

# Changes in Importance of Motherhood Following Pregnancy Loss

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## Abstract

Pregnancy loss (i.e., miscarriage, stillbirth) is a relatively common and often traumatic experience. Although prior research has examined mental health consequences of pregnancy loss, to our knowledge, none have examined how the experience of pregnancy loss affects how women perceive or value the importance of motherhood. Using longitudinal data from the National Survey of Fertility Barriers, we applied change-score regression analysis to examine how a pregnancy loss that occurred between survey waves was associated with a change in importance of motherhood scores, controlling for sociodemographic and pregnancy-specific characteristics. We found that women who experienced a pregnancy loss reported an increase in importance of motherhood compared to women without a pregnancy loss. The findings suggest that an increase in the importance of motherhood following a pregnancy loss could be a grief response. Health care professionals should consider validating maternal identity following a pregnancy loss, as women highly associate with this role.

## Keywords

pregnancy loss, miscarriage, stillbirth, motherhood, maternal identity

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Although the majority of American women value motherhood and view it as their most central identity (Katz-Wise et al., 2010), pregnancy loss is a prevalent and traumatic barrier to motherhood. 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 et al., 1999). Approximately 25% of women of childbearing age in the United States experience at least one pregnancy loss (Price, 2006). Pregnancy loss at any point in the pregnancy is often a devastating experience for parents and can result in feelings of grief, anxiety, depression, and guilt (Harden, 2018; Lok & Neugebauer, 2007; Shreffler et al., 2011; Thapar & Thapar, 1992). Mothers experience complex and conflicting emotions after a loss, such as the intense joy and grief of their child's short life (Gerber-Epstein et al., 2009). Following a loss, a woman may still feel intimately connected to her child and maternal identity despite her current maternal status (Côté-Arsenault & O'Leary, 2015; Harden, 2018; Lathrop & VandeVusse, 2011).

A woman's prioritization of maternal identity can be conceptualized as the *importance of motherhood* (McQuillan et al., 2008), that is, the extent to which becoming a mother is a highly valued and important priority. Despite changing female gender expectations, parenthood is still such a prevalent social norm that woman having children is commonplace and even expected, and childlessness may be considered aberrant (Ulrich & Weatherall, 2000). There are a multitude of factors contributing to a woman's desire to become a mother, and previous research has suggested that the importance of motherhood is closely linked to women's sociocultural identity and position in the life course, including gender attitudes, age, race, appreciation for leisure time, religiosity, family-oriented values, maternal status, and fertility (Arnett, 1998; McQuillan et al., 2008, 2015). Yet there has been scant research on the *process* through which women come to value motherhood (McQuillan et al., 2008). Further, no studies to our knowledge have examined whether importance of motherhood is a stable characteristic of women or if it can change due to changes in women's characteristics or experiences.

There is evidence from clinical or convenience samples suggesting that the experience of pregnancy loss can have a profound impact on maternal identity, however. When pregnancy loss occurs, women are simultaneously coping with the loss of identity as a maternal caregiver and parent while also mourning the loss of their baby (Harden, 2018). Women who have experienced pregnancy losses assert that they want to be identified as mothers and that their fetuses are considered babies (Lathrop & VandeVusse, 2011). Affirming a woman's maternal identity and the existence of her

pregnancy has been shown to be beneficial as she copes with a miscarriage or stillbirth (Côté-Arsenault & O’Leary, 2015; Lathrop & VandeVusse, 2011), and continuing to acknowledge her role as mother to the deceased baby helps parents emotionally prepare to welcome a new baby in subsequent pregnancies (Côté-Arsenault & O’Leary, 2015; Prigerson et al., 2009; Romanoff, 2001).

Yet, there is considerable variation in distress in response to pregnancy loss (Shreffler et al., 2011). Involuntarily childless/infertile women are most at risk for distress outcomes following pregnancy loss, including depression and lower life satisfaction (McQuillan et al., 2007, 2012; Schwerdtfeger & Shreffler, 2009; Shreffler et al., 2011). Pregnancies that were intended and pregnancies that were not followed by a subsequent live birth are associated with higher levels of distress (Shreffler et al., 2011). These findings suggest that pregnancy-specific characteristics are important considerations for the impact that pregnancy loss may have on importance of motherhood.

In this study, we use a nationally representative, longitudinal sample to examine how experiencing a pregnancy loss between survey waves affects the importance of motherhood to U.S. women. Drawing from the pregnancy loss and distress literature, we hypothesized that motherhood would be reported as more important among women who experienced a pregnancy loss as compared to women who did not experience a pregnancy loss.

## **Methods**

### *Procedures*

The National Survey of Fertility Barriers (NSFB) was a random-digit-dial (RDD) telephone survey conducted in 2004–2007 (wave 1) that included follow-up interviews three years after the initial interview (wave 2). The study includes a probability-based sample of 4,787 U.S. women aged 25–45 years, with an oversample of high minority (over 40%) census tracts to ensure sufficient numbers of non-White women for subgroup analyses. Interviewing was conducted by the Survey Research Center (SRC) at the Pennsylvania State University and the Bureau of Sociological Research (BOSR) at the University of Nebraska–Lincoln. The same interviewer training material and interviewer guides were used at both sites, and Institutional Review Board approval was secured at both sites before data collection began. The data and methodology report may be accessed at <https://www.icpsr.umich.edu/icpsrweb/DSDR/studies/36902#bibtite>.

## Participants

The NSFBI screened to oversample women who were at risk for infertility or who previously had infertility and included 1/10th of those with no prior fertility issues or risks for comparison. The response rate to the eligibility screening questions was 54%, which was typical for RDD telephone surveys conducted during that decade (McCarty et al., 2006). There is close correspondence between the NSFBI participants' demographic characteristics and women aged 25–45 years in the 2005 Current Population Survey (CPS), which used in-person interviews and has a 90% response rate, justifying our confidence in the validity and representativeness of this dataset. The sample for this analysis ( $N = 2,173$ ) includes all women who were not sterile in wave 1, responded to both waves 1 and 2, and who responded to importance of motherhood questions in both waves.

## Measures

The dependent variable for this study—*importance of motherhood*—was assessed at both waves with the same questions. The scale was constructed by averaging responses to five questions. Four items were measured on Likert scales (strongly agree to strongly disagree): (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”; (d) “It is important for me to have children.” A fifth item was measured on a scale from very important to not important; and (e) “How important is each of the following in your life. . . raising children?” Factor analyses showed that these items corresponded to a single factor that explained 64% of the variance. The Cronbach's alpha was high ( $\alpha = 0.86$  in wave 1). This scale had a slight positive skew (1.79 in wave 1). To generate the change scores that were used in the analyses, we subtracted wave 1 scores from wave 2 scores.

*Pregnancy loss*, the focal independent variable, was measured in wave 2 by questions asking about pregnancies that occurred since the first survey and the outcomes of those pregnancies. If respondents noted a pregnancy that ended in miscarriage or stillbirth, pregnancy loss was coded as 1 (no loss was coded as 0).

Additional sociodemographic variables were included as controls, including race/ethnicity, age, level of education, union status, and number of children. *Race/ethnicity* was measured using the two standard Census questions. Individuals who reported multiple races were classified giving first priority to identification as “Hispanic” and second priority to identification as “Black.” Indicator variables were constructed for Black, Hispanic, Asian, and “other race” compared to White. *Age* at wave 1 was measured in years. All women

were between the ages of 25 years and 45 years at wave 1. *Education* at wave 1 was measured in years. *Union status* at waves 1 and 2 was assessed via the questions, “What is your current marital status?” and if not married, “Are you currently living with a partner?” We created a binary indicator, where “1” indicates that the respondent was in a marital or cohabiting union in either wave, and “0” indicates that the respondent was not in a union during either wave.

We also controlled for several variables related to pregnancy, including desire for a(nother) child, sought medical help to get pregnant, and live birth between waves. In wave 1, respondents were asked, “Would you, yourself, like to have a(nother) baby?” Responses indicating *want to have a baby* were coded such that “1” signifies “definitely yes” or “probably yes” responses and “0” signifies “definitely no” or “probably no.” *Sought medical help to have a baby* is an indicator variable based on a question asked at wave 2, “Have you ever been to a doctor or clinic to talk about ways to help have a baby?” A score of “1” indicates help-seeking; a score of “0” indicates no help-seeking. An indicator variable measured whether women had a *live birth between waves*. Respondents were asked in wave 2 if they had a birth since the last interview. Women who responded “yes” were coded as “1”; women who did not report any live births were coded as “0.”

### **Analytical Strategy**

We used multivariate ordinary least squares (OLS) regression and change-score measures to assess changes in importance of motherhood score. Change-score models are advantageous because they become fixed-effects estimators when only two panels are used, and they examine only within-person variance (Johnson, 2005). Estimating coefficients based on individual-level change in the independent and dependent variables reduces biases due to unobserved time-invariant family or individual differences (Wooldridge, 2009). Models controlled for the variables discussed earlier, which include time-invariant measures of respondents’ individual and household characteristics. In formal fixed-effects models, these variables would drop from the model, but in the functionally equivalent two-period change models, key time-invariant variables, such as relationship structure, age, education, and race can be included to control for selection into transition categories.

### **Results**

Means, standard deviations (for continuous variables), and proportions (for categorical variables) for the dependent and independent variables in the analysis are shown in Table 1 separately by pregnancy loss status. Mean comparisons using *t*-tests (for continuous variables) and chi-square tests (for categorical

**Table 1.** Comparisons of Descriptive Statistics of Study Variables by Pregnancy Loss between Waves (N = 2,173).

Variables	No Loss between Waves (n = 2,023)		Loss between Waves (n = 150)		Range	p-Value
	M	SD	M	SD		
Importance of motherhood scale						
Imp. of motherhood w1	3.18	0.77	3.26	0.65	1-4	
Imp. of motherhood w2	3.14	0.79	3.35	0.63	1-4	**
Change between w1 and w2	-0.04	0.54	0.09	0.57	-3-2.5	**
Race/ethnicity						
White	0.66	0.47	0.60	0.49	0-1	
Black	0.17	0.37	0.19	0.39	0-1	
Hispanic	0.12	0.33	0.17	0.37	0-1	
Asian	0.03	0.16	0.01	0.12	0-1	
Other	0.03	0.16	0.03	0.18	0-1	
Age (years)	35.48	6.02	33.13	4.98	25-45	***
Education in years	15.33	2.68	15.80	2.67	0-22	*
Union (w1 or w2)	0.79	0.41	0.91	0.29	0-1	**
Number of children	1.30	1.30	1.13	1.40	0-10	
Want to have a baby	0.59	0.49	0.81	0.40	0-1	***
Sought help to get pregnant	0.10	0.30	0.30	0.46	0-1	***
Live birth between waves	1.53	1.38	1.82	1.85	0-10	***

Note. w1: wave 1; w2: wave 2; Union: married or cohabitating.

\* $p < 0.05$ ; \*\* $p < 0.01$ ; and \*\*\* $p < 0.001$ .

**Table 2.** Change in Importance of Motherhood Scores by Pregnancy Loss and Sociodemographic Variables ( $N = 2,173$ ).

Variables	Model 1		Model 2	
	<i>b</i>	SE	<i>b</i>	SE
Loss between waves	0.13**	0.05	0.10*	0.05
Race/ethnicity (White)				
Black			0.01	0.04
Hispanic			0.04	0.04
Asian			0.08	0.08
Other			0.06	0.08
Age			0.00	0.00
Education in years			0.00	0.00
Union (w1 or w2)			0.03	0.03
Number of children			0.00	0.01
Want to have a baby			-0.03	0.03
Sought medical help to get pregnant			0.12**	0.04
Live birth between waves			0.02	0.03
Constant	-0.04**	0.01	0.00	0.12

Note. w1: wave 1; w2: wave 2; Union: married or cohabitating.

\* $p < 0.05$ ; \*\* $p < 0.01$ .

variables) were conducted to determine whether the groups differed across variables at each wave. Results indicate that although there were no significant differences in importance of motherhood scores at wave 1, there were significant differences in scores at wave 2, with those who experienced pregnancy loss reporting an increase in importance of motherhood. Similarly, the change score difference was also statistically significant by loss group status, with significantly more change among those who experienced a pregnancy loss.

There were significant differences in age, education, and union status between the groups, with those who experienced a loss reporting younger age, slightly more education, and a greater likelihood of higher proportion of being in a union at either wave. Women who experienced a loss between waves were significantly more likely to say they wanted to have a baby, to have sought medical help to get pregnant, and to have had a live birth between waves. The fact that the two groups differ from one another on so many of these independent variables suggests that it is important to control for them in the multivariate analysis.

The results of the OLS regression change score analysis are presented in Table 2. The dependent variable is change in importance of motherhood

scores between waves 1 and 2. Linear change score analyses are presented in Table 2. Model 1 includes pregnancy loss only (without any controls), and model 2 includes the control variables. Both models indicate that women who experienced a loss between waves experienced a significant increase in importance of motherhood scores ( $b = 0.18$ ;  $p < 0.01$ ). The effect of experiencing a loss between waves on the importance of motherhood change score remained significant after the control variables were added to the model ( $b = 0.10$ ;  $p < 0.05$ ). The only control variable that was significantly associated with change in the importance of motherhood between waves was seeking medical help to get pregnant. Women who had sought help experienced an increase in importance of motherhood scores between waves compared to those who did not seek help.

## Discussion

The current study examined changes in the importance of motherhood in pregnant women across a 3-year time span and provides the first known investigation of changes in importance of motherhood, following a pregnancy loss. Findings indicate that women who experienced a pregnancy loss between waves reported an increase in the importance of motherhood compared to women who did not experience a loss. Although women who experienced a pregnancy loss differed from their counterparts in other notable ways, including age, education, and union status, as well as having a greater desire to have a baby, being more likely to seek medical help to get pregnant, and being more likely to have a live birth between waves, regression results indicate that only two factors were significantly associated with change in the importance of motherhood between survey waves: pregnancy loss and seeking medical help to get pregnant.

Although this is the first study to examine the causal impact of pregnancy loss on importance of motherhood, it is aligned with prior research on the variation of distress following pregnancy loss (Shreffler et al., 2011), which highlighted the importance of reproductive context for distress outcomes; women who were trying to become pregnant, childless, further along in their pregnancies, and did not have a subsequent live birth reported significantly higher distress following a pregnancy loss. Similarly, we found that reproductive context mattered for women's reports on the importance of motherhood following pregnancy loss, particularly for women who were seeking medical help to get pregnant; women seeking help to get pregnant between waves 1 and 2 reported an increase in importance of motherhood.

These findings have important implications for health care practitioners who work with pregnant or postpartum women. An increase in importance of

motherhood for women who experience a pregnancy loss highlights the need for woman's maternal identity to be validated; therefore, medical and mental health care professionals should strive to support maternal identity following a pregnancy loss. Further, it may be difficult for practitioners to effectively treat and reduce negative psychological consequences of pregnancy loss without understanding the factors that shape the experience and meaning of pregnancy loss. Practitioners working with women and couples who have experienced pregnancy loss could provide more targeted support and effective treatment if they assess women's attitudes about the importance of motherhood, as they may provide greater understanding of the meaning of the loss.

Despite the current study being the first of its kind to examine pregnancy loss and the importance of motherhood, there are limitations to the current findings. Although our sample is representative of the U.S. population, and we have included a number of control variables, it is always possible that some unknown endogenous variable is confounding our results. In particular, it might have been useful to have a measure of postpartum grief or postpartum distress to include in the model. It is possible that the increase of the importance of motherhood may be a short-term grief response to a pregnancy loss. Some evidence suggests involuntarily childless women eventually relinquish motherhood identities and realign their identities in other ways, such as with leisure pursuits (Parry, 2005). Because our data only included two waves that occurred three years apart, we were unable to assess whether the increase in importance of motherhood was permanent or waned over time.

It is also possible that some women had multiple pregnancy losses, and that this could affect our results, though the number of women reporting multiple pregnancy losses in the three years between survey waves was too small for us to include in analyses. Information on the gestational timing of the pregnancy loss would also have added to our confidence in our results. Finally, it would have been helpful to have data on the kind of medical help to get pregnant women received, as well as data on coping strategies for both women and their partners following losses and as they were trying to conceive. Future studies would benefit from the inclusion of the aforementioned variables, though such studies would require a considerably larger sample than we had available to us.

To summarize, the current study's findings provide evidence that the importance of motherhood increases for women who experience a pregnancy loss and is the first known study to utilize longitudinal data to examine changes in perceived importance of motherhood. Further investigation is warranted to examine how patterns of importance of motherhood shift over time and to understand how perceptions of importance of motherhood are associated with grief and maternal identity.

### Author's Note

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