

## **Psychological Consequences of Pregnancy Loss and Infant Death in a Sample of Bereaved Parents**

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*This study aimed to explore a broad range of psychological reactions to trauma in a sample of bereaved parents in order to assess whether the traumatic framework is adequate for describing the entire range of emotional reactions to infant death. A sample of bereaved parents (N = 455) who lost their child through perinatal or postnatal loss were compared to a control group of parents (N = 110) who gave birth to a healthy child. Multivariate regression analysis clearly demonstrated that bereaved parents scored significantly higher on the Depression, Anxiety, Dissociation, Sleep Disturbances, Somatization, Interpersonal Sensitivity, and Aggression subscales of the Trauma Symptom Checklist. Consistent with previous studies, the results showed that for up to 5 years postloss bereaved parents expressed elevated levels of trauma-specific and psychological outcomes, in particular interpersonal sensitivity and aggression.*

*KEYWORDS* multivariate regression, parental bereavement, perinatal loss, postnatal loss, trauma

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A substantial number of research studies have examined the psychological effects of pregnancy loss and infant death in parents. However, many of these studies lacked systematic research methods and faced methodological challenges such as small sample sizes, lack of comparison groups, and a narrow range of outcome measures, which has affected the validity of some of the studies (Hendrickson, 2009). Similarly, a myriad of variables have been used to predict bereavement outcomes following the loss of a child, and different measures and types of bereavement have been used.

Toedter, Lasker, and Janssen (2001) carried out a systematic review of 22 studies that used the Perinatal Grief Scale (Toedter, Lasker, & Alhadeff, 1988) in order to determine the scale's validity across different samples. The Perinatal Grief Scale was developed to incorporate the many different dimensions of grief, such as disbelief, anger, loneliness, and guilt. Factor-analytical research (Potvin, Lasker, & Toedter, 1989; Toedter et al., 2001) revealed a three-factor structure representing active grief (sadness, missing the baby), difficulty coping (depression and withdrawn), and despair (feelings of worthlessness and hopelessness). A total of 2,457 participants were included in the review, and in the majority of studies the time since loss was 1 year. The scale has made a significant contribution to the literature as it addresses some of the inconsistencies in bereavement research with regard to the methods used. The instrument provides a means of evaluating a wide range of affective and behavioral responses experienced by parents bereaved by perinatal loss (Badenhorst, Riches, Turton, & Hughes, 2006) and has been credited with validity across numerous studies. The extant literature has consistently identified a significant association between parental loss and grief; however, more research is needed to investigate a wider range of psychological outcomes associated with the traumatic effects of pregnancy loss and infant death on bereaved parents.

There are other inconsistencies within the parental bereavement research relating to assessment of type of death. First, the different terms used to depict the type of death vary considerably, especially in the field of pregnancy loss. Wright (2011) outlines the problems with using different terms for pregnancy loss and gives definitions of different types of pregnancy loss (fetal death, stillbirth, perinatal loss, spontaneous abortion, early miscarriage, and early pregnancy loss) described in research studies over the years. Elklit and Gudmundsdóttir (2006) also underline the range of terms used to describe both pregnancy loss and infant death. One of the most commonly reported type of infant death is the sudden and unexpected death of an infant or toddler, (SIDS) which extends from 2 weeks to 2 years of age and whereby the death cannot be determined by a postmortem examination. According to Elklit and Gudmundsdóttir (2006), perinatal mortality is described as death from gestation weeks 28–42 or during birth. Neonatal mortality can refer to death in the first 4 weeks of life or when an infant does not show any sign of life in the womb and is born after gestation week 20.

Finally, stillbirths are instances when the infant dies when it is born and can occur prematurely or at full term (Elklit & Gudmundsdóttir, 2006). With the varying terms used across different research studies, there is a heightened risk to the validity of these studies, as the same terms may be applied to describe the same types of loss but in different ways (Wright, 2011). It is therefore evident that more consistent terms need to be applied to the varying types of infant death and pregnancy loss.

In the trauma literature, there has been debate about what constitutes a traumatic event; this has seen a shift from the original objective viewpoint of trauma to a more subjective investigation into individuals' response to trauma in different situations. This change in focus has meant that other experiences are now being examined within the traumatic framework and can contribute to a greater understanding of the complex symptoms that can follow a traumatic event. This has led to studies investigating bereavement and loss within the posttraumatic stress disorder (PTSD) framework.

In light of the change in diagnostic criteria for PTSD, the death of an infant is sufficient for parents to meet DSM-IV Criteria A1 (the person has experienced, witnessed, or been confronted with an event or events that involve actual or threatened death or serious injury, or a threat to the physical integrity of oneself or others) and A2 (the person's response involved intense fear, helplessness, or horror). Bereavement and PTSD have some similar symptoms such as heightened levels of anxiety, avoidance, and reexperiencing. PTSD has been shown in other types of bereavement and has been linked to complicated grief (O'Connor, Lasgaard, Shevlin, & Guldin, 2010).

PTSD has been investigated as a psychological outcome in the bereavement research literature. Engelhard, van den Hout, and Arntz (2001) assessed acute and chronic PTSD after pregnancy loss in a large Dutch sample. The estimated PTSD prevalence was 25% 1 month following the loss and 7% 4 months following the loss. In a prospective study, Murphy, Johnson, and Lohan (2002) examined bereaved parents' concurrent changes in PTSD and mental distress up to 5 years following the sudden and violent death of a child. Using the Brief Symptom Inventory (BSI; Derogatis, 1993) and the Traumatic Experiences Scale (based on DSM-III-R criteria for PTSD; American Psychiatric Association, 1987), Murphy et al. (2002) showed that PTSD symptoms were still present up to 5 years following the loss, with more than 25% of mothers and 12% of fathers meeting the diagnostic criteria for PTSD. When compared to the normative control sample of Kessler, Sonnega, Bromet, Hughes, and Nelson (1995), it was found that reported PTSD incidence was three times as high for bereaved mothers and twice as high for fathers. The results further showed that 60% of mothers and 50% of fathers met diagnostic criteria for mental distress as measured by BSI Global Severity Index scores. These studies demonstrate findings that provide empirical support for the presence of PTSD in bereaved populations.

Many factors have been investigated in determining the severity of the traumatization process for bereaved parents following infant death, and different practices have been examined when working with parents in the aftermath of loss. Elklit and Gudmundsdóttir (2006) investigated if clinical practices following perinatal and postnatal infant death were helpful or detrimental for parental psychological well-being. The results of this study revealed no significant differences in psychological distress between types of losses (perinatal or postnatal), but for those parents who lost their child through postnatal death, a reduction in levels of distress was associated with the amount of time spent with their child. This contrasts, however, to findings of a study conducted by Hughes, Turton, Hopper, and Evans (2002), who found higher levels of PTSD in mothers who saw their child following perinatal loss.

Gender differences have been a focal point of research examining the psychological impact of bereavement. While the impact of loss has been thoroughly researched among mothers, much less attention in recent years has been placed on the impact on fathers. In an review conducted by Badenhorst et al. (2006) on the psychological effects of perinatal death on fathers, they found that many fathers experience psychological outcomes such as loneliness, anger, guilt, and helplessness. Quantitative studies included in this review revealed that while fathers did display symptoms of anxiety and depression, they did so to a lesser extent than mothers (Badenhorst et al., 2006). Other studies have supported this finding, reporting that women are more likely to experience negative psychological outcomes related to bereavement (Vance, Boyle, Najman, & Thearle, 1995). The traumatic impact of pregnancy loss in fathers was investigated by Turton et al. (2006), who conducted a community-based cohort study of 38 pregnant couples who experienced a stillbirth and 38 pair-matched case controls. The results indicated that fathers experienced significant levels of anxiety and PTSD antenatally; however, these symptoms remitted after the birth of a live child. Moreover, findings regarding gender differences are inconclusive, with some research suggesting that there are no gender differences with regard to distress levels between parents (Toedter et al., 2001).

The psychological consequences of infant death have been argued to result from different factors. Anxiety and depression are seen as common responses to traumatic experience and have received a significant amount of attention in the bereavement literature. Vance, Boyle, Najman, and Thearle (2002) investigated anxiety, depression, and alcohol use in parents who experienced stillbirth, neonatal death, or sudden infant death. The study was a 30-month prospective case-control design of 138 bereaved parents and 150 non-bereaved parents. The results revealed that 30 months after the loss, 25% of the parents were still exhibiting distress, which was significantly higher than reported in the control group. However, when alcohol was included in the analysis, there was a significant decrease in gender differences in the

sample. This suggests that males may have used alcohol as a coping mechanism in dealing with the loss and therefore delayed the onset of distress. In another prospective study, Janssen, Cuisinier, Hoogduin, and de Graauw (1996) investigated depression following infant death and found women were 4.5 times more likely to experience depression than community controls and 3.4 times more likely than pregnant women. In addition, this study showed elevated anxiety, somatization, and obsessive-compulsive behaviors in bereaved mothers. Anxiety is also a common symptom investigated following pregnancy loss, and studies have shown that women who experience perinatal loss have elevated anxiety levels, with prevalence rates ranging from 22% to 41% (Athey & Spielvogel, 2000; Janssen et al., 1996; Prettyman, Cordle, & Cook, 1993).

Bennett, Litz, Maguen, and Ehrenreich (2008) investigated the impact of perinatal loss on mental health outcomes including complicated grief, traumatic stress, and internalizing symptoms (anxiety and depression). This study consisted of 91 women who experienced perinatal loss within the past 5 years. Results of this study revealed that as the time since loss increased, psychological symptoms decreased with the exception of depression. Based on scores from the Brief Symptom Inventory (Derogatis, 1993), Bennett et al. (2008) found that women who experienced perinatal loss were significantly more likely than normative controls to experience anxiety and depression and reported symptomology levels equivalent to those seen in a psychiatric outpatient sample (Derogatis, 1993).

While anxiety and depression make significant contributions to the psychopathology of bereaved parents, there are many other symptoms that require attention within the traumatic context. Symptoms such as interpersonal sensitivity, aggression and hostility, and somatization are common sequelae to traumatic experiences but have received little research attention in relation to parental loss. Within the PTSD literature, anger and hostility have been investigated with regard to symptom severity. This line of research has potential implications for traumatized populations in terms of intervention, treatment plans, and recovery; focus should be placed on addressing the anger/hostility problems that traumatized individuals often experience after the event.

This study addresses some of the methodological limitations of previous research by looking at parental loss throughout the cycle of pregnancy and postnatally in a large sample of bereaved parents. The research literature on bereaved parents has focused mainly on the association between bereavement and a PTSD diagnosis, depression, and anxiety. However, there has been relatively little research that looks at other psychological responses to bereavement. Therefore, the main aim of this study was to explore a broad range of psychological reactions to trauma in a sample of bereaved parents in order to assess whether the traumatic framework is adequate for describing the entire range of emotional reactions to infant death. The second aim

was to examine gender differences between bereaved parents and a control sample of parents. The final aim was to examine outcomes such as interpersonal sensitivity and aggression as strong predictors of parental distress up until 5 years postloss.

## METHOD

### Participants

Participants were all members of the Danish National Association of Infant Death, which is a private organization that provides counseling and support to bereaved parents and close family members. The association arranges support groups, annual services, memorials, and public lectures disseminating information and awareness of infant death. Bereaved individuals are referred to the association during their time in hospital or upon discharge. The ethical standards of the study protocol were approved by the institutional review board. The study was also subject to a board decision within the National Association of Infant Death and granted permission to proceed. Invitation letters were sent out together with the questionnaire; participation was entirely voluntary, and no reason for nonparticipation was requested. The information letters detailed the study and were sent out with questionnaire packs to 650 households of members of the association. Each questionnaire pack included two copies of the survey, one for each parent. The senior author's contact details were included in the invitation letter for further information or mental health needs of those members who agreed to participate. The response rate was (defined as at least one answer from one parent from one address) was 53%.

In this study, the term perinatal loss was used to describe a sample of parents who experienced loss from gestational week 18 until birth. The term postnatal loss was used to describe parents who lost their child within the first 2 years of life. It is hoped this will help provide a clearer picture of the sequelae of loss and the different types of loss. The final sample who met the inclusion criteria limiting time since loss to between 5 days and 5 years consisted of 455 participants (254 females and 191 males). The mean age of participants was 32.64 ( $SD = 5.1$ ). In order to assess the type of loss, participants were grouped into two categories: perinatal loss that included loss during pregnancy or labor ( $n = 242$ ) and postnatal loss ( $n = 199$ ) occurring within the first 2 years of life. The average time since the loss of the infant was 2.2 years ( $SD = 1.2$ ). There were missing data for four cases, and these cases were therefore not included in the analysis. The exclusion criterion was that the loss had to occur within the past 5 years, which was the criterion set in similar studies conducted by Bennett et al. (2008) and Murphy et al. (2002).

A comparison group that consisted of 110 parents, 64 (58.2%) of whom were women who had given birth to healthy babies without any pre- or postnatal complications, was included in the study. The recruitment procedures were similar to those used in the national association sample. The participants in this group were parents who had attended either the maternity or neonatal ward at two large university hospitals in Denmark (Skejby Hospital and Aalborg North Hospital). The study was completed 1 month after giving birth. The mean age of the participants in this sample was 30.3 ( $SD = 4.1$ ).

## Measures

The first part of the questionnaire consisted of demographic variables to ascertain age and gender differences between the two samples.

The Trauma Symptom Checklist (TSC; Briere & Runtz, 1989) was used to measure trauma-specific and psychological symptoms associated with the loss of an infant. The scale consists of 35 items that are rated in relation to the previous month ("How often have you experienced each of the following in the last month ...?"). In this study, two items ("Do you feel angry or irritated?" and "Do you feel low in energy?") were added to the original TSC 33 (Elklit, 1990). Participants responded using a 4-point Likert scale ranging from no (0) to very often (3). The checklist measures seven variables: depression, anxiety, dissociation, sleep disturbances, somatization, interpersonal sensitivity, and aggression.

The revised version of the TSC 35 has undergone psychometric testing (Elklit, 1990; Elklit & Brink, 2003). Elklit (1990) found that estimates of reliability for each of the subscales were adequate: Depression ( $\alpha = .89$ ), Anxiety ( $\alpha = .82$ ), Dissociation ( $\alpha = .84$ ), Sleep Disturbances ( $\alpha = .87$ ), Somatization ( $\alpha = .84$ ), Interpersonal Sensitivity ( $\alpha = .74$ ), and Aggression ( $\alpha = .68$ ). The overall reliability ( $\alpha$ ) for the TSC was .95. The TSC has been credited as a valid measurement of the sequelae of traumatization.

## Data Analysis

A multivariate regression analysis was carried out using Mplus 6.1 (Muthen & Muthen, 2010). Multivariate regression analysis was utilized in this study as it allows several dependent variables (in this case, the TSC subscales) to be jointly regressed on predictor variables. The predictor variables in this model were age, gender, and two dummy-coded variables representing time of loss. The dummy-coded variables represented a distinction between the comparison group and the postnatal loss group and between the comparison group and the perinatal loss group. The regression estimates for each dependent variable indicate the difference between the two group means in the scale of the dependent variable. Robust maximum likelihood

estimation was employed, as it is the most appropriate estimator under conditions of non-normality (Satorra & Bentler, 1994).

## RESULTS

A series of *t* tests were conducted to measure the difference between bereaved parents and the control group on the individual subscales of the TSC. The means, standard deviations, and values are presented in Table 1. There were significant differences, with parents from the bereaved sample scoring higher, between the two groups on all subscales of the TSC. *T* tests were also conducted to investigate if there were any differences between time of loss (perinatal or postnatal) in the bereaved sample. The results revealed that there were no significant differences between the type of loss in any of the TSC subscales.

The bereaved parents group ( $M = 32.6$  years,  $SD = 5.1$ ) was significantly older than the comparison group ( $M = 30.37$  years,  $SD = 4.16$ ),  $t(551) = 1.16$ ,  $p < .01$ . The gender distribution was similar between the two groups, with 43% males and 57% females in the bereaved group and 41.8% males and 58.2% females in the comparison group. There was no statistical difference between the groups ( $\chi^2 = 1.47$ ,  $df = 2$ ,  $p > .05$ ).

For the main analysis, a multivariate regression analysis was conducted on the following predictor variables: gender, age, and whether the loss was perinatal or postnatal. In order to examine the impact of type of loss, this variable was grouped as perinatal versus comparison and postnatal versus comparison. Table 2 shows that all factors significantly contributed to the overall trauma score. Based on the  $R^2$  values, which provide an explanation of the overall quality of the model, it is evident that depression made the largest contribution to the total amount of variance explained in the model, at 16.6%.

**TABLE 1** Descriptive Statistics for the Bereaved Parents and Comparison Sample of Parents for All Subscales of the Trauma Symptom Checklist.

TSC subscale	Bereaved group mean ( <i>SD</i> )	Comparison group mean ( <i>SD</i> )	<i>t</i>	<i>df</i>	<i>p</i>
Depression	15.86 (4.09)	13.94 (3.19)	4.39	537	<.001
Anxiety	10.70 (2.90)	9.52 (1.58)	4.02	537	<.001
Dissociation	9.63 (2.79)	8.24 (1.65)	4.91	541	<.001
Sleep Problems	5.87 (2.11)	5.36 (1.64)	2.30	545	<.05
Somatization	9.90 (2.99)	8.78 (1.72)	3.72	543	<.001
Interpersonal Sensitivity	10.31 (2.83)	8.57 (1.82)	6.05	542	<.001
Hostility/Aggression	5.52 (1.53)	4.59 (0.86)	6.03	547	<.001
Total	50.52 (11.66)	43.71 (6.64)	5.54	513	<.001

*Note.* Bereaved parents,  $n = 455$ ; comparison sample,  $n = 110$ .



**TABLE 2** Regression Coefficients for TSC Subscales, Gender, Age, and Postnatal or Perinatal Loss: Bereaved Versus Control Group.

Predictor	Depression $\beta$ (SE)	Anxiety $\beta$ (SE)	Dissociation $\beta$ (SE)	Sleep $\beta$ (SE)	Somatization $\beta$ (SE)	Interpersonal sensitivity $\beta$ (SE)	Aggression $\beta$ (SE)
Gender	.339*** (.036)	.198*** (.038)	.094* (.040)	.114* (.043)	.195*** (.039)	.098* (.040)	.102* (.041)
Age	-.080 (.045)	-.106* (.048)	-.167*** (.048)	.001 (.056)	-.116** (.048)	-.121** (.043)	-.122** (.043)
Postnatal	.209*** (.048)	.202*** (.046)	.294*** (.044)	.128* (.053)	.182*** (.047)	.318*** (.045)	.312*** (.045)
Perinatal	.259*** (.047)	.245*** (.042)	.293*** (.040)	.133* (.049)	.234*** (.043)	.324*** (.045)	.294*** (.045)
$R^2$	.166*** (.029)	.087*** (.022)	.088*** (.022)	.024* (.012)	.086*** (.022)	.088*** (.020)	.082*** (.019)

\* $p < .05$ ; \*\* $p < .005$ ; \*\*\* $p = .001$ .

The results for perinatal loss and the comparison group were similar to that found in the postnatal sample. As expected, there were significant associations found for all subscales, with the bereaved parents scoring higher on all of the trauma symptoms. The largest contributing variable in this analysis was the Interpersonal Sensitivity subscale, with a beta value of .32. When comparing parents who lost their child through postnatal death to non-bereaved parents, there were significant differences in all of the seven TSC subscales. This signifies that parents who experienced infant death displayed more trauma symptoms than the comparison group. When further examining the results, the largest effect was seen in the Interpersonal Sensitivity subscale ( $\beta = .32$ ), indicating that parents who lost a child displayed higher levels of loneliness and isolation when compared to non-bereaved parents.

## DISCUSSION

The main aim of this study was to examine the association between trauma symptomology in a sample of bereaved parents and a comparison sample of non-bereaved parents. The findings clearly demonstrated that there were significant group differences between parents who had lost their infant through perinatal and postnatal death when compared with the comparison sample. Consistent with previous studies, bereaved parents had elevated levels of trauma-specific and psychological outcomes following the loss of an infant. However, when examining differences between the type of loss, there were no significant differences found on any of the TSC subscales.

The second aim of the study was to investigate gender differences between bereaved parents and a control sample of parents on trauma symptomology. This study revealed that demographic variables played a significant role in the level of traumatization following infant loss. Gender had a significant impact on all of the subscales of the Trauma Symptom Checklist. In terms of depression, females expressed higher levels of depressive symptoms than males, which coincides with the literature (Dyregrov & Matthiesen, 1991). This finding again was extended throughout all subscales of the TSC. The age of the parent had a significant impact in the majority of the subscales, although there was no effect found for depression and sleeping disturbances. There was a negative association found on this predictor variable, which suggests that psychopathology decreases the older the parent is at the time of loss. This finding is contrary to other research, as it suggests that older parents experience higher levels of psychopathology following infant loss (Janssen et al., 1996).

The third aim of this study was to investigate trauma-related responses that are not as commonly reported in research findings, such as anger, hostility, and interpersonal sensitivity. The results revealed that interpersonal sensitivity was the largest contributing variable in parents who suffer perinatal

loss. This finding is interesting, as across the bereavement literature there is little reported on interpersonal sensitivity. Interpersonal sensitivity refers to problems that may affect interpersonal relationships; for example, higher levels of interpersonal sensitivity represent increased feelings of loneliness, isolation, and feeling like one is not getting on with others. This is a plausible response following perinatal death. It can be difficult to offer support to people suffering perinatal death, as there was no child for others (with the exception of the parents) to form a bond with; therefore, it may be more difficult for parents to try to express these feelings. For bereaved parents who suffered a perinatal loss, there were also significantly higher dissociative experiences in relation to the comparison sample. Dissociative experiences following a traumatic event are common (Bremner et al., 1992; Briere, Scott, & Weathers, 2005; Wagner & Linehan, 1998) and are often referred to in the trauma literature as peritraumatic dissociation. Dissociation can be seen as a coping mechanism for avoiding the painful memories of the trauma; however, there has been relatively little research carried out on dissociative reactions following the loss of an infant. This is a significant finding of our study due to the high levels of dissociation in the bereaved sample.

The current findings are consistent with the literature showing that bereaved parents are more likely than non-bereaved parents to experience higher levels of somatic symptoms. We found that parents who experienced perinatal loss were particularly more likely to experience somatic symptoms than the comparison sample. Somatic symptoms can include eating problems, sleeping disturbances, headaches, and dizziness. Research has found that mothers often experience more somatic complaints following perinatal and postnatal loss (Dyregrov & Matthiesen, 1991).

Aggression and hostility are underresearched areas in the bereavement literature. However, within the trauma framework, anger and aggression can be commonly found in traumatized populations (Orth, Cahill, Foa, & Macercker, 2008). The results from this study support previous research and highlight that parents who have lost a child through postnatal death experience high levels of interpersonal sensitivity and aggression. A possible explanation for the high levels of hostility in this study is that traumatized individuals have a tendency to avoid feelings of fear brought on by the traumatic event. In this case, hostility could be seen as a distraction mechanism from the traumatic memories, as has been found in other studies using PTSD samples (Riggs, Dancu, Gershuny, Greenberg, & Foa, 1992). In addition, parents who lost their child through postnatal death scored higher on the Interpersonal Sensitivity subscale and the Dissociative Experiences scale than the non-bereaved sample. Overall, these results support previous findings that report high levels of trauma in bereaved parents in comparison to normative controls 5 years postloss (Bennett et al., 2008; Murphy et al., 2002). Both of these studies used the BSI, which includes similar subscales to the TSC, such as interpersonal sensitivity and aggression. However, only the

Murphy et al. (2002) study included all of the subscales in their analysis. The current study reported similar findings to the Murphy et al. (2002) study that also demonstrated high levels of trauma symptomology when compared to normative controls.

There are some limitations to this study. First, the results are based on a self-report single measure of trauma-specific psychopathology. Second, we did not include information on any prior pregnancy or infant losses as part of the analysis. This could have played a contributory role in the extent of trauma expressed by both samples. Third, other traumatic events were not included in the analysis, which could also have had an impact on the results. Finally, the response rate for the survey was 54%, so it is not clear how representative the sample was of the population of bereaved parents. It may be that those parents who were most distressed did not participate due to painful memories.

This study had many strengths, one being it looked at a broad range of psychological responses to trauma rather than focusing on a PTSD diagnosis. It also examined different types of infant death (postnatal/perinatal) and made comparisons with a sample of non-bereaved parents. Our study has uncovered interesting areas for future research in terms of looking more deeply into the role of interpersonal sensitivity, aggression, and dissociative experiences following the loss of an infant. Our findings can make a valuable contribution in understanding the role of trauma and sequelae in parents who have endured the death of an infant. Our results also highlight the need for more attention to planning interventions, focused within a traumatic framework, that will help support parents who have experienced pregnancy loss and infant death.

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