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Pregnancy Loss and Distress Among U.S. Women

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Abstract

Although pregnancy loss—especially miscarriage— is a relatively common experience among reproductive-aged women, much of our understanding about the experience has come from small clinic-based or other nonrepresentative samples. We compared fertility-specific distress among a national sample of 1,284 women who have ever experienced a stillbirth or miscarriage. We found that commitment/attachment to pregnancy that ended in loss as well as current childbearing contexts and attitudes were associated with distress following pregnancy loss. Practitioners working with women or couples who have experienced pregnancy loss should be aware of the importance of characteristics associated with higher distress, such as whether the pregnancy had been planned, recency of the loss, no subsequent live births, having a medical explanation for the loss, a history of infertility, current childbearing desires, importance of motherhood, and locus of control over fertility.

Keywords: attachment, commitment, distress, fertility, miscarriage, pregnancy loss, stillbirth

Approximately 14% of all clinically recognized pregnancies in the United States result in miscarriage, defined as a loss during the first 20 weeks of pregnancy, another 0.5% result in stillbirth, a loss after the 20th week (Saraiya, Berg, Shulman, Green, & Atrash, 1999).

Pregnancy loss is often a devastating experience for parents. Research suggests that women experience a variety of psychological distress outcomes following miscarriage, including grief, anxiety, depression, and guilt (Lok, Yip, Lee, Sahota, & Chung, 2010; Thapar & Thapar, 1992), and that—although effects usually diminish within 6 months (Brier, 2008)—these outcomes are often sustained over years (Janssen, Cuisinier, & Hoogduin, 1996; Stinson, Lasker, Lohmann, & Toedter, 1992). Less is known about stillbirths than early pregnancy loss; however, research on stillbirth indicates that bereaved mothers, as a group, manifest significantly higher rates of psychological distress than mothers of living infants for at least 30 months after their loss (Boyle, Vance, Najman, & Thearle, 1996). There is some evidence that the adverse effects of stillbirth on mental health persist throughout the life course (Bernazzani & Bifulco, 2003).

Although pregnancy loss, especially miscarriage, is a relatively common experience among reproductive-aged women, much of our understanding about the experience of pregnancy loss has come from small clinic-based or other nonrepresentative samples. Furthermore, the various factors (individual, familial, economic, medical, and cultural) that affect the psychological response to pregnancy loss are not well understood (Bennett, Litz, Lee, & Maguen, 2005), possibly limiting the effectiveness that family professionals could have with regard to reducing psychological distress. We therefore advance understanding of the responses to pregnancy loss by examining factors associated with distress using a population-based sample of women who had stillbirths or miscarriages or both. Making use of the concepts of commitment and attachment, we endeavored to enhance understanding of the effect of pregnancy loss on fertility-specific distress (FSD) using data from the National Survey of Fertility Barriers (NSFB), a probability-based study of 4,796 American women of reproductive age. We assessed differences in distress by pregnancy commitment and attachment (e.g., gestation length and whether the pregnancy had been planned); experiences since the loss (e.g., recency of loss, having a medical explanation for the loss, giving birth after the loss, and having experienced multiple losses); current fertility context (e.g., infertility history, currently wanting a baby, importance of motherhood, and pregnancy locus of control); and background characteristics (e.g., education level, age, relationship status, and race/ethnicity).

Investment in Pregnancy and the Relevance of Pregnancy Loss

There is a good deal of variability in how women respond to pregnancy loss. Evidence from research on pregnancy loss indicates that anywhere from 20 to 55% of women report elevated levels of depressive symptoms in the months immediately following pregnancy loss (Janssen et al., 1996; Lok & Neugebauer, 2007). A recent study (Lok et al., 2010) revealed that over a quarter of women scored high enough on the Beck Depression Inventory immediately after miscarriage to be rated as probably having a depressive disorder. Women with higher initial depressive scores continued to report depressive symptoms over the course of a year.

Bennett et al. (2005) provided a long list of prebirth events or attitudes that are likely to be associated with distress following pregnancy loss, including investment in and meaning of the pregnancy, time and energy spent trying to conceive, fertility history of the couple, previous fertility help-seeking behaviors, age of the mother, number of previous pregnancy losses, number of living children, relationship quality between the parents of the child, and outside influence and expectations about having a child. The factors in this list have not been evaluated through comprehensive studies. Research focusing on the importance of these factors individually, however, has determined a number of pregnancy loss and fertility history characteristics that are associated with distress. Our goal is to advance understanding of differences in reactions to pregnancy loss among a probability-based sample of American women.

Variations in distress following pregnancy loss are often attributed to variations in levels of commitment (Lydon, Dunkel-Schetter, Cohan, & Pierce, 1996) and attachment (Robinson, Baker, & Nackerud, 1999) to pregnancy. The concepts of commitment and attachment have both been employed to describe the process of identification with the motherhood role during pregnancy (Kemp & Page, 1987; Lydon et al.; Muller, 1992). Studies on commitment use the concept to refer to an investment in a particular line of action (Becker, 1960; Hirschi, 1969) and to a tendency to feel psychologically attached to a role, a relationship, or an organization (Kanter, 1972; Lydon et al.; Stryker, 1968). Pioneering work on commitment in the 1960s and 1970s established support for the fundamental tenet of commitment

theory: Greater investment in a line of action or a relationship is associated with greater likelihood of continuing in that line of action or working to maintain that relationship (Becker; Hirschi; Kanter). A corollary, therefore, is that greater investment in a line of action or relationship will be associated with greater distress if that line of action or relationship is lost.

Attachment has been defined as a “relatively enduring emotional tie to a specific other person” (Maccoby, 1980, p. 53). The concept of attachment calls to mind Bowlby’s (1969) attachment theory, but those who study the role of attachment in reactions to pregnancy loss are not necessarily making use of Bowlby’s attachment theory. Bowlby created attachment theory as an alternative to psychoanalytic theories of object relations and intended it as an explanation of the development of separation anxiety in children (Bretherton, 1985). Those who employ the concept in research on perinatal loss are not trying to account for the development of specific attachments or of attachment styles. Rather, they are asserting that women with stronger attachments to their pregnancies should experience greater distress from pregnancy loss (e.g., Peppers & Knapp, 1980).

Thus, there is much overlap between the concepts of commitment and attachment as they are employed in the pregnancy loss literature. Researchers have used both terms to suggest that the stronger psychological investment in pregnancy should lead to higher distress from a pregnancy loss. Furthermore, researchers have used both terms to make similar assertions about the factors related to variations in the experience of pregnancy loss (e.g., Lydon et al., 1996; Peppers & Knapp, 1980; Robinson et al., 1999). In the discussion that follows, we employ the specific term that researchers have used, understanding that both terms are employed in an effort to show how investment in a pregnancy is related to the experience of pregnancy loss.

Variations in Distress by Pregnancy Attachment and Commitment

The process of investment in a relationship with an infant starts well before birth. Peppers and Knapp (1980, p. 59) described nine events that contribute to mother-infant attachment: “(a) planning the pregnancy; (b) confirming the pregnancy; (c) accepting the pregnancy; (d)

feeling fetal movement; (e) accepting the fetus as an individual; (f) giving birth; (g) seeing the baby; (h) touching the baby; and (i) giving care to the baby.” They point out that five of these events occur prenatally. The concept of commitment as investment suggests that the more emotional and physical effort one spends attempting to achieve a goal, the more committed to that goal one becomes (Kanter, 1972). Thus, we expected that the longer the duration of a pregnancy, the greater the attachment to the pregnancy and, hence, the greater the distress experienced after a pregnancy loss (Robinson et al., 1999). Indeed, Lydon et al. (1996) reported that expectant mothers’ commitment to a pregnancy progresses as the pregnancy proceeds.

Variations in distress following a pregnancy loss are not fully explained by gestation (length) at time of loss, however. Although commitment to a pregnancy may be greater later in the pregnancy, it is unlikely that commitment is simply a matter of the length of gestation. Although pregnancy is obviously a biological state, it is also a socially constructed reality. Women assign meanings to their pregnancies as intended or unintended, welcome or unwelcome, life-changing or relatively routine, and so forth. Looking at pregnancy loss from the perspectives of attachment and commitment suggests that women will become more attached to children who are more “real” to them (Klier, Geller, & Ritscher, 2002; Muller, 1992). If commitment and attachment depend on the meaning attributed to a pregnancy, then a pregnancy loss occurring for women who had been trying to get pregnant should be more distressing than a loss for women who were not trying or expecting to get pregnant.

Variations in Distress and Current Fertility Context

There is much evidence to suggest that distress resulting from pregnancy loss decreases over time. Thus, we expect to find that women whose losses occurred in the more recent past will report higher levels of distress (Janssen et al., 1996; Lok & Neugebauer, 2007; Lok et al., 2010). A recent longitudinal study on miscarriage and psychological distress (Lok et al.) found that initial elevated distress declined steadily over a year, so that at the end of the year, differences in distress between the women who miscarried and the women in the comparison group were no longer significant.

Pregnancy loss often occurs in the absence of an obvious explanation. Women who have medical explanations for miscarriage have less difficulty coping than women who do not have medical explanations (Simmons, Singh, Maconochie, Doyle, & Green, 2006). Lack of information about the reason for the loss contributes to increased anxiety in subsequent pregnancies (Theut, Pederson, Zaslow, & Rabinovich, 1988), although research has not demonstrated that knowing the specific reason for a pregnancy loss reduces distress levels. We expected that knowing the reason for a pregnancy loss would be associated with lower distress.

Pregnancy histories are also relevant considerations for distress following pregnancy loss. Women without children in the household have higher personal significance associated with the pregnancy (Swanson, 2000) and increased distress when they lose a child compared with women who already have a child (Janssen, Cuisinier, & de Brauw, 1997; Schwerdtfeger & Shreffler, 2009; Thapar & Thapar, 1992). Motherhood does not alleviate the distress from a loss, however, even after the subsequent birth of a healthy baby. Approximately one third of mothers who experienced pregnancy loss prior to a live birth continue to report symptoms that place them at a high risk for depression (Armstrong, 2007). Still, we expected that distress would be lower for women who have had a live birth following their (most recent) loss.

Approximately 1–2% of reproductive-aged women experience recurrent pregnancy loss (Kutteh, 2005), which typically refers to three or more consecutive pregnancy losses. Women who have experienced prior losses attach more significance to a miscarriage (Swanson, 2000), and research indicates that recurrent pregnancy loss is associated with significant psychological distress (Adeyemi, 2008; Magee, 2003). Therefore, we expected that women who have experienced more than one loss would report higher FSD.

If investment of time and energy increases commitment and attachment to pregnancy, then women who have difficulty conceiving or carrying a pregnancy to term should experience pregnancy loss as more distressing than women who had no challenges conceiving or carrying a pregnancy. Women experiencing high-risk pregnancies need to invest more time and energy in their pregnancy and report higher levels of attachment to their pregnancies (Mercer & Ferketich, 1990; Stainton, McNeil, & Harvey, 1992). Previous studies have shown that involuntary childlessness is associated with higher distress than

voluntary childlessness or infertility (Janssen et al., 1997; McQuillan, Greil, White, & Jacob, 2003; Schwerdtfeger & Shreffler, 2009; Toedter, Lasker, & Alhadeff, 1988), although the association between difficulty conceiving and psychological distress among women who have had a pregnancy loss has not been explored. We expected to find that infertility would be related to higher distress among women who have experienced a pregnancy loss.

In addition, women who are more eager for motherhood should be more committed to their pregnancy and report more distress than women who are less eager for motherhood. Importance of motherhood and current fertility intentions have not been assessed in the pregnancy loss literature, but evidence from infertility research suggests they should be relevant, as both pregnancy loss and infertility are barriers to childbearing for women who want to have children. In a study on infertile couples, Abbey, Andrews, and Halman (1992) reported that greater importance of children is associated with greater distress. Miles, Keitel, Jackson, Harris, and Licciardi (2009) found that infertile women who report greater pressure to become mothers score higher on a general measure of distress. These findings suggest that women who view motherhood as more important should report higher distress following a pregnancy loss.

Current pregnancy intentions should also be relevant for distress following a loss. In a study comparing infertile women with and without pregnancy intent, Greil, McQuillan, Johnson, Blevins-Slauson, and Shreffler (2010) found that infertility is only distressing for women who report that they currently want to have a baby. Thus, we expected that pregnancy loss would be more distressing for women who currently want to have a baby.

Another consideration is how confident women are that they can and will get pregnant and have a baby when the time is right—that is, a childbearing locus of control. Infertility research has shown that having lower locus of control is associated with greater likelihood of seeking medical help to become pregnant (Greil & McQuillan, 2004), suggesting that women who feel more confident in their ability to get pregnant or carry a pregnancy to term should feel less distress.

The vast majority of studies that have looked at the influence of demographic characteristics (e.g., age, socioeconomic status, race/ethnicity, and union status) on the relationship between pregnancy loss and psychological distress have not reported significant findings

(Brier, 2008; Klier et al., 2002; Lok & Neugebauer, 2007). The major exception to this generalization has to do with parity. As noted above, pregnancy loss appears to be significantly more distressing among women with no children. This is consistent with what one would expect on the basis of findings concerning the relationship between the meaning of a pregnancy and the distress resulting from pregnancy loss (Klier et al., 2002; Muller, 1992). It must be remembered, however, that most studies have used relatively small numbers of women who self-select into studies. An appropriate evaluation of demographic characteristics and distress following pregnancy loss requires a representative sample. Despite the limits of existing research, some studies have found an association between demographic variables and distress. Toedter et al. (1988) reported that lower socioeconomic status is associated with higher levels of distress. We expected older women to have more concern about pregnancy loss because of fertility age limits, but we are aware of only one study that found this association (Janssen et al., 1997). Because demographic factors may influence the incidence of pregnancy loss experiences as well as fertility contexts, it is important to control for these variables to avoid spurious findings.

Statement of the Problem

Most studies using measures specifically related to distress associated with pregnancy loss, such as the Perinatal Grief Scale (Toedter et al., 1988) and the Perinatal Bereavement Grief Scale (Ritsher, 2002) have found that those who had shorter pregnancies have lower grief scores than those who had longer pregnancies (Franche, 2001; Janssen et al., 1997; Lasker & Toedter, 2000). Studies that have employed more general measures of psychological functioning—such as depression—as the dependent variable, however, have failed to find a conclusive link between length of gestation and distress levels (Klier, Geller, & Neugebauer, 2000; Neugebauer et al., 1992), although women with late losses exhibit more symptoms of depression than women with earlier losses (Neugebauer et al.). This suggests that measures specifically related to fertility may be more sensitive to variation in distress following pregnancy loss than more general measures. Infertility researchers have made a similar argument for

studying psychological distress related to infertility (Greil, Slauson-Blevins, & McQuillan, 2010; Schmidt, 2009). We, therefore, utilized a measure of FSD to provide a more sensitive measure of emotional reactivity to pregnancy loss than a general measure of psychological distress.

We provide several contributions to research on the associations between pregnancy loss and distress. First, we used a nationally representative sample of women of childbearing age who have experienced pregnancy loss. Second, we examined the importance of pregnancy commitment; length of gestation and whether the pregnancy had been planned were used to create four groups. We compared women who have experienced miscarriages that were unplanned pregnancies with women who experienced miscarriages that were planned, women who experienced stillbirths that were unplanned, and women who experienced stillbirths of planned pregnancies to assess the hypothesis that losses from longer pregnancies (stillbirths) would be associated with higher distress than losses from shorter pregnancies (miscarriages) and that losses of pregnancies that had been planned are more distressing than losses of pregnancies that were not planned. Third, we used a fertility-specific measure of distress to capture variations in the experience of pregnancy loss. Fourth, we included numerous measures relevant to the meaning of the pregnancy and loss to women: time since the most recent loss, birth since most recent loss, knowing the reason for a loss, multiple losses, self-identification of a fertility problem, currently wanting a baby, importance of motherhood, and pregnancy locus of control. Fifth, we controlled for many variables that might explain why some women experience more distress from pregnancy loss than other women, including education, race/ethnicity, age, and union status.

These concepts and associations are depicted in the conceptual map provided in **Figure 1**. This figure shows that demographic variables lay a foundation for experiencing pregnancy loss and that current pregnancy context should mediate at least some of the association between pregnancy commitment and attachment and FSD. Finally, guided by insights from the commitment and attachment perspectives, we used multiple regression to assess the associations between FSD by commitment to the lost pregnancy, controlling for measures of the experiences since the pregnancy loss, current fertility context, and demographic variables.

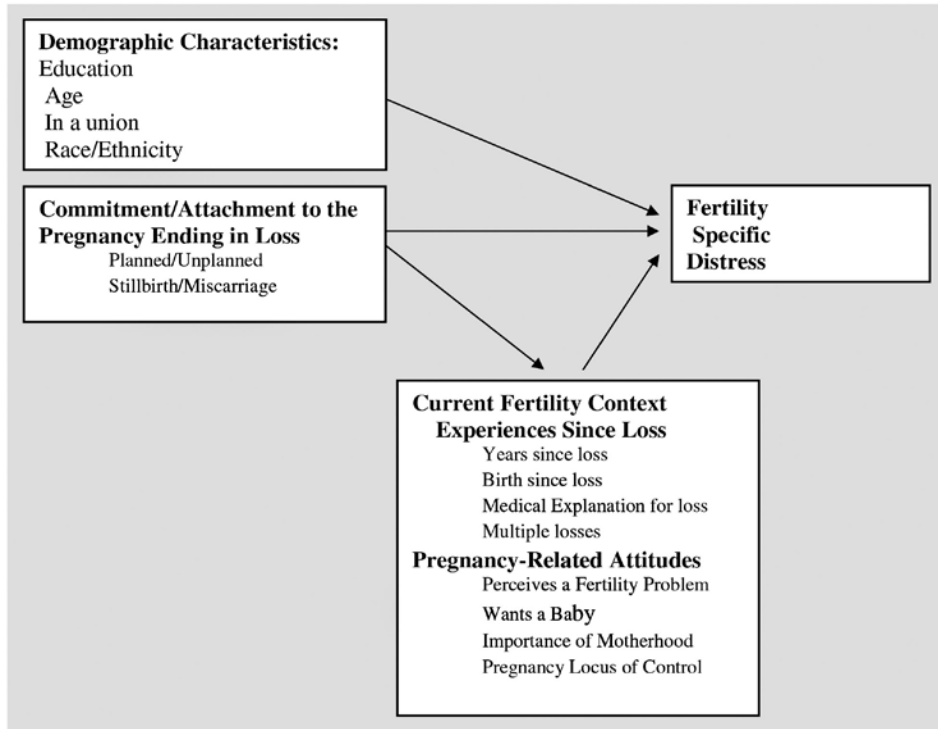


Figure 1. Conceptual model of commitment/attachment to the pregnancy ending in loss and fertility-specific distress.

Method

Sample

The sample for this study comes from the NSFB, a random-digit-dial nationally representative data set of 4,796 women of childbearing age (25–45) and a subset of their partners which includes oversamples of women with fertility problems and census tracts with minority (African American and Hispanic) populations greater than 40%. This current sample of women who have experienced a pregnancy loss ($N = 1,284$) included women who experienced miscarriage(s) only ($n = 1,152$) and women who have had at least one stillbirth ($n = 132$). Data were weighted so that the sample is representative of the population.

Measures

Fertility-specific distress. Although there are a number ways to measure distress resulting from pregnancy loss, the NSFBI includes a broad measure of FSD that could be applied to a wide range of fertility barriers. Respondents who reported any type of fertility problem (such as pregnancy loss or infertility) were asked a series of questions regarding whether they experienced certain reactions to their fertility problem(s), including pregnancy loss. These include (a) "I felt cheated by life," (b) "I felt that I was being punished," (c) "I felt angry at God," (d) "I felt inadequate," (e) "I felt seriously depressed," and (f) "I felt like a failure as a woman." These items are dichotomous (1 = yes; 0 = no). The mean of available items were used to create a scale from 0 (*no distress*) to 1 (*high distress*), then logged to reduce skew. Cronbach's α for the FSD scale is .80 for women who have experienced a pregnancy loss, and the logged scale ranges from 0 to .69.

Commitment/attachment to the pregnancy loss. For the descriptive analyses, type of pregnancy loss is measured by an indicator variable for *ever stillbirth*, with miscarriages only as the reference category. Respondents were classified in the miscarriage group if they had ever had at least one miscarriage but no stillbirths. The respondents in the stillbirth group had had at least one stillbirth, but many also had experienced miscarriages as well. Women self-identified their type of loss, as our data do not include the exact gestation at which the loss occurred. For the regression analysis, we operationalized commitment or attachment as including both gestation length and whether the lost pregnancy had been planned. Respondents were asked "When you got pregnant, were you trying to get pregnant, trying not to get pregnant, or were you okay either way?" about each pregnancy. Women who reported that they were "trying to" get pregnant for the pregnancy that resulted in a loss were coded 1; other responses were coded 0. We coded respondents into four groups using these two concepts: *miscarriage/unplanned* refers to women whose miscarriage had been an unplanned pregnancy; *miscarriage/planned* includes women who had planned their pregnancy that resulted in miscarriage; *stillbirth/unplanned* refers to women who had a stillbirth of an unplanned pregnancy; and *stillbirth/planned* includes women who had planned the

pregnancy that ended in stillbirth. Note that many of the respondents had more than one loss; these groups were created based on the gestation length and planning data for the most recent pregnancy that had been lost if there were multiple losses. In effect, these variables are interaction terms that combine type of loss and attitude toward pregnancy at the time of the loss. We used the four-variable approach because it simplifies interpretation of the associations.

Current Fertility Context

Experiences since loss. *Years since loss* refers to the length of time (in years) since the (most recent) loss. The variable was mean centered for regression analyses. Respondents were coded as having a *birth since loss* if the year of their most recent live birth was more recent than the year of their (last) pregnancy loss. *Medical explanation* is a dichotomous variable indicating that the respondent had medical evaluation following the pregnancy loss that resulted in an explanation for the loss. Respondents were coded as 1 if they received a medical explanation; respondents who did not have an evaluation or received an evaluation but given the diagnosis of “unexplained” were coded as 0. *Multiple loss* is a dichotomous variable indicating whether the respondent experienced more than one loss.

Pregnancy-related attitudes. *Perceives a fertility problem* is a dichotomous variable indicating that the respondent identifies herself as “someone who has or has had fertility problems” or thinks of herself as “someone who has, has had, or might have trouble getting pregnant.” *Wants to have a baby* is a continuous variable indicating the extent to which the respondent “would like to have a(nother) baby,” and responses range from 1 (*definitely no*) to 4 (*definitely yes*). *Importance of motherhood* was constructed by combining responses to four questions. Four items are measured on Likert scales (*strongly disagree* to *strongly agree*): (a) “Having children is important to my feeling complete as a woman,” (b) “I always thought I would be a parent,” (c) “I think my life will be or is more fulfilling with children,” and (d) “It is important for me to have children.” The Cronbach’s α is .80 for the current sample, and the mean of available items were used to create a scale ranging from 1 to 4. Pregnancy locus of control was measured by agreement to two items (*strongly disagree* to *strongly agree*): (a) “I

think (or thought for those not currently intending to get pregnant) I would get pregnant when the time was right” and (b) “I think (or thought) if it’s God’s will, I would get pregnant.” The mean of available items was used to create a scale ranging from 1 to 4 with an α of .76 for this sample.

Background variables. *Education* (in years) is a continuous variable, ranging from 2 to 22 in our sample. *Age* is a continuous variable and ranges from 25 to 45 in our sample. *In a union* is a dichotomous variable, with 1 indicating that the respondent is currently married or cohabiting. Race/ethnicity is included as dummy variables for *Black*, *Hispanic*, and “*Other race*,” with *White* respondents as the reference category.

Analytic Strategy

Descriptive analyses estimated differences by type of pregnancy loss (miscarriage(s) only and ever stillbirth). For continuous variables, means and standard deviations were provided; *t* tests were conducted to determine the significance of differences between means. For categorical variables, differences in proportion tests were used to provide indication of differences between groups. Ordinary least squares regression (OLS) models the associations between the independent variables, including commitment/attachment (length of gestation and planning), pregnancy loss experiences, current fertility contexts, and FSD. Continuous variables in the OLS models were mean centered for the analyses.

Results

Table 1 shows the minimum, maximum, mean, and standard deviation for each variable by pregnancy loss outcome (miscarriage(s) only or ever stillbirth). *t* tests for the difference in means for the continuous variables and difference in proportions tests for the categorical variables showed that women in these two groups differ on many characteristics. The mean logged FSD was higher for women who have had stillbirths than for women who have had miscarriages, but the

Table 1. Fertility-Specific Distress, Pregnancy Loss Experiences, Current Fertility Contexts and Attitudes, and Demographic Characteristics by Type of Pregnancy Loss (N = 1,284)

Variables	Miscarriage(s) Only (n = 1,152)				Ever Stillbirth (n = 132)				
	Minimum	Maximum	Mean	SD	Minimum	Maximum	Mean	SD	
Fertility-specific distress, logged	0.00	0.69	0.17	0.23	0.00	0.69	0.22	0.26	*
Pregnancy loss experiences									
Years since loss	0.01	29.08	9.99	6.74	0.05	25.12	11.13	6.55	
Planned pregnancy	0.00	1.00	0.38	0.49	0.00	1.00	0.48	0.50	**
Had a birth since the loss	0.00	1.00	0.27	0.44	0.00	1.00	0.33	0.47	**
Know the problem	0.00	1.00	0.06	0.24	0.00	1.00	0.12	0.33	***
Multiple losses	0.00	1.00	0.30	0.46	0.00	1.00	0.44	0.50	***
Current fertility contexts and attitudes									
Perceives a fertility problem	0.00	1.00	0.35	0.48	0.00	1.00	0.27	0.45	***
Wants a baby	1.00	4.00	2.14	1.20	1.00	4.00	2.07	1.21	
Importance of motherhood	1.00	4.00	3.37	0.58	1.67	4.00	3.35	0.64	*
Pregnancy locus of control	1.00	4.00	3.10	0.63	1.00	4.00	3.13	0.49	
Demographic characteristics									
Education	2.00	22.00	13.46	2.78	2.00	22.00	12.55	2.57	
Age	25.00	45.00	36.02	5.80	25.00	45.00	36.53	5.85	
In a union	0.00	1.00	0.79	0.41	0.00	1.00	0.72	0.45	**
White	0.00	1.00	0.64	0.48	0.00	1.00	0.60	0.49	
Black	0.00	1.00	0.16	0.36	0.00	1.00	0.15	0.36	
Hispanic	0.00	1.00	0.16	0.37	0.00	1.00	0.23	0.42	**
Other race	0.00	1.00	0.05	0.22	0.00	1.00	0.02	0.14	**

t tests were conducted for continuous variables and difference in proportion tests for categorical variables. National Survey of Fertility Barriers, women ages 25–45.

* $p < .05$; ** $p < .01$; *** $p < .001$

range of values and standard deviation were very similar. Women who have had stillbirths were also more likely to have planned their pregnancy. In addition, more have had a birth since the loss, more know the problem that caused the pregnancy outcome, and more have had multiple pregnancy losses. Women who have had miscarriages, however, were more likely to report a fertility problem than women who have had stillbirths. Women who have had miscarriages also had slightly but significantly higher importance of motherhood scores and were more likely to be in a relationship. Among Hispanic women, a higher proportion reported a stillbirth than a miscarriage. Among women in the “other” race category, a higher proportion had

a miscarriage than a stillbirth. Some of these findings (e.g., trying to conceive, having multiple losses, and knowing the cause of the problem) suggest that women who have had stillbirths should have higher distress than women who have had miscarriages. Other findings (e.g., having had a birth since the loss and lower importance of motherhood scores) suggest that women who have had stillbirths should have lower distress. There are several characteristics that do not differ by pregnancy outcome status. Although the maximum value for time since the focal pregnancy was higher for women who had a miscarriage than women who had a stillbirth, the mean time since the focal pregnancy did not differ by pregnancy outcome. Additionally, mean strength of desire for a child, mean pregnancy locus of control, mean age, and mean education were not statistically different between the two groups.

The descriptive statistics revealed that there is considerable variation among the women who have had pregnancy losses. For example, the standard deviation for FSD was larger than the mean. Fewer than half of the women were trying to conceive the pregnancy that they lost. About a third have had a child since the loss, although very few knew the cause of the pregnancy loss. Although all the women have had a problem with a pregnancy (i.e., at least one pregnancy loss), only about a third saw themselves as having a fertility problem. Overall, the women had high average scores on the “importance of motherhood” scale (over 3 on a scale from 1 to 4), but scores that covered the full range from very low to very high. These descriptive statistics, from a population-based sample, showed that pregnancy loss occurs across a broad spectrum of women. This suggests that the subjective experience of pregnancy loss is likely to vary among women as well.

In the multivariate analysis, we examined which characteristics of pregnancy commitment/ attachment, experiences since loss, attitudes, childbearing desires, and background characteristics were associated with FSD. We assessed whether the characteristics that differ among the four groups of women—unplanned/ miscarriage, planned/miscarriage, unplanned/ stillbirth, and planned/stillbirth— helped explain the differences in FSD or whether there was a unique effect related to pregnancy commitment after other factors were controlled.

Pregnancy Loss and Fertility-Specific Distress

The results for the multiple regression analyses of FSD are displayed in **Table 2**. Model 1 examined demographic characteristics and FSD. Because the dependent variable is logged, the coefficients can be interpreted as percentages. Of the demographic characteristics, only education was associated with FSD. Each year increase in education was associated with 1% lower FSD.

Model 2 examined how commitment/attachment to the lost pregnancy was associated with FSD. Whether the pregnancy was planned was linked to significant differences in FSD; women who had a miscarriage of a planned pregnancy has almost 10% higher FSD than women

Table 2. Ordinary Least Squares Regression Analysis of Variables Predicting Fertility-Specific Distress (N = 1,284)

Variables	Model 1			Model 2			Model 3					
	<i>b</i>	<i>SE</i>	<i>Beta</i>	<i>b</i>	<i>SE</i>	<i>Beta</i>	<i>b</i>	<i>SE</i>	<i>Beta</i>			
Constant	.17	.02	***	.13	.02	***	.06	.02	**			
Demographic characteristics												
Education	-.01	.00	-.07	*	-.01	.00	-.08	**	-.01	.00	-.12	***
Age	.00	.00	-.04		.00	.00	-.06		.001	.00	.02	
In a union	.01	.02	.02		.00	.02	.00		.001	.02	.00	
Black(White)	-.03	.02	-.05		-.02	.02	-.03		-.001	.02	.00	
Hispanic	.01	.02	.01		.01	.02	.02		.03	.02	.04	
Other race	.01	.03	.01		.02	.03	.02		.03	.03	.03	
Commitment to lost pregnancy (unplanned/miscarriage)												
Planned/miscarriage					.10	.01	.21	***	.05	.01	.11	***
Unplanned/stillbirth					.05	.03	.05		.05	.03	.04	
Planned/stillbirth					.14	.03	.13	***	.10	.03	.09	**
Experiences since loss												
Years since loss									-.004	.00	-.11	**
Birth since loss									-.04	.02	-.08	*
Medical explanation									.11	.03	.12	***
Multiple losses									.02	.01	.04	
Current pregnancy-related attitudes												
Perceives a fertility problem									.10	.01	.21	***
Wants a baby									.02	.01	.11	**
Importance of motherhood									.04	.01	.09	**
Pregnancy locus of control									-.04	.01	-.11	***
Adjusted <i>R</i> ²		.01				.05				.15		

Reference categories are in parentheses.

* $p < .05$; ** $p < .01$; *** $p < .001$

who had a miscarriage of an unplanned pregnancy ($b = .10, p < .001$). Experiencing a stillbirth of a planned pregnancy was associated with 14% higher FSD than women who had a miscarriage of an unplanned pregnancy ($b = .14, p < .001$). Women who experienced a stillbirth of an unplanned pregnancy reported 5% higher FSD than women who experienced a miscarriage of an unplanned pregnancy, but the difference was not significant. The commitment/attachment variables explain 4% of the variance in FSD.

Adding women's current fertility contexts, including experiences since loss and pregnancy-related attitudes, explained an additional 10% of the variance in FSD (Model 3). Having losses that occurred further in the past and having a subsequent birth were associated with lower distress. Women who know the reason for the pregnancy loss had higher distress than women in the comparison groups. Most of these measures remained associated with FSD in subsequent models; only multiple losses ceased to be significant. **Figure 2** shows the predicted log FSD by attachment/commitment category for the model controlling for demographic characteristics (Model 2) and also adds experiences since the loss and current pregnancy-related indicators

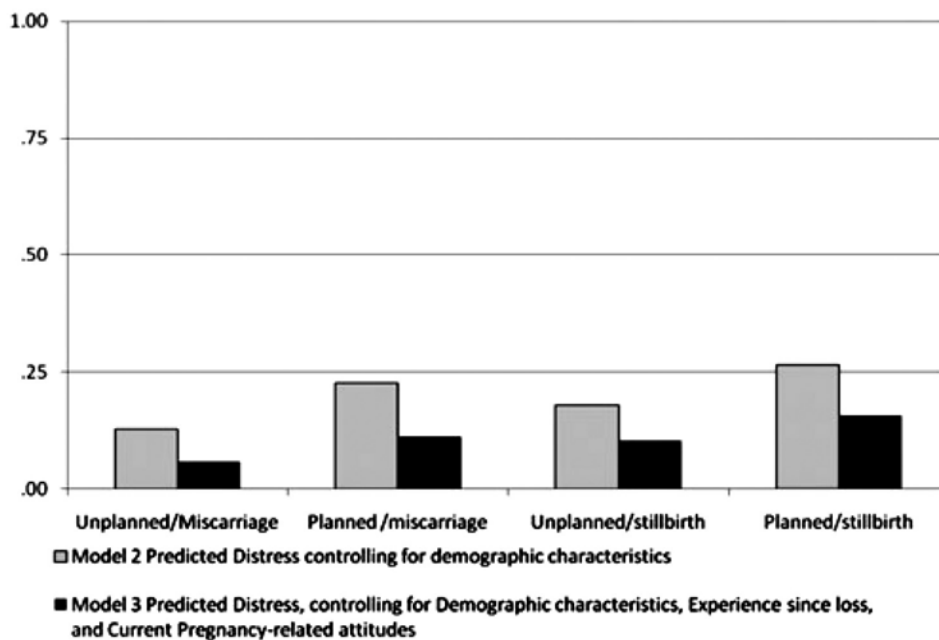


Figure 2. Predicted fertility-specific distress level by pregnancy commitment/attachment category controlling for demographic characteristics (model 2) and current fertility context (model 3) from the regression models.

(Model 3). For all the four groups, FSD was partially explained by experiences since the loss and the current pregnancy-related context, indicated by lower levels of FSD in Model 3 compared with Model 2. Perceiving a fertility problem, wanting a child, and importance of motherhood were all associated with higher FSD, whereas higher pregnancy locus of control was associated with lower FSD.

Conclusions

We studied variations in the effects of pregnancy loss on distress among women who have had a pregnancy loss from a random sample of American women of reproductive age. The large NSFB sample provided an unprecedented opportunity to examine pregnancy attachment and commitment, operationalized by gestation length (late term pregnancy loss vs. early term pregnancy loss) and whether the lost pregnancy had been planned as well as numerous other characteristics related to the pregnancy loss, perceptions and attitudes regarding childbearing, current intentions, and demographic characteristics. Our analysis of FSD provides evidence that pregnancy-relevant commitment and attachment measures are associated with greater FSD. In particular, whether the pregnancy that resulted in loss had been planned appears to be particularly salient. Women who experience losses of planned pregnancies report greater FSD than women who lost pregnancies that were not planned. Women who know the cause of their pregnancy loss, women with self-identified fertility problems, women who currently desire a baby, and women who place a higher value on motherhood are more distressed than women not in these categories. More time since the loss, having a birth since the loss, and reporting more locus of control regarding getting pregnant are associated with less distress. These results suggest that the context of women's pregnancy and fertility experiences as a whole and the meanings they attribute to their pregnancies are crucial in shaping the psychological response to pregnancy loss.

We were surprised that knowing the reason for the pregnancy loss was associated with higher distress. This finding is counter to previous literature, which argued that unexplained loss should be more distressing (Simmons et al., 2006). Rather than empowering women, perhaps finding out the reason for a pregnancy loss allows women

to place “blame” on themselves even if the loss was out of their control. Infertility research shows similar findings; in infertile couples, women express more distress and internalize the infertility diagnosis even when it is their husband with the infertility “problem” (Greil, 1991). We were also surprised that recurrent pregnancy loss was not associated with significantly higher distress. We explored this association and found that the association was significant until “perceiving a fertility problem” was added to the model. We therefore conclude that multiple losses contribute to distress primarily if they contribute to women self-identifying a fertility problem.

Limitations

The current study has several limitations. Some of these limitations are the result of the cross-sectional data. First, we would have stronger causal certainty if we had more data points in the process of dealing with pregnancy loss. We have causal ordering in that the loss happened before our measures of distress, but we do not know about other sequences, such as the ordering of distress and pregnancy locus of control. We do not know whether women who are more distressed report less control or whether feeling less in control of pregnancies increases distress.

Second, we would like to know the trajectory of distress before, during, and following the pregnancy loss, but we only have measures at the time of the interview. For example, our findings show that distress decreases with time following a loss, but it is unclear if the decline is linear. Finally, although we believe one of the great strengths of this study is the use of a nationally representative sample of reproductive-age women, we are limited to the measures included in the NSFB. There are potentially relevant concepts that we are unable to include in this study. For example, we use women’s reports of whether their loss was a miscarriage or a stillbirth, but there may be discrepancy in these reports; whereas some women may use the medical definition of a stillbirth as a loss after 20 weeks, others may use the term “miscarriage” to refer to any loss that occurs during the pregnancy. Furthermore, we do not have measures for some concepts that may be important to understand the reduction in distress following a pregnancy loss. Day and Hooks (1987) found that family cohesion and adaptability are crucial for a faster recovery from pregnancy loss.

Unfortunately, the NSFB does not include measures for affect, ability to be flexible, or the ability to reframe and redefine stressful events. The NSFB also does not include detailed information about the actual experience of the loss. For example, we cannot determine if women who had a stillbirth and were able to hold their baby report more or less distress than women who did not process their loss in this way. Despite these limitations, however, this study is the first to provide an in-depth investigation of factors that increase or reduce distress following a pregnancy loss.

Implications for Practice

Our findings increase knowledge about the psychological impact of pregnancy loss by providing evidence that distress differs for women depending on both their commitment/attachment to their pregnancies and their current fertility contexts. This study has practical implications for women who have experienced pregnancy loss and for family professionals who work with them. It may be difficult for practitioners to effectively reduce negative psychological consequences of pregnancy loss without understanding the factors that shape the experience and meaning of pregnancy loss for women. Our findings highlight the importance of women's fertility histories and their childbearing desires. Women who planned for the pregnancy that resulted in a loss are more distressed, regardless of whether the loss was a miscarriage or stillbirth. As expected, women who experienced a stillbirth of a planned pregnancy are the most distressed, but women who experienced a miscarriage of a planned pregnancy are also significantly distressed. In addition, women who know the reason for the loss, experienced more than one loss, have experienced infertility, want to have a baby, and value motherhood as more important are more distressed following a pregnancy loss. Time since the loss, having a birth after the loss, and viewing oneself as having more control over pregnancies are associated with less distress. Practitioners working with women and couples who have experienced pregnancy loss could provide more targeted support and effective treatment if they assess FSD, commitment/ attachment to a pregnancy that ended in loss, and current fertility context and pregnancy-related attitudes for a contextual understanding of the meaning of the loss.

Much of the information currently available to practitioners regarding the psychological consequences of pregnancy loss posits that attachment increases further along as a pregnancy progresses. Our findings suggest, however, that the meaning that women place on their pregnancy, along with their fertility histories, attitudes, and intentions are as important as gestation length at the time of the loss. This study suggests support for a social constructionist approach to understand how pregnancy loss affects women's mental health. A more nuanced understanding of the consequences of pregnancy loss for women includes the type of loss and whether the loss occurred for a planned pregnancy as well as other pregnancy loss and fertility-related characteristics such as subsequent childbearing, infertility, childbearing desires or intentions, and importance of motherhood.

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References

- Abbey, A., Andrews, F. M., & Halman, L. J. (1992). Psychosocial, treatment, and demographic predictors of the stress associated with infertility. *Fertility and Sterility*, 57, 122-128.
- Adeyemi, A. (2008). Depressive symptoms in a sample of women following perinatal loss. *Journal of the National Medical Association*, 100, 1463-1468.
- Armstrong, D. S. (2007). Perinatal loss and parental distress after the birth of a healthy infant. *Advances in Neonatal Care: Official Journal of the National Association of Neonatal Nurses*, 7, 200-206.
- Becker, H. S. (1960). Notes on the concept of commitment. *American Journal of Sociology*, 66, 32-40.
- Bennett, S. M., Litz, B. T., Lee, B. S., & Maguen, S. (2005). The scope and impact of perinatal loss: Current status and future directions. *Professional Psychology: Research and Practice*, 36, 180-187.
- Bernazzani, O., & Bifulco, A. (2003). Motherhood as a vulnerability factor in major depression: The role of negative pregnancy experiences. *Social Science and Medicine*, 56, 1249-1260.
- Bowlby, J. (1969). *Attachment and loss: Attachment*. New York: Basic Books.

- Boyle, F. M., Vance, J. C., Najman, J. M., & Thearle, M. J. (1996). The mental health impact of stillbirth, neonatal death or SIDS: Prevalence and patterns of distress among mothers. *Social Science and Medicine*, *43*, 1273-1282.
- Bretherton, I. (1985). Attachment theory: Retrospect and prospect. *Monographs of the Society for Research in Child Development*, *50*(1/2), 3-35.
- Brier, N. (2008). Grief following miscarriage: A comprehensive review of the literature. *Journal of Women's Health*, *17*, 451-463.
- Day, R. D., & Hooks, D. (1987). Miscarriage: A special type of family crisis. *Family Relations*, *36*, 305-310.
- Franche, R. (2001). Psychological and obstetric predictors of grief during pregnancy or after perinatal death. *Obstetrics and Gynecology*, *97*, 597-602.
- Greil, A. L. (1991). *Not yet pregnant: Infertile couples in contemporary America*. New Brunswick, NJ: Rutgers University Press.
- Greil, A. L., & McQuillan, J. (2004). Help-seeking patterns among infertile women. *Journal of Reproductive and Infant Psychology*, *22*, 305-319.
- Greil, A. L., McQuillan, J., Johnson, K., Blevins- Slauson, K., & Shreffler, K. M. (2010). The hidden infertile: Infertile women without pregnancy intent in the United States. *Fertility and Sterility*, *93*, 2080-2083.
- Greil, A. L., Slauson-Blevins, K., & McQuillan, J. (2010). The experience of infertility: A review of recent literature. *Sociology of Health and Illness*, *32*, 140-162.
- Hirschi, T. (1969). *Causes of delinquency*. Berkeley: University of California Press.
- Janssen, H. J., Cuisinier, M. C. & de Grauw, K. P. (1997). A prospective study of risk factors predicting grief intensity following pregnancy loss. *Archives of General Psychiatry*, *54*, 56-61.
- Janssen, H. J., Cuisinier, M. C., & Hoogduin, K. A. L. (1996). A critical review of the concept of pathological grief following pregnancy loss. *Journal of Death and Dying*, *33*, 21-42.
- Kanter, R. M. (1972). *Commitment and community: Communes and utopias in social perspective*. Cambridge, MA: Harvard University Press.
- Kemp, V. H., & Page, C. K. (1987). Maternal prenatal attachment in normal and high-risk pregnancies. *Journal of Obstetrics, Gynecologic, and Neonatal Nursing*, *16*, 195-206.
- Klier, C. M., Geller, P. A., & Neugebauer, R. (2000). Minor depressive disorder in the context of miscarriage. *Journal of Affective Disorders*, *59*, 13-21.
- Klier, C. M., Geller, P. A., & Ritsher, J. B. (2002). Affective disorders in the aftermath of miscarriage: A comprehensive review. *Archives of Women's Mental Health*, *5*, 129-149.
- Kutteh, W. H. (2005). Recurrent pregnancy loss. In B. R. Carr, R. E. Blackwell, & R. Azziz (Eds.), *Essential reproductive medicine* (pp. 585-592). New York: McGraw-Hill.
- Lasker, J. N., & Toedter, L. J. (2000). Predicting outcomes after pregnancy loss: Results from studies using the Perinatal Grief Scale. *Illness, Crisis and Loss*, *8*, 350-372.
- Lok, I. H., & Neugebauer, R. (2007). Psychological morbidity following miscarriage. *Best Practice & Research, Clinical Obstetrics and Gynaecology*, *21*, 229-247.

- Lok, I. H., Yip, A. S., Lee, D. T., Sahota, D., & Chung, T. K. (2010). A 1-year longitudinal study of psychological morbidity after miscarriage. *Fertility and Sterility*, *93*, 1966-1975.
- Lydon, J., Dunkel-Schetter, C., Cohan, C. L., & Pierce, T. (1996). Pregnancy decision making as a significant life event: A commitment approach. *Journal of Personality and Social Psychology*, *71*, 141-151.
- Maccoby, E. E. (1980). *Social development: Growth and the parent-child relationship*. New York: Harcourt Brace Jovanovich.
- Magee, P. L. (2003). Psychological distress in recurrent miscarriage: The role of prospective thinking and role and goal investment. *Journal of Reproductive and Infant Psychology*, *21*, 35-47.
- McQuillan, J., Greil, A. L., White, L., & Jacob, M. C. (2003). Frustrated fertility: Infertility and psychological distress among women. *Journal of Marriage & Family*, *65*, 1007-1018.
- Mercer, R. T., & Ferketich, S. L. (1990). Predictors of parental attachment during early parenthood. *Journal of Advanced Nursing*, *15*, 268-280.
- Miles, L. M., Keitel, M., Jackson, M., Harris, A., & Licciardi, F. (2009). Predictors of distress in women being treated for infertility. *Journal of Reproductive and Infant Psychology*, *27*, 238-257.
- Muller, M. E. (1992). A critical review of prenatal attachment research. *Scholarly Inquiry for Nursing Practice: An International Journal*, *6*, 5-21.
- Neugebauer, R., Kline, J., O'Connor, P., Johnson, J., Skodol, A., Wicks, J., & Susser, M. (1992). Depressive symptoms in women in the six months after miscarriage. *American Journal of Obstetrics and Gynecology*, *166*, 104-109.
- Peppers, L. G., & Knapp, R. J. (1980). *Motherhood and mourning: Perinatal death*. New York: Praeger.
- Ritsher, J. B. (2002). Perinatal bereavement grief scale: Distinguishing grief from depression following miscarriage. *Assessment*, *9*, 31-40.
- Robinson, M., Baker, L., & Nackerud, L. (1999). The relationship of attachment theory and perinatal loss. *Death Studies*, *23*, 257-270.
- Saraiya, M., Berg, C. J., Shulman, H., Green, C. A., & Atrash, H. K. (1999). Estimates of the annual number of clinically recognized pregnancies in the United States, 1981-1991. *American Journal of Epidemiology*, *149*, 1025-1029.
- Schmidt, L. (2009). Social and psychological consequences of infertility and assisted reproduction—What are the research priorities? *Human Fertility*, *12*, 14-20.
- Schwerdtfeger, K. L., & Shreffler, K. M. (2009). Trauma of pregnancy loss and infertility for mothers and involuntarily childless women in the contemporary United States. *Journal of Loss and Trauma*, *14*, 211-227.
- Simmons, R. K., Singh, G., Maconochie, N., Doyle, P., & Green, J. (2006). Experience of miscarriage in the UK: Qualitative findings from the National Women's Health Study. *Social Science & Medicine*, *63*, 1934-1946.
- Stainton, M. C., McNeil, D., & Harvey, S. (1992). Maternal tasks of uncertain motherhood. *Maternal-Child Nursing Journal*, *20*, 113-123.
- Stinson, K. M., Lasker, J. N., Lohmann, J., & Toedter, L. J. (1992). Parents' grief following pregnancy loss: A comparison of mothers and fathers. *Family Relations*, *41*, 218-223.

- Stryker, S. (1968). Identity salience and role performance: The relevance of symbolic interaction theory for family research. *Journal of Marriage and the Family*, 4, 558-564.
- Swanson, K. M. (2000). Predicting depressive symptoms after miscarriage: A path analysis based on the Lazarus paradigm. *Journal of Women's Health & Gender-Based Medicine*, 9, 191-206.
- Thapar, A. K., & Thapar, A. (1992). Psychological sequelae of miscarriage: A controlled study using the general health questionnaire and the hospital anxiety and depression scale. *British Journal of General Practice*, 42, 94-96.
- Theut, S. K., Pederson, F. A., Zaslow, M. J., & Rabinovich, B. A. (1988). Pregnancy subsequent to perinatal loss: Parental anxiety and depression. *Journal of the American Academy of Child and Adolescent Psychiatry*, 27, 289-292.
- Toedter, L. J., Lasker, J. N., & Alhadeff, J. M. (1988). The Perinatal Grief Scale: Development and initial validation. *American Journal of Orthopsychiatry*, 58, 435-449.