

Factors Involved in Posttraumatic Growth in Mothers Experiencing Fetal and Infant Death

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Abstract

Factors associated with posttraumatic growth (PTG) are investigated in mothers who have suffered fetal or infant death. Mothers ($N = 66$) completed the Posttraumatic Growth Inventory (PTGI; [Tedeschi & Calhoun, 1996](#)), the Core Beliefs Inventory (CBI; [Cann et al., 2010](#)), and answered questions about the severity of their loss, age of fetus or infant, time since loss, social support, finding meaning, and involvement in loss-related behavior. Results indicate a greatly traumatic loss ($M = 4.41$), a great degree of core belief disruption ($M = 3.57$), and a moderate level of PTG ($M = 2.80$). CBI scores are positively correlated with severity of the loss and age of the fetus or infant. PTGI scores are positively related to CBI scores and to social support from family and friends who have suffered similar losses and support groups. PTG and finding meaning are positively correlated with involvement in loss-related activities and supporting others.

Keywords

posttraumatic growth, grief, infant death, miscarriage, stillbirth

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Introduction

The death of an individual's child is one of the most tragic losses (Cacciatore et al., 2014). This type of trauma is not uncommon and includes the loss of a baby before or after birth, including miscarriage which is defined as fetal death under 20-week gestation, stillbirth defined as fetal death at 20-week gestation or later, and infant death which is a live birth followed by death prior to 1 year of age (Barfield, 2016). The risk of miscarriage worldwide is 15.3% of recognized pregnancies, totaling approximately 23 million losses per year (Quenby et al., 2021). Additionally, the most recent available vital statistics in the U.S. indicate approximately 21,478 stillbirths or a rate .57% of live births in 2019 (Gregory et al., 2019) and 19,578 infant deaths or a rate of .54% of live births in 2020 (Ely & Driscoll, 2020).

After the death of their child, bereaved family members may struggle with depression, anxiety, posttraumatic stress disorder (PTSD) symptoms, health problems, increased alcohol or substance use (Burden et al., 2016; Cacciatore et al., 2014), social phobia, agoraphobia, anger, guilt, suicidal ideation, financial debt, employment problems (Burden et al., 2016), and difficulties in familial relationships (Cacciatore et al., 2014). Despite suffering the loss of a baby, benefits resulting from this trauma have been reported. These benefits have been observed in studies including immediate family members (i.e., parents, grandparents, an aunt, and an unspecified relative; Cacciatore et al., 2014), both parents (Black & Sandelowski, 2010; Büchi et al., 2009; Polatinsky & Esprey, 2000), and only mothers (Freedle & Kashubeck-West, 2021; Tian & Solomon, 2020). Tedeschi and Calhoun (1996) coined this phenomenon of benefits following trauma as posttraumatic growth (PTG). They developed the Posttraumatic Growth Inventory (PTGI), which is comprised of items in five potential domains of growth: relating to others, new possibilities, personal strength, spirituality, and appreciation of life. Growth in relationships focuses on recognizing the importance of social relationships and feeling closer to others. The new possibilities domain highlights positive life changes and new life goals. Personal strength emphasizes recognizing their own ability to cope with difficult situations. The spirituality domain pertains to stronger faith and increased spiritual understanding. Appreciation of life focuses on changes in personal priorities and greater appreciation for life.

The current study examines PTG in mothers who have experienced the loss of a baby before or after birth. Bereaved mothers completed the PTGI, the CBI (Core Beliefs Inventory; Cann et al., 2010), and a survey asking them to rate factors that may contribute to PTG, such as severity of the loss, age of fetus or infant at time of loss, time since loss, social support from various sources, finding meaning in the loss and in life, supporting others, and participating in activities, occupations, volunteering, and hobbies related to their loss. The purpose of the current study is to determine factors that are associated with PTG in mothers who have lost a fetus or infant in hopes of fostering PTG in this population.

Background of the Problem

PTG has been observed to result from a variety of traumatic experiences, such as situations in which one's own life was threatened, witnessing traumatic events, and losing loved ones or relationships (Cacciatore et al., 2014; Krosch & Shakespeare-Finch, 2017; Polatinsky & Esprey, 2000; Tedeschi & Calhoun, 1996; Yeung et al., 2016). Research has indicated that PTG is positively correlated with disruption of core beliefs (Cann et al., 2010; Groleau et al., 2013; Krosch & Shakespeare-Finch, 2017; Lindstrom et al., 2013; Su & Chen, 2015; Triplett et al., 2012), perceived social support (Dolbier et al., 2010; Su & Chen, 2015), support group attendance (Richardson, 2016), helpful self-disclosure of the trauma (David et al., 2022; Tedeschi et al., 2018), and connection to and acceptance by others (Yeung et al., 2016).

Core beliefs are an individual's rigid and encompassing beliefs about the world, others, and oneself (Beck, 2011). Trauma disrupts individuals' core beliefs by challenging their assumptions about the world and their place in it. It has been proposed that this disruption encourages growth through the process of cognitively restructuring beliefs to accommodate an understanding of the trauma and its consequences (Tedeschi & Calhoun, 2004). Thus, disruption of core beliefs is considered to be a necessary factor for the development of PTG (Tedeschi et al., 2018). With respect to mothers who have experienced a miscarriage or stillbirth, a sample of 328 mothers reported a great disruption of core beliefs and severity of disruption to core beliefs, as indicated by CBI scores, was shown to be positively related to their PTGI scores (Krosch & Shakespeare-Finch, 2017).

Fetal and infant deaths are often thought of as a lesser loss compared to the death of an older child (Frøen et al., 2011). This is evident in that the loss of a fetus through miscarriage typically does not involve bereavement leave from work (Fredenburg, 2017) nor a funeral or mourning ritual (Kersting & Wagner, 2012; Rowlands & Lee, 2010), and may not be acknowledged as a loss by family and friends (Kersting & Wagner, 2012). Similarly, stillbirths have been misunderstood and marginalized by society (Cacciatore, 2013), resulting in a lack of cultural guidance on grieving this type of loss (Poleshuck & Woods, 2014). Counter-evidence supporting the notion that grief from the loss of a fetus or infant is of the same magnitude as grieving the loss of an older child comes from a study which compared the psychological symptoms of grief and PTG in 13 mothers who had lost a fetus or infant due to termination for medical reasons, stillbirth, or death within 4 weeks of birth versus 15 mothers who had lost a child between the ages of 8 weeks–18 years. No differences were found with respect to grief symptoms or growth between these two groups (Field et al., 2013). However, a separate study found differences due to age of a fetus in pregnancy loss. In 328 mothers who had experienced a miscarriage or stillbirth, there were positive correlations between age of fetus, ratings of severity of their loss experience, and core belief disruption (Krosch & Shakespeare-Finch, 2017). This suggests that although loss of a fetus or infant is comparable to the loss of an older child with respect to grief symptoms and growth, age of a fetus may make a difference with

respect to severity of the loss experience and disruption of core beliefs when comparing losses during pregnancy.

The effects of time since the trauma on PTG is unclear. Previous research has measured PTG in participants from as early as one day (Su & Chen, 2015) to 41 years (Cacciatore et al., 2014) after the trauma. Conflicting results have demonstrated greater PTG with more time since the trauma (Cann et al., 2010; Scholtes & Browne, 2015), no difference in PTG with respect to time since the trauma (Su & Chen, 2015; Tedeschi & Calhoun, 1996), and a reduction in PTG over time (Dekel et al., 2012). Studies of bereaved family members have shown similar conflicting results. In a study of 503 bereaved family members of children who died at any age from stillbirth through adulthood with time since the death ranging from .43 to 41.48 years, scores on the PTGI were found to positively correlate with time since the loss (Cacciatore et al., 2014). Similarly, a study of 67 bereaved parents (age of children was not specified) with time since the loss ranging from 6 months to 8 years, found a positive correlation between time since the loss and PTGI scores (Polatinsky & Esprey, 2000). Additionally, a study of 328 mothers who had experienced a miscarriage or stillbirth with time since death ranging from .01 – 40 years found a positive correlation between PTGI scores and time since death (Krosch & Shakespeare-Finch, 2017). However, a study of 197 bereaved parents of children who died at any age ranging from stillbirth to 52 years with time since death ranging from 6 months to 10 years, did not find a relationship between time since death and PTG (Albuquerque et al., 2018). Similarly, a study of 44 bereaved parents who lost a premature baby with time since the loss ranging from 2 – 6 years, was unable to find a relationship between time since the loss and PTGI scores (Büchi et al., 2009).

Parents who experience the death of their fetus or infant often have limited social support due to lack of recognition of this type of loss from society (Rowlands & Lee, 2010). Despite this, many parents find some support from their spouse, family, friends, other bereaved parents, health care workers, psychologists, and social workers (Kreicbergs et al., 2007). This social support has been shown to be positively related to PTG in mothers grieving the loss of their fetus or infant (Raitio et al., 2015; Tian & Solomon, 2020). Additionally, peers who have had similar losses may provide much-needed support for these mothers. These peers may be found among family and friends of the bereaved or from support groups. In a study of women who had experienced miscarriage, participants reported their most valuable support coming from friends and family who had also experienced pregnancy loss (Rowlands & Lee, 2010). Studies of bereaved mothers attending in-person support groups showed mixed results, with one study reporting less distress in those attending support groups (Cacciatore, 2007), another finding no difference between those attending support groups versus those who did not with respect to anxiety and depression (Cacciatore et al., 2009), and one finding greater grief reactions and less growth in those attending support groups (Raitio et al., 2015).

The effects of online message board support groups have not been examined in parents who lost a fetus or infant, but this type of support has been investigated in

individuals bereaved by suicide. In these studies, online message board participation resulted in increases in well-being, feelings of support, and recognition, and decreases in depression (Kramer et al., 2015) and feelings of isolation (Bailey et al., 2017).

PTG in trauma survivors has been found to be positively associated with finding meaning (Cadell et al., 2014; Grad & Zeligman, 2017; Groleau et al., 2013; Triplett et al., 2012). Making sense of their loss and finding benefits as a result of their loss have been observed in bereaved parents (Lichtenthal et al., 2010; Meert et al., 2015), but these have not been investigated with respect to co-occurrence with PTG.

Additionally, increased levels of PTG occur in trauma survivors who report behavioral changes (Hobfoll et al., 2007; Shakespeare-Finch & Barrington, 2012). Behaviors that have helped bereaved parents manage their grief include sharing about their loss on social media, providing peer support, participating in research projects, and working with hospitals to improve care (Burden et al., 2016). However, the relationship between behavior changes and PTG has not been investigated in bereaved parents, or more specifically mothers, who have lost a fetus or infant.

Research Method

The purpose of this study is to examine factors that are associated with PTG in mothers who have experienced the loss of a fetus or infant in hopes of fostering PTG in this population. This study focuses on mothers because women have shown more distress than men following the loss of a baby (DiMarco et al., 2001; Vance et al., 2002), women are more likely to seek online message board support than men (Bailey et al., 2017), and some studies have demonstrated greater PTG following trauma in women than in men (Albuquerque et al., 2018; Büchi et al., 2009; Tedeschi & Calhoun, 1996).

The first research question focuses on whether core belief disruption is related to perceived severity of the loss and age of the fetus or infant at the time of loss. Specifically, is there more disruption of core beliefs with higher severity rating of the loss or greater age of the fetus or infant?

The second research question examines factors that may correlate with PTG, that is, core belief disruption, time since the loss, and social support. Core belief disruption has been found to be correlated with PTG and is proposed to be a necessary factor for the development of PTG. Previous research has shown mixed results with respect to a relationship between time since a trauma and PTG. Social support following a trauma has been found to correlate with PTG. The current study will explore this further by examining the amount of support from friends and family who have not experienced a similar loss versus support from friends, family, and peers who have experienced similar losses. Do core belief disruption, time since the loss, and social support from those with similar losses correlate with PTG in this population?

The third research question addresses how involvement in loss-related behaviors corresponds to PTG and finding meaning. Is greater involvement in behavior related to the loss through activities, occupation, volunteering, hobbies, or supporting others associated with increased PTG and finding meaning?

Participants

Participants are mothers aged 18 years or older who had experienced the death of at least one fetus or infant under one year of age. Additionally, the loss must have occurred at least 6 months prior to participation, as in previous bereavement studies (Albuquerque et al., 2018; Bailey et al., 2017), in order to be sensitive to their grieving (Stroebe et al., 2003). Participants in the current study consist of 66 mothers. The number of losses in this sample ranges from 1 – 6 losses ($M = 1.85$) with a total of 121 losses. Time since the most recent loss ranges from 7 months to 30 years ($M = 5.06$ years, $Mdn = 2.75$ years). The age of the fetus or infant at the time of loss ranges from 5 weeks gestation to 3 months after birth: 61.98% ($N = 75$) miscarriage (less than 20 weeks gestation), 29.75% ($N = 36$) stillbirth (20 weeks – full-term gestation), 8.26% ($N = 10$) infant death (live birth and lived 0 – 364 days; Barfield, 2016). Types of losses include ectopic pregnancy, miscarriage, infection in the mother, placental abruption, termination due to a fatal diagnosis in the fetus, cord accident, preeclampsia, loss of amniotic fluid, incompetent cervix, uterine rupture, intrauterine growth restriction, hydrops fetalis, twin-to-twin transfusion syndrome, stillbirth, and live birth with death due to prematurity, brain damage, Potter's Syndrome, Trisomy 13, hypoplastic left heart syndrome, and SIDS.

Mothers were selected by convenience sampling from an online bereavement support group message board, as utilized in similar studies (Bailey et al., 2017; Cacciatore et al., 2014; Kramer et al., 2015). Specifically, they were recruited from the corresponding author's personal Facebook page and the Facebook page of Empty Cradle, a bereavement support group for pregnancy and infant loss. This study was approved by the IRB of California Southern University. Participants were notified of potential risks and provided informed consent. All responses were submitted anonymously.

Instruments

The instruments utilized include the PTGI (Tedeschi & Calhoun, 1996), Core Beliefs Inventory (CBI; Cann et al., 2010),¹ and additional survey questions (see Appendix). The PTGI is comprised of 21 items in five potential domains of growth: relating to others, new possibilities, personal strength, spirituality, and appreciation of life. The CBI consists of 9 items which measure the extent to which beliefs about human nature, social relationships, spirituality, the meaning of life, and personal strengths and weaknesses are examined following a major life event. The PTGI and the CBI have demonstrated good internal consistency, test-retest reliability, and construct validity. The additional survey questions pertain to specific factors associated with the loss, including number of losses, age of fetus or infant, length of time since the most recent loss, subjective rating of severity of the loss, amount of social support received from those who have and have not experienced similar losses, and changes in behavior related to the loss, such as activities, occupation, volunteering, hobbies, and supporting

others. The PTGI, CBI, and survey items are rated on a 6-point Likert scale with 0 = none to 5 = a very great amount. IBM SPSS software was used to statistically analyze the data.

Results

Research question one focuses on perceived severity of the loss and age of the fetus or infant at the time of loss in relation to core belief disruption to determine if CBI scores increase with greater severity rating and greater age of fetus or infant. Ages of the fetus or infant are categorized into miscarriage, stillbirth, and infant death for this analysis to increase the number of participants in each age category. The mean score for severity of the loss is 4.41, which indicates a greatly traumatic loss. The mean score for the CBI is 3.57, which shows a great degree of core belief disruption. Severity of the loss is positively correlated with age of the fetus or infant, $r(52) = .49, p < .001$. CBI scores are correlated with both severity of the loss, $r(64) = .42, p < .001$, and age of the fetus or infant, $r(52) = .30, p = .028$.²

Research question two addresses factors that may correlate with PTG, that is, core belief disruption, time since the loss, and social support. For participants in the current study, the mean PTGI score is 2.80, which indicates a moderate degree of PTG. The means for domains of growth are as follows: relating to others = 2.75, new possibilities = 2.52, personal strength = 3.18, spiritual change = 2.58, and appreciation of life = 3.05, which all fall in the moderate PTG range. The scores on the PTGI and the CBI are found to be positively related, $r(64) = .52, p < .001$. However, time since the most recent loss is not found to be positively correlated with PTG, $r(54) = .20, p = .133$.³

With respect to relationships between PTGI scores and levels of social support, scores on the PTGI are on the border of significance with respect to the amount of social support received in general. However, these scores are positively correlated with support from family and friends who have experienced a similar loss, support from groups in general (i.e., online message board or in-person), support from online message board groups, and support from in-person groups. On the other hand, PTGI scores are not significantly related to social support received from family and friends who have not personally experienced a similar loss nor to support received from a partner (see Table 1).

When asked which type of social support participants found most helpful, 48.48% ($N = 32$) indicate support groups (online message board or in-person) comprised of others who have experienced a similar loss, 27.27% ($N = 18$) indicate family and friends who have personally experienced a similar loss, 22.73% ($N = 15$) indicate their partner, and only 1.52% ($N = 1$) indicate family and friends who have not personally experienced a similar loss. Paired comparisons reveal that receiving help from family and friends who have not personally experienced a similar loss is less preferred to receiving support from family and friends who experienced a similar loss, $\chi^2(1, N = 19) = 15.21, p < .001$; from a partner, $\chi^2(1, N = 16) = 12.25, p < .001$; and from support

groups, $\chi^2(1, N = 33) = 29.12, p < .001$. A greater number of participants find support groups more helpful than family and friends who have experienced a similar loss, $\chi^2(1, N = 50) = 3.92, p = .048$, and more helpful than support from a partner, $\chi^2(1, N = 47) = 6.15, p = .013$.

Research question three explores whether greater involvement in behavior related to the loss through activities, occupation, volunteering, hobbies, or supporting others is related to increased PTG and finding meaning. Scores on the PTGI are found to be positively correlated with finding meaning in the loss, finding meaning in life, being involved in activities related to the loss, and supporting others. On the other hand, PTGI scores are not found to be correlated with having a loss-related occupation, volunteer work, or hobbies (see Table 2).

With respect to finding meaning in the loss and in life, these two variables are positively correlated with each other. Finding meaning in the loss is also positively correlated with being involved in activities related to the loss, having an occupation related to the loss, volunteer work related to the loss, and supporting others. The only

Table 1. Correlations Between PTGI Score and Social Support.

	PTGI			
	<i>M</i>	<i>SD</i>	<i>r</i>	<i>p</i>
Social support in general	3.17	1.33	.24	.052
Family/friends no loss	2.79	1.53	.20	.112
Family/friends loss	3.23	1.53	.31	.013
Partner	3.65	1.52	-.03	.795
Support groups in general	3.26	1.73	.33	.006
Support groups online message	2.89	1.71	.41	<.001
Support groups in-person	1.91	2.04	.25	.042

Table 2. Correlations Between PTGI Score, Found Meaning, and Changes in Behavior.

	<i>M</i>	<i>SD</i>	PTGI	Meaning in loss	Meaning in life
PTGI	2.80	1.06	-	.41***	.31*
Meaning in loss	2.73	1.61	.41***	-	.59***
Meaning in life	3.50	1.51	.31*	.59***	-
Activities	2.21	1.70	.43***	.45***	.32**
Occupation	1.14	1.74	.17	.24*	.18
Volunteer	1.42	1.88	.21	.33**	.23
Hobby	1.12	1.59	.21	.18	.20
Supporting others	2.56	1.69	.49***	.46***	.33**

Note. * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

variable that is not correlated with finding meaning in the loss is having a hobby related to the loss. Finding meaning in life is positively correlated with being involved in activities related to the loss and supporting others. However, finding meaning in life is not correlated with having an occupation that relates to the loss, volunteer work related to the loss, or having a hobby related to the loss (see [Table 2](#)).

Discussion

As in prior studies of mothers who lost babies due to miscarriage or stillbirth ([Freedle & Kashubeck-West, 2021](#); [Krosch & Shakespeare-Finch, 2017](#)), mothers in the current study report the severity of the loss of their baby as greatly traumatic. Level of severity of the loss is positively correlated with age of the fetus or infant. This suggests that losses later in pregnancy or after birth are perceived by mothers as more severe. This correlation was previously reported for mothers with losses due to miscarriage and stillbirth ([Krosch & Shakespeare-Finch, 2017](#)), however, the current study expands these findings by including infants under one year of age. This increase in level of severity of the loss with greater age of the fetus or infant could be related to more time to bond with the fetus or infant. It could also be due to tendencies to downplay or disregard emotions for earlier losses due to society's lack of recognition of miscarriages. Although pregnancy losses in general are disenfranchised by society, miscarriages are discounted to an even greater extent ([Fredenburg, 2017](#); [Rowlands & Lee, 2010](#)). These societal views of miscarriage may result in mothers invalidating their own grief and not seeking or receiving emotional support.

Both severity of loss and age of fetus or infant at time of loss are positively related to core belief disruption measured by the CBI. This was also previously found in mothers experiencing losses due to miscarriage and stillbirth ([Krosch & Shakespeare-Finch, 2017](#)) and these results extend those findings to include infant death. Greater core belief disruption would be expected to cause greater distress resulting in increased feelings of severity of a loss and vice versa. Greater age of fetus or infant is expected to relate to more core belief disruption, because early pregnancy losses are more common than later losses ([Ely & Driscoll, 2020](#); [Gregory et al., 2019](#); [Quenby et al., 2021](#)).

Participants in the current study show a moderate degree of PTG overall and in all five domains. These PTG findings are similar to those reported in previous studies of family members after the loss of a child ([Cacciatore et al., 2014](#)) and mothers who had lost babies due to miscarriage or stillbirth ([Freedle & Kashubeck-West, 2021](#); [Krosch & Shakespeare-Finch, 2017](#)). Current study participants also show a great degree of core belief disruption and scores on the PTGI and CBI are positively related. This corresponds to results in previous studies of participants suffering trauma in general ([Cann et al., 2010](#); [Lindstrom et al., 2013](#); [Su & Chen, 2015](#); [Triplett et al., 2012](#)) and in a study of mothers who had experienced a miscarriage or stillbirth ([Krosch & Shakespeare-Finch, 2017](#)). Thus, the current results extend these findings to include infant death.

Time since the loss is not correlated with PTG. Previous research has shown mixed results for this comparison, thus the current results are not unusual. However, this is surprising, because one might expect that PTG would take time and that greater time since a trauma would show greater growth due to more opportunity to improve relationships with others, explore new possibilities, recognize personal strength, deepen understanding of spiritual matters, and learn ways to appreciate life after the initial impact of grief.

Greater perceived social support has been found to be correlated with higher PTG in previous studies of various traumas (Dolbier et al., 2010; Richardson, 2016; Su & Chen, 2015) and in a study with bereaved mothers who had lost children between 22 weeks gestation and 3 years of age (Raitio et al., 2015). In the current study, social support in general is on the border of being significantly correlated with PTG. However, when types of support are examined, support from those who have experienced similar losses (i.e., family, friends, and peers) are positively correlated with PTG. This corresponds to findings by Rowlands and Lee (2010) that mothers who had experienced miscarriage reported receiving the most support from their family and friends who had similar losses. The current study expands these results by including stillbirth and infant death and examining support from peers in support groups with similar losses.

In the current study, PTGI scores are not related to amount of support from a partner. This contrasts with previous results from two studies of bereaved mothers that found a positive correlation between amount of support from a partner and PTG (Raitio et al., 2015; Tian & Solomon, 2020). These conflicting results could be related to differences in sample group demographics and measuring techniques. Raitio et al. (2015) included the loss of fetuses from 22 weeks gestation up to 3-year-old children and Tian and Solomon (2020) focused exclusively on miscarriage. Additionally, Raitio et al. (2015) measured growth using the Hogan Grief Reactions Checklist instead of the PTGI. Despite lack of a correlation between PTG and support from a partner in the current study, nearly 23% of participants report support from their partner as being the most helpful type of social support and the amount of support received from a partner has the highest mean ($M = 3.65$) of all types of social support. In contrast, types of support with lower means (i.e., family and friends who have experienced a loss and support groups) are positively correlated with PTG. This demonstrates that the amount of support does not always correlate with PTG and that the source of support may make a difference with respect to PTG. A possible explanation for this comes from a study by David et al. (2022), which found a positive relationship between helpful self-disclosure of the trauma and PTG. Self-disclosure of the loss of a fetus or infant is not typically directed to a partner given the fact that partners often experience this loss along with the mother. Growth from self-disclosure can only occur in interactions with individuals who were not present during the loss (e.g., family, friends, and peers in support groups). This may explain why support from a partner was well-rated but not correlated with growth.

Positive correlations between PTG and both in-person and online message board support groups are found in the present study. This contrasts with a previous study of mothers who lost fetuses from 22 weeks gestation to children up to 3 years of age,

which found less growth (measured by the Hogan Grief Reactions Checklist) in those who attended in-person support groups (Raitio et al., 2015). These conflicting results could be due to differences in the age ranges of the children at the time of death and the use of different measuring instruments.

In previous studies involving participants who have suffered a variety of traumas, those who reported finding meaning (Cadell et al., 2014; Grad & Zeligman, 2017; Groleau et al., 2013; Triplett et al., 2012) and changes in behavior (Hobfoll et al., 2007; Shakespeare-Finch & Barrington, 2012) experienced greater PTG. The current study extends these findings to mothers who have lost a fetus or infant by showing that PTG is correlated with finding meaning in life, finding meaning in the loss, involvement in loss-related activities, and supporting others. Additionally, finding meaning in the loss is positively correlated with loss-related occupations and volunteer work in these mothers.

In summary, the current study of mothers experiencing the loss of a fetus or infant found:

- Correlations between severity of the loss, age of the fetus or infant, and CBI scores
- Correlation between PTGI and CBI scores
- Correlations between PTGI and support from family and friends with similar losses and support groups
- Support groups reported as the most helpful type of social support
- Correlations between PTGI and finding meaning in the loss, finding meaning in life, activities related to the loss, and supporting others
- Correlations between finding meaning in the loss and activities, occupations, and volunteer work related to the loss, and supporting others
- Correlations between finding meaning in life and activities related to the loss and supporting others

These results provide additional evidence that pregnancy and infant losses are experienced as traumatic events. Although these losses are often marginalized by society, recognition of the severity of these types of losses is improving. Indication of this change is apparent from recent legislation in particular states within the United States and in other countries for parental bereavement leave to include miscarriages, stillbirth, abortions, and losses from surrogacy and in vitro fertilization.

The current results also indicate possible interventions for mental health therapists, healthcare professionals, family, and friends when working or interacting with bereaved mothers. Correlations between PTGI and CBI scores suggest that revising core beliefs may help PTG. The amount of disruption to an individual's core beliefs cannot be altered because it depends on the content of their core beliefs prior to the loss. However, therapy could help mothers restructure core beliefs to fit their new reality. This notion is supported by the finding that deliberate rumination is positively correlated with PTG (Cann et al., 2011).

Since social support from those who have experienced similar losses is positively correlated to PTG, referring bereaved mothers to in-person and online pregnancy and

infant loss support groups could foster their PTG. Additionally, family and friends who have experienced similar losses should be encouraged to support the bereaved mother. Finding meaning in life, finding meaning in the loss, and PTG are positively correlated with involvement in activities related to the loss and supporting others. Thus, PTG may be increased by encouraging these mothers to participate in loss-related activities, such as attending remembrance walks, lighting a candle for their baby on the annual October 15th Wave of Light, making a scrapbook of memories of their baby, or planting a tree in honor of their baby. PTG may also be enhanced by urging bereaved mothers to support others in their grief through support groups or by listening to and sharing their experience with family, friends, and acquaintances who have suffered similar losses. Finding meaning in the loss is additionally associated with having an occupation or volunteer work related to the loss. Suggesting loss-related volunteer work or loss-related careers may be helpful to bereaved mothers who are continuing to search for meaning and desire a change from their life before loss.

A limitation of the current study is the ability for these findings to be generalized to various types of bereaved parents. Participants in this study are selected by convenience sampling, rather than a true random selection. Furthermore, most of the sample consists of mothers who sought help through support groups. Therefore, these participants may be more motivated to get help and make life changes that could be related to PTG and they may not be representative of mothers who do not seek out support from groups. Since this study focuses on mothers, the findings may not be applicable to fathers. The time since the loss is required to be 6 months or greater. Thus, the findings of the current study may not pertain to individuals experiencing more recent losses. The 1 year age limit on infants in this study is determined by its medical definition and therefore, the results may not pertain to mothers who have lost children over 1 year of age. Since the nature of the losses are miscarriages, terminations for medical reasons, stillbirths, and infant deaths, the results of the current study may not extend to mothers who have had elective abortions.

Further limitations include subjectivity and the correlational nature of this study. The data collected in this study is primarily subjective, because it is based on participants' self-reports. Additionally, there may be a problem with recall, because some losses occurred several years prior to the study. Cause and effect cannot be concluded from the results due to its correlational rather than experimental design. Any correlations between PTG and measured variables indicate that these variables are related, but do not show which variable is the cause, or if there is some additional variable causing the relationship.

To expand these results, future research could utilize more varied samples, provide more detailed examination of variables, and conduct experimental studies. Collecting responses from mothers who do not attend support groups and mothers who do not have access to the internet would be more representative of the target population. Additional demographic factors that may influence PTG could be collected and analyzed, including race and ethnicity, religion, age of the mother at the time of loss, whether the mother had living children prior to the loss, whether the mother was partnered at the time of the loss, and comparing mothers with single versus multiple losses.

Variables used in the current study could be examined more rigorously. Analysis of the correlation between ratings of severity of losses with increasing age of the fetus or infant could be improved with a greater sample size that would allow for more fine-grained measurements of the age at loss, such as using gestation in weeks as in [Krosch and Shakespeare-Finch \(2017\)](#). This correlation could be investigated, perhaps cross-culturally, to determine whether bonding time or society's greater disregard for miscarriages affect these ratings. Since involvement in loss-related activities is found to be positively related to PTG and finding meaning, future research could investigate which types of loss-related activities are beneficial. The fact that support from a partner was not associated with PTG suggests that support from some sources may contribute to PTG more than others. For example, is support from those who were not directly involved in a trauma more strongly correlated with PTG due to greater opportunity for self-disclosure with people who were not present during the trauma?

Lastly, conducting experimental studies with this population of mothers would help determine causality. Certain variables (e.g., social support and changes in behavior) could be manipulated to investigate their effects on PTG. Bereaved mothers could be randomly assigned to groups, with some attending an in-person or online message board support group, some participating in loss-related activities, and some providing support to others who are grieving. Results from these experimental studies would indicate whether these variables cause an increase PTG.

Conclusion

It is hoped that the current study will inform professionals, family, and friends of bereaved mothers about interventions that may promote PTG. The results indicate that greater PTG is related to social support from others who have experienced similar losses, involvement in activities related to the loss, supporting others, finding meaning in the loss, and finding meaning in life. Although these mothers report that the loss of their baby is experienced as a great trauma, which disrupts their core beliefs, this type of loss is often ignored or marginalized by the larger society. The authors hope that this research can bring more understanding and compassion to those who have suffered the loss of a baby. It is important to remember that despite the positive changes that result from growth, this growth stems from intense struggle with a deeply traumatic event.

Appendix

Healing Survey

1. Describe the nature of your loss(es) – gestation/age of baby, cause if known
2. How many pregnancy/baby losses have you experienced?
3. What was the gestational age or age after birth of your baby/babies? (check all that apply)

- less than 13 weeks
 - 13 – 19 weeks
 - 20 – 27 weeks
 - 28 weeks – full-term
 - live birth, lived 0 – 6 days
 - live birth, lived 7 – 27 days
 - live birth, lived 28 – 364 days
4. What was the date of your most recent loss?
 5. How would you rate the severity of your loss(es)? If they differ in severity, rate the most severe loss.
 - 0 = not traumatic
 - 1 = slightly traumatic
 - 2 = mildly traumatic
 - 3 = moderately traumatic
 - 4 = greatly traumatic
 - 5 = severely traumatic

Likert scale for questions 6–12

- 0 = none
 - 1 = very little
 - 2 = a little
 - 3 = a moderate amount
 - 4 = a great amount
 - 5 = a very great amount
6. How much social support have you received in general?
 7. How much support have you received from family and/or friends who have not personally experienced a similar loss?
 8. How much support have you received from family and/or friends who have personally experienced a similar loss?
 9. How much support have you received from your partner?
 10. How much support have you received from support groups (online message board or in-person) comprised of others who have personally experienced a similar loss?
 11. How much support have you received from online message board support groups comprised of others who have personally experienced a similar loss?
 12. How much support have you received from in-person support groups comprised of others who have personally experienced a similar loss?
 13. Which type of support have you found most helpful?
 - family and/or friends who have not personally experienced a similar loss
 - family and/or friends who have personally experienced a similar loss
 - partner
 - support groups (online message board or in-person) comprised of others who have personally experienced a similar loss

Likert scale for questions 14–20

0 = not at all

1 = to a very small degree

2 = to a small degree

3 = to a moderate degree

4 = to a great degree

5 = to a very great degree

14. I feel that I have found meaning in my loss(es).
15. I feel that I have found meaning in my life since my loss(es).
16. I am involved in activities related to my loss(es).
17. My occupation relates to my loss(es).
18. My volunteer work relates to my loss(es).
19. My hobby relates to my loss(es).
20. I am involved in supporting others as a result of my loss(es).

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Ethical Statement

Ethical Approval

This study was approved by the IRB of California Southern University. Participants were notified of potential risks and provided informed consent. All responses were submitted anonymously.

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Notes

1. Copies of these scales can be requested by sending email to institute@bouldercrest.org.
2. $N = 54$ for age of fetus or infant, because participants who had multiple losses in different age categories were excluded from the analysis due to inability to determine which loss was related to the severity or CBI score.
3. $N = 56$ for this measure, because 10 participants did not provide the time since their most recent loss.

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