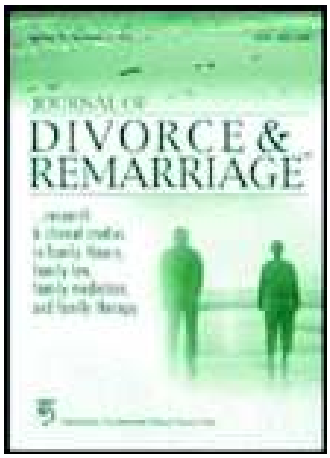


Journal of Divorce & Remarriage
Publication details, including instructions for authors and subscription information:
http://www.tandfonline.com/loi/wjdr20

# Exploring the Increased Odds of Divorce Following Miscarriage or Stillbirth

Karina M. Shreffler [a] , Patricia Wonch Hill [b] & Joanne Cacciatore [c]

[a] Human Development and Family Science, Oklahoma State University, Tulsa, Oklahoma, USA

[b] Department of Sociology, University of Nebraska-Lincoln, Lincoln, Nebraska, USA

[c] School of Social Work, Arizona State University, Phoenix, Arizona, USA

Available online: 27 Feb 2012

**To cite this article:** Karina M. Shreffler, Patricia Wonch Hill & Joanne Cacciatore (2012): Exploring the Increased Odds of Divorce Following Miscarriage or Stillbirth, Journal of Divorce & Remarriage, 53:2, 91-107

**To link to this article:** http://dx.doi.org/10.1080/10502556.2012.651963

*Journal of Divorce & Remarriage*, 53:91–107, 2012

ISSN: 1050-2556 print/1540-4811 online
DOI: 10.1080/10502556.2012.651963



# Exploring the Increased Odds of Divorce Following Miscarriage or Stillbirth

KARINA M. SHREFFLER
*Human Development and Family Science, Oklahoma State University, Tulsa, Oklahoma, USA*

PATRICIA WONCH HILL
*Department of Sociology, University of Nebraska–Lincoln, Lincoln, Nebraska, USA*

JOANNE CACCIATORE
*School of Social Work, Arizona State University, Phoenix, Arizona, USA*

*We build on recent studies on the consequences of miscarriage and stillbirth for women to assess the (a) odds of divorce among women who experienced a loss compared to those who did not; and (b) fertility-specific characteristics that increase odds of divorce. Utilizing a nationally representative sample of 3,461 women who have ever been pregnant and married, we find that women who experienced miscarriage or stillbirth have greater odds of divorce than women who did not experience a loss, and we highlight the importance of characteristics associated with the pregnancy and loss experiences: gestation length, whether the pregnancy had been planned, and experiencing multiple losses.*

*KEYWORDS attachment, commitment, divorce, fertility, loss, miscarriage, stillbirth*

There has been much speculation about the impact of both miscarriage and stillbirth on couple relationships—particularly regarding increased divorce risk—but prior empirical research has been limited, primarily due to methodological shortcomings. Recent research utilizing a national sample of women who have been pregnant, however, confirms that women who experienced

Address correspondence to Karina M. Shreffler, PhD, Human Development and Family Science, Oklahoma State University, 700 N. Greenwood Ave., Tulsa, OK 74106, USA. E-mail: karina.shreffler@okstate.edu

either miscarriages or stillbirths have significantly greater hazards of relationship dissolution compared with women who had a live birth (Gold, Sen, & Hayward, 2010). Reasons for the increased divorce risk have not been fully explored, however; it remains unclear how characteristics of women's pregnancy or loss increase the risk of divorce following a loss.

Although there is a lack of empirical research on the nature of the relationship between miscarriage or stillbirth and marital dissolution, divorce is not a rare occurrence, and many couple stressors have been linked to increased risk of divorce. By the end of the twentieth century, between 43% and 46% of marriages were predicted to end in divorce (Schoen & Canudas-Romo, 2006). A variety of stressors have been associated with increased divorce risk, spanning economic, structural, cultural, and circumstantial factors (Amato, 2010). Specifically distressing or traumatic events have been the focus of relatively few studies on divorce risk, however, despite the fact that feelings of distress after an event such as miscarriage or stillbirth can persist for decades (Bernazzani & Bifulco, 2003). Among all clinically recognized pregnancies in the United States, approximately 14% result in miscarriage—a loss occurring within the first 20 weeks of pregnancy—and an additional 0.5% end in stillbirth, defined as the death of a baby from the 20th completed week of gestation until birth (Saraiya, Berg, Shulman, Green, & Atrash, 1999).

## CONFLICTING EVIDENCE ON THE MISCARRIAGE/STILLBIRTH AND DIVORCE RELATIONSHIP

Until recently, the majority of studies on the relationship consequences of miscarriage or stillbirth have utilized data from small clinic-based or other nonrepresentative samples (Shreffler, Greil, & McQuillan, 2011). Although these studies tend to be rich in experiences and explanations of factors that mediate the effects of a loss on the couple or marital relationship, by design, they are unable to incorporate women or couples who do not seek treatment or therapy. Those who seek help following marital stressors might differ from those who do not seek help; thus, findings from prior studies are not generalizable or representative of all couples who have experienced a miscarriage or stillbirth. Further, results of previous studies present conflicting findings. In some smaller, clinic-based studies, couples report that a miscarriage or stillbirth strengthens their marriage as they turn to each other for support. For example, a study by Cacciatore, DeFrain, and Jones (2008) found that fewer than 10% of couples who experienced a loss reported that they considered divorce because of their stillbirth. Similarly, DeFrain, Millspaugh, and Xie (1996) found only 11% of couples who had experienced a miscarriage reported that their marriages were weakened by the event, compared to 60% who said it was strengthened. It is possible, however, that

the couples who seek therapy or participation in studies focused on the consequences of their pregnancy or perinatal losses differ from other couples; their relationships might be more resilient to begin with.

Two recent studies using population-based data have begun to reveal more about the psychosocial consequences following a miscarriage or stillbirth. Using the National Survey of Family Growth (NSFG), Gold et al. (2010) assessed the effects of miscarriage and stillbirth on relationship dissolution, finding that both types of loss are associated with an increased likelihood of separation for married and cohabiting couples. Due to data limitations, however, the study was unable to assess a comprehensive set of factors that might mediate risk. A second population-based study on the psychological consequences of miscarriage and stillbirth using the National Survey of Fertility Barriers (NSFB) examined a comprehensive set of pregnancy history and current fertility context variables. Results indicated that factors such as length of gestation, whether the pregnancy was planned, current childbearing desires, and a history of fertility problems are linked to greater distress (Shreffler et al., 2011). However, the study did not compare women who experienced a loss to those who had not experienced a loss, nor did it examine relationship outcomes.

In sum, research has only begun to examine the effects of miscarriage or stillbirth on couple relationships using population-based data, and it remains unclear which factors heighten risk or promote resilience among couples who have experienced a loss. We build on these recent studies on consequences of miscarriage and stillbirth and utilize a nationally representative sample of 3,461 women who have ever been pregnant and married from the NSFB to assess (a) the odds of divorce among women who have experienced a stillbirth, women who have had miscarriage(s) only, and women who have not experienced either; and (b) factors that mediate risk among women who have experienced a loss.

## CONCEPTUALIZING THE LINK BETWEEN LOSS AND DIVORCE

As a strong link between stillbirth or miscarriage and relationship dissolution is a new development, Gold and colleagues (2010) drew on prior research on the stressors that child death has for marriage for a guiding framework. We employ a similar strategy, although we extend the conceptualization to draw from the attachment and commitment perspectives typically used to explain differential distress patterns following miscarriage or stillbirth.

Prior researchers note an increase in marital tension following the loss of a child that is related to gender differences in grieving patterns between partners (Alderman, Chisholm, Denmark, & Seibold, 1998; Littlewood, Cramer, Hoekstra, & Humphrey, 1991; Schwab, 1992). Incongruent grief can cause strain on a marriage as each spouse deals with loss in his or her

own way (de Montigny, Beaudet, & Dumas, 1999; Puddifoot & Johnson, 1999). The process of reorganization and role adjustment to the loss of the expectation of becoming a parent also present significant stressors and challenges on a relationship (Boyle, Vance, Najman, & Thearle, 1996; DeFrain et al., 1996; Fletcher, 2002; Vance et al., 1995). The loss of a baby might also impact couples differently due to partners' variations in parental attachment, grieving styles, and coping, which can result in the erosion of the intimate relationship. For example, disconcordant coping styles in couples after a loss of a child are associated with mother's reports of conflict in their communication (Feeley & Gottlieb, 1988). Whereas the mother's loss is recognized by others, often bereaved fathers feel powerless and unable protect their partners (McCreight, 2004; Samuelsson, Radestad, & Segesten, 2001). Bohannon (1990) found that bereaved fathers experience more anger, whereas bereaved mothers struggle more with guilt.

Research on child death and divorce risk provide a framework to understanding how experiencing a miscarriage or stillbirth can be a defining stressful event in a relationship. Yet, the loss of a baby prior to or during birth—such as in stillbirth—could actually heighten some grieving differences between mothers and fathers. Whereas both parents are likely to feel strong attachment to an older child who dies, evidence suggests that mothers develop deeper attachment feelings and commitment to their babies during the prenatal period (Peppers & Knapp, 1980). Peppers and Knapp (1980) reported that mothers also experience more grief in reaction to the abrupt severance of that attachment. For fathers, a pregnancy might not become "real" or the child seen as an individual until they first feel the baby move, with bonding sometimes beginning only after birth when the father can have a direct role as caretaker (Peppers & Knapp, 1980). Although both bereaved mothers and fathers experience higher levels of depression and despair than those who have not experienced stillbirth (Boyle et al., 1996), mothers are more likely to experience depressive symptoms longer than fathers (Vance et al., 1995; Wilson, Witzke, Fenton, & Soule, 1985). Recent research on distress following miscarriage or stillbirth using a national sample indicates that attachment or commitment to a pregnancy—as operationalized by gestational age and wantedness of the pregnancy—predict distress years after a loss (Shreffler et al., 2011). Further, they indicate the importance of contextual factors such as beliefs about the importance of motherhood, experiencing more than one loss, and birth following loss.

Following Shreffler and colleagues' (2011) framework, we expect the associations between a pregnancy or perinatal loss and odds of marital dissolution to differ based on type of loss (miscarriage or stillbirth) as well as the wantedness of the pregnancy and relevant fertility-related factors, including experiencing multiple losses and giving birth after the loss. Recurrent pregnancy loss is associated with significant psychological distress (Adeyemi, 2008; Magee, 2003), as women who have experienced prior losses attach

more significance to a miscarriage (Swanson, 2000). Therefore, we expect that odds of divorce will be higher for women who have experienced more than one loss. Prior research indicates that infertility is particularly distressing for couples or individuals who are involuntarily childless (Janssen, Cuisinier, de Graauw, & Hoogduin, 1997; Schwerdtfeger & Shreffler, 2009; Toedter, Lasker, & Alhadeff, 1988), so we further expect a loss for couples without prior children to be more distressing for a couple's relationship. We propose the following hypotheses:

1. We expect that women who have experienced stillbirth and miscarriage will have greater odds of divorce than women who have not experienced a loss. We expect that the odds of divorce will be greatest for women who have experienced stillbirth.
2. Among all women who have experienced miscarriage or stillbirth, we expect that longer gestation (i.e., stillbirth compared to miscarriage) and wantedness of the pregnancy ending in loss (attachment proxies) to be associated with greater odds of divorce.
3. Having more than one loss is expected to be associated with higher odds of divorce.
4. Having a subsequent live birth following a loss is expected to be associated with lower odds of divorce.

## METHODS

### Sample

Telephone interviews were conducted in 2004 to 2006 with 4,796 women aged 25 to 45 in the United States and a subset of their partners as part of the NSFB. The random-digit dialing sample is nationally representative and includes an oversample of Census central office codes with high (over 40%) African American or Hispanic populations. The data set also includes an oversample of women who have experienced—or might experience—fertility barriers, including miscarriage and stillbirth, to ensure sufficient numbers of women for subgroup analyses. We therefore weight the data to make it representative for U.S. women aged 25 to 45. The estimated response rate for the sample is 53% for the screener (APPOR 4 calculation), which is consistent with recent declines in participation in telephone surveys (McCarty, House, Harman, & Richards, 2006). Extensive comparisons with data from the NSFG and the American Community Survey indicate the NSFB is representative of women age 25 to 45 in the United States. This study restricts the sample to women who have ever been pregnant and married ($N$ = 3,461), and includes women who did not experience a loss ($n$ = 1,957), women who experienced miscarriage(s) only ($n$ = 1,242), and women who have had at least one stillbirth ($n$ = 109).

## Measures

### Dependent variables

Respondents were coded as ever divorced if they either provided divorced status for their current marital status or if they responded that they were currently married or living with a partner but that they had been divorced prior to the current arrangement. Although there are no questions in the NSFB regarding time since a divorce, there is a question for currently married respondents about the length of their current marriage. Therefore, a dependent variable representing divorce since first loss/pregnancy was constructed by subtracting years since first loss or first pregnancy (for those without a loss) from the length of the current relationship for those who had been divorced.

### Independent variables

The loss variables are measured by two indicator variables for miscarriage(s) and ever stillbirth, with no loss 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; we do not know the exact gestation at which the loss occurred. 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 a planned pregnancy (i.e., that they were "trying to" get pregnant) for the pregnancy that resulted in a loss were coded 1; other responses were coded 0. 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] miscarriage or stillbirth. Multiple loss is a dichotomous variable indicating whether the respondent experienced more than one loss.

### Background variables

Education and age are continuous variables. Race or ethnicity is included as a dummy variable for Black, Hispanic, Asian, and other race, with white respondents as the reference category.

### Attitudes/ideologies

Importance of motherhood was constructed by combining responses to four questions. Four items are measured on Likert scales (*strongly disagree* to *strongly agree*):

1. Having children is important to my feeling complete as a woman.
2. I always thought I would be a parent.
3. I think my life will be or is more fulfilling with children.
4. It is important for me to have children.

The Cronbach's alpha is .84 for the current sample, and the mean of available items are used to create a scale ranging from 1 to 4.

Religiosity is a 4-item scale ($\alpha$ reliability = .82) of the following questions:

1. How often do you attend religious services?
2. About how often do you pray?
3. How close do you feel to God most of the time?
4. In general, how much would you say your religious beliefs influence your daily life? Would you say . . . very much to none.

Because the response categories for the religiosity variables differed, they were standardized before combining them into a scale. Traditional gender role attitudes were measured by agreement to at least one of the following statements: "It is much better for everyone if the man earns the main living and the woman takes care of the home and family," and "If a husband and a wife both work full-time they should share household tasks equally" (reverse-coded).

## Analytic Strategy

Descriptive analyses estimate differences by type of loss (no loss, miscarriage(s) only, and ever stillbirth) for women who have ever been pregnant. For continuous variables, means are provided and analysis of variance (ANOVA) *F* tests indicate the significance of the overall differences in means, and Tukey's post-hoc tests provide specific comparisons between groups. For categorical variables, proportions and chi-square tests provide indication of differences between groups. Logistic regression analyses model the associations between loss and divorce odds controlling for relevant characteristics. There are two samples utilized for each logistic analysis. Sample 1 includes all women who have ever been pregnant and married ($N$ = 3,461). Sample 2 includes women currently in a relationship who have ever been pregnant and married ($N$ = 3,141). The two samples are necessary because we can only ascertain the timing of the loss compared to the divorce for those currently in a relationship; however, as many women who divorced might not be currently in a relationship, we also examine the entire sample although we cannot tease apart when the loss versus when the

divorce occurred. We believe it is more likely that the loss occurred before the divorce for the majority of women.

The first analysis of the odds of divorce includes women without a loss so that the experience of having a loss can be examined compared to no loss. The dependent variable for Sample 1 is ever divorced, whereas the dependent variable for Sample 2 is divorced since first loss (or first pregnancy for those with no loss). Model 1 includes miscarriage and stillbirth variables only (as compared to "no loss" as the reference group), and Model 2 adds background and attitude and ideology variables.

The second analysis is restricted to women who have experienced a miscarriage or stillbirth only. Women who have not experienced a loss are excluded from this analysis so that contextual factors regarding the loss could be incorporated. Sample 1 (all women who have experienced a loss in this analysis) examines the odds of being "ever divorced." Sample 2 (women who have experienced a loss and are currently in a relationship) examines "divorce since first loss." Model 1 includes loss context variables, including gestation length (stillbirth compared to miscarriage), whether the loss was a planned pregnancy, if the woman has had a birth since the loss, and if the woman has had more than one loss. Model 2 adds background and ideologies and attitudes variables.

## RESULTS

Group differences on the included variables are displayed in Table 1. Women who experienced a miscarriage or stillbirth were much more likely to report having ever been divorced. Roughly 27% of women who had not experienced either a miscarriage or stillbirth had ever been divorced, compared to 32% and 43% in the early and late perinatal loss groups ($p < .001$). Post-hoc tests reveal that the divorce risk is significantly higher between groups, women with no losses were significantly less likely to divorce as compared to women who experienced miscarriage or stillbirth, and women who experienced miscarriage were significantly less likely to divorce than women who experienced stillbirth. In the smaller subset of women with whom relationship data were collected (women in a relationship at the time of the study), the pattern is similar, although the percentages are much smaller. Seventeen percent of women who had not experienced a loss had been divorced since their last pregnancy, 24% of women who had experienced a miscarriage divorced afterward, and 29% who had experienced a stillbirth were also divorced after their loss ($p < .001$). The smaller percentages likely indicate the women who have been divorced and are not currently in a relationship ($n = 393$). Post-hoc tests again reveal significant differences among all groups. Regarding current union status, significant group differences were apparent for married respondents (women who

**TABLE 1** Weighted Means and Standard Deviations of Study Variables, for Women Who Have Ever Been Pregnant and Married

| | No losses[1] ($n$ = 1,957) | | Miscarriage(s) only ($n$ = 1,242) | | Ever stillbirth ($n$ = 109) | | | |
|---|---|---|---|---|---|---|---|---|
| Variables | *M* | *SD* | *M* | *SD* | *M* | *SD* | *p* | Tukey's HSD |
| Ever divorced | .27 | .45 | .32 | .47 | .43 | .50 | *** | a, b, c |
| Divorce since first loss or first pregnancy[2] | .17 | .38 | .24 | .43 | .29 | .46 | *** | a, b, c |
| Current union status | | | | | | | | |
| Married | .79 | .41 | .79 | .40 | .68 | .47 | * | b, c |
| Divorced/separated/ widowed | .19 | .39 | .18 | .39 | .31 | .47 | ** | b, c |
| Cohabiting | .06 | .23 | .07 | .26 | .10 | .31 | | |
| Background variables | | | | | | | | |
| Education in years | 13.46 | 2.99 | 13.52 | 2.84 | 12.58 | 2.64 | ** | b, c |
| Age | 36.02 | 5.75 | 36.57 | 5.64 | 37.37 | 5.49 | ** | a, b |
| Race/ethnicity | | | | | | | | |
| White | .61 | .49 | .69 | .46 | .66 | .47 | *** | a |
| Black | .09 | .29 | .10 | .30 | .09 | .29 | | |
| Hispanic | .22 | .41 | .15 | .36 | .24 | .43 | *** | a |
| Other race | .07 | .26 | .05 | .23 | .00 | .07 | ** | b |
| Ideologies/attitudes | | | | | | | | |
| Importance of motherhood | 3.38 | .57 | 3.42 | .56 | 3.37 | .62 | | |
| Religious | .20 | 2.63 | .35 | 2.62 | .51 | 2.66 | | |
| Traditional gender roles | 3.96 | 1.06 | 3.89 | 1.07 | 4.12 | 1.08 | | |
| Loss context-relevant variables | | | | | | | | |
| Loss was planned pregnancy[a] | N/A | N/A | .42 | .49 | .49 | .50 | *** | c |
| Birth since loss | N/A | N/A | .75 | .43 | .75 | .43 | | |
| Multiple losses | N/A | N/A | .31 | .46 | .45 | .50 | *** | c |

*Note.* $N$ = 3,461. Means are weighted; N are unweighted. HSD = honestly significant difference.
Tukey's HSD post-hoc tests: a = significant difference ($p < .05$) between no loss vs. miscarriage groups; b = significant difference between no loss and stillbirth groups; c = significant difference between miscarriage and stillbirth groups.
[1]Categories are mutually exclusive such that women with more than one type of loss are placed in the group with the stillbirth category. [2]Restricted to women who are currently in a relationship.
$^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

had experienced a stillbirth were significantly less likely to be married than women in the other groups) and those currently divorced, separated, or widowed; women who had experienced a stillbirth were significantly more likely to be divorced, separated, or widowed at the time of interview ($p < .01$).

Women who experienced a stillbirth had significantly fewer years of education than women who experienced a miscarriage or no loss ($p < .01$). There were statistically significant group differences in age, as women who reported no loss were on average younger than women who experienced a

miscarriage or a stillbirth ($p < .01$), likely reflecting some younger women who have not yet tried to conceive. White women were significantly more likely to report a miscarriage or stillbirth, and Hispanic women were less likely to experience a miscarriage ($p < .001$).

There were no significant differences among the three groups on ideologies and attitudes. There were two significant differences in loss context-relevant variables: Women who had experienced a stillbirth were more likely to report that their loss had been a planned pregnancy than women who experienced a miscarriage (49% compared to 42%, respectively; $p < .001$), and women who experienced stillbirth had also experienced more losses; 45% of women in the "ever stillbirth" group had experienced more than one loss, whereas 31% of women in the "miscarriage(s) only" group had experienced multiple losses ($p < .001$). On the importance of motherhood index, women who experienced a miscarriage rated the importance of motherhood, on average, significantly higher (13.62) than those in the no loss group (13.44; $p < .05$).

Results for the first logistic analysis are displayed in Table 2. In the full sample—all women who have ever been pregnant (Sample 1)—miscarriage and stillbirth are both risk factors for having ever been divorced, as shown in Model 1. Women who reported a miscarriage were more likely to report having been divorced than those not experiencing a loss (OR = 1.23, $p < .05$), whereas women who experienced a stillbirth were nearly twice as likely to report ever being divorced (OR = 1.84, $p < .01$) than women who had not experienced a loss. These findings were only slightly attenuated, but remained significant, when background and attitudes and ideologies variables were added into the model. In the sample restricted to those currently in a relationship who had ever been pregnant (Sample 2), the odds of divorce for women who had experienced miscarriage or stillbirth increased. Women who experienced miscarriage are 1.63 times more likely to have divorced, and women who experienced stillbirth are nearly twice as likely (OR = 1.98) to have divorced following a loss. With all variables included in Model 2, the increased odds of divorce remained significant. In both analyses in Table 2, more education is associated with lower odds of divorce, whereas older women have higher odds of divorce. Black and Hispanic women are less likely to divorce, and odds of divorce are also lower for women who report greater importance of motherhood and who report having more traditional gender ideology.

Results of the logistic regression analyses of the odds of divorce for women who have experienced a miscarriage or stillbirth are presented in Table 3. The first sample is restricted to all women who have been married and have experienced a loss, and findings suggest that of the loss context variables, having experienced more than one loss is significantly associated with higher odds of divorce (OR = 1.55, $p < .01$). In Model 2, with all background and ideologies and attitude variables, having experienced

**TABLE 2** Logistic Regression Analyses of the Odds of Divorce

| | Sample 1: All women who have ever been pregnant and married[a] | | | | | | | | Sample 2: Women currently in a relationship who have ever been pregnant[b] | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DV = Ever divorced | | | | | | | | DV = Divorced since first loss | | | | | | | |
| | Model 1 | | | | Model 2 | | | | Model 1 | | | | Model 2 | | | |
| Variables | *B* | *SE* | OR | | *B* | *SE* | OR | | *B* | *SE* | OR | | *B* | *SE* | OR | |
| Losses (no loss) | | | | | | | | | | | | | | | | |
| Miscarriage | .20 | .08 | 1.23 | * | .18 | .08 | 1.20 | * | .49 | .10 | 1.63 | *** | .46 | .10 | 1.58 | *** |
| Stillbirth | .61 | .19 | 1.84 | ** | .53 | .19 | 1.70 | ** | .69 | .24 | 1.98 | ** | .51 | .25 | 1.67 | * |
| Background variables | | | | | | | | | | | | | | | | |
| Education | | | | | −.08 | .01 | .92 | *** | | | | | −.14 | .02 | .87 | *** |
| Age | | | | | .07 | .01 | 1.07 | *** | | | | | .07 | .01 | 1.07 | *** |
| Race/ethnicity (White) | | | | | | | | | | | | | | | | |
| Black | | | | | −.37 | .12 | .69 | ** | | | | | −.43 | .19 | .65 | * |
| Hispanic | | | | | −.34 | .11 | .71 | ** | | | | | −.56 | .15 | .57 | *** |
| Other race | | | | | −.11 | .17 | .90 | | | | | | −.57 | .26 | .57 | * |
| Ideologies/attitudes | | | | | | | | | | | | | | | | |
| Importance of motherhood | | | | | −.19 | .06 | .83 | ** | | | | | −.25 | .08 | .78 | ** |
| Religious | | | | | −.05 | .05 | .95 | | | | | | −.12 | .06 | .89 | |
| Traditional gender ideology | | | | | −.23 | .08 | .79 | ** | | | | | −.30 | .10 | .74 | ** |
| Constant | −1.18 | .05 | .31 | *** | −1.08 | .07 | .34 | *** | −1.68 | .06 | .19 | *** | −1.57 | .09 | .21 | *** |
| Nagalkerke $R^2$ | .01 | | | | .07 | | | | .02 | | | | .10 | | | |

*Note.* DV = dependent variable.
[a]$N = 3{,}461$. [b]$N = 3{,}141$.
*$p < .05$. **$p < .01$. ***$p < .001$.

**TABLE 3** Logistic Regression Analyses of the Odds of Divorce for Women Who Have Experienced a Miscarriage or Stillbirth

| | Sample 1: All women who have been married and experienced a loss[a] | | | | | | | Sample 2: Women currently in a relationship who have experienced a loss[b] | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DV = Ever divorced | | | | | | | DV = Divorced since first loss | | | | | | |
| | Model 1 | | | | Model 2 | | | Model 1 | | | | Model 2 | | |
| Variables | *B* | *SE* | OR | | *B* | *SE* | OR | *B* | *SE* | OR | | *B* | *SE* | OR |
| Loss context variables | | | | | | | | | | | | | | |
| Stillbirth | .37 | .20 | 1.45 | | .33 | .21 | 1.38 | .17 | .25 | 1.19 | | .03 | .26 | 1.04 |
| Loss was planned pregnancy[c] | −.23 | .13 | .80 | | −.30 | .14 | .74 | * | −.45 | .16 | .64 | ** | −.44 | .17 | .64 | ** |
| Birth since loss[c] | .23 | .15 | 1.26 | | .22 | .15 | 1.24 | | .29 | .18 | 1.34 | | .32 | .19 | 1.38 | |
| Multiple losses | .44 | .13 | 1.55 | ** | .39 | .14 | 1.48 | ** | .50 | .16 | 1.65 | ** | .44 | .17 | 1.56 | ** |
| Background variables | | | | | | | | | | | | | | |
| Education | | | | | −.09 | .03 | .91 | *** | | | | | −.17 | .03 | .84 | *** |
| Age | | | | | .08 | .01 | 1.08 | *** | | | | | .07 | .01 | 1.07 | *** |
| Race/ethnicity (White) | | | | | | | | | | | | | | |
| Black | | | | | −.83 | .21 | .44 | *** | | | | | −.41 | .28 | .66 | |
| Hispanic | | | | | −.64 | .20 | .53 | ** | | | | | −.87 | .27 | .42 | ** |
| Other race | | | | | −.44 | .35 | .65 | | | | | | −.72 | .49 | .49 | |
| Ideologies/attitudes | | | | | | | | | | | | | | |
| Importance of motherhood | | | | | −.19 | .12 | .83 | | | | | | −.29 | .15 | .75 | * |
| Religious | | | | | .01 | .08 | 1.01 | | | | | | −.12 | .10 | .88 | |
| Traditional gender ideology | | | | | −.15 | .14 | .86 | | | | | | −.21 | .17 | .81 | |
| Constant | −1.20 | .14 | .30 | *** | −.96 | .16 | .38 | *** | −1.40 | .18 | .25 | *** | −1.32 | .21 | .27 | *** |
| Nagalkerke $R^2$ | .02 | | | | .12 | | | | .03 | | | | .14 | | | |

*Note*. DV = dependent value.

[a]$N = 1{,}284$. [b]$N = 1{,}001$. [c]Refers to first loss if more than one loss.

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

multiple losses remains significant. In addition, experiencing a loss of a planned pregnancy is associated with lower odds of divorce (OR = .74, $p < .05$). Restricting the sample to women currently in a relationship who have experienced a loss reveals similar findings. In Model 1, with only loss context variables included in the model, the loss of a planned pregnancy is associated with lower odds of divorce (OR = .64, $p < .01$), and having multiple losses is associated with increased odds of divorce (OR = 1.65, $p < .01$). Adding all variables in Model 2 does not change the associations much; a loss of a planned pregnancy remains associated with lower odds of divorce and experiencing more than one loss is associated with higher odds of divorce. In addition, in both samples, education is associated with lower odds of divorce, whereas older women have higher odds of divorce. Black women in the full sample (all women who have experienced a loss) have lower odds of divorce, and Hispanic women in both samples have lower odds of divorce. For women currently in a relationship who have experienced a loss, reporting motherhood as more important is associated with lower odds of divorce.

## DISCUSSION

We examined the effects of both miscarriage and stillbirth on divorce odds among a random sample of American women of reproductive age who had ever been pregnant and married. We extended prior research using large, random samples by examining the odds of divorce for women who experienced a miscarriage or stillbirth compared to women who had a live birth, and we determined how characteristics of the pregnancy that ended in loss were associated with odds of divorce. We utilized two dependent variables due to data limitations: the odds of having ever divorced and the odds of having divorced since a miscarriage or stillbirth (or since first pregnancy for women without a loss) for women currently in a marriage or cohabiting relationship. We also utilized two samples due to data limitations: all women who have been pregnant and women currently in a relationship. Our findings provide evidence that women who have experienced a miscarriage or stillbirth are more likely to have divorced and that characteristics associated with the pregnancy or loss experiences provide additional insights into factors that make the experience of miscarriage or stillbirth particularly distressing for a marital relationship. Although both miscarriage and stillbirth experiences are associated with increased odds of having ever divorced (Sample 1) or divorced since first loss (Sample 2), odds are particularly high for women who have experienced a stillbirth, indicating that the experience of stillbirth is particularly distressing for a marital relationship. Further investigation of divorce odds for women with a miscarriage or stillbirth indicates that characteristics of the loss or fertility context are associated with increased

odds of having divorced. Women who experienced stillbirth do not have significantly greater odds of divorce than women who experienced miscarriage, but women who have experienced more than one loss and women whose loss was not a planned pregnancy are more likely to have divorced.

In addition to the loss and fertility context factors, background characteristics and attitudes and ideologies also serve as protective or risk factors. Both sets of analyses revealed that women with more education, Black and Hispanic women, those who view motherhood as more important, and those with more traditional gender ideologies had lower odds of divorce, and older women had a higher risk of divorce. Some of the significant results were in the opposite direction than expected. We hypothesized that being more attached or committed to a pregnancy that ends in loss would be associated with an increase in odds of divorce because of research indicating that higher attachment and commitment to a pregnancy that ends in loss is more distressing (Shreffler et al., 2011). Although we did find that women who experienced miscarriage and stillbirth had significantly greater odds of divorce than women without a loss—with greatest odds for women who experienced stillbirth—women who experienced the loss of a planned pregnancy were less likely to have divorced. We suspect that this finding might be an indication of couple communication, which can also buffer the distress following a loss (Cacciatore et al., 2008; DeFrain et al., 1996). It is also possible that an unplanned pregnancy might be an indicator of an unstable relationship; prior evidence suggests that women who try to get pregnant as compared to those trying not to get pregnant report greater relationship satisfaction (McQuillan, Greil, & Shreffler, 2010).

We were originally surprised by our finding that Black and Hispanic women have lower odds of divorce in our sample, particularly in the sample restricted to those currently in a relationship. Further investigation revealed that when education and ideologies and attitudes are not controlled for in the model, Black women have significantly ($p = .03$) higher odds of divorce, and the odds for Hispanic women and women of other race or ethnicity were not significantly different than the odds for White women. Our results also suggest that ideologies and attitudes are associated with the odds of divorce for all women who have been pregnant and for women who have experienced a loss; women who report that motherhood is more important have lower odds of divorce, as do women with more traditional gender ideologies.

## Limitations

This study has several limitations. Some of these limitations are the result of the cross-sectional data and lack of partner data; we would have stronger causal certainty if we had more data points; in particular, couple assessments before and after a loss would be most informative. The ability to

follow couples before pregnancy, soon after a loss, and years after a loss would help determine relationship processes and coping styles that are most effective in reducing divorce risk following a loss.

Another limitation is the lack of information about the divorce in the data set; more information regarding the reasons for the divorce, such as whether or not the respondents view their loss to be an influential factor in the divorce, would be particularly informative. In addition, information such as attempts to resolve conflicts or seek marital help, or couple communication or coping styles, could be used to inform preventative measures. Further, the data did not directly probe when divorces occurred for all women in the sample, making it impossible to determine the sequence of miscarriage or stillbirth and divorce; we were therefore only able to determine temporal order for the women in our sample who are currently in a relationship based on three separate items (ever divorced, years in current relationship, and year of first pregnancy or loss). Because of this limitation, we decided on the two samples for each set of analysis; in the first sample, we cannot be certain that the loss happened prior to the divorce. In the second analyses, we have temporal order, but we are limited to those who are currently in relationships; as at least some women who have been divorced will not be in current relationships, this creates a conservative estimate of the effects of loss on the probability of ever being divorced. Despite these limitations, however, this study is the first to provide an in-depth investigation of factors that help explain the increased odds of divorce for women who have experienced miscarriage or stillbirth.

## REFERENCES

Adeyemi, A. (2008). Depressive symptoms in a sample of women following perinatal loss. *Journal of the National Medical Association*, *100*, 1463–1468.

Alderman, L., Chisholm, J., Denmark, F., & Seibold, S. C. (1998). Bereavement and stress of a miscarriage: As it affects the couple. *Omega: Journal of Death and Dying*, *37*, 317–327.

Amato, P. R. (2010). Research on divorce: Continuing trends and new developments. *Journal of Marriage and Family*, *72*, 650–666.

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.

Bohannon, J. R. (1990). Grief responses of spouses following the death of a child: A longitudinal study. *Omega: Journal of Death and Dying*, *22*, 1097–1121.

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.

Cacciatore, J., DeFrain, J., & Jones, K. L. C. (2008). When a baby dies: Ambiguity and stillbirth. *Marriage and Family Review*, *44*, 439–454.

DeFrain, J., Millspaugh, E., & Xie, X. (1996). The psychosocial effects of miscarriage: Implications for health professionals. *Families, Systems, & Health*, *14*, 331–347.

de Montigny, F., Beaudet, L., & Dumas, L. (1999). A baby has died: The impact of perinatal loss of family social networks. *Journal of Obstetric, Gynecologic, and Neonatal Nursing*, *28*, 151–156.

Feeley, N., & Gottlieb, L. N. (1988). Parents' coping and communication following their infants' death. *Omega*, *19*, 51–67.

Fletcher, P. N. (2002). Experiences in family bereavement. *Family Community Health*, *25*, 57–70.

Gold, K. J., Sen, A., & Hayward, R. A. (2010). Marriage and cohabitation outcomes after pregnancy loss. *Pediatrics*, *125*, 1202–1207.

Janssen, H. J., Cuisinier, M. C., de Graauw, K. P., & Hoogduin, K. A. (1997). A prospective study of risk factors predicting grief intensity following pregnancy loss. *Archives of General Psychiatry*, *54*, 56–61.

Littlewood, J., Cramer, D., Hoekstra, J., & Humphrey, G. (1991). Gender differences in parental coping following their child's death. *British Journal of Guidance and Counseling*, *19*, 139–148.

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.

McCarty, C., House, M., Harman, J., & Richards, S. (2006). Effort in phone survey response rates: The effects of vendor and client-controlled factors. *Field Methods*, *18*, 172–188.

McCreight, B. S. (2004 ). A grief ignored: Narratives of pregnancy loss from a male perspective. *Sociology of Health and Illness*, *26*, 326–350.

McQuillan, J., Greil, A. L., & Shreffler, K. M. (2010). Pregnancy intentions for women who do not try: Recognizing women who are okay either way. *Maternal and Child Health Journal*, *15*, 178–187.

Peppers, L. G., & Knapp, R. J. (1980). *Motherhood and mourning: Perinatal death*. New York, NY: Praeger.

Puddifoot, J. E., & Johnson, M. P. (1999). Active grief, despair and difficulty coping: Some measured characteristics of male response following their partner's miscarriage. *Journal of Reproductive and Infant Psychology*, *17*, 89–93.

Samuelsson, M., Radestad, I., & Segesten, K. (2001). A waste of life: Fathers' experience of losing a child before birth. *Birth*, *28*, 124–130.

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.

Schoen, R., & Canudas-Romo, V. (2006). Timing effects on divorce: 20th century experience in the United States. *Journal of Marriage and Family*, *68*, 749–758.

Schwab, R. (1992). Effects of a child's death on the marital relationship: A preliminary study. *Death Studies*, *16*, 141–154.

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*(3), 211–227.

Shreffler, K. M., Greil, A. L., & McQuillan, J. (2011). Pregnancy loss and distress among U.S. women. *Family Relations*, *60*, 342–355.

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.

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.

Vance, J. C., Najman, J. M., Thearle, M. J., Embelton, G., Foster, W. J., & Boyle, F. M. (1995). Psychological changes in parents eight months after the loss of an infant from stillbirth, neonatal death, or sudden infant death syndrome—A longitudinal study. *Pediatrics*, *96*, 933–938.

Wilson, A. L., Witzke, D., Fenton, L. J., & Soule, D. (1985). Parental response to perinatal death: Mother-father differences. *American Journal of Diseases of Childhood*, *139*, 1235–1238.