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IS GAINING, LOSING, OR KEEPING A SELF-IDENTIFIED FERTILITY PROBLEM
ASSOCIATED WITH CHANGES IN SELF-ESTEEM?

By

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IS GAINING, LOSING, OR KEEPING A SELF-IDENTIFIED FERTILITY PROBLEM
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University of Nebraska, 2014

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Because motherhood is an expected and valued identity in the United States, becoming a mother should lead to an increase in self-esteem and perceiving a problem becoming a mother should lead to a decrease in self-esteem. Little research has examined the combined experience of both identifying with a fertility problem and becoming a mother or not over time. Guided by identity theory framework, this study uses two waves of data from the National Survey of Fertility Barriers (NSFB) to examine how change and stability in motherhood status and perceived fertility barrier status is associated with changes in self-esteem among women who initially were not mothers. Results revealed that gaining or losing a fertility problem identity was not associated with changes in self-esteem; however, becoming a mother was associated with increased self-esteem. The persistence of a fertility problem identity was associated with a decrease in self-esteem for those who did not become a mother and increased self-esteem for those who did become a mother. Women who did not report a fertility problem at either interview and became a mother by wave 2 had a significant increase in self-esteem between waves. A small group of women became mothers and identified a fertility problem at wave two; this group had a substantial increase in self-esteem, and the association was larger for older compared to younger women. These findings suggest that becoming a mother has a bigger impact on a woman's self-esteem than perceiving a fertility problem.

INTRODUCTION

Motherhood is an important status and identity among women in the United States (McQuillan et al. 2008). The inability to become a mother, therefore, should be associated with lower self-esteem. For example, prior research has shown the negative effects of infertility on women's quality of life (Abbey et al. 1992; Johnson et al. 2012; McQuillan et al. 2003). More specifically, having a fertility problem can cause challenges in achieving an identity that many women hold in high ideal, motherhood. Previous literature examining the impact of infertility on self-esteem has largely focused on samples from clinics or those seeking infertility help (Abbey et al. 1992; Greil et al. 2010). Women who tend to go to clinics have already identified that they may have trouble conceiving. Only examining women who attend fertility clinics leaves out those women who do not self-identify with having a fertility problem. Methodologically, it is difficult to determine the types of change that occurs within women who identify with a fertility problem if clinic-based samples are only examined. It is therefore important to include women who do and do not seek medical help in studies of the impact of a self-perceived fertility problem on changes in self-esteem.

The current study will improve understanding of how change and stability in perceptions of a fertility problem, in the context of becoming a mother or not, is associated with changes in self-esteem among a diverse group of women in the United States who initially have no children (are not mothers). Using identity theory, I conceptualize self-identifying a fertility problem as gaining a barrier to a socially valued identity and becoming a mother as gaining an identity that is socially valued. This study contributes to growing research on the psychosocial effects of fertility events and fertility

problems using longitudinal, nationally representative data. Change-score multiple regressions of two-wave data provides a rigorous evaluation of gaining or losing a self-identity as having a fertility problem or having a baby compared to no change in fertility identity. I also assess the modifying effect of age on the association between change in self-identity as having a fertility problem and, changes in self-esteem.

Infertility is often conceptualized through a medical lens, yet growing sociological research is bringing a social construction perspective to fertility problems (Greil et al. 2010). My study uses the sociological social construction of a problem approach to infertility. Therefore, I will focus on women self-identifying as having a fertility problem rather than them having to meet a medical criteria (Conrad and Barker 2010). One-third to one-half of women who meet the medical criteria of having a fertility problem personally identified that they had a problem (Greil 2010b; White et al. 2006b). Half of women who meet the medical criteria of having a fertility problem do not seek medical help (Greil et al. 2010b). Because fertility identity can differ from meeting the medical criteria for infertility it is important to examine women's self-perceptions of having a fertility problem regardless of whether or not they have met the medical criteria for infertility. Because few studies have examined the effects of self-labeling of a fertility problem using longitudinal data, the current study uses in-person change to rule out the possibility of selection effects that characterizes cross-sectional studies on this topic (Abbey et al. 1991; Greil 2010a). The current research will assess how changes in social status: (becoming a mother through having a baby and seeing oneself as no longer having a fertility problem or gaining a fertility problem) are associated with changes in self-esteem. Although not a change, this study also assesses the effect of the persistence of

perceiving a fertility problem on change in self-esteem. These changes in social identity- one esteemed (becoming a mother) and one not (fertility problem identity)- should be associated with changes in self-esteem if they are as consequential as they are portrayed in prior research and in popular media on motherhood and infertility.

There is limited research on motherhood identity changes and self-esteem. There is evidence that compared to no change, becoming a mother is associated with an increase in self-esteem (Taubam et al. 2009). There is no research, however, examining if self-identifying as having a fertility problem and becoming a mother is associated with changes in self-esteem. Therefore, I examine how the importance of motherhood and identifying a barrier to achieving motherhood identity are associated with changes in women's self-esteem. This study is important because the nuances of perceiving a barrier to motherhood and becoming a mother may have a distinctive impact on change in women's self-esteem, adjusting for other changes in women's lives. If perceiving a fertility problem is associated with worse self-esteem, then efforts to help women cope with infertility will need to address not only life satisfaction (McQuillan et al. 2007) and fertility specific distress (McQuillan et al. 2003) but also self-esteem. Positive self-identity (Pearlin et al. 1981) supports and low self-identity (Kaplan 1980) inhibits overall well-being, and therefore should be included in research focusing on the psychosocial consequences of fertility problems.

LITERATURE REVIEW

Examining Motherhood through Identity Theory

Identity theory posits that people hold many identities that emerge from social positions with expected roles (Stryker and Burke 2000). Individuals internalize an

identity once they have fulfilled the role expectations and the multiple identities that people hold are organized into an identity salience hierarchy where certain identities rank in higher importance compared to others (Stryker and Burke 2000). Social messages suggest that motherhood is considered a highly important identity, or master status, among most women. Because motherhood is highly ranked on the identity salience hierarchy, women who think that they cannot become mothers or who become mothers should have different self-appraisals. It is likely that becoming a mother will be associated with an increase in self-esteem and perceiving a problem having a baby will be associated with a decrease in self-esteem for those women who value motherhood (Hypothesis H1a). Self-esteem should change with becoming a mother or perceiving a barrier differently for women who have higher or lower motherhood attitudes. According to prior research, being a mother is considered a calling (Abbott, Wallace, and Tyler 2005) and defines what is womanly (Glover, McLellan, and Weaver 2008; Ussher 1989) for some women. Because having children and being a woman have both biological and social aspects in American society, women who greatly value motherhood are likely to experience a decrease in self-esteem if they suffer from a fertility problem (identity threat) but should experience an increase in self-esteem if they become a mother (identity boost) (Hypothesis 2a). Research, however, shows that not all women value becoming a mother and a small segment of women are relieved when they have a fertility barrier (Gillespie 2003). Thus, it is expected that those women who do not value motherhood and do not have a child will not experience a change in self-esteem due to having a fertility problem.

Many Americans see the biological ability to have a child and being “womanly” as linked (Abbey et al. 1991; Ussher 1989) and that womanhood is achieved through pregnancy and giving birth (Glover et al. 2008). Further, some women reported “motherhood” and “womanhood” as synonymous terms (Ulrich and Weatherall 2000). Because becoming a mother is a highly valued status (Glover et al. 2008; Ulrich and Weatherall 2000) and not being able to be a mother can be stigmatizing and seen as a failure to achieving adult femininity (Abbey et al. 1991; Ussher 1989), gaining a motherhood status should be associated with an increase and gaining a fertility barrier should be associated with decreased self-esteem (Hypothesis 1c).

Parenthood is a cultural norm in the United States; therefore not having children is considered by many to be deviant (Ridgeway and Correll 2004; Ulrich and Weatherall 2000). Ulrich and Weatherall (2000) found in their qualitative study that heterosexual women described motherhood as a natural instinct and a crucial step in fulfilling their relationship with their partners. Women described having children with their partners as creating the ultimate bond and the final stage of their relationship. Failing to have children due to infertility left the women feeling “incomplete” (Ulrich and Weatherall 2000). Research shows, however, that women vary in how much they value motherhood. McQuillan et al. (2008) found that overall women held motherhood in high regard, yet there was a full range of scores indicating that some women put a low value on motherhood compared to others. As such, it is expected that higher salience (indicated by higher importance of motherhood) should modify the association between having a child and self-labeling. In other words, the direction and strength of the association between

change in status (e.g. gaining a fertility barrier status or becoming a mother) and change in self-esteem should differ by level of importance of motherhood.

Parenthood is considered one of the most important identities in the identity salience hierarchy despite other roles or possessions (McQuillan et al. 2003). Motherhood to women is considered a master status that influences other roles and statuses (Hughes 1945; McQuillan et al. 2003). If women are not able to achieve their master status and they desire to have children, they may experience stress and a lower sense of self-esteem. Therefore, I hypothesize that women who strongly value motherhood should experience a barrier that threatens a master status, and thus, experience a decline in self-esteem (Hypothesis 2).

Self-Identified Fertility Problem

Encountering fertility problems, which often comes as a surprise, is an obstacle that people confront when they intend to have children but cannot (Greil et al. 1991). The inability to have children often is conceptualized as a personal failure and “infertility” can be a damaging identity. Even when a woman’s body is not the source of the infertility problem, they are often the focus of treatments and experience lack of conception in an acute way because their bodies are central to pregnancy and birth (Abbey et al. 1991; McLeod and Ponesse 2008).

Prior research has shown that there is an assortment of negative psychological outcomes that women may experience from involuntary childlessness. Women with multiple fertility problems have been found to report greater distress compared to those with no fertility problems (McQuillan et al. 2003). Women who gave up intentions to have children experience increases in depressive symptoms (White et al. 2006a). The

negative psychological effects of internalizing a fertility problem identity are likely to create an in-person change of identity, yet I know of no studies that have tested this hypothesis. For example, women report that they feel “anxiety” and “anger” when they are unable to conceive a child (Jacob et al. 2007). Based on the literature showing the negative effects of infertility, I predict that losing a self-identification of a fertility problem would be associated with an increase in self-esteem (Hypothesis 1b) and gaining a self-identification of a fertility problem would be associated with a decline in self-esteem (Hypothesis 1c). In addition to the negative feelings that perceiving a fertility barrier can create within women, various factors are also important to consider when examining the effects of a fertility problem barrier on self-esteem.

Age, self-rated health and seeking medical health are likely to shape the experiences of gaining or losing a perception of a fertility barrier. McQuillan et al. (2003) found that older women express less distress associated with fertility problems than younger women. Therefore age should modify the association between change in status (i.e. becoming a mother or gaining a self-identified fertility problem) and change in self-esteem (Hypothesis 3). Women with better self-rated health have fewer consequences from infertility compared to women who report worse health (McQuillan et al. 2003; White et al. 2006a; White et al. 2006b). Not all women who perceive that they have a fertility problem will talk to a doctor (White et al. 2006b; Greil et al. 2010). Yet the process of medical helpseeking for infertility could be more a source of lower self-esteem than self-identifying a problem itself (Greil 1991). Controlling for self-rated health, therefore, could mediate the association between change in fertility status and change in self-esteem. Even among women who do not talk to a doctor, identifying with a fertility

problem is associated with high levels of distress among women who were involuntarily childless (McQuillan et al. 2003) Thus, age, health status and talking to a doctor may affect how change in fertility status is associated with changes in self-esteem.

Attitudes and values could also explain the apparent association between change in fertility status and changes in self-esteem. For example, the association could differ for women who value leisure or career success more or less (Mahlstedt 1985; McCormick 1980; Parry and Shiness 2004) or who have higher or lower economic resources (Bell 2009). Motherhood is not the only valued identity open to adult women. Enjoying leisure, career success, and relationship satisfaction all can co-exist with or replace motherhood as a valued identities (McQuillan 2008). For example, success at work is associated with self-esteem (Judge 2009). Women of lower SES have a unique experience of infertility compared to women with higher SES; they have lower access to medical treatments for infertility and are unlikely to be approved for adoption (Bell 2009). Economic hardship has also been linked to greater distress among women (Wickrama et al. 2012). Identifying a fertility problem has also been associated with an increase in the desire for social support among women (Beutel et al., 1998) and having a spouse is associated with higher self-esteem for women (Elliot 1996; Sacco and Phares 2001). Religion also has been found to play a role in helping women cope with having a fertility problem (Ventura et al. 2007), however, some women justify infertility as God's will and blame God when they fail to conceive (Greil 1991). Thus, it is important to include changes in work, leisure, economic hardship, social support, marital status and religiosity in models investigating the association between changes in fertility identity status and changes in self-esteem.

Primary Infertility versus Secondary Infertility

This study focuses on women who had no children at time one and may or may not have had a child by time two. Because primary infertility is often defined as infertility among women with no children and secondary infertility is often defined as infertility among women who already have children, primary or secondary infertility may seem irrelevant to this study. Yet some women have a pregnancy that ends in a miscarriage or abortion and then encounter infertility. By medical definitions these women will be counted as having secondary infertility. Yet because I used parent status, no prior pregnancy, as the key inclusion criteria, some of the women in this study could have had prior pregnancies. This is an appropriate approach because of the comparison with “becoming a mother”, and because Greil et al. (2011) find that women experience infertility following a pregnancy that does or does not result in becoming a mother differently than the strict medical criteria might presume. Greil et al. (2011) found that women who had primary infertility reported higher distress than women with secondary infertility. The current study will focus on the identity relevant meanings of fertility problems and, because I am comparing becoming a mother and subsequently becoming aware of a fertility problem, I focus only on those women who do not have children at Wave 1.

Research on the impact of having a fertility problem and its’ effects on self-esteem have been limited to populations seeking help for infertility through clinics or infertility specialists and those women who meet biomedical criteria of infertility (Abbey et al. 1992; Hennings et al. 2002). In a cross sectional study, Abbey et al. (1992) examined the mediating effects of self-esteem on infertility stress on well-being among

women who sought help from an infertility specialist. The authors found that the more fertility stress women felt the lower their self-esteem was and their general wellbeing declined (Abbey et al., 1992). These findings, however, may differ among a more diverse population-based sample of women and it is difficult to discern whether lower self-esteem is due to infertility or help-seeking. As such, the current study will examine the effects of identifying with a primary fertility problem using a nationally representative, longitudinal sample in order to test the association between identifying with a fertility problem and the effects it has on self-esteem. In addition, I specifically assess the effect of entering or ending medical helpseeking for infertility compared to never seeking medical help on changes in self-esteem.

Self-Esteem

Self-esteem, which refers to an individual's overall positive evaluation of the self has been conceptualized as a major component of developing a healthy self-concept (Cast and Burke 2002; Rosenberg 1979). Specifically, self-esteem has two major components: competence and worth (Rosenberg 1990). I study worth-based self-esteem, which refers to the degree in which a person feels they are of value (Cast and Burke 2002). A vital part of self-worth is based on the amount of psychological resources that a person has to help shield against negative, stressful experiences (Pearlin and Schooler 1978). These psychological resources are independent of certain roles a person holds and help determine how well the individual copes with stressors (Pearlin and Schooler 1978). The ability and success of performing certain roles, however, is self-evaluated by referring to a comparison group (Thoits 2011). Women with fertility problems are likely to evaluate themselves compared to women in the same age, socioeconomic or locational

surroundings, known as their reference group. Self-esteem is built on self-evaluations of their reference group within treasured role domains (Thoits 2011). For women for whom motherhood is a highly salient identity, having a fertility problem should contribute to lower self-esteem compared to women who do not gain a fertility problem identity over time. It is also expected that coping resources, such as social support and religiosity, would buffer the potential consequences of fertility problems on declines in self-esteem.

There are two general perceptions on how self-esteem is conceptualized: state or stable trait (Leary 1999). State self-esteem is a momentary assessment of one's self and trait self-esteem is a person's general perception of their value. State self-esteem varies based on how the person perceives others feel about them. State self-esteem increases if a person feels others around them think highly of them and decreases if they think negatively about them. Trait self-esteem is based on how the person feels they are of total value to others and predicts future actions (Leary 1999). Conley (1984) argued that self-esteem is more state-like because it is substantially influenced by a person's environment. Self-esteem has also been found to be the most stable during adulthood, but fluctuates during young adulthood and old age (Trzesniewski et al. 2003). Self-esteem in this context is depicted similar to a personality trait; it is changing, but also has some steadiness (Trzesniewski et al. 2003). Harter and Whitesell (2003) found that an individual's self-esteem was either trait or state-like depending on approval from others. They also found that a change in self-esteem was related to mood (Harter and Whitesell 2003). By treating self-esteem as a state, women who have difficulty achieving the normalized biological function of having a child will experience rejection and stress from their primary groups and lead to lower self-esteem.

Many studies have shown the benefits that motherhood status has on self-esteem. When motherhood is “threatened” the result is lower levels of mental health among women (Taubam et al. 2009). Amato and Kane (2011) found that having children did not negatively influence mother’s self-esteem among women who waited to have children. Self-esteem is also improved if women are able to integrate their new motherhood identity and balance pre-existing roles (Reilly et al. 1987). Although there is evidence that motherhood increases self-esteem (Amato and Kane 2011; Reilly et al. 1987), research has also shown that having a child decreases self-esteem due to new stressors, decrease in marital satisfaction, and interference of wage earning (Elliot 1996). In contrast, Oates (1997) found that motherhood did not influence self-esteem. Although there is some contradictory evidence about the effects of motherhood status on self-esteem, I predict that self-esteem will increase when women become mothers due to motherhood being a highly valued identity (Hypothesis 1c).

McQuillan et al. (2003) applied an identity framework to a cross sectional population based sample with distress as an outcome and found that when situations outside of the individual’s control blocks them from reaching an important identity they are likely to experience stress. Psychological distress has also been found to increase when an important identity is threatened (Thoits 1992). Women may internalize failing to easily conceive a child as a personal failure and their self-esteem will decrease (Abbey et al. 1992). According to identity theory, when a stressor threatens an important identity, such as motherhood, like a fertility problem, having a child should then lead to an increase in self-esteem. When women do not have a child, however, this should lead to lower self-esteem since they are unable to achieve the identity of motherhood. Thus,

becoming a mother should lead to an increase in self-esteem compared to women who do not become mothers. In regards to recognizing a fertility barrier, this study will examine if women change how they feel about themselves after not being able to achieve motherhood. Based on the prior literature review and social identity theory, I hypothesized that women who gain a fertility problem identity will experience the largest decrease in self-esteem (Hypothesis 1c). In contrast, those women who lose a fertility problem identity should have the largest increase in self-esteem (Hypothesis 1b).

HYPOTHESES

Based on the review of identity theory and prior research, I hypothesize the following:

H1: Women who gain a fertility problem identity, lose a fertility problem identity, or have a baby will have the greatest change in self-esteem.

H1a: Women who have a baby will experience more of an increase in self-esteem than those women who do not have a baby.

H1b: Women who lose a fertility problem identity will experience an increase in self-esteem.

H1c: Women who gain a fertility problem identity will experience a decrease in self-esteem.

H2: The relationship between fertility problem identity and self-esteem will depend upon the level of importance of motherhood.

H2a: The association between gaining or losing a self-identity as having a fertility problem and changes in self-esteem will be stronger for women with higher compared to lower initial importance of motherhood.

H3: Age will moderate the relationship between fertility problem and self-esteem.

H3a: The association between gaining or losing a self-identity as having a fertility problem and changes in self-esteem will be stronger for younger women compared to older women.

METHODS

Sampling Procedure

The National Survey of Fertility Barriers (NSFB) is a nationally representative telephone survey, which focuses on women and their partner's experiences of fertility and infertility. This study uses the two waves of the NSFB data (Wave 1 (2004-2006) and Wave 2 (2007-2010)) to examine the change in self-esteem among the four different fertility identity groups: those who gain a fertility problem, lose a fertility problem, persist with a fertility problem and never have a fertility problem.

The sampling procedure selected women between the ages of 25 and 45 years old. The investigators used random digit dialing to find this random sample. The sample was restricted to this age group because the National Family Growth survey found that infertility for women younger than 25 only accounted for a small percentage of cases across the United States (only 3%). The investigators wanted a sample that was representative of women in the United States with a landline telephone. The survey also over-sampled high minority census tracts to ensure a representative sample: over 40% of the sample is non-White.

To make the survey process efficient and effective, the NSFB research team used screening questions to select all women who were at risk for infertility or who previously had infertility, and 1/10th of the women for comparison who had no issue or no risk of new issues. The response rate to the screening questions that determined eligibility was

54%. Women with an educational attainment of a high school degree or less were slightly under-sampled. The investigators also compared the NSFB to the National Survey of Family Growth (2002), which was a large in person survey with a response rate of 90%. The two surveys had comparable demographic characteristics and similar answer percentages.

The analytic sample for the current study includes women who initially had no children. The original sample of 4,712 women was limited to those women who did not have a child at Wave 1 of data collection (N=1,180). The sample was further limited to those women who participated in both waves of data (N=683) and had no missing data on the measures used in this study. The final analytic sample size is 563. A description of the sample is provided in Table 1 below.

Measurement

Dependent Variable. Women's self-esteem included three items: "I feel that I do not have much to be proud of", "I am a person of worth at least equal to others", and "All in all, I am inclined to feel I am a failure" (Rosenberg 1979). Response categories included: (1) strongly agree, (2) agree, (3) disagree or (4) strongly disagreed. The items were combined into a scale by summing the responses. The three items loaded highly on one factor and had an alpha reliability of .76. A change score for self-esteem was created by subtracting Wave 1 values from Wave 2 values.

Independent Variables. Self-identified fertility problem, defined as someone who responded yes or maybe to either of the following questions: "Do you think of yourself as someone who has, has had or might have trouble getting pregnant?" and "Do you think of yourself as someone who has or has had fertility problems?" The possible response

choices were yes, maybe or no. The self-identification fertility problem measures were created from these Wave 1 and Wave 2 items into the four categories: persist having a fertility problem, gaining a fertility problem, losing a fertility problem or never having a fertility problem. Figure 1. shows the categories that the respondents were placed in based on these items.

(INSERT FIGURE 1)

Interactions were then created for each self-identity category by the “had first child by wave 2” indicator variables.

Age. Age at wave 1 is measured in years and is mean-centered for the analyses. Because it is a stable characteristic, it is only included in the analysis as a modifying variable for the fertility barrier self-identification and “had a baby” variables.

Importance of Motherhood. The importance of motherhood scale measures the salience of motherhood. The importance of motherhood scale was created by combining the following two items: “Having kids is important to my feeling complete as a woman”, “I always thought I’d be a parent”, “I think life will be or is more fulfilling with children” and “it is important for me to have children.” The possible response choices were (1) strongly agree, (2) agree, (3) disagree, and (4) strongly disagree. Another item included was: “how important is raising children” with possible response choices: (1) very important, (2) important, (3) somewhat important, and (4) not important. The scale was coded so that a higher value meant a greater value of motherhood. The values for the importance of motherhood indicators were summed at each wave and wave 1 values were subtracted from wave 2 values to create the change score for importance of motherhood.

Control Variables. Marital status was assessed by the question: “What is your current marital status?” I created four dummy variables to indicate if the woman was in a union (married or cohabitating) only in wave 1, only in wave 2, in a union at both waves or never in a union. The “never in a union category” is based on not being in a marriage or cohabitation relationship in either wave of data. Talking to a doctor is measured at waves 1 and 2 and was assessed with the question: “Have you ever been to a doctor or clinic to talk about ways to help you have a baby?” I created four dummy variables: talked to a doctor only in wave 1, talked to a doctor only in wave 2, talked to a doctor at both waves, and never talked to a doctor.

Change Score Control Variables. Because this study uses change-score analyses (see below), I created change score versions of the variables that could change between waves. The dependent variable and several independent variables are change score variables: self-esteem, religiosity, social support, importance of leisure, importance of work and economic hardship. The religiosity scale was developed by the investigators of the NSFB and includes the four items: “How often do you attend religious services”, “How often do you pray”, “How close do you feel to God most of the time,” and “In general, how much would you say your religious beliefs influence your daily life?” The scale was coded so that a higher value indicates higher religiosity. The change score for social support was developed from a scale with the following items: “How often is each of the following kinds of support available to you if you need it?”: “someone to give you good advice about a crisis”, “someone to give you information to help you understand a situation”, “someone whose advice you really want”, and “someone to share your most private worries and fears with.” The possible response choices were (1) often, (2)

occasionally, (3) seldom, and (4) never. The higher values were coded to indicate higher levels of social support. The change in importance of leisure and importance of work success items were based on the question: “How important is each of the following to you in your life: Having leisure time to enjoy my own interest. Being successful in my line of work” The possible response choices were very important, important, somewhat important, and not important. Finally, the change in economic hardship scale was developed from the three items: “During the last 12 months, how often did it happen that you: had trouble paying the bills?”, “did not have enough money to buy food, clothes or other things in your household needed?”, and “did not have enough money to pay for medical care?” All the change scores for these variables were created from summing the items on the scales from Wave 1 and Wave 2 and then subtracting Wave 1 values from Wave 2.

RESULTS

Analytic Strategy

Because the dependent variable self-esteem is continuous, I used ordinary least squares (OLS) regression to determine if changes in fertility problem identity are associated with changes in self-esteem (Acock 2012). I ran a series of models to assess the main effects, adjusted effects, and moderation effects of change scores in self-identifying a fertility problem and changes in self-esteem.

This study uses change-score analysis because it is an effective way to control for exogenous differences in those individuals who did and did not experience a change of self-esteem (Johnson 2005). Change-score models are used when the goal is to assess the effect of events or experiences on a change from time 1 to time 2 for individuals. Because

certain variables are time-invariant, they do not change and are not included in the models (i.e. race/ethnicity), however, change-score analysis controls for all these variables even if they are not measured (Johnson 2005). Change-score analysis also decreases the chance of bias from measurement error, which can be problematic when using lagged dependent variable technique (Johnson 2005). Change-score methodology is the most effective analytical technique when examining the effects of an event, such as perceiving a fertility problem or having a baby, on a certain outcome (e.g. changes in self-esteem; Johnson 2005).

For the analysis, I created two-way and three-way interaction variable categories with age and importance of motherhood. Both variables were combined with fertility problem categories, gaining a fertility problem, losing a fertility problem, persistence of having a fertility problem by had a baby, gaining a fertility problem by had a baby, losing a fertility problem by had a baby, and never having a fertility problem by had a baby. I tested importance of motherhood interactions with having a baby, but they were not significant and are therefore not included in the tables and figures.

Descriptive Findings

Table 1 exhibits the descriptive statistics of the variables of interest. Over seventy percent (71%) of the sample never self-identified as having a fertility problem. Fifteen percent, however, perceived that they had a fertility problem in both interviews. This is similar to the National Survey of Family Growth, which estimated that 11% of women have infertility (Chandra and Copen 2013). Overall, on average self-esteem decreased minimally between waves (less than 1%). Twenty- three percent of women in the sample had a baby between waves. Among women who had a baby between waves, the largest

group was those women who never self-identified with having a fertility problem. Almost half of the sample were in a union during both waves and had not talked to a doctor about fertility issues. Average religiosity was close to the midpoint of the scale (0). Average change of social support, importance of motherhood, importance of leisure and work success was above the midpoints of the scales. Average economic hardship, however, was near the low end of the scale.

(INSERT TABLE 1)

Multivariate Analysis

Table 2 shows the OLS regression model testing the effects of self-identifying a fertility problem, change in motherhood identity, and controls on change in self-esteem. In all of the models, the groups changing in their fertility problem self-identity did not have significantly different changes in self-esteem than those who did not self-identify in either wave (Model 1). Yet women who persisted with a self-identified fertility problem, and did not have a baby between waves, did have a significantly larger decrease in self-esteem ($B = -.17; p < .05$) compared to the women who did not self-identify in either wave. For women who did not self-identify in either wave, those who had a baby by the second wave had higher average positive increases in self-esteem compared to women who did not self-identify in either wave.

All the models show that among the control variables, women who experienced a decrease in religiosity had a decrease in self-esteem ($B = -.02; p < 0.1$). Contrary to prior research, changes in social support, importance of parenthood, importance of leisure, importance of success or economic hardship were not associated with changes in self-

esteem. Change in marital status and change in talking to a doctor status were also not associated with changes in self-esteem.

(INSERT TABLE 2)

Table 3 displays results for additional tests of moderation. Similar to previous models, change in fertility problem identity was not associated with changes in self-esteem in any of the models. Women who persist in self-identifying a fertility problem and do not have a baby, however, had a decrease in self-esteem ($p < 0.05$). Those women who gain a self-identification problem and had a baby experienced higher self-esteem than those who did not self-identify in either wave and did not have a baby. Women who experienced an increase in the importance of leisure or religiosity had increases in self-esteem.

(INSERT TABLE 3)

Table 3 includes the age by fertility identity variables to test if older women differed from younger women in the effects of change of fertility identity and change of motherhood status on their change in self-esteem. Results revealed that women who persist with a fertility problem and do not have a child have a decrease in self-esteem between waves ($B = -.21$; $p < .05$). An interesting finding is that those women who gain a fertility problem identity and have a child experience an increase in self-esteem compared to those who did not self-identify in either interview.

(INSERT FIGURE 2)

Among the significant interaction results, gaining a fertility problem and having a baby was associated with a decrease in self-esteem (Figure 2). Among women who are 27 years old, gaining a self-identification of a fertility problem and having a baby led to a

decrease in self-esteem, yet never self-identifying a fertility problem and not having a baby led to a slight increase in self-esteem. In contrast, among women who were older and gained a self-identified fertility problem, self-esteem increased substantially more for those that had a baby compared to those that did not self-identify a problem and did not have a baby. Contrary to my hypothesis, gaining a self-identified fertility problem and having a baby led to a decrease in self-esteem among younger women and an increase in self-esteem for older women.

In addition to testing the buffering effects of age, the importance of motherhood was also tested. Contrary to my second hypothesis, there were no interaction effects among differing levels of importance of motherhood.

DISCUSSION AND CONCLUSION

Based on identity theory and previous studies, the effects of encountering a fertility problem identity should have a negative effect on self-esteem. Within this nationally representative sample of women, however, the change in self-esteem does not differ based on a change in fertility identity. One explanation for this finding is that self-esteem did not change greatly on average between waves. Self-esteem decreased less than 1% on average between wave 1 and wave 2 in this sample of women. Another explanation could be that infertility does not necessarily have the huge damaging effects on self-esteem that it has often been projected in main stream media. Greil et al. (2010) reviewed the last decade of research on psychosocial dimensions of infertility and found that psychopathology did not differ by fertility status. Another possible explanation is timing. I had not anticipated that the amount of time between waves could be a factor in assessing the impact of encountering a fertility barrier. Women who persisted with a

fertility barrier identity and did not have a first child between both waves did have a significant decline in self-esteem over time. The current study adds an important new piece of information to the exploration of fertility barriers and wellbeing. Specifically, gaining a fertility barrier identity was not associated with as large a decrease in self-esteem as anticipated, but gaining a motherhood identity was associated with an increase in self-esteem.

Although the relationship between gaining a fertility problem identity and changes in self-esteem was not statistically significant, there were findings that suggested support for identity theory. Women who persist with having a fertility problem and did not have a child had a decrease in self-esteem compared to those women who never self-identified with a fertility problem and did not have a child. In addition, those who never self-identified with a fertility problem and had a baby increased in self-esteem. This shows that for certain groups of women, fertility problems are associated with lower self-esteem and having a baby is associated with an increase in self-esteem.

This study did not find that age, change in marital status, talking to a doctor, change in social support, change in importance of motherhood, change in importance of work success or a change in economic hardship modified the effects of changes in fertility problem identities on self-esteem. Contrary to hypothesis 2, the differing levels of importance of motherhood did not modify the non-significant association between fertility problem identity groups and a change in self-esteem. This finding is contrary to prior research showing that infertility is associated with importance of motherhood (McQuillan et al. 2008).

Change in religiosity was associated with a change in self-esteem. When women become less religious they also experience a decrease in self-esteem. This aligns with research showing that higher religiosity is associated with higher mental health (Hackney and Sanders, 2003). Religiosity, therefore, may serve as a protective factor for maintaining self-esteem (Hackney and Sanders, 2003). Yet the religiosity effect seems to be direct, because preliminary analyses showed it was not a modifier of the association between change in fertility identity and change in self-esteem. This set of associations deserves further exploration because religiosity has been a factor in coping with other health issues.

The results suggest that there is a buffering effect of age on self-identifying with a fertility problem and a change in self-esteem when women have a baby. Younger women experience lower self-esteem compared to older women. This may be due to older women generally having more self-esteem compared to younger women (Borzumato-Gainey et al. 2009). The significant finding is that having a baby is associated with an increase in self-esteem. For younger women without a fertility problem identity, becoming a mother is associated with an increase in self-esteem and among older women it results in a considerable increase in self-esteem. Consistent with the idea that motherhood is a highly valued identity, becoming a mother, at least for older women, is associated with higher self-esteem.

Contrary to my first hypothesis, women who gain a fertility problem and have a baby also increase in self-esteem. One possible explanation for this finding is that women start at a lower level of self-esteem if they perceive a fertility problem but having a child increases their self-esteem. Consequentially, this finding shows that having a child

matters more in terms of a woman's level of self-esteem compared with gaining a fertility problem identity for older women. Becoming a mother is associated with increases self-esteem among older women, with no significant differences by level of importance of motherhood.

Although this study has provided some contributions, there are some limitations. One limitation is that the sample did not include a large number of women who had fertility problems or experienced a change in self-esteem. As such, the relationship between fertility identity and self-esteem may not have had the statistical power to be significant. Additionally, the level of self-esteem was consistent between waves, which may be attributed to the ages of these women as we are less likely to see large swings in self-esteem with this group compared to teenage girls for example. As such, this consistency makes it more difficult to detect differences between groups of women. Related, many of the coefficients were small and an association may be present in a larger sample. Thus, future research should examine this relationship in a sample with more women who do have fertility problem identities.

Finally, another limitation has to do with the order in which the questions on the survey were asked. For example, there may be social desirability bias because the self-esteem items were asked after the fertility problem questions. The respondents may have been alerted to the aim of the questionnaire and may have answered the self-esteem questions inaccurately to project a positive self-image. Because the question order was the same for both waves, the question order effect may be more impactful on the level than change in self-esteem.

In conclusion, on average women who persist with a self-identified fertility problem have decreases in self-esteem, women who become a mother have increases in self-esteem and women who gain or lose a self-identity as having a problem have no change in self-esteem compared to women with no changes in fertility status. Gaining or losing a self-identity as having a fertility problem was not associated with changes in self-esteem as expected. Nevertheless, the persisting with a problem or becoming a mother was associated with changes in self-esteem. Becoming a mother mattered more for self-esteem than did gaining or losing a fertility problem identity.

TABLES

Table 1. Descriptive Statistics of Variables of Interest; N=563

Variable	Mean	Std. Deviation	Min.	Max.
<i>Dependent Variable</i>				
Change in Self-Esteem ^a	.00	.50	-1.50	1.50
<i>Self-Identifying with a Fertility Problem Status</i>				
Persist Self-Id (T1 and T2)	.15		.00	1.00
Gain a Self-Id (Only T2)	.09		.00	1.00
Lose a Self-Id (Only T1)	.05		.00	1.00
Never Self-Id (Neither T1 or T2)	.71		.00	1.00
Had a Baby	.23		.00	1.00
<i>Control Variables</i>				
Age (T1) ^b	32.96	6.05	23.00	45.00
<i>Relationship Status</i>				
Gain a Spouse/Partner	.15		.00	1.00
Lose a Spouse/Partner	.06		.00	1.00
Persist in both T1 and T2	.48		.00	1.00
Not in a Union both T1 and T2	.31		.00	1.00
<i>Fertility Doctor Status</i>				
Lose a doctor about fertility	.11		.00	1.00
Gain a doctor about fertility	.10		.00	1.00
Persist with a doctor about fertility	.10		.00	1.00
Did not talk to doctor T1 and T2 about fertility	.69		.00	1.00
<i>Conceptual Variables</i>				
Change in religiosity	.10	2.15	-9.22	8.79
Change in social support ^{ab}	.19	1.85	-6.67	12.00
Change in economic hardship ^{ab}	.02	1.88	-9.02	7.98
<i>Identity Salience Variables</i>				
Change in importance of parenthood ^{ab}	-.26	2.39	-8.00	8.00
Change in importance of leisure ^{ab}	-.14	.90	-2.00	3.00
Change in importance of work success ^{ab}	.00	.83	-3.00	3.00

Note: This sample is limited to women who did not have a child at wave 1 and respondents who had completed data for all the variables of interest. Scheffe post hoc tests revealed no significant differences among the four self-identifying with a fertility problem status groups.

^a Change score variables represent time 2 value minus time 1 value.

^b Mean-centered for multivariate analysis

Table 2. OLS Regression of Self-Identification, Had Baby and Control Variables

Variable	Model 1		Model 2		Model 3		Model 4					
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>				
<i>Self-Identification of a Fertility Problem Identity</i>												
Persist Self-Identify a Problem	-.17	**	.08		-.15	**	.08	-.19	**	.08		
X Had a Baby								.12		.15		
Gain Self-Identification of a Problem	-.06		.08		-.06		.08	-.09		.09		
X Had a Baby								.14		.18		
Lose Self-Identification of a Problem	.01		.09		.00		.10	.10		.12		
X Had a Baby								-.31		.21		
Never Self-Identify a Problem (reference)												
Had a Baby				.14	**	.06	.13	**	.06	.12	*	.07
No baby between waves (reference)												
<i>Control Variables</i>												
<i>Relationship Status (Partner = married or cohabiting)</i>												
Gain A Partner	.03		.07	.02	.07	.01	.07	.03		.07		
Lose A Partner	.01		.10	.00	.10	-.01	.10	.01		.10		
Partner In Both Waves	-.02		.05	.06	.05	-.05	.06	-.05		.06		
Never Have A Partner in Both Waves (reference)												
<i>Fertility Doctor Status</i>												
Lose a Doctor about Fertility	.07		.08	.02	.07	.05	.08	.07		.08		
Gain a Doctor about Fertility	-.10		.08	-.13	*	.07	-.11	.08	-.12	.08		
Persist with a Doctor about Fertility	.14		.09	.03	.08	.12	.09	.11		.09		
Did not talk to a doctor in either wave about Fertility (reference)												
<i>Conceptual Variables</i>												
Change in Religiosity	-.02		.01	-.02	.01	-.02	*	.01	-.02	*	.01	
Change in Social Support	-.01		.01	-.01	.01	-.01	.01	-.01		.01		
Change in Economic Hardship	.00		.01	.00	.01	.00	.01	.00		.01		
<i>Identity Salience Variables</i>												
Change in Importance of Parenthood	.00		.01	-.01	.01	.00	.01	.00		.01		
Change in Importance of Leisure	.03		.03	.03	.03	.03	.03	.04		.03		
Change in Importance of Work Success	.03		.03	-.03	.03	-.03	.03	-.04		.03		
Constant	.02		.04	.01	.04	.02	.04	.01		.04		

Note: N=563; *p<0.1, **p<0.05, ***p<.001

Table 3. OLS Regression with Age Interaction Variables

Variable	Model 1
<i>Self-Identification of a Fertility Problem Identity</i>	
	<i>B</i>
Persist Self-Identity	-.213 ** ^a
	X Had a Baby .167
	PersistXAge .014
	PersistXHad BabyXAge .014
Gain Self-Identity	-.100
	X Had a Baby .457 ** ^{ab}
	GainXAge .004
	GainXHad BabyXAge .093 ** ^{ab}
Lose Self-Identity	.100 ** ^b
	X Had a Baby -.231
	LoseXAge .005
	LoseXHad BabyXAge .036
Never Self-Identify a Problem	.213 *** ^b
Had a Baby	.086
	XAge -.005
No baby between waves (Reference)	
<i>Control Variables</i>	
Age (T1) centered	.002
<i>Relationship Status (Union = married or cohabiting)</i>	
Gain A Union	.004
Lose A Union	.012
Union In Both Waves	-.054
Not in a Union Both Waves (reference)	
<i>Infertility medical help seeking status</i>	
Talked to a Doctor (T1 only)	.043
Talked to a Doctor (T2 only)	-.089
Talked to a Doctor Both Waves	.109
Did not talk to a doctor in either wave (reference)	
Change in Religiosity	-.018 * ^{ab}
Change in Social Support	-.012
Change in Importance of Parenthood	-.004
Change in Importance of Leisure	.045 * ^{ab}
Change in Importance of Work Success	-.041
Change in Economic Hardship	.002
Constant	.019 ** ^b

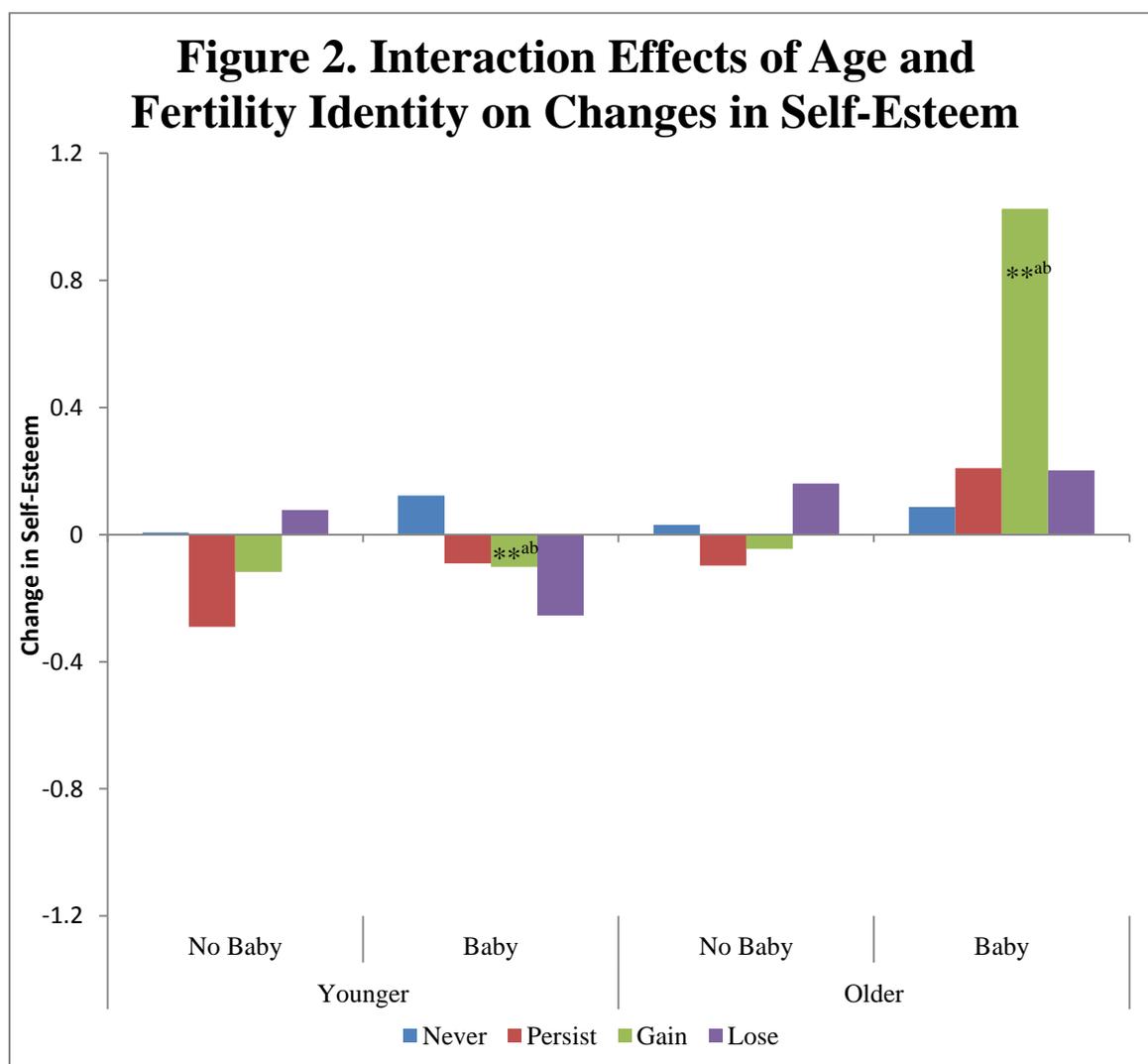
Note: $N=563$. Honest significant difference results, P-value at least $<.05$. No significant differences for gain a self-id versus all other categories and lose a self-id for all other categories. * $p<0.1$, ** $p<0.05$, *** $p<.001$

^a Never self-identifying and not having a baby versus all other categories.

^b Persisting with a self-id and not having a baby versus all other categories.

Figure 1. Categories for Women without Children at Wave 1

	<i>Self-Identified Fertility Problem Wave 1</i>	<i>No Self-Identified Fertility Problem Wave 1</i>
<i>Self-Identified Fertility Problem Wave 2</i>	Persist with a Fertility Problem Identity	Gain a Fertility Problem Identity
<i>No Self-Identified Fertility Problem Wave 2</i>	Lose a Fertility Problem Identity	Never have a Fertility Problem Identity



Note: Average age is 33 years old. One standard below the mean is 27 years old. One standard deviation above is 39 years old.

^a Significant differences between never self-identifying a fertility problem and not having a baby versus other categories.

^b Significant differences between always self-identifying a fertility problem and not having a baby versus other categories.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

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