and this reflects her growth.

4.2 Changed Priorities

Women's sense of what is important in life has changed since their birth trauma. There were several key themes around changed priorities, including: *approach to parenting; views on worrying;* and *self-care.*

4.2.1 Parenting

> Hannah: I'm a lot more patient with the kids… I may be giving them more slack than I normally would… you know, like when I said life's too short, you know

> you might die tomorrow, so why do you want your last thing to have been going 'get your flipping bedroom cleaned now' shouting at the kids.
>
> Maria: It probably did change how I parented… I think I'm much more wellbeing focused and not like 'you've got to get these grades' and 'we've got to be doing all these activities' and 'we've got to be doing, doing, doing'. I think I'm much more, 'well as long as we're happy', that is the first, you know that's the most important thing, because without that we haven't really got anything have we.

These quotes reflect a shift in attitudes towards parenting. Hannah reflects that her relationships with her children have changed and the priorities around what is important are different because of her traumatic birth. She is more patient with her children and believes this change aligns with her thoughts that '*life is too short'*. Likewise, Maria prioritises her children's wellbeing and happiness rather than achieving grades or doing lots of activities. These quotes also link to changed relationships with others, as women prioritise other things in their relationships with their children.

4.2.2 Worry Less

Some women felt that they worry less or let go of things that don't matter.

> Natasha: I don't worry about things as much, like, I don't worry so much about the way my body looks, like I don't worry so much about what people think of me, and I'm sort of, I feel at peace with a lot of things that I didn't feel at peace with before, I guess it's just like self-acceptance.

Natasha reflects that she no longer worries about things that she would have before her trauma and this applies to several areas of life and gives her a sense of peace and self-acceptance.

4.2.3 Self-care

Women reflected that immediately after birth, their baby became their priority, and this message was reinforced by the actions of healthcare services and societal norms. On their journey to posttraumatic growth, women reported a shift in their mindset towards prioritising their own needs and goals, allowing for themselves to have an identity outside of being a Mum, taking better care of themselves, and accepting that is not selfish.

> Hannah: I've been a stay-at-home Mum mostly for like eight years… I'm looking forward to having something that's my own… I've given so much to the children, maybe for the first time I need to do something for me.
>
> Lauren: I think the fundamental thing was I always used to work myself into the ground… this has been the biggest wake up call for me to go, actually, to be the best version of myself for my baby, I need to look after myself and have that self-awareness, and rather than seeing that as a selfish or a negative thing, selfish is a positive thing because we take responsibility for ourselves, and look after ourselves, and nurture ourselves, and love ourselves. And I could tell you that this time last year, but I wouldn't have believed it, or I wouldn't be embodying it. But I'm slowly getting to that place where I embody it, so that's what I would say has transformed for me.

Hannah speaks about her decision to return to work and how important it was for her to have something of her own. She reflects that she has '*given so much to the children'* but acknowledges that '*it is time to do something for me'* which reflects her growth. Lauren recognises that her birth trauma was the catalyst for her to prioritise self-care and reflects on how this self-awareness of caring for herself and her needs is not selfish. She acknowledges how difficult it has been to embody this view until she experienced her trauma and her priorities changed. Holding compassion both for herself, and other people, was a key theme throughout Lauren's narrative and her experience of growth. Women reported that they did not have these views around self-care before, or in the immediate aftermath, of their trauma, however as part of their experience of processing their trauma, they have recognised the importance of self-care and the impact this can have on their wellbeing, as well as on their relationships with others, and things that are important to them.

Discussion

This study aimed to understand more of women's experiences of posttraumatic growth following birth trauma. In line with previous research, the results suggest that women experience posttraumatic growth across many areas of life and the identified themes aligned closely with the wider literature on how people experience growth (Beck & Watson, 2016; Brandão et al., 2020; Tedeschi & Calhoun, 1996; Tedeschi et al., 2017). Women reported changes in the way they relate to others, to include positive changes in relationships, an

openness to expressing emotions, accepting support, and feeling less judgmental towards others (Beck & Watson, 2016; Zięba, Wiecheć, Biegańska-Banaś & Mieleszczenko-Kowszewicz, 2019). New possibilities were identified by women around self-improvement in their career or education (Menger, Mohammed Halim, Rimmer & Sharp, 2021). Women felt an increased sense of personal strength, and were more able to cope with other difficult experiences (Beck & Watson, 2016). Women appreciated life in new ways and reported a positive outlook and new priorities (Beck & Watson, 2016). In line with previous research, sub themes within the higher order themes of new possibilities and personal strength were the most commonly experienced by women throughout the narratives (Beck & Watson, 2016).

In addition to themes consistent with existing literature, new themes specific to the context of birth trauma were also identified. These themes were linked to perspectives around the inadequate care received during and after birth trauma. Evidence suggests that people are motivated to use the knowledge and skills they acquire through processing their trauma to support others with similar trauma experiences (Beck & Watson, 2016; McMillen, 2004; Orille, Marton & Taku, 2022). Indeed, women in the present study were able to relate to the experiences of, and feel compassion for, other women who had experienced birth trauma. This motivated women to support others through formal and informal roles in healthcare and in the local community because of their awareness, and acceptance, of the inadequacy of care that is provided by healthcare services.

Women reflected that they felt let down by professionals during their traumatic childbirth. Because of this, women reported that they have developed the confidence to trust their instincts and assert boundaries and preferences in subsequent birth experiences or other situations in healthcare or life in general. As well as feeling let down by healthcare professionals and systems, women also felt let down by people in their social network and hence felt the need to depend on themselves to overcome their trauma. It is hypothesised that being confronted with the potential loss of significant relationships because of trauma motivates individuals to improve their relationships with others (Taku et al., 2008; Tedeschi & Calhoun, 1996). A new theme was identified around ending unhealthy or unbalanced relationships, and this theme was slightly more commonly experienced than the theme relating to improved relationships. Women reported feeling positive about ending unhealthy or unbalanced relationships and therefore this theme may reflect an additional element to positive changes in relationships. The transition to parenthood has been associated with a

reduction in social network size (Power & Parke, 1984; Wrzus, Hänel, Wagner & Neyer, 2013), which may occur due to practical reasons, such as less available time, changes in daily routine, and providing care to dependents, or because of a change in attitude towards the relationship, or a change in outlook, values, and perspectives because of the transition to a new role as a parent (Bost, Cox, Burchinal & Payne, 2002; Pancer, Pratt, Hunsberger & Gallant, 2000). It is therefore possible that a combination of these factors contributed to women ending unhelpful relationships.

There was some variation across women in terms of the number of traumatic childbirth experiences and this may have implications for the generalisability of results. The literature on posttraumatic growth typically examines singular experiences of trauma. A limited number of studies have considered the impact of multiple traumatic experiences and report that posttraumatic growth can be experienced across several areas of life (Brooks, Graham-Kevan, Robinson & Lowe, 2021; Teodorescu et al., 2012). A greater level of posttraumatic growth has been reported by people who experience a higher number of traumatic events (Haglund et al., 2009; Jirek & Saunders, 2018). In addition, multiple experiences of trauma have been associated with increased personal resources and self-report of characteristics such as perseverance, kindness, bravery, honesty, curiosity, and learning, which may increase feelings of wisdom and experiences of growth. (Kira et al., 2013; Petersen, Park, Pole, D'Andrea & Seligman, 2008). Further research is needed to clarify how experiences of growth may differ based on multiple traumatic experiences in the context of birth trauma. In addition, time since traumatic childbirth experience varied considerably between women. Evidence suggests that posttraumatic growth can occur at any point as the individual processes their trauma and experiences posttraumatic growth (Janoff-Bulman, 2004; Linley & Joseph, 2004). The greatest increases in reported experiences of posttraumatic growth are suggested to be between two weeks and two months post-trauma, and levels of growth remain stable throughout the first year of trauma (Janoff-Bulman, 2006; Linley & Joseph, 2004; Wortman, 2004). It is possible that women in the present sample who experienced birth trauma at this time experienced posttraumatic growth in a different way to those whose birth trauma was over one year.

This research suggests that women can experience posttraumatic growth following birth trauma and there are many factors associated with the context of birth trauma that may facilitate posttraumatic growth. Previous research suggests that factors such as openness to

new experiences, a high level of purpose, and event centrality are relevant (Barskova & Oesterreich, 2009; Helgeson, Reynolds & Tomich, 2006; Henson, Truchot, D & Canevello, 2021; Forgeard, Bayer-Pacht, Silvia, Roepke & Björgvinsson, 2021; Powell, Gilson & Collin, 2012). It is possible that people who are open to new experiences may be more likely to reconsider their belief systems. Having a baby is associated with significant changes and new experiences in a woman's life, therefore women who experience birth trauma may already be more open to new experiences and more readily able to process trauma in this context. In addition, becoming a parent typically brings a new purpose and awareness of the significance and centrality of this life event.

This research contributes to challenging the narrative around trauma and birth in society, and the expectation that childbirth is a positive event. It also reflects how women can both experience trauma and positive psychological change through experiences of posttraumatic growth, which challenges the existing narrative in the literature around birth trauma and its association with negative outcomes for mother and baby (Cook et al., 2018). All women in the present study experienced some level of distress associated with their birth trauma and were able to process this distress to develop new beliefs and assumptions about the world that facilitated posttraumatic growth (Tedeschi & Calhoun, 2004; Tedeschi et al., 2007, 2015). This has implications for an association between distress and posttraumatic growth (Tedeschi & Calhoun, 2004). Importantly, this research does not imply that trauma is positive, rather that women can experience growth because of the way that trauma is processed and understood. Clinicians should be sensitive about their approach to exploring posttraumatic growth and be clear that growth originates from the client's experience of processing their trauma and not from the experience of trauma itself (Calhoun & Tedeschi, 1999; Tedeschi et al., 2015).

Clinical Implications

Implications for individuals

Although women self-reported significant distress because of their birth trauma, all women experienced posttraumatic growth and this had a positive impact on their life. This finding challenges the existing narrative in the literature that focuses on negative outcomes for both mother and baby following a birth trauma (Cook et al., 2018). All themes identified relating to posttraumatic growth were beneficial to mother and baby. For example, themes around

improved relationships with other people have positive implications for women in terms of accessing practical and emotional support, maintaining healthy relationships, and understanding the experiences of others. Themes around new possibilities enable women to feel confident enough to trust their instincts and ensure their needs and the needs of their family are met, to engage with self-improvement opportunities to provide a better future for themselves and their family, and to support other people who have experienced trauma demonstrating qualities of compassion and kindness. Themes around personal strength such as feeling stronger and able to manage trauma, and applying skills and resources developed as a result of processing birth trauma to other difficult situations also have positive implications for the way that women view themselves and navigate challenges that arise in other areas of life. Finally, themes relating to appreciating life, including having a positive outlook on life and changed priorities, such as parenting with a focus on wellbeing, worrying less about the little things, and prioritising self-care all have positive implications for women. In line with past research, it was clear from the narratives of women that experiencing posttraumatic growth in this way improved wellbeing and reduced feelings of distress (Aldwin & Levenson, 2004; Helgeson, et al., 2006; Linley, 2003; Webster, 2010; Webster & Deng 2015). Each of these themes also benefit the baby as their mother's mental health and wellbeing is improved. In addition, the environment that baby is living and developing within is characterised by positive features, such as models of well-balanced relationships and managing difficult situations using skills and strategies to regulate distress. This may have a range of positive implications for baby, such as developing emotion regulation skills, attachment, growth, and development (Risi, Pickard & Bird, 2021; Zemp, Johnson & Bodenmann, 2019).

The finding that women can experience posttraumatic growth following birth trauma has implications for how best to facilitate experiences of growth. Past research identifies several contextual factors that increase experiences of posttraumatic growth, including emotional and practical support from grandmothers, partners, and others in the social network (Brandão et al., 2020). This implicates an important role for close social contacts in supporting women who have experienced birth trauma.

Implications for clinical practice

These findings have important implications for the way that responses to trauma are understood in clinical practice. Healthcare professionals typically provide services to address

the negative outcomes associated with birth trauma and provide interventions to reduce = emotional distress. Considering posttraumatic growth as another possible response to trauma may have implications for the way that services are structured and the care that is provided to women who have experienced birth trauma (Christopher, 2004; Zoellner & Maercker, 2006). It is widely recognised that current mental health care provision for women who have experienced birth trauma is poor and the NHS Long Term Plan (2019) aims to address inadequacies in care by improving access to specialist perinatal mental health services. Current psychological interventions for birth trauma focus on symptom reduction, however it may be important for clinicians to introduce therapeutic techniques to facilitate posttraumatic growth within traditional therapeutic approaches. For example, clinicians may explore the narrative around the struggle of overcoming and processing birth trauma rather than focussing on the traumatic experience itself or listen to the language that women use to describe their struggle and draw attention to their experiences of growth (Tedeschi et al., 2015; Tedeschi & Calhoun, 2004). Perhaps a combination of intervention approaches to facilitate growth and reduce symptoms of distress may be most appropriate given that PTSD and posttraumatic growth may co-occur (Butler et al., 2005; Frazier et al., 2001).

Although interventions to reduce distress and techniques to facilitate posttraumatic growth in therapy may be effective, there is often a delay between experiencing trauma and receiving psychological intervention. Past research suggests that supporting women in the immediate aftermath of their traumatic birth experience may facilitate experiences of posttraumatic growth (Jones et al., 2020). Specifically, understanding the circumstances of the trauma, managing feelings of threat, fear, and control, and getting the right emotional and practical support from staff are all factors that have been associated with reduced distress and increased experiences of posttraumatic growth in the immediate aftermath of the trauma (Brandão et al., 2020; Calhoun et al., 2010). Women describing experiences of birth trauma in the literature express that birth trauma heightens feelings of threat and fear, often because medical procedures and events happen quickly, and staff do not explain changes in circumstances or procedures in a way that women are able to understand or consent to (Reed, Sharman & Inglis, 2017). Understandably, this leaves women feeling out of control, which intensifies feelings of threat and fear (Keedle, Bell, Keedle & Dahlen, 2022). Many women remain in hospital after childbirth and report that inadequacies in the care and support provided, particularly in relation to mental health (Rodríguez-Almagro et al., 2019). Maternity services could make some adaptations to practice to reduce the extent of trauma

experienced by women during childbirth. For example, staff could explain procedures and ensure that women understand the purpose of procedures, provide sufficient information about procedures, and ask women for informed consent. This may enable women to feel more in control and hence may reduce feelings of threat and fear. In addition, providing sufficient care after birth trauma and considering the impact on mental health and wellbeing may further reduce feelings of threat and fear and enable women to feel understood. A first step for maternity services could be to ensure that all staff have an awareness of birth trauma and its impact (Fenech & Thomson, 2014). A trauma informed workforce is more likely to provide care that meets the needs of people who have experienced trauma. In turn, this may enable women to begin to understand and process their trauma and move towards experiencing posttraumatic growth, rather than remaining highly distressed. This may enable women to manage their emotional distress, process their traumatic experience, and experience posttraumatic growth, without the need to access healthcare services for support relating to birth trauma.

Implications for theory and research

Nearly all women accessed mental health services for support with their birth trauma, which suggests that women experienced a high level of emotional distress prior to experiencing posttraumatic growth. Although it was not possible to determine if women's distress met the diagnostic criteria for PTSD, this has implications for the nature of the association between posttraumatic growth and distress. The findings are in line with Tedeschi et al., (2018) model of posttraumatic growth, which suggests that emotional distress is needed to experience posttraumatic growth. It is possible that accessing mental health support enabled women to manage their distress and begin to process their traumatic experience. Further research is needed to clarify how mental health support may facilitate experiences of posttraumatic growth in the context of birth trauma. This finding also suggests that differences in reported prevalence of perinatal PTSD in the literature may be related to posttraumatic growth. It is possible that prevalence estimates vary depending on the stage of processing that the women are at. For example, women at the stage of high emotional distress with intrusive ruminative thoughts are likely to meet the criteria for perinatal PTSD. Whereas women who were previously distressed about their traumatic birth experience, but have had time to process their experience, revise their schemas to account for their trauma and their changed views

about the self, others, and the world, and who are beginning to experience posttraumatic growth, may no longer meet the criteria for perinatal PTSD.

Many of the themes identified in the findings were closely aligned to themes reported by people who have experienced other types of trauma and the domains of the PTGI (Tedeschi & Calhoun, 1996). This suggests that posttraumatic growth is experienced in a similar way across trauma types and that the PTGI is an appropriate measure to quantify experiences of growth in research.

Strengths and Considerations

This research has several strengths, including its contribution to understanding how the concept of posttraumatic growth is experienced by women following birth trauma. The sample size was sufficient for completing Template Analysis which provided a basis to compare the present findings to what is already known about how posttraumatic growth is experienced (King, 2012; Lyons & Coyle, 2007). This study extends past research on posttraumatic growth following birth trauma by using a qualitative approach with comprehensive and rich interview data (Beck & Watson 2016; Brandão et al., 2020; Handy & Ross, 2005).

This research has some limitations. Time since birth trauma varied from four months to 17 years, and it is possible that women who have had longer to process their trauma may experience growth in different ways or may have experienced additional difficulty that may contribute to posttraumatic growth. However, evidence suggests that growth can be experienced at any point after trauma and common themes were identified across all participants despite time since birth trauma (Tedeschi et al., 2015). In addition, it is possible that experiences of growth are associated with the transition to parenthood rather than as a direct result of birth trauma. Given that these events occur simultaneously, it is difficult to disentangle the contribution of each. However, reported experiences of growth in this study are similar to those reported by people who have experienced other types of trauma and this suggests that the traumatic experience was associated with the reported positive changes. Finally, participants were a self-selected voluntary sample who self-reported experiences of posttraumatic growth. One advantage of self-selected participants is that they can provide an in-depth perspective into the concept of interest (Saunders, Lewis & Thornhill, 2016). However, it is also possible that self-report of growth may better represent a ‘perception’ of

growth rather than an experience of 'actual' change and growth (Boals & Schuler, 2018; Jayawickreme & Blackie, 2014; McFarland & Alvaro, 2000). When a person experiences perceived growth, the traumatic experience is integrated in a positively biased way that maintains the persons existing identity, beliefs, values, and understanding of the world prior to the trauma. Thus, perceived growth is a maladaptive coping strategy to reduce distress by avoiding confronting or accepting a new reality in the aftermath of trauma (Maecker & Zoellner, 2004; Sumalla, Ochoa & Blanco, 2009). However, the experiences reported by women in the present sample appear to reflect actual growth as many women reported they had processed their traumatic experience, had accommodated this into their identity, and this led to significant changes in their beliefs, values, and views of the world that differ to those before their trauma.

Future Research

Future research may consider factors that facilitate experiences of posttraumatic growth in the context of birth trauma. Quantitative evidence from the literature around posttraumatic growth and birth trauma suggests that factors associated with the individual, the traumatic event, and the context can influence how trauma is processed and experiences of growth (Brandão et al., 2020; Calhoun & Tedeschi, 2014; Tedeschi & Calhoun, 2004). Gaining insight into factors that facilitate growth could lead to changes to health and social care systems to enable more women to experience growth after a traumatic birth and consider possible interventions to facilitate posttraumatic growth. Future research could also consider interviewing women at multiple time points after their traumatic birth experience to determine if reported changes reflect 'actual' or 'perceived' experiences of posttraumatic growth (Jayawickreme & Blackie, 2014; Tennen & Affleck, 2009). Findings from the present research highlight a lack of trust that women feel towards professionals. This is an important finding and future research ought to consider how professionals can facilitate experiences of posttraumatic growth through the provision of care.

Summary

This qualitative study found that women can experience posttraumatic growth after birth trauma. Women were able to build new meanings that accommodated their traumatic birth experience which led to growth across many areas of life, including: changed relationships; new possibilities; personal strength; and appreciation for life. These findings have important

implications for clinical practice and emphasise the need to consider experiences of distress and growth following trauma (Christopher, 2004; Zoellner & Maercker, 2006). The findings also have implications for the way that care is provided to women who experience birth trauma and future research ought to consider factors that contribute to distress and growth during birth trauma.

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Chapter 3: Press Releases

Psychological Interventions to Facilitate Posttraumatic Growth: Press Release

Can interventions facilitate positive change after a traumatic experience?

Psychological interventions can facilitate positive change for people who have experienced trauma. These interventions are most effective within five months post-intervention, for women, and for people aged 26-50 years.

Background

Up to 90% of people will experience at least one traumatic event in their lifetime (Lewis et al., 2019). Responses to traumatic experiences vary and while many people experience distress, only a small number of people will be diagnosed with posttraumatic stress disorder (PTSD).

Posttraumatic growth is a psychological concept that may account for the difference in levels of distress following trauma exposure. The concept suggests that positive life changes can be experienced after an individual processes their trauma and adjusts their beliefs about the world and their place within it to accommodate their traumatic experience. Research suggests that posttraumatic growth may be experienced in several areas of life, such as: feeling a greater sense of personal strength; experiencing more meaningful relationships; having a greater appreciation for life; an openness to seeing new possibilities and priorities about what is important; and a change in existential and spiritual views (Tedeschi & Calhoun, 2004).

While PTSD and prolonged experiences of distress are associated with negative outcomes, experiences of posttraumatic growth have several benefits to people who have experienced trauma and to health and social care systems. For example, as people experience posttraumatic growth, they develop resources and skills them to cope with the stress of the trauma. These resources and skills can be applied to other challenging situations in the future, enabling the person to better manage distress (Tedeschi & Calhoun, 1996). In addition, when people process trauma, they typically revisit thoughts about the traumatic event. People who experience PTSD typically focus on the traumatic memories and this leads to an increase in distress and symptoms of PTSD (Moulds, Bisby, Wild & Bryant, 2020). Whereas people who experience posttraumatic growth move away from focussing on traumatic memories and towards a process of making sense of the meaning of life following the traumatic event.

Therefore, posttraumatic growth is associated with better mental health and wellbeing (Helgeson, Reynolds & Tomich, 2006).

Given the benefits of experiencing posttraumatic growth, it is important to consider how growth can be facilitated following trauma exposure. Therefore, researchers at the University of Birmingham summarised published research on psychological interventions to facilitate posttraumatic growth.

Findings

Researchers found that the effectiveness of fifty-one interventions to facilitate posttraumatic growth have been evaluated by researchers. In each of the studies, one group of participants received an intervention to facilitate posttraumatic growth, and another 'control' group did not receive any intervention. Across all fifty-one studies, people who received an intervention reported higher levels of posttraumatic growth compared to people who did not receive an intervention. The interventions were most beneficial between 0-5 months after the intervention had been completed, for women, and for people between the age of 26-50 years. The interventions were effective for any type of traumatic experience and mostly focussed on reducing symptoms of PTSD.

Implications

These findings have important implications for the way that healthcare services and professionals support people who have experienced trauma. Many interventions primarily aim to reduce symptoms of PTSD, low mood, or anxiety and do not specifically aim to facilitate posttraumatic growth. Interventions may be more effective if they are targeted to facilitate posttraumatic growth and support people to explore their life experiences in terms of meaning, satisfaction, and fulfilment, after their traumatic experience. This is important as in recent years, healthcare policy has emphasised the need to promote recovery from distress associated with trauma. This could be achieved by moving away from interventions that aim to reduce symptoms and towards interventions that facilitate connectedness, hope, identity, meaning, and empowerment to improve quality of life for people who have experienced trauma (Leamy et al., 2011).

The finding that interventions are only effective for a short amount of time have important implications for clinical practice. It is possible that providing follow-up sessions, ongoing written expressive exercises, or a more specific focus on posttraumatic growth in

interventions may increase the effectiveness of interventions in the long term. Posttraumatic growth can be experienced spontaneously without the need for intervention. Therefore, it is possible that over time, people in the control groups were able to process their trauma and experience posttraumatic growth without the need for intervention. This may suggest that interventions for posttraumatic growth are not an effective use of resources, however more research is needed to explore this further.

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Experiences of Posttraumatic Growth Following Birth Trauma: Press Release

'It's like a scar that happened to me, but it doesn't hurt anymore'.

Research suggests that women can experience positive change in their lives after birth trauma.

Background

Around 50% of women describe their experience of childbirth as traumatic (Beck, Watson & Gable, 2018) and research suggests that there are differences in the level of distress reported. Some women may meet the criteria for a diagnosis of posttraumatic stress disorder (PTSD), whereas other women may be highly distressed and have symptoms of PTSD, but do not meet the criteria for diagnosis. For some women, distress decreases in intensity over time, and some women remain highly distressed (Ayers, Bond, Bertullies & Wijma, 2016).

Posttraumatic growth is a psychological concept that may account for the difference in levels of distress reported by women. This suggests that positive life changes can be experienced following trauma as the individual processes their experience and makes sense of their world in the aftermath of trauma (Tedeschi & Calhoun, 2004). Posttraumatic growth has been examined widely by researchers, but very limited research has explored experiences of growth following birth trauma.

There are many advantages of posttraumatic growth both for people who have experienced trauma and for health and social care systems. As people process trauma and experience growth, they develop skills and strategies that help them to cope with distress, and can be used in the future as people are faced with new challenging events. This means that people are more able to manage distress and are less likely to depend on healthcare services for support. People who experience growth report better wellbeing compared to people who remain distressed following trauma (Tedeschi & Calhoun, 1996).

Given these potential benefits, researchers at the University of Birmingham aimed to explore experiences of posttraumatic growth in women following birth trauma. Seventeen women who experienced a traumatic childbirth were interviewed and key themes were identified.

Findings

All women reported experiences of posttraumatic growth and reflected on difficulties throughout their journey.

> *'I feel like I have transformed. It's like you have to go from the caterpillar, then into the chrysalis, and it went really dark for a while, until you emerge like a butterfly.'*

Women experienced posttraumatic growth in different areas of life, such as their **relationships with other people**. Relationships with close social contacts improved, and women ended unhealthy relationships and felt positive about these changes. Women felt more able to express their emotions, accept support from others, valued kindness, and felt compassion for other people and what they may be going through, especially for new Mum's.

Women discovered **new possibilities** because of their birth trauma, such as the confidence to trust their instincts in difficult situations, even though this may go against professional advice. Women felt let down by the care they received, and this motivated them to provide support to others who have experienced birth trauma through new formal and informal roles in healthcare, academia, and business. Women also started new careers or returned to education to make improvements for themselves and their families.

Women felt an increased sense of **personal strength**, and more able to cope with difficult situations. Women reflected that they must depend on themselves to manage their trauma and this realisation came from feeling let down by professionals and others within their social network.

Women **appreciated life** in new ways, such as having a positive outlook in life, or changing their priorities by worrying less, prioritising self-care, and being more wellbeing focussed as parents.

Implications

The finding that women experience posttraumatic growth after birth trauma has implications for healthcare professionals and services. It is important for professionals to consider posttraumatic growth as a response to trauma, rather than simply focussing on negative outcomes. Interventions to manage distress after trauma usually aim to reduce symptoms of trauma, however interventions should also consider the role of posttraumatic growth. The findings also have implications for the way that care is provided to women who experience

birth trauma and future research ought to consider factors that contribute to distress and growth during birth trauma. Importantly, this research does not imply that trauma is positive; rather it suggests that the experience of trauma can be processed in a way that leads to positive changes in life.

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List of Appendices

Appendix 1: Study advert

UNIVERSITY OF BIRMINGHAM

Positive experiences following birth trauma

We are looking for Mums to take part in a study exploring positive experiences or changes in life following birth trauma.

Lots of research explores the negative impact of birth trauma. We would like to understand more about the positive changes experienced in life following birth trauma.

You can participate if:

- You have experienced positive change in your life following a traumatic childbirth.
- Your experience of childbirth was traumatic (childbirth involved events and/or care that caused distress that affected you during and after childbirth).
- You are over the age of 18 years.
- You are not currently accessing mental health services for support with your traumatic childbirth.

If you participate you will:

- Take part in an 40-60 minute interview with a researcher from the University of Birmingham.
- Interviews will be conducted online using Zoom.
- If you change your mind, you will have the right to withdraw from the study at any time.

If you are interested in participating, please contact us for more information: Isobel Evans

Please note that people respond to birth trauma in different ways and not everyone will experience positive change following birth trauma. For support or information on birth trauma please visit: the Birth Trauma Association (https://www.birthtraumaassociation.org.uk/)

Appendix 2: Ethical approval

Appendix 3: Participant information sheet

Positive experiences following traumatic childbirth

Information for participants (version 1.2)

This information sheet explains what taking part in this research project would involve. Please read it carefully, discuss it with others if you wish, and ask us if there is anything that is not clear, or if you would like more details. You can take as long as you like to decide whether or not you want to take part. Thank you for reading this information sheet.

What is this research about?

You have given us permission to contact you to take part in a research study investigating positive experiences following a traumatic childbirth. There is a lot of research on the negative impact of a traumatic childbirth on women and their baby, however little is known about positive life changes experienced following birth trauma.

There is some research evidence to suggest that women report positive experiences and personal growth in their lives following birth trauma. Personal growth has been reported across many areas of life. However, this research is very limited and uses questionnaire data which does not provide as much information about these experiences as interview data. In addition, the existing research does not explore factors that may facilitate positive experiences following birth trauma.

Therefore, the aim of this research is to find out what positive experiences women report following a traumatic childbirth and any factors that may help women to experience positive changes. We hope that the findings of this research can inform healthcare services how best to support women after they have experienced birth trauma.

Why have I been invited?

We are inviting you to take part because you have responded to an advert about this study. You have experienced a traumatic childbirth and feel that you have experienced some positive changes in your life following this traumatic experience. You are not currently accessing mental health services for support relating to this trauma and you are over the age of 18 years.

Can I choose whether or not to take part?

It is up to you to decide whether or not you want to take part. If you do want to take part, we will ask you to sign a consent form. If you change your mind after agreeing to take part, you can withdraw at any time and you do not have to say why. If you decide not to take part, or to withdraw, this will not affect your rights in any way.

What will happen if I decide to take part?

After receiving this information sheet, you will have the opportunity to ask any further questions about the study by email or telephone. If you decide that you would like to participate, you will be asked to sign a consent form to confirm your participation.

A date will be arranged for you to complete an interview. The interview will last between 40-60 minutes and will be completed by video call (e.g. Zoom or Microsoft Teams). This interview will be recorded to enable the researcher to analyse the data when interviews are complete. During the interview, you will be asked about any positive experiences you have had following a traumatic childbirth and any factors that may have helped you to experience those positive changes. We will also collect some demographic information (e.g. age, date of traumatic childbirth, type of delivery, etc.) You can choose not to answer a question and only share experiences you feel comfortable with throughout the interview.

After data analysis has been completed, we will send you a summary of the findings if you would like to know more about the outcome of the study.

What are the possible disadvantages and risks of taking part?

We do not think that taking part will lead to any disadvantages, risks, or harm to you. However, talking about your traumatic birth experience may trigger some emotional distress and difficult memories. Please take the time to consider how this may affect you. If you feel that completing the interview is having a negative effect on you, you are free to stop the interview at any time. If the researcher feels that you are becoming very distressed during the interview, they may stop the interview. Information and resources for you to access support are provided below. These resources will be sent to you again on completion of the interview.

Resources for support:

- NHS:
  - Access support through your GP
  - https://www.bsmhft.nhs.uk/our-services/specialist-services/perinatal-mental-health-service/information-for-mothers/birth-trauma/
  - https://www.nhs.uk/conditions/baby/support-and-services/
- Birth Trauma Association: https://www.birthtraumaassociation.org.uk/
- Mind: https://www.mind.org.uk/information-support/types-of-mental-health-problems/postnatal-depression-and-perinatal-mental-health/ptsd-and-birth-trauma/
- National Childbirth Trust: https://www.nct.org.uk/labour-birth/you-after-birth/traumatic-birth-and-post-traumatic-stress-disorder
- Samaritans: Call 116 123 or visit the website https://www.samaritans.org/

What are the possible benefits of taking part?

There is very little research into the positive experiences of women following a traumatic childbirth. We know that people experience and process trauma in different ways. This study will contribute to our understanding of how women can experience personal growth following a traumatic childbirth.

The findings may be used to inform best practice and interventions in healthcare settings for women who have experienced a traumatic childbirth. This means that by taking part you may help others in the future.

Will I be paid for taking part in the study?

We are very grateful for the contribution of everyone who participates, but we do not have any funds to pay you for taking part.

What if something goes wrong?

If you are unhappy or dissatisfied with any aspect of your participation, you can contact any of the following:

Isobel Evans, Clinical Psychologist in Training (School of Psychology, Centre for Applied Psychology, University of Birmingham, 52 Pritchatts Road, Birmingham, B15 2TT. Email:)

George Johnson, Project Supervisor (School of Psychology, Centre for Applied Psychology, University of Birmingham, 52 Pritchatts Road, Birmingham, B15 2TT. Email:)

Will my participation in the study be kept confidential?

Your participation and all of the information that we collect about you during the study will be kept strictly confidential. Only the members of the research team will have access to your personal

information. Any records that we make during the study will be stored securely and separately from any of your personal details. No-one outside the research team will be able to identify you personally from these records, and no-one will ever be able to identify you personally from anything that we write or say in public about the research.

Confidentiality will only be broken if the researcher is very concerned for your safety, or the safety of others, during the interview. In these circumstances, the researcher will inform you that they need to break confidentiality. The researcher will seek immediate support from emergency services and will follow the advice provided. After contacting emergency services, the researcher will ask for the details of your GP and will ask for your consent to contact your GP to inform them of the situation.

What will happen if I change my mind about taking part?

You can withdraw from the study at any time without giving a reason. If you withdraw from the study it will not affect your rights in any way. We will continue to use the information collected before you decided to withdraw, unless you tell us that you do not want us to do so. You will be able to ask for your interview data to be withdrawn up to two weeks after it has been collected. After this date, analyses will have begun, and it will not be possible to withdraw your data from the study.

What will happen to the results of the research study?

When the study is complete, it will be written up as part of a doctoral research project. This will be available online. The results may also be presented at scientific conferences and published in scientific journals. The results will be shared with healthcare professionals who may use the findings to make changes to healthcare services. If you would like to know the results, we will provide a summary of the findings. We expect the results to be available in 2023.

Who is organising and funding the research?

This research project is led by Isobel Evans, a Clinical Psychologist in Training, at the University of Birmingham. The project is being supervised by Dr George Johnson. This research is being completed as part of the requirements of the Clinical Psychology Doctoral training course. This training course is funded by NHS England.

Who has reviewed the study?

This study has been reviewed and approved by the University of Birmingham ethics committee (reference number: ERN_21-1532).

Who can I contact for further information?

For more information, please contact the lead researcher:

Isobel Evans, Clinical Psychologist in Training (School of Psychology, Centre for Applied Psychology, University of Birmingham, 52 Pritchatts Road, Birmingham, B15 2TT. Email:

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

Appendix 4: Screening questionnaire

Questionnaire completed by participants to screen eligibility for participation and to obtain demographic information.

1. What is your date of birth?
2. Did you experience your childbirth as traumatic?
3. Please specify the date(s) of your traumatic childbirth(s)
4. What type of delivery did you have during your traumatic childbirth?
5. What is your ethnicity?
6. Are you currently accessing support for your mental health because of your traumatic childbirth experience?
7. Have you ever received support from a healthcare professional because of your traumatic childbirth experience?
8. Was your traumatic childbirth your first experience of birth or have you previously experienced childbirth?
9. This research is about positive experiences of childbirth. Do you think that you have experienced positive change in your life as a result of your traumatic childbirth?

Appendix 5: Participant consent form

Positive experiences following birth trauma

Consent form (version 1.2)

		Initial box if in agreement
1.	I have read and understood the information sheet dated 21/02/2022 (version 1.2) for this study and I have had the opportunity to ask questions about the study.	
2.	I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason. I understand that if I withdraw this will not affect me or my rights in any way.	
3.	I understand that if I withdraw from the study the researchers will use the information I have provided up to that point, unless I indicate that I do not want them to. I can ask for my interview data to be withdrawn up to two weeks after the interview date. After this time it will not be possible to withdraw.	
4.	I agree to audio and video recording during the interview. I agree that anonymised quotes from the interview may be written in research reports and publications.	
5.	I understand that the information I give to the researchers will only be used for the purposes of research, and that personal details will be treated with the strictest confidence. My data will be stored and processed by the University of Birmingham in accordance with the Data Protection Act 2018.	
6.	I confirm that I am over the age of 18 years.	
7.	I confirm that I am not currently accessing mental health services for support with my traumatic childbirth experience.	
8.	I understand that this research is exploring experiences of positive life changes following a traumatic childbirth. I feel that I have experienced a traumatic childbirth and have experienced some positive changes in my life following my traumatic childbirth experience.	
9.	I understand that confidentiality will only be broken if the researcher has concerns for the immediate safety of myself or others, and I will be informed immediately if this happens. I understand that under these circumstances, the researcher will contact emergency services and follow the advice provided. The researcher will ask for consent to contact my registered General Practitioner (GP) to inform them of the situation after the emergency has passed.	
10.	I agree to take part in the study.	

Name of participant:	Date:	Participant signature:
_____	_____	_____

Once complete, please email this consent form to Isobel Evans: [redacted]

Appendix 6: Participant debrief sheet

Positive experiences following traumatic childbirth

Debrief information for participants (version 1)

Thank you for taking the time to participant in this research and complete your interview. The aim of this research study was to explore the positive changes women experience in their life following birth trauma and to consider the factors that help women to experience those positive changes.

There is a lot of research exploring the concept of posttraumatic growth, which refers to positive changes people experience in their life following a traumatic experience. There is evidence to suggest that positive changes may be experienced across a range of areas in life, such as a new appreciation of life, more meaningful interpersonal relationships, an increased sense of personal strength, changed priorities or new possibilities, and a change in existential and spiritual life. There are also some factors that are thought to be important to facilitate growth, such as social support, coping styles, perceived level of control, and opportunity to process the traumatic event.

Post traumatic growth has not been explored in the context of birth trauma. We hope that the findings from this study will inform our understanding of how women experience positive life changes following birth trauma. We are especially interested in the factors that may facilitate these positive changes as this may inform healthcare practice. Specifically, enhancing healthcare professionals understanding of, and factors that may facilitate, posttraumatic growth may alleviate the distress that some women experience following birth trauma.

Thank you again for taking the time to complete an interview. Your participation in this study is very much appreciated. If you feel at all uncomfortable as a result of participating in the study, or you would like to find out more information, please contact the lead investigator:

- **Isobel Evans**, *Clinical Psychologist in Training* (School of Psychology, Centre for Applied Psychology, University of Birmingham, 52 Pritchatts Road, Birmingham, B15 2TT. Email:)

Information and resources for you to access support are provided below:

- NHS:
  - Access support through your GP
  - https://www.bsmhft.nhs.uk/our-services/specialist-services/perinatal-mental-health-service/information-for-mothers/birth-trauma/
  - https://www.nhs.uk/conditions/baby/support-and-services/
- Birth Trauma Association: https://www.birthtraumaassociation.org.uk/
- Mind: https://www.mind.org.uk/information-support/types-of-mental-health-problems/postnatal-depression-and-perinatal-mental-health/ptsd-and-birth-trauma/
- National Childbirth Trust: https://www.nct.org.uk/labour-birth/you-after-birth/traumatic-birth-and-post-traumatic-stress-disorder
- Samaritans: Call 116 123 or visit the website https://www.samaritans.org/

Appendix 7: Interview schedule

The interview schedule provided a guide of topics for the researcher to ask participants during the interview. Each of the four questions were asked and prompts provided to participants if needed.

Focus area	Questions and prompts
Birth trauma	**1. Can you tell me about your traumatic birth experience?** *Prompts* • What was it about the birth experience that you found traumatic? • Did you have any expectations about what childbirth would be like?
Positive changes	**2. Can you describe any positive changes you have experienced in life following your traumatic childbirth experience?** *Prompts* • What kind of positive changes have you noticed? • Have changes been specific to one area of life or multiple areas? • How soon after your traumatic birth experience did you start to notice these changes? • How have these positive changes impacted your life? • How do you think your life may be different if you hadn't experienced these positive changes after birth trauma?
Facilitators of positive changes	**3. What has helped you to experience the positive changes you have described?** *Prompts* • Do you think there is anything that has made it easier for you to experience these positive changes? • What was it about how you coped that led to the positive changes? • What are your thoughts on why you started to experience positive changes?
Barriers to positive change	**4. Do you think there was anything that hindered your ability to experience positive change?** *Prompts* • Do you think there is anything that has made it more difficult for you to experience these positive changes? • Is there anything that could have been different and may have further facilitated your experience of positive change?

Appendix 8: Distress protocol

Positive Experiences Following Birth Trauma: Distress Protocol (version 1.1)

This protocol outlines the steps to follow if a participant becomes distressed during the interview.

Participant displays distress	**A participant indicates that they are experiencing a high level of distress during the interview through either:** • Verbal indication from the participant that this is a difficult topic to talk about *E.g. 'this is really hard to talk about', 'I'm feeling really overwhelmed', 'I didn't think it would be this difficult to talk about', etc.* • Non-verbal indication *E.g. crying, unable to speak, lots of pauses and deep sighs, hesitancy to answer, avoiding eye contact, shaking, turn camera off/ moving out of sight from the camera, covering face, change in speech, fidgety, provides non-relevant answers to questions etc.*
Interviewer response	**The researcher will stop the interview as soon as a verbal or non-verbal indication of distress is observed and will check-in with the participant.** 1) The researcher will inform the participant that they have noticed the participant may be distressed: *'I know that talking about your experiences following birth trauma can be really stressful'* (continue response with below options depending on what has been observed) ▪ Verbal indication: *'You have mentioned that this is really hard to talk about [or paraphrase whatever verbal indication(s) the participant gave]'* ▪ Non-verbal indication: *'I have noticed that talking about this seems to be distressing [highlight specific non-verbal indicator(s)]'* ▪ Or both 2) The researcher will then ask the participant the following questions to assess the level of distress. ▪ *'Can you tell me what thoughts you are having right now?'* ▪ *'Can you tell me what you are feeling right now?'* ▪ *'Do you think that continuing with this interview will make you feel worse?'* 3) The researcher will assess the participants responses. If the participant expresses thoughts of suicide, self-harm, harming others, or extremely negative views about their traumatic birth experience or anything else, or reports feeling emotionally overwhelmed, the researcher will stop the interview (see ending the interview early). If the participant does not express any of the above, the researcher will ask the participant *'would you like to continue with the interview?'.* ➢ If the participant says YES the interview will continue (see continue and review). ➢ If the participant says NO the interview will be ended (see ending the interview early).
Continue and review	**If the participant indicates that they would like to continue with the interview and the researcher assesses that it is appropriate for the interview to continue:** The interview will continue. The researcher will repeat 'interviewer response' stage as many times as appropriate if signs of distress from 'participant displays distress' continue to be observed by the researcher.

Ending the interview early	**If the interview has ended because the participant has expressed any thoughts of suicide, self-harm, harming others, and there are concerns that people are in immediate danger:** ▪ The researcher will inform the participant that as outlined in the participant information sheet, confidentiality will need to be broken for reasons of safety. ▪ The researcher will continue to engage with the participant and contact emergency services while they are still on the interview video call. ▪ The researcher will share details with the emergency services (any details the emergency service asks for). The researcher will follow the advice of the emergency service contacted. ▪ After emergency services have been contacted and the immediate emergency situation has passed, the researcher will ask the participant for the details of their GP and for consent to make contact with the GP to inform them of the situation. ▪ The research supervisor will be contacted immediately after the above steps have been completed. ▪ Signposting resources will be sent to the participant via email: o NHS information on birth trauma: https://www.bsmhft.nhs.uk/our-services/specialist-services/perinatal-mental-health-service/information-for-mothers/birth-trauma/ o NHS information on perinatal support: https://www.nhs.uk/conditions/baby/support-and-services/ o Birth Trauma Association: https://www.birthtraumaassociation.org.uk/ o Mind: https://www.mind.org.uk/information-support/types-of-mental-health-problems/postnatal-depression-and-perinatal-mental-health/ptsd-and-birth-trauma/ o National Childbirth Trust: https://www.nct.org.uk/labour-birth/you-after-birth/traumatic-birth-and-post-traumatic-stress-disorder o Samaritans: Call 116 123 or visit the website https://www.samaritans.org/ o Emergency services: Call 999 **If the interview has ended because a) the participant feels too distressed to continue, b) the researcher assesses that the participant is too distressed to continue (but the participant and others are in no immediate danger), or c) the participant has asked for the interview to end for any other reason:** ▪ Encourage the participant to contact their GP. ▪ Signposting resources sent to the participant via email: o NHS information on birth trauma: https://www.bsmhft.nhs.uk/our-services/specialist-services/perinatal-mental-health-service/information-for-mothers/birth-trauma/ o NHS information on perinatal support: https://www.nhs.uk/conditions/baby/support-and-services/ o Birth Trauma Association: https://www.birthtraumaassociation.org.uk/ o Mind: https://www.mind.org.uk/information-support/types-of-mental-health-problems/postnatal-depression-and-perinatal-mental-health/ptsd-and-birth-trauma/ o National Childbirth Trust: https://www.nct.org.uk/labour-birth/you-after-birth/traumatic-birth-and-post-traumatic-stress-disorder o Samaritans: Call 116 123 or visit the website https://www.samaritans.org/ o Emergency services: Call 999 ▪ The research supervisor will be contacted immediately.

Appendix 9: Refining the template for experiences of posttraumatic growth

Template 1: Initial template

1. Relating to others
2. New possibilities
3. Personal strength
4. Spiritual or religious change
5. Appreciation for life

Template 2: Revised after template 1 was applied to 5 sets of data

1. Relating to others
1.1 The way that I relate to others has changed (e.g. with my husband, Mum, children)
1.2 I have understood my past experiences of trauma
1.3 I can empathise with other new Mum's
2. New possibilities
2.1 Trusting my instinct and advocating for myself in subsequent pregnancies
2.2 Able to cope with other difficult things now
2.3 Better parent
2.4 Got a job or volunteer role in maternity services
2.5 Got a job related to mental health
2.6 Advocate for and support other women
2.7 Advocate for changes in maternity care
3. Personal strength
3.1 I feel strong
3.2 I feel empowered
4. Spiritual or religious change
5. Appreciation for life
5.1 Life is short, I want to make the most of it
5.2 I appreciate the NHS
6. Acceptance
6.1 Trauma happens
6.2 Life doesn't always go to plan

Template 3: Revised after template 2 was applied to all 17 sets of data

1. Relating to others
1.1 The way that I relate to others has changed for the better (e.g. with my husband, parents, children)
1.2 I have understood my past experiences of trauma
1.3 I can empathise with other new Mum's
1.4 I am more honest with women who are having a baby
1.5 I am more open to talking about my difficulties
1.6 I will ask for help if I need it
1.7 I have ended unhealthy or unbalanced relationships
1.8 I have higher standards and the confidence to call people out

1.9 I have a better understanding of what it means to have poor mental health and how it must affect other people

1.10 I empathise with other people and feel a shared humanity

1.11 I am less judgmental of other people

2. New possibilities

2.1 Trusting my instinct and advocating for myself in subsequent pregnancies

2.2 Able to cope with other difficult things now

2.3 Better parent

2.4 Got a job or volunteer role in maternity services

2.5 Got a job related to mental health

2.6 Advocate for and support other women

2.7 Advocate for changes in maternity care

2.8 Set up my own business to make change

2.9 Gone back into education to improve myself and my career prospects

2.10 I don't worry as much or sweat over the small things

2.11 I have an increased sense of confidence in knowing what I want and asserting that

2.12 I take better care of myself

3. Personal strength

3.1 I feel strong and empowered

3.2 You have to make change for yourself

3.3 I can face up to my fears

3.4 I have a better understanding of myself

3.5 My confidence has grown

4. Appreciation for life

4.1 Life is short, I want to make the most of it

4.2 I appreciate the NHS

4.3 I have a more positive outlook on life

4.4 I feel more fulfilled and happier

5. Acceptance

5.1 Trauma happens

5.2 Life doesn't always go to plan

5.3 I accept that the system is broken

Template 4: Revised after reconsidering Tedeschi et al's., (2018) model of posttraumatic growth

1. Relating to others

1.1 Improved relationships

1.2 Emotional expression

1.3 Accepting help

1.4 Less judgmental

1.5 Ending unhealthy or unbalanced relationships

2. New possibilities

2.1 Trust my instincts

2.2 Self-improvement

2.3 Supporting other women

3. Personal strength

3.1 Stronger

- 3.2 Depend on myself to manage trauma
- 3.3 Coping with other difficulties
- 3.4 Acceptance
    - 3.4.1 The system is broken
    - 3.4.1 Life doesn't go to plan

4. Appreciation for life

- 4.1 Positive outlook on life
- 4.2 Appreciate the NHS
- 4.3 Changed priorities
    - 4.3.1 Parenting
    - 4.3.2 Worry less
    - 4.3.3 Self-care

Template 5: Final template

1. Relating to others

- 1.1 Improved relationships
- 1.2 Emotional expression
- 1.3 Accepting help
- 1.4 Less judgmental
- 1.5 Ending unhealthy or unbalanced relationships

2. New possibilities

- 2.1 Trust my instincts
- 2.2 Self-improvement
- 2.3 Supporting other women

3. Personal strength

- 3.1 Stronger
- 3.2 Depend on myself to manage trauma
- 3.3 Coping with other difficulties

4. Appreciation for life

- 4.1 Positive outlook on life
- 4.2 Changed priorities
    - 4.2.1 Parenting
    - 4.2.2 Worry less
    - 4.2.3 Self-care

Appendix 10: How do themes map onto existing themes identified within the literature?

The table below outlines which themes identifies in the template map onto existing literature and the PTGI and identify new themes identified in the current research and specific to posttraumatic growth following birth trauma.

Theme	Was the theme established in the literature or is this specific to the context of birth trauma?
1. Relating to others	
1.1 Improved relationships	Established
1.2 Emotional expression	Established
1.3 Accepting help	Established
1.4 Less judgmental	Established
1.5 End unhealthy or unbalanced relationships	New and specific to the context of birth trauma
2. New possibilities	
2.1 Trust my instincts	New and specific to the context of birth trauma
2.2 Self-improvement	Established
2.3 Supporting other women	New and specific to the context of birth trauma
3. Personal strength	
3.1 Stronger	Established
3.2 Depend on myself to manage trauma	Established
3.3 Coping with other difficulties	Established
4. Appreciation for life	
4.1 Positive outlook on life	Established
4.2 Changed priorities	Established
4.2.1 Parenting	Established
4.2.2 Worry less	Established
4.2.3 Prioritise self-care	Established