Posttraumatic growth following pregnancy termination for fetal abnormality: the predictive role of coping strategies and perinatal grief

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Abstract

Background: Research about termination for fetal abnormality (TFA) suggests it is a traumatic event with potential negative psychological consequences. However, evidence also indicates that following traumatic events individuals may experience growth. Although TFA's negative psychological outcomes are well documented, little is known of the potential for growth following this event. Therefore, the study's objectives were to measure posttraumatic growth (PTG) post-TFA, examine the relationship between PTG, perinatal grief and coping, and determine the predictors of PTG.

Design: An online, retrospective survey was conducted with 161 women.

Methods: Eligible participants were women over 18 who had undergone TFA. Participants were recruited from a support organisation. They completed the Brief COPE, Short Perinatal Grief Scale and Posttraumatic Growth Inventory. Data were analysed using regression analyses.

Results: Moderate levels of PTG were observed for 'relating to others,' 'personal strengths' and 'appreciation of life.' 'Positive reframing' was a significant predictor of PTG. Despite using mainly 'adaptive coping strategies, women's grief levels were high.

Conclusions: 'Adaptive' coping strategies e.g. 'positive reframing' are relevant to TFA. They may act as protective factors against distress and as foundations for growth, implicating that interventions such as Cognitive Behavioural Therapy, which aim to reframe women's experience, may be beneficial.

Keywords: Termination of pregnancy, fetal abnormality, posttraumatic growth, trauma, coping strategies, perinatal grief

Introduction

In England and Wales in 2013, pregnancy termination for fetal abnormality (TFA) represented 2% of all terminations (Department of Health, 2015). However, an increasing number of women face a diagnosis of fetal abnormality due to developments in prenatal diagnosis techniques (e.g. earlier screening [Nicolaides, 2011]) and increased maternal age, which is associated with higher risks of obstetric complications (Royal College of Obstetricians and Gynaecologists, 2009). Research suggests that women experience TFA as a traumatic event (Anonymised, 2014; McCoyd, 2007) which can have negative, long-lasting psychological consequences including depression, posttraumatic stress disorder and complicated grief (Kersting et al., 2009; Korenromp, Page-Christiaens, van den Bout, Mulder, & Visser, 2009). However, more recent qualitative evidence suggests that women may experience positive growth following TFA (Anonymised, 2013, 2014).

The concept of positive growth following adversity, most commonly referred to as posttraumatic growth (PTG), has attracted much interest since the rise in popularity of Positive Psychology (Seligman & Csikszentmihalyi, 2000). There is a large body of evidence available on the experience of PTG following trauma, particularly in the context of life threatening illnesses (Hefferon, Grealy, & Mutrie, 2009; Lelorain, Bonnaud-Antignac & Florin, 2010; Schroevers & Teo, 2008), and bereavement (Calhoun, Tedeschi, Cann, & Hanks, 2010; Engelkemeyer & Marwit, 2008; Riley, La Montagne, Hepworth, & Murphy, 2007).

PTG refers to a new way of functioning following a traumatic event. It involves changes on several levels: personal (e.g. discovering new strengths), philosophical (e.g. sense of purpose, meaning) and interpersonal (e.g. renewed sense of intimacy [Joseph, 2011; Tedeschi & Calhoun, 2004]). The concept of PTG is underpinned by Janoff-Bulman's shattered assumptions theory (1992), which posits that individuals' visions of the world are

shaped by three assumptions: the world is benevolent, meaningful and worthy. A traumatic event has the potential to shatter these assumptions, and permanently alter the way one sees the world, causing distress in the process. Following a traumatic event, individuals build new visions of the world that are congruent with their experience. These new visions may become richer, more meaningful, and more conducive to growth, despite also encompassing feelings of vulnerability (Joseph, 2011).

Tedeschi and Calhoun (2004) suggest that PTG has three main characteristics. First, it differs from resilience in that resilience corresponds to a return to normal functioning following adversity, whereas PTG entails a "transformation." Second, PTG coexists with distress in that it is the process of managing the distress experienced that may be conducive to growth. Third, PTG involves intense cognitive activity as once the world assumptions have been shattered, individuals start re-building a new vision of the world. Research suggests that 30-75% of the population may experience PTG (Linley & Joseph, 2004). PTG has been positively linked to wellbeing and negatively linked to depression (Helgeson, Reynolds, & Tomich, 2006).

There is some, albeit limited, evidence that positive transformations can occur following perinatal loss (e.g. stillbirth, miscarriage [Black & Sandelowski, 2010; Thomadaki, 2012]). To our knowledge, only one study has specifically examined PTG in the context of fetal abnormality (Black & Sandelowski, 2010). This study shows that following a diagnosis of fetal abnormality, some women experience positive changes, particularly in the area of 'relation to others.' However, the sample mainly comprised women who continued their pregnancy, making it difficult to purport whether women who terminate their pregnancy following a diagnosis of fetal abnormality also experience PTG. This is particularly relevant given that recent qualitative investigations have indicated that PTG is an important element in

women's experience of TFA (Lafarge, Mitchell, & Fox, 2013, 2014) and that, following a diagnosis of fetal abnormality, the most common decision is to terminate the pregnancy.

PTG research has also demonstrated that coping is a significant factor in the growth experience. Several studies have shown that the use of coping strategies generally considered to be 'adaptive,' i.e. engagement coping or volitional strategies such as active coping, planning, reframing (Carver & Connor-Smith, 2010) predict growth (Barskova & Oesterreich, 2009; Lelorain et al., 2010; Riley et al. 2007; Schroevers & Teo, 2008; Schmidt, Blank, Bellizzi, & Park, 2012). Similarly, how women cope with TFA relates to their psychological adjustment, with 'adaptive' coping strategies, particularly acceptance and positive reframing, predicting lower levels of grief following TFA (Lafarge et al., 2013; Nazaré, Fonseca, & Canavarro, 2013). Therefore, it is probable that in the context of TFA, the same coping strategies may also predict PTG. Evidence also points to a relationship between distress and PTG, although the direction of this association is unclear (Joseph & Linley, 2004; Lelorain et al., 2010). This is also the case for grief and PTG in the context of bereavement (Calhoun et al., 2010) although one study has shown grief to be negatively associated to PTG among a sample of bereaved parents (Engelkemeyer & Marwit, 2008).

To our knowledge, the present study is the first to specifically examine the experience of growth following TFA. Its main objectives are to measure PTG following TFA, examine the relationship between PTG, perinatal grief and coping and determine the predictors of PTG. In doing so, the study also provides an assessment of the coping strategies used by women and their levels of perinatal grief following TFA.

Methods

Procedure and sampling

An online cross-sectional survey was conducted with 161 members of a UK-based support organisation which provides support to parents facing a diagnosis of fetal

abnormality. Participants were recruited from the organisation's online forum through a message posted by the administrator. To be eligible, participants had to be women over 18 years old who had undergone TFA. The survey was hosted on a secure website (SurveyMonkey). Data were collected between February and May 2014.

Measures

Participants were asked to complete the Brief COPE (Carver, 1997), the Short Perinatal Grief Scale (Short PGS [Potvin, Lasker, & Toedter, 1989]) and the Posttraumatic Growth Inventory (PTGI [Tedeschi & Calhoun, 1996]). The Brief COPE comprises 28 items measuring 14 coping strategies (e.g. 'self-distraction,' 'active coping,' 'denial') and uses a four-point Likert scale (*I haven't been doing this at all* to *I've been doing this a lot*). Following Carver's suggestions (1997) to tailor the scale to a particular study, the subscale 'humour' was removed because it was deemed insensitive in the context of TFA. The Brief COPE has been used in different health settings (e.g. Cartwright Endean, & Porter, 2009; Gourounti, Anagnostopoulos, & Lykeridou, 2013) and trauma (Schmidt et al., 2012; Schroevers & Teo, 2008). Its validity and reliability are well established with Cronbach's alpha values between 0.50 and 0.90 (Carver, 1997). Participants were allocated a score between 2 and 8 on each subscale with higher scores representing higher reliance on a coping strategy.

The Short PGS (Potvin et al., 1989) has been used in the context of TFA (Gaudet, Séjourné, Camborieux, Rogers, & Chabrol, 2010; Hunfeld, Wladimiroff, & Passchier, 1994; Nazaré et al., 2013). It comprises 33 items scored on a five-point Likert scale *(strongly agree* to *strongly disagree)*. Items are grouped into three 11-item subscales 'active grief,' 'difficulty coping' and 'despair' depicting progressive pathological levels of grief. 'Active grief' represents 'uncomplicated grief' whilst 'difficulty coping' and 'despair' depict 'complicated grief'. The three subscales are aggregated into an 'overall grief' scale. Higher scores reflect

higher levels of grief. Scores range from 11 to 55 for the three subscales and from 33 to 165 for the 'overall grief' scale. The scale has good validity and reliability with Cronbach's alpha values between 0.86 and 0.92 (Potvin et al., 1989).

The PTGI (Tedeschi & Calhoun, 1996) is widely used to measure PTG in health research (Schmidt et al., 2012; Schroevers & Teo, 2008) and bereavement (Calhoun et al., 2010; Engelkemeyer & Marwit, 2008). It comprises 21 items scored on a six-point Likert scale (*I did not experience this change as a result of my crisis* to *I experienced this change to a very great degree*). Items are grouped into five subscales: 'relating to others,' 'new possibilities,' 'personal strength,' 'spiritual change' and 'appreciation of life.' The subscales are also aggregated into an 'overall growth' measure (ranging from 0-105), with higher scores indicating greater growth. The PTGI has well-established validity and reliability with Cronbach's alpha values between 0.67 and 0.90 (Tedeschi & Calhoun, 1996).

Participants were also asked questions related to the terminated pregnancy: gestational age, termination method, fetal abnormality prognosis (compatible/incompatible with life), whether women had living children at the time of the TFA, whether this was their first pregnancy, feeling about the decision to terminate (would/would not make the same decision again) and time elapsed since TFA. Demographic data (e.g. age, education level, religion and ethnicity) were also collected.

Ethics

The study received ethical approval from the University of West London Ethics committee in 2014. Participants were provided with information about the study and informed of their rights as participants (e.g. confidentiality, withdrawal). Before beginning the survey, participants had to indicate their agreement to four statements eliciting their consent. Given the sensitivity of the topic, participants were advised to contact the support organisation's helpline and/or support volunteers should they need to speak to someone about

the study. None of the respondents contacted the helpline or volunteers as a result of study participation.

Analysis

As one of the aims of the study was to examine the relationship between variables and determine the predictors of PTG, a calculation was performed to estimate the sample size required to run such analyses (i.e. multiple regression analyses), using the G*Power program (version 3.1; Faul, Erdfelder, Lang, & Buchner, 2007). Based on previous research (Lafarge, Mitchell, & Fox, 2013), it was anticipated that coping and perinatal grief variables may predict PTG and that a maximum of 20 predictors would be used in the regression analyses to predict PTG. Using an effect size of 0.15, an alpha value of 0.05 and a power value of 0.80, the sample size required was 157. Data were analysed using SPSS (version 22, SPSS Inc, Chicago, USA). PTG levels were compared across obstetric and demographic groups using a one-way analysis of variance test, followed by Bonferroni post hoc test (equal variances) and *t* tests. Relationships between women's coping strategies, their levels of grief and of PTG were examined through correlation and multiple regression analyses. Given the large number of analyses conducted, *p*-values <0.01 were considered statistically significant.

Results

Participants' profile

178 participants agreed to participate in the study. Of those, 16 (8.99%) did not complete the survey in full. One record was identified as a duplicate and removed from the dataset. Therefore, the total number of completed questionnaires for this study was 161. The support organisation's online forum has approximately 900 members. However, it is not possible to calculate an exact response rate because there are currently no data on the members' level of activity on the forum and on the extent to which members had the opportunity to make a decision regarding the study.

Participants' full demographic and obstetric profiles are shown in Table 1. Participants were aged between 20 and 47 years old ($M = 35.55$, $SD = 5.29$), and the majority ($n = 112$, 69.57%) were educated at university level. All were married or in a relationship, and almost all ($n = 144$, 89.44%) were White British. For 69 participants (43.13%), this was their first pregnancy. Pregnancies were terminated between 11 and 34 weeks of gestation ($M = 18.16$, $SD = 4.74$), with most terminated before 24 weeks ($n = 142$, 88.20%). For 59 participants (36.65%), the termination had occurred over 24 months prior to study participation.

Insert Table 1 here

Coping strategies, levels of perinatal grief and PTG

The use of coping strategies and levels of perinatal grief and PTG are shown in Table 2. The scales displayed satisfactory levels of reliability with all Cronbach's alpha values above the minimum requirement of 0.5 (Nunnally, 1978; see Table 2). These ranged between 0.55 for 'self-distraction' and 0.93 for 'substance use' for the Brief COPE, between 0.88 for 'despair' and 0.96 for 'overall grief' for the Short PGS, and between 0.77 for 'appreciation of life' and 0.92 for 'overall growth' for the PTGI. Overall, women used mainly 'adaptive' strategies, including 'acceptance,' 'emotional support,' 'active coping' and 'planning' with scores above the midpoint value of 5. In comparison, 'maladaptive' strategies, i.e. disengagement coping or less volitional strategies (Carver & Connor-Smith, 2010) such as 'behavioural disengagement' and 'substance use' registered the lowest usage. The mean scores for the three perinatal grief subscales, which indicate incremental levels of grief, decreased progressively, with the highest scores for 'active grief 'and the lowest for 'despair.' 'Active grief' was the only subscale for which the scores were above the scale's midpoint. Women's levels of PTG were moderate and varied across PTGI dimensions. Scores for 'relating to others,' 'personal strengths' and 'appreciation of life' were on a par or just above

the scales' midpoints. By contrast, the mean scores for 'new possibilities,' 'spiritual change' and 'overall growth' were below the scales' midpoints.

Insert Table 2 here

Of the 21 changes listed in the PTGI that individuals may experience following a traumatic event, participants in this study reported having experienced ten changes to either a moderate, strong or very strong degree following TFA ($M = 9.83$, $SD = 5.49$) The changes most frequently reported following TFA were: 'I have discovered that I am stronger than I thought I was' (77.64%), 'I changed my priorities about what is important in life' (73.29%), 'I know better that I can handle difficulties' (72.67%) and 'I have more compassion for others' (72.05%). Results are shown in Table 3.

Insert Table 3 here

Only one group difference was observed on levels of 'spiritual change'. Higher levels of 'spiritual change' were reported among women who stated having a religion compared to those who stated they had no religion ($M = 2.74$, $SD = 2.74$ vs. $M = 0.84$, $SD = 1.39$, $t(154) = 5.52$, $p < 0.001$, $r = 0.40$). No other group differences were statistically significant. This suggests that neither women's demographic or obstetric profile, nor termination-related variables had any significant impact upon whether women experienced PTG following TFA.

Relationship between PTG, perinatal grief and coping

Correlations.

Analyses were run to examine the relationship between women's levels of PTG, perinatal grief and their use of coping strategies. Correlation analyses were run to identify variables to be used in the regression analyses (Tabachnick & Fidell, 2007). Pearson's correlations indicated that scores on the PTG subscales were inter-correlated, ranging from $r = 0.21$, $p < 0.01$ for 'spiritual change' and 'appreciation of life' to $r = 0.88$, $p < 0.01$ for 'relating to others' and 'overall growth.' A similar pattern was observed for the perinatal

grief variables, with inter-correlations ranging from $r = 0.81$, $p < 0.01$ for 'active grief' and 'despair' and $r = 0.95$, $p < 0.01$ for 'difficulty coping' and 'overall grief.' Coping strategies considered to be 'adaptive' were positively correlated with each other (e.g. 'positive reframing' and 'acceptance' $r = 0.38$, $p < 0.01$). Similarly, coping strategies considered to be 'maladaptive' were associated with each other (e.g. 'denial' and 'self-blame,' $r = 0.48$, $p < 0.01$). Relationships between 'venting,' 'the use of religion,' and the other coping strategies were less consistent (i.e. each variable correlated with either 'adaptive' or 'maladaptive' coping strategies). Clear relationship patterns between the variable sets were also identified. 'Adaptive' coping strategies were negatively correlated with perinatal grief (e.g. 'acceptance' and 'overall grief' $r = -0.54$, $p < 0.01$), and positively related to PTG variables (e.g. 'positive reframing' and 'overall growth' $r = 0.46$, $p < 0.01$). By contrast, 'maladaptive' coping strategies were positively correlated with grief (e.g. 'self-blame' and 'overall grief' $r = 0.67$, $p < 0.01$) and negatively correlated with PTG variables although these latter correlations were not statistically significant. (e.g. 'behavioural disengagement' and 'overall growth' $r = -0.12$ $p > 0.05$).

Several coping strategies were significantly positively correlated with PTG variables. These included: 'positive reframing' which correlated with five PTG variables (e.g. 'positive reframing' and 'new possibilities' $r = 0.44$, $p < 0.01$); 'active coping' with four PTG variables (e.g. 'active coping' and 'overall growth' $r = 0.30$, $p < 0.01$); 'instrumental support' and 'acceptance' with three PTG variables (e.g. 'instrumental support' and 'relating to others' $r = 0.31$, $p < 0.01$ and 'acceptance' and 'personal strengths' $r = 0.38$, $p < 0.01$) and 'emotional support' and 'religion' with two PTG variables (e.g. 'emotional support' and 'relating to others' $r = 0.40$, $p < 0.01$ and 'the use of religion' and 'spiritual change' $r = 0.75$ $p < 0.01$). All perinatal grief variables were negatively correlated with the PTG subscales (e.g. 'difficulty coping' and 'personal strengths' $r = -0.38$, $p < 0.01$) except for 'relating to

others' for which the negative correlations with perinatal grief were not statistically

significant. Results of the correlation analyses are displayed in Table 4.

Insert Table 4 here

Predicting growth.

Multiple hierarchical regression analyses were run to ascertain whether coping

strategies and/or perinatal grief levels predicted PTG. Variables exhibiting significant

correlations/group differences with the PTG variables were used as predictors. Individual

regression models were run for each PTGI subscale. Despite the four perinatal grief variables

being significantly correlated with all the PTGI subscales (except 'spiritual change'), only the

'overall grief' measure was used as a predictor. This decision was driven by: the high levels

of multicollinearity in the three perinatal grief variables (i.e. tolerance values being less than

the recommended levels of 0.2, [Field, 2014]); a decrease in the model's predictive capability

when all perinatal grief variables were included compared to one (e.g. *F* value of 11.76 for

the 'personal strength' regression model when only the 'overall grief' measure was included

decreasing to 8.3 when all perinatal grief variables were included); and the fact that 'overall

grief 'is a composite measure encompassing the other three subscales. Coping strategies were

entered first and other variables ('overall grief' and some demographic and religious status)

second. The regression models are displayed in Table 5.

Insert Table 5 here

Growth in the areas of 'new possibilities' and 'appreciation of life' was predicted by

'positive reframing.' PTG concerning 'relating to others' was predicted by both 'positive

reframing' and 'emotional support, 'whilst 'overall growth' was predicted by 'positive

reframing' and the 'use of religion.' The results also show that 'predictive reframing' and

'acceptance' contributed to predicting growth in 'personal strengths.' However, the

predictive value of these coping strategies was no longer significant once the 'overall grief'

variable was introduced in the model. PTG in the area of 'spiritual change' was predicted by 'the use of religion.' Coping strategies were the main predictors of PTG, with 'overall grief' and religious status contributing little predictive capability to the models (between 1 and 2%). In some cases, the addition of these predictors contributed to a significant reduction of the F value (e.g. for 'spiritual change' $F(3,153) = 207.18$, $p < 0.001$ at step 1 and $F(3,153) = 106.09$, $p < 0.001$ at step 2). The amount of variance explained by the regression models was moderate and varied between 16.4% for 'appreciation of life' and 58.1% for 'spiritual change.' However, alongside the statistically significant reports of analysis of variance in the models, these figures indicate that 'positive reframing' and 'the use of 'religion' predict PTG.

Discussion

This study sought to measure women's levels of PTG following TFA and examine the relationship between PTG, perinatal grief and coping. More specifically, the study aimed to ascertain whether coping strategies and/or levels of grief could predict PTG, and which coping strategies (if any) may be associated with this phenomenon.

Women's use of coping strategies and their levels of perinatal grief

The findings indicate that women relied to a greater extent on 'adaptive' rather than 'maladaptive' coping strategies to deal with TFA. This supports previous research (Anonymised, 2013; Nazaré et al., 2013). The coping strategies of 'acceptance,' 'emotional support,' 'active coping' and 'planning' displayed the highest usage. Levels of perinatal grief in this study were higher than in other investigations using the short PGS scale (Hunfeld et al., 1994; Nazaré et al., 2013). They were also above the threshold of 'normative' grief responses defined by Toedter and colleagues (2001), namely 34 for 'active grief,' 30 for 'difficulty coping,' 27 for 'despair' and 91 for 'overall grief.' In this study, 65.84% (n = 106) of the women scored above 34 for 'active grief,' 44.72% (n = 72) above 30 for 'difficulty coping,' 52.17% (n = 84) above 27 for 'despair' and 55.28% (n = 89) above 91 for 'overall

grief.' This indicates that a significant proportion of women displayed pathological levels of grief.

Women's levels of PTG

Women reported growth in several areas, which supports the PTG literature following bereavement and perinatal loss (Black & Sandelowski, 2010; Calhoun et al., 2010; Engelkemeyer & Marwit, 2008; Tedeschi & Calhoun, 2004; Thomadaki, 2012). It is also consistent with qualitative explorations of the experience of TFA (Anonymised, 2013, 2014). The areas where growth was most reported were 'relating to others', which is coherent with women's engagement in a support group, 'personal strengths' and 'appreciation of life'. Nevertheless, scores for these variables were just above the scales' midpoints.

When compared to other studies, the PTGI scores in this study were moderate. Research indicates that the 'overall PTG' scores may vary between 59.3 and 73.1 among cancer survivors (Lelorain et al., 2010; Morris, & Shakespeare-Finch, 2011; Schroevers & Teo, 2008), and between 64.7 and 71.1 following bereavement (Engelkemeyer & Marwit, 2008; Shakespeare-Finch & Amstrong, 2010). In comparison, the 'overall growth' scores in this study were 46.6. This finding may appear somewhat surprising given that participants were recruited from an online support group, and evidence suggests that self-disclosure within supportive environments may promote PTG though the opportunity to create narratives and make sense of the loss (Tedeschi & Calhoun, 2004).

Several factors may account for the moderate levels of PTG recorded in this study. Calhoun et al. (2010) posited that growth only occurs when an event triggers a fundamental re-appraisal of individuals' worldviews. Thus, distress and intense cognitive and emotional work are prerequisites of PTG. One explanation for the moderate levels of PTG may be that women, in this study, were particularly resilient and that the TFA experience may not have shaken their worldviews to the extent that it would generate growth. However, the high levels

of perinatal grief observed in the study, in comparison to other studies using the Short PGS, challenges this interpretation. Rather, it is possible that high levels of distress may hinder growth (Kleim & Ehlers, 2009). Evidence suggests that PTG follows a curvilinear relationship with distress, and that too little or too much distress may inhibit growth (Currier, Holland & Niemeyer, 2012). The relatively high levels of perinatal grief in this study, illustrated by the significant proportion of women displaying pathological levels of grief, may account for restricted PTG. The negative correlations between the perinatal grief variables and the growth measures in this study support this hypothesis.

Women's relatively low levels of PTG may also be due to the nature of their loss. Although, growth has been shown to be higher following bereavement compared to other types of trauma (Shakespeare-Finch & Amstrong, 2010), several studies have suggested that some bereaved parents struggle to identify any benefits from their experience (Keesee, Currier, & Neimeyer, 2008; Lichtenthal, Currier, Neimeyer & Keesee, 2010). The 'unnatural' characteristic of the loss in which a parent outlives his/her child may contribute to these difficulties (Keesee et al., 2008; Lichtenthal et al., 2010). In the context of TFA, parents choose to end the pregnancy and this may make it harder for them to derive, or indeed report, any benefits following the termination. Evidence also suggests that unexpected and/or violent losses are generally more conducive to growth because they tend to shake individuals' worldviews more profoundly (Currier, Mallot, Martinez, Sandy, & Neimeyer, 2013). Therefore, the degree of anticipation and perceived control over a difficult event may influence the experience of PTG afterwards.

Another factor impacting PTG may be the time elapsed since the traumatic event. However, in this study, there was no evidence that time elapsed since the termination related to PTG. It is difficult to ascertain to what extent this finding is consistent with existing evidence because studies on PTG vary significantly on this criterion (Barskova & Osterreich,

2009). Nevertheless, it is generally accepted that because PTG involves intense cognitive

work (Tedeschi & Calhoun, 2004), it is not a quick process. The sample in this study was

evenly divided between women whose termination had occurred within a year of study

participation (48.5%) and over a year (51.5%). There was no statistical difference between

the groups on PTG measures. The lack of relationship between time elapsed since TFA and

PTG may simply reflect individual differences. Tedeschi and Calhoun (2004) suggested that

some individuals may report positive changes close to the event, whilst others may report

them much later in life.

Relationship between coping strategies and PTG

In this study, several coping strategies were positively associated with PTG ('active

coping,' 'emotional support,' 'positive reframing,' 'acceptance', 'instrumental support' and

'the use of religion'), and 'positive reframing' was a significant predictor of four of the PTG

variables. This suggests that 'adaptive' coping strategies are associated with growth, which is

consistent with some of the PTG literature (Barskova & Osterreich, 2009; Currier, et al.,

2013; Lelorain et al., 2010; Lichtenthal et al., 2010; Riley et al., 2007). The 'use of religion'

was also an important coping strategy for some women and may constitute an additional

resource they draw upon. This also supports research indicating that engaging in religious

activities is associated with PTG (Currier et al., 2013).

Practical implications

Despite using generally 'adaptive' coping strategies, the levels of perinatal grief in

this study were higher than those reported in other investigations into perinatal grief. Thus, it

is important to identify women in need of support following TFA. This is particularly

relevant in light of the inclusion of 'complicated grief' as a disorder in the *DSM–V* in 2013

(American Psychiatric Association, 2013). Furthermore, given the associations between

'adaptive' coping strategies such as 'positive reframing' and PTG observed in this study, as

well as their potential role in alleviating perinatal grief (Anonymised, 2013), it may be important to promote these strategies. Cognitive Behavioural Therapy (CBT) may be beneficial in this context. CBT-based interventions have been used extensively in the context of bereavement and complicated grief (Bennett, Ehrenreich-May, Litz, Boisseau, & Barlow, 2012; Boelen, 2006) and have been shown to be effective in decreasing pathological symptoms (Wittouck, Van Autreve, De Jaegere, Portzky, & van Heeringen, 2011). The effectiveness of CBT-based interventions has also been demonstrated in the context of miscarriage and perinatal loss (Kersting et al., 2013; Sejourné, Callahan, & Chabrol, 2010). It is possible that this type of intervention may assist in the development of protective factors and facilitate the experience of growth following TFA.

Limitations of the study

It is important to highlight the limitations of this study relating to its methodology and participant sample. The cross-sectional design precludes identification of the directional causality between PTG, perinatal grief and coping. However, it seems reasonable to assume that the use of particular coping strategies would precede the experience of PTG, which in turn, would intensify the reliance on those strategies. Nonetheless, a longitudinal study would further our understanding of the nature of the relationship between these variables. The relatively moderate amount of variance explained by the regression models also suggests that other variables, not measured in this study, may account for PTG. Thus, the inclusion of other variables would be recommended, such as perception of social support, in further studies about PTG in the context of TFA. The sample in this study mainly comprised White, well-educated participants. It is possible that, as the PTG literature suggests, women from ethnic minorities may be more likely to report PTG than Caucasian women (Helgeson et al., 2006). Further research would be needed among a wider demographic group to gain a more comprehensive view into the experience of PTG following TFA.

Participants were members of a support organisation. It is, therefore, possible that some coping strategies may be over-represented (e.g. 'emotional support'). Furthermore, women who use support organisations may experience more distress than those who do not, prompting them to seek help in the first place. They may also struggle to identify any positive changes following their experience. Further research among women who do not use a support group would provide insights on this question. Finally, a social desirability bias cannot be excluded. Women who choose to terminate their pregnancy because of a fetal abnormality are aware of the social stigma surrounding their decision (Maguire, Light, Kuppermann, Dalton, Steinauer, & Kerns, 2014). Consequently, they may find it difficult to report any benefits following the termination. A qualitative investigation on the potential for growth following TFA may provide insights into this possible bias.

Conclusion

This study represents a first step towards furthering our understanding of PTG in the context of TFA. It demonstrates a relationship between coping and women's psychological adjustment. Coping strategies considered to be 'adaptive' (e.g. 'positive reframing,' 'emotional support' and 'acceptance') were associated with lower levels of perinatal grief, and higher levels of PTG. 'Positive reframing' was also a significant predictor of PTG. These findings call for the development of an intervention to promote these coping strategies among women following TFA. This is particularly important given that a significant proportion of women in this study exhibited elevated levels of perinatal grief.

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Table 1. *Participants' demographic and obstetric profile*

	n	*%*	*Mean*	*SD*	*Range*
Demographic profile					
Age	161		35.55	5.29	20-47
Education					
Secondary	48	29.81			
University level Graduate	112	69.57			
Ethnicity - White	158	98.14			
Marital status – Married/living together	161	100			
Religious status (156 responses)					
No religion	75	48.08			
Christian	74	47.44			
Other	7	4.49			
Obstetric profile					
Time since termination					
Up to 6 months	47	29.19			
7-12 months	31	19.25			
12-24 months	24	14.91			
24 months+	59	36.65			
Gestational age at TFA (weeks)	161		18.16	4.74	11-34
Method of termination - Medical	132	81.99			
Abnormality prognosis – Lethal	62	38.75			
Children at time of TFA - Yes	80	49.69			
First pregnancy – Yes	69	43.13			
Would make the same decision again - Yes	122	76.25			
Children since TFA - Yes/pregnant	85	52.80			

Note. n: number of participants; *SD*: standard deviation

Table 2. *Cronbach's values, mean scores and standard deviations for the Brief COPE, the Short Perinatal Grief Scale and the Posttraumatic Growth Inventory*

Measure	α value	Mean	SD
Brief COPE			
Self-distraction	0.55	4.84	1.67
Active coping	0.68	**5.35**	1.74
Denial	0.77	3.01	1.49
Substance use	0.93	2.72	1.30
Emotional support	0.83	**5.55**	1.77
Instrumental support	0.84	4.77	1.86
Behavioural disengagement	0.57	2.70	0.98
Venting	0.56	4.47	1.52
Positive reframing	0.71	4.34	1.80
Planning	0.74	**5.09**	1.71
Acceptance	0.80	**6.23**	1.53
Religion	0.81	3.14	1.63
Self-blame	0.82	4.78	1.96
Short Perinatal Grief Scale			
Active grief (11-55)	0.90	**37.70**	9.48
Difficulty coping (11-55)	0.92	29.27	10.50
Despair (11-55)	0.88	28.14	9.34
Overall grief (33-165)	0.96	95.11	27.65
Posttraumatic Growth Inventory			
Relating to others (0-35)	0.84	**17.55**	7.66
New possibilities (0-25)	0.83	8.46	5.73
Personal strengths (0-20)	0.78	**10.92**	4.53
Spiritual change (0-10)	0.74	1.88	2.39
Appreciation of life (0-15)	0.77	**7.80**	3.99
Overall growth (0-105)	0.92	46.61	19.58

Note. α value: Cronbach's values; *SD*: standard deviation; In brackets: range of scores for each scale; Values above the mid-point in bold – Brief COPE: > 5, Active grief, Difficulty coping and Despair: > 33 and Overall grief: > 99; relating to others: > 17.5, new possibilities: > 12.5, personal strength: > 10, spiritual change: > 5, appreciation of life: > 7.5 and Overall growth: > 52.5

Table 3. *Posttraumatic Growth Inventory – Participants reporting changes to a moderate, strong and very strong degree*

Items	n	%
I discovered that I am stronger than I thought	125	77.64
I changed my priorities about what is important in life	118	73.29
I know better that I can handle difficulties	117	72.67
I have more compassion for others	116	72.05
I put more effort into my relationships	88	54.66
I more clearly see that I can count on people in times of trouble	88	54.66
I have a greater sense of closeness with others	86	53.42
I am more willing to express my emotions	84	52.17
I have a greater appreciation for the value of my own life	81	50.31
I learned a great deal about how wonderful people are	81	50.31
I am more likely to try to change things which need changing	78	48.45
I better accept needing others	76	47.20
I have a greater feeling of self-reliance	70	43.48
I can better appreciate each day	70	43.48
I am better able to accept the way things work out	64	39.75
I established a new path for my life	59	36.65
I am able to do better things with my life	52	32.30
I developed new interests	50	31.06
I have a better understanding of spiritual matters	32	19.88
New opportunities are available which wouldn't have been otherwise	27	16.77
I have a stronger religious faith	21	13.04

Note. Total sample, *N* = 161

Table 4. *Correlations between the Brief COPE, the Short Perinatal Grief Scale and the Posttraumatic Growth Inventory at the p < 0.01 level*

Measure	1	2	3	4	5	6	7	8	9	10	11	12	13
						The Brief COPE							
1. Self-distraction	−												
2. Active coping	.16	−											
3. Denial	.22**	-.07	−										
4. Substance use	.08	0.03	0.19	−									
5. Emotional support	.21**	.40**	-.03	.06	−								
6. Instrumental support	0.19	.33**	.02	.17	.68**	−							
7. Behavioural disengagement	.22**	-.13	.46**	.17	-.10	-.06	−						
8. Venting	.27**	.30**	.26**	.25**	.35**	.39**	.32**	−					
9. Positive reframing	.06	.40**	-.10	-.17	.28**	.25**	-.17	.09	−				
10. Planning	.25**	.55**	-.01	.18	.33**	.37**	-.01	.35**	.15	−			
11. Acceptance	-.08	.33**	-.29**	-.09	.14	.00	-.27**	.03	.38**	-.02	−		
12. Religion	.10	.10	.12	.02	.21**	.11	.21**	.27**	.07	.14	-.08	−	
13. Self-blame	.25**	.01	.48**	.20	.05	.09	.46**	.35**	-.14	.14	-.34**	.16	−
Active grief	.24**	-.09	.39**	.15	.04	.12	.43**	.25**	-.29**	.11	-.50**	.16	.62**
Difficulty coping	.21**	-.19	.35**	.26**	-.01	.09	.46**	.24**	-.37**	.08	-.55**	.12	.60**
Despair	.25**	-.13	.45**	.22**	-.06	.06	.53**	.27**	-.31**	.08	-.48**	.20**	.68**
Overall grief	.25**	-.15	.42**	.23**	-.01	.10	.50**	.27**	-.35**	.09	-.54**	.17	.67**
Relating to others	.01	.30**	-.03	.03	.40**	.31**	-.15	.10	.40**	.14	.17	.15	-.08
New possibilities	.00	.26**	-.08	.00	.20	.24**	-.09	.05	.44**	.08	.19	.09	-.08
Personal strengths	.01	.28**	-.07	-.01	.18	.07	-.14	.05	.38**	.04	.38**	.13	-.16
Spiritual change	.05	.04	.09	-.09	.16	.12	.13	.17	.12	.04	-.07	.75**	.06
Life appreciation	-.08	.20	-.07	.04	.13	.09	-.09	-.01	.37**	-.06	.26**	.09	-.11
Overall growth	-.01	.30**	-.06	.00	.30**	.24**	-.12	.09	.46**	.08	.25**	.23**	-.11

Table 4. *Correlations between the Short Perinatal Grief Scale and the Posttraumatic Growth Inventory at the p < 0.01 level (Continued)*

| Measures | Short Perinatal Grief Scale | | | | Posttraumatic Growth Inventory | | | | | |
	Active grief	Difficulty coping	Despair	Overall grief	Relating to others	New possibilities	Personal strength	Spiritual change	Life appreciation	Overall growth
Active grief	–									
Difficulty coping	.82**	–								
Despair	.81**	.87**	–							
Overall grief	.93**	.95**	.95**	–						
Relating to others	-.07	-.15	-.11	-.12	–					
New possibilities	-.19	-.28**	-.19	-.24**	.63**	–				
Personal strengths	-.32**	-.38**	-.28**	-.35**	.61**	.55**	–			
Spiritual change	.11	.07	.15	.11	.30**	.26**	.30**	–		
Life appreciation	-.21**	-.32**	-.21**	-.27**	.62**	.72**	.66**	.21**	–	
Overall growth	-.19	-.28**	-.19	-.24**	.88**	.85**	.80**	.43**	.83**	–

Note. Brief COPE: 1: Self-distraction; 2: Active coping; 3: Denial; 4: Substance use; 5: Emotional support; 6: Instrumental support; 7: Behavioural disengagement; 8: Venting; 9: Positive reframing; 10: Planning; 11: Acceptance; 12: Religion; 13: Self-blame; Overall grief: Aggregated subscales of the Short Perinatal Grief Scale; Overall growth: Aggregated subscales of the Posttraumatic Growth Inventory; ** $p < 0.01$, *** $p < 0.001$

Table 5. *Hierarchical multiple regression analyses predicting posttraumatic growth from coping strategies, overall grief and religious status*

	Domains of Posttraumatic Growth											
	Relating to others		*New possibilities*		*Personal strengths*		*Spiritual change*		*Life appreciation*		*Overall growth*	
Predictor	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β
Step 1	0.25***		0.21***		0.21***		0.57***		0.15***		0.28***	
Active coping		0.07		0.07		0.10						0.06
Emotional support		0.26**										0.09
Instrumental support		0.04		0.13								0.06
Positive reframing		0.28***		0.38***		0.24**				0.32***		0.34***
Acceptance						0.26**				0.14		0.10
Use of religion								0.76***				0.18*
Step 2			0.01		0.02		0.01		0.01		0.01	
Active coping				0.06		0.11						0.07
Emotional support												0.09
Instrumental support				0.15								0.08
Positive reframing				0.33***		0.21				0.30***		0.31***
Acceptance						0.17				0.09		0.04
Use of religion								0.72***				0.20**
Overall grief				-0.13		-0.17				-0.12		-0.14
Religious status								0.10				
Total R^2	0.25***		0.23***		0.23***		0.58***		0.16***		0.30***	
N	161		161		161		161		161		161	

Note. ** $p < 0.01$, *** $p < 0.001$