CHANGES IN FATHERS’ PHYSICAL HEALTH ACROSS THE TRANSITION TO PARENTHOOD

A thesis submitted
To Kent State University in partial fulfillment of the requirements for the Degree of Master of Arts

by
Virginia L. Little
May, 2014
Thesis written by
Virginia Leigh Little
B.S., Mount Vernon Nazarene University, 2012
B.A., Mount Vernon Nazarene University, 2012
M.A., Kent State University, 2014

Approved by

Kristen Mickelson, Advisor, Department of Sociology

Richard Serpe, Chair, Department of Sociology

James Blank, Dean, College of Arts and Sciences
# TABLE OF CONTENTS

LIST OF FIGURES..........................................................................................................iv
LIST OF TABLES..............................................................................................................v

I. LITERATURE REVIEW..................................................................................................1

II. METHODS....................................................................................................................16

III. RESULTS....................................................................................................................21

IV. DISCUSSION..............................................................................................................25

V. LIMITATIONS............................................................................................................37

VI. CONCLUSION...........................................................................................................38

VII. REFERENCES...........................................................................................................40

IX. APPENDIX..................................................................................................................55
LIST OF FIGURES:

FIGURE 1. Moderating Effects.................................................................59
LIST OF TABLES

TABLE 1. Descriptive Statistics of Sociodemographic Variables for Males……………56
TABLE 2. Fathers’ Physical Health Across the First Year………………………………57
TABLE 3. Main Effects of Low Spousal Support on Health at 9-months Postpartum….58
TABLE 4. Moderating effects of External Support on Health at 9-months Postpartum...58
Fathers’ Physical Health Across the Transition To Parenthood

The transition to parenthood is an important developmental milestone for men and women. Yet, we also know that role transitions, such as parenthood, can have vastly different consequences for men’s and women’s health outcomes (Moen 2001). The lifecourse perspective emphasizes the importance of timing and social context of role transitions, such as marriage and parenthood (Elder 1985). The timing and context of role transitions affect the ease of incorporating a new role into one’s identity, the social acceptance of a new role, the social-psychological and material resources available to adjust, and the effect and magnitude of the role transition’s impact on health outcomes (Elder 1985; Wheaton 1990; Williams and Umberson 2004). While both men and women lead “linked lives,” marriage and parenthood, specifically, anchor men’s lifecourse trajectories (Moen 2001).

Thus, it is reasonable that the effects of role transitions on physical health outcomes are important for new fathers. However, most of the literature concerning the transition to parenthood focuses primarily on the psychological and physical health of the mother (O’Hara and Swain 1996; Beck 2001), specifically postpartum depression. While maternal health and its predictors have been extensively studied, relatively little is known about fathers’ health. When studied, fathers’ health is primarily used as a predictor for
mothers’ mental health (e.g. Areias et al. 1996; Ballard et al. 1994; Deater-Deckard et al. 1998; Dudley et al. 2001; Matthey et al 2000; Soliday et al. 1999; Zelkowitz and Milet 1997), as opposed to being the primary outcome of postnatal studies. Additionally, we know that paternal health is important not only for mothers’ health, but also for the healthy development of the child (Repetti, Taylor, and Seeman 2002; Sallis, Prochaska, and Taylor 2000) and marital relationship (Barclay and Lupton 1999; Barnett and Marshall 1993; Kotler and Wingard 1989). For this reason, I believe that researchers need to focus their attention on fathers’ health outcomes in the transition to parenthood.

Parenthood is a major life transition for first-time fathers, because it involves significant changes in self-identity and marital relationship dynamics (Barclay and Lupton 1999). Major lifecourse events (e.g., parenthood, divorce, death of a spouse) are stressful, regardless of the context, because they set in motion a sequence of events that are taxing and alter one’s identity (Nomaguchi and Milkie 2003; Thoits 1983; Wheaton 1990). Both parents make significant adjustments in creating a new balance between work, family, friends and time spent together. This adjustment can be a time of considerable stress for the new family, especially for first-time fathers; as a consequence, it is likely to have implications for fathers’ physical health. For this reason, the conceptualization of men’s health should be broadened to include important life course events, such as fatherhood, which play a big role in men’s physical well-being (see for review Garfield, Clark-Kauffman and Davis 2006).

Despite the transition to parenthood being a major life course event for men, very few studies have examined fathers’ postnatal physical health. To my knowledge, only
three studies have included findings regarding postpartum physical health outcomes of fathers. First, Ferketich and Mercer (1989) reported a general decline in fathers’ overall health from birth to eight months postpartum. Second, Condon, Boyce and Corkindale (2004) found that first-time fathers reported decreased job satisfaction, frequency of recreational activities, sleep and increased weight gain after the birth of a baby. Finally, Clinton (1987) found that when compared to non-expectant men, expectant fathers perceived increased levels of backaches, colds, stomach aches and unintentional weight gain during all three trimesters.

**Predictors of Fathers’ Physical Health**

Although a few studies have examined fathers’ physical health during the transition to parenthood, even less is known about specific predictors of fathers’ physical health. Researchers have noted the apparent lack of research in this area, as they have recently stressed the importance of conducting studies that examine fatherhood as an integral aspect of men’s health (Garfield, Clark-Kaufman, and Davis 2006). Of the studies that have examined predictors of fathers’ health across the transition to parenthood, most focus on paternal mental health (see for review Goodman 2004), or changes in leisure and exercise behaviors (see Bellows-Riecken and Rhodes 2008; Bird and Fremont 1991; Claxton and Perry-Jenkins 2008; Nomaguchi and Bianchi 2004). New fathers experienced increased levels of anxiety and depression after the birth of a baby and reported less leisure time and physical activity postnatally compared to their childless counterparts.
There have been some studies focused on paternal physical health, but not during the transition to parenthood. These studies suggest that subjective role experiences are strong predictors of fathers’ physical health (Barnett, Marshall and Pleck 1992). Barnett, Marshall and Pleck (1992) examined 300 married men in dual-earner families to determine the relationship between men's subjective experiences in their work and family roles and their level of stress. Researchers found that the quality of fathers’ family roles and work roles (as measured by the extent to which an item was currently rewarding or distressing) equally affect their level of distress. Moreover, fathers’ emotional involvement with their children acted as a buffer against work-related stresses (see also Eggebeen and Knoester 2001). Second, increased role concerns, specifically parental role concerns about being a good father, is a significant predictor of physical health symptoms in men. (Barnett and Marshall 1993). Barnett and Marshall (1993) studied the relationship between the occupation of multiple social roles (marital, family, work) and physical health in 300 married men from dual-earner households. Researchers found that for men who occupy all three roles, only concerns about being a good parent is a significant predictor of physical health outcomes. Finally, the relationship between children and fathers’ health is fairly consistent throughout the literature. Kandel and colleagues (1985) found that children living at home may negatively affect parents’ mental and physical well-being. Both mothers and fathers whose children no longer live at home are in better physical health and less depressed than childless adults of the same age (Kandel et al. 1985). Additionally, fathers show a 4% increase in risk of obesity for every additional child, adjusting for age, race, household income, work status, physical
activity, tobacco use, and alcohol use (Weng et al. 2004). Finally, research shows that there is a positive linear relationship between physical health and age at first birth for fathers only (Mirowsky 2002). Men who had their first child before the age of 20 reported worse self-rated physical health, compared to men who became fathers after 20 years of age (Taylor 2009). To conclude, although the relationship between being a parent and fathers’ health is well documented, albeit with mixed results, it is unclear what the transition to parenthood means for fathers’ physical health outcomes.

While relatively little is known about fathers’ physical health outcomes during the transition to parenthood, literature concerning maternal physical health outcomes during this transition may provide a parallel example of what may be happening to fathers’ physical health during this time as well. Many researchers have studied mothers’ physical health outcomes, especially with respect to depression, emotional well-being and marital satisfaction. First, in a study of 1366 mothers, Brown and Lumly (2000) found that higher levels of depression were associated with increased odds of physical health problems (e.g., tiredness, urinary incontinence, sexual problems, more coughs, colds and minor illnesses than usual, and bowel problems). Another study by Elek, Hudson and Fleck (2002) found that mothers’ fatigue was associated with more depression, less marital satisfaction, less income, and less maternity leave. Finally, Bayer, Hiscock, Hampton and Wake (2007) found that poor physical health in mothers was related to infant sleep problems, history of depression, and unmet expectations of the infant sleeping more than fifteen hours per day. These studies may provide a parallel picture of the physical health changes I expect from fathers who are undergoing during the transition to parenthood.
While this paper does not specifically focus on gender differences in physical health outcomes, it is reasonable to expect gendered differences, as pregnancy and childbirth directly and indirectly impact women’s’ physical health. Fathers, on the other hand, would only experience indirect effects of having a child on their health. I expect that first-time fathers will experience physical health outcomes, similar to mothers’ physical health outcomes mentioned above, in response to the stress of a new baby during the transition to parenthood.

**Stress and Health**

Based on the stress literature, I believe that the stress accompanying the transition to parenthood for men will be an important predictor of paternal physical health. The effects of stress on men’s health are well documented. Researchers have linked stress with men’s health status during pregnancy (Brown 1986; Cronenwett and Kunst-Wilson 1981). Studies show that first-time fathers report numerous stressors during the transition to parenthood, including increased financial worries, work demands, shifts in the division of labor at home, as well as concerns about the infant (Clinton and Kebler 1993; Glazer 1989; Ventura 1987; Zelkowitz and Milet 1997).

It is common knowledge that stress negatively affects one’s physical health. Prolonged exposure to stress and extended activation of the sympathetic nervous system can lead to deleterious health outcomes such as congestive heart failure, hypertension, insulin resistance and decreased immune function (Curtis and O’Keefe 2002; see Juster, McEwen, and Lupien 2010 for review). Evidence also suggests that experiencing
stressful life events impacts the physical heath of men and women differently when examining specific illnesses or biomarkers (e.g., Ford, Louck and Berkman 2006; Polefrone and Manuck 1987). Kivimaki and colleagues found that job strain is associated with atherosclerosis in men but not women (Hintsanen, Kivimaki et al. 2005; Kivimaki, Vahtera, Elovainio, Lillrank, and Kevin 2002). While previous research has focused on gendered differences in vulnerability to stressful events (Kessler and McLeod 1984), another possible explanation for these gender differences in physical health outcomes to stress is related to the differential stress responses employed by men and women.

The mental health literature on stress processes can provide a framework to elucidate new fathers’ adjustments and coping in response to the stressors that accompany the birth of a baby. Pearlin (1989) argued for the evaluation of the social contexts of individual’s lives when studying stressful events, because life events are situated within the social structure. The importance of social context in studying stress processes is also applicable to difficult daily life conditions (i.e., chronic stressors; Pearlin and Schooler 1978; Turner, Wheaton and Lloyd 1995; Wheaton 1994). Another integral component in understanding new fathers’ adaptations to stress is coping. A father’s appraisal of the relationship between the stressor and his ability to meet, alleviate or alter the demands of the situation affects stress process outcomes (Lazarus, DeLongis, Folkman, and Gruen 1985). The appraisal of inadequate coping resources during the transition to parenthood can lead to poor health outcomes. The prototypical model of the stress response is fight-or-flight, which is thought to be primarily exhibited by men (Taylor et al. 2000). The flight-or-flight response to stress is a biobehavioral response by
the sympathetic nervous system to threatening or stressful situations (Cannon 1932). The
fight-or-flight response results in an actor either fighting the stressor, or running away
from the stressor, in order to reduce harm and successfully adapt to his/her environment.
However, fight-or-flight may not be an appropriate response to all types of stressors.
While it is an effective response to physical threats, it is not an effective response to
emotional threats, such as the birth of a new baby. In the case of the transition to
parenthood, it is not socially acceptable to abandon an infant.

To address this problem, Taylor and colleagues (2000) propose a “tend-and-befriend”
model as an alternate response pattern to stress. “Tending” refers to caring for
significant others or family members and blending into the surrounding environment,
while “befriending” is the extent to which an individual is affiliated with a social group
and the “creation of networks of associations that provide resources and protection”
under stressful situations (Taylor et al. 2000:412). Nurturing and affiliation (i.e. social
support) are means to reduce harm from stress. Much like the fight-or-flight response,
tend-and-befriend is a biobehavioral mechanism that down-regulates the sympathetic
suggests that the foundation of the tend-and-befriend response can be in part explained by
infant attachment and caregiving systems (see Hofer 1995; Pankesepp 1998).
Evolutionarily speaking, women developed the tend-and-befriend response as a more
effective and necessary response to stress by protecting the self and their offspring.
Taylor concludes that stress responses are gendered, whereby women primarily engage in
tend-and-befriend, while men primarily exhibit fight-or-flight. However, support for
Taylor’s gendered conclusions are drawn primarily from animal studies and two human studies using only female participants (e.g., Taylor et al. 2006; Turner et al. 1999). Despite Taylor’s (2000) conclusion that women are more likely than men to engage in tend-and-befriend, I propose that men may engage in this alternate stress response pattern when fight-or-flight is neither optimal nor acceptable, such as the transition to parenthood.

The Role of Social Support and Fathers’ Physical Health

Prior to examining how the tend-and-befriend response may be related to paternal physical health during the transition to parenthood, it is important to first understand the role of social support in men’s health more broadly. Although not specifically studied with respect to fathers’ health, the role social support plays in health outcomes more generally is well documented (see Cohen and Syme 1985 for review). Social support is “an exchange of resources between two individuals perceived by the provider or the recipient to be intended to enhance the well-being of the recipient” (Shumaker and Brownell 1984:13). Research clearly shows that social relationships affect men’s health outcomes. More specifically, spousal social support has been consistently shown to be a strong predictor of better health outcomes for men. For example, married men experience more physical health advantages over single men (Cleary 1987); and employed, married parents report having better overall health than adults who occupy none of these social roles (Verbrugge 1983). Furthermore, age-adjusted mortality rates are consistently higher among unmarried and childless individuals, especially men (e.g., Berkman and Syme
Researchers posit that the reason married persons have better health and lower mortality is that marriage “provides a healthy social environment” (Umberson 1987:308; also see Durkheim 1951; Gove 1973; Syme 1974). For men, spousal support may take the form of encouraging positive health behaviors (e.g., yearly physical exams) and discouraging risky health behaviors (e.g., drinking alcohol and smoking).

In addition to the gendered health benefits of spousal support, evidence also suggests there are gender differences in social network compositions. Women tend to have extensive support networks and benefit from many sources of support including spouses, relatives, and friends (see Cochran and Niego 1995; Gjerdingen, Froberg, and Fontaine 1991), whereas the spouse is the primary source of social support for men (Cronenwett and Knust-Wilson 1981, Jordan 1990, Anderson 1996, Zelkowitz and Milet 1997). This gendered difference in social network composition may, in part, explain the differential health benefits of spousal support. As mentioned earlier, social support is clearly beneficial for men’s physical health, and some evidence supports stronger physical health benefits for men than women (e.g., Gore 1978; Hannum and Espelage 2005; Kaplan et al. 1988; Okamoto and Tanaka 2004; Shumaker and Hill 1991). For example, Helgeson (1991) found that lack of social support is a stronger predictor for men than women of re-hospitalization after myocardial infarction, post infarction chest pain, and perceived health. More specifically, men who reported higher levels of spousal support were re-hospitalized less often than women who reported similar levels of support. Thus, social support, especially spousal support, may have a stronger impact on
paternal physical health during the transition to parenthood than has been seen for maternal physical health.

Changes in Support During the Transition to Parenthood

Since there is no literature specifically demonstrating the physical health benefits of the tend-and-befriend response employed by men, the broader social support literature may offer a theoretical framework to understand the pivotal changes that occur in fathers’ social support networks across the transition to parenthood. If fathers are engaging in tend-and-befriend during stressful times, it is likely that they will turn to their spouses for support. It is also well known that the spouse is the primary source of social support for men (Cronenwett and Knust-Wilson 1981, Jordan 1990, Anderson 1996, Zelkowitz and Milet 1997). In other words, fathers will employ tend-and-befriend in response to the stress of a new baby, by seeking support (“befriend”) in existing social networks, specifically in the primary support provided by a spouse. Yet, across the literature, research consistently shows that new parents are likely to report a decline in marital satisfaction and spousal support (e.g., Belsky and Rovine 1990; Cowan and Cowan 1988; Doss, Rhoades, Stanly and Markman 2009; Twenge, Campell and Foster 2003). Thus, after the birth of a baby, a father’s primary source of support is likely to become less available as the mother’s attention is given to the baby. Consequently, the father may feel a decline in his primary social support. Indeed, Mercer and colleagues (1993) found that fathers reported significant deterioration in close social support during the postnatal year.
Social Support Substitution and Compensation

As mentioned above, men derive the majority of their social support from their spouses. Yet, new fathers experience deterioration or loss of spousal support postnatally (e.g., Belsky and Rovine 1990; Cowan and Cowan 1988; Mercer 1993). However, there is no literature specifically demonstrating whether this loss of spousal support during the postnatal period is linked to paternal physical health. Moreover, little is known about the health benefits other sources of social support may provide to new fathers during the postpartum period. More specifically, can men effectively substitute other sources of social support (such as from family members or close friends) to adequately compensate for the lack or loss of spousal support?

Social network substitution and compensation theory (Rook and Schulster 1996) provides a theoretical framework to help researchers understand what may be happening during the transition to fatherhood. Specifically, fathers may engage in social network substitution to compensate for the perceived loss of spousal support. Social network substitution is “the extent to which…individuals can derive support from alternative social ties, whereas compensation refers to the extent to which these alternative social ties enhance well-being” (Zettel and Rook 2004, p. 433). This theory is typically applied to understand the changes that may occur in the social networks of elderly and widowed individuals. However, this theory is also applicable to new fathers, even though there is not an actual loss of a spouse. The theory explains that the experience of losing an important social support member (e.g., spouse) leads an individual to 1) form new social
ties, 2) rekindle old social ties, or 3) turn to existing ties to provide to compensate for the support lost by the absence of the spouse (Rook and Schulster 1996).

While new fathers do not experience the loss of a spouse, they do experience a marked decrease in primary social support (i.e. their spouses) and consequently may engage in social network substitution to compensate for the loss of spousal support they feel. Research has shown that new fathers report an increase in contact with and support from family and friends (e.g., Bost, Cox, Burchinal and Payne 2002; Eggebeen and Knoester 2001; Knoester and Eggebeen 2006). However, the effectiveness of social network compensation depends on the extent to which the substitutive ties (either old or new) can minimize the impact of the loss of the social network member (Lang and Carstensen 1994). In other words, it is unclear whether the additional contact and reported support actually compensates for the lack of spousal support during the transition to parenthood. If the substitutive ties do not adequately fill the void, social network compensation may actually result in more distress.

A study by East and Rook (1992) found that socially isolated children who substituted their siblings for a deficiency in school social ties were more distressed than those children who had school social ties. In other words, increased contact with or social support from family or friends may not be enough to compensate for the deficit in spousal support, and may lead to increased distress, which ultimately impairs fathers’ physical health. One reason men may not benefit from social network compensation is that they may be less likely to proactively seek support from others (especially new social ties). Regardless, social network substitution and compensation theory may help
conceptualize the changes occurring in fathers’ social support networks during the transition to parenthood. The primary aim of this study is to examine the role of social support in men’s physical health during the transition to parenthood. I propose that lack of received social support from a spouse/partner will predict poor physical health outcomes in the father. As a result of the increased stress of the birth of a new baby and a decrease in spousal support, fathers will utilize the alternative stress response of tend-and-befriend and seek social support in existing social ties in family and close friends. Furthermore, the alternative sources of social support will compensate for the lack of spousal support.

Present Study

The transition to parenthood is a time for men where their primary support system may be significantly lacking. The present study focuses on first-time fathers from one month postpartum to nine months postpartum. For this study, overall physical health will be measured by self-rated health, physical health symptom sum scores, and individual somatic symptoms including headaches, fatigue, trouble sleeping and joint/back pains. The present study has three specific aims: 1) to examine changes in first-time fathers’ physical health using longitudinal data during pregnancy, 1-month, 4-months, and 9-months postpartum; 2) to study the effects of low perceived spousal support on fathers’ physical health; and, 3) to examine the moderating effects of external social support (received from persons other than the spouse) at 4-months postpartum on the relationship between low spousal support at 1-month postpartum and fathers’ physical health at 9-
months postpartum. My study is unique because, to my knowledge, no published studies have examined specific predictors of fathers’ physical health across the transition to parenthood. I will utilize longitudinal data to study fathers’ physical health across the transition to parenthood. Finally, I examine the effects of other sources of social support on health outcomes.
METHODS

Participants

Participants in the current study consisted of 104 couples from northeast Ohio, who were interviewed during the third trimester, one month, four months, and nine months postpartum. To be eligible to participate, both the mother and father needed to be in a heterosexual marriage or marriage-like relationship with their partner, expecting their first child (i.e., primiparous), employed, and speak fluent English. Hereafter, for ease of presentation, I will refer to partners as spouses. Participants were recruited from online pregnancy message boards and local birthing classes. The snowballing technique was also used to recruit participants. To eliminate potential confounding variables, only couples with low-risk pregnancies were included in the sample. The sample was primarily married (91%) and on average had been married/cohabitating for 3 years ($M = 3.29; SD = 2.10$). The present study and analyses will focus only on fathers. The mean age of fathers was 30 years ($SD = 4.77$). The majority of men were non-Hispanic White (87.5%) with a college or advanced degree (66.3%) and working full-time (89.4%) with a total household income of $60,000 or more (70.6%). Attrition rates were low with 93 fathers completing the 1-month interview; 86 fathers completing the 4-month interview; and 81 fathers completing the 9-month postnatal interview. Reasons for attrition included declining to further participate in the study, unable to reach participants after multiple attempts and dissolution of the relationship.
Procedure

Couples agreed to take part in a year-long longitudinal study called Baby Transitions in Marital Exchanges (a.k.a. Baby T.I.M.E.), in which both parents completed interviews beginning in the third trimester of pregnancy, 1-month, 4-months, and 9-months postpartum. For the current study, I will be using data from all four waves. Participants were first asked to complete an online survey (either at home or work). Participants were contacted by a trained interviewer within 24 hours of completing the online survey and completed the final portion of the questionnaire over the telephone. Spouses completed both the online and telephone portion of the interview independent of one another. Combined, the surveys took about an hour to complete. For each completed wave of interviews, couples were compensated $25.

Materials

Sociodemographics. The following demographic information was collected from participants: age (ranged from 18 to 52 years); hours worked in an average week (ranged from 15 to 85 hours); years married/cohabitating (ranged from 1 month to 12 years), race/ethnicity, educational attainment and total household income. Married and cohabitating participants were combined because the number of cohabitating couples was small (n=9). Race/ethnicity was categorized as non-Hispanic White, African American, Hispanic, Asian or Other. Highest level of completed education was categorized as some high school, high school diploma, some college, college degree, or advanced degree. Total household income was categorized as less than $20,000, $20,001-$40,000,
$40,001-$60,000, $60,001-$80,000, $80,001-$100,000, $100,001-$120,000, or more than $120,000.

*Physical health symptoms.* Individual health symptoms were measured at each time point. Fathers were asked, “During the past 4 weeks, to what extent have you experienced any of the following symptoms: not at all, once or twice, once a week, several times a week, or almost every day?” with respect to headaches, being easily tired/fatigued, back pain, and trouble sleeping. Responses ranged from 0 = not at all to 4= almost every day. A sum score was calculated for headaches, fatigue, back pain and trouble sleeping. Cronbach’s alpha was not calculated for this measure because symptoms in one category may not predict other symptoms.

*Perceived health.* Fathers were asked to rate their overall health perception at pregnancy, 1-month, 4-months and 9-months postpartum (e.g., “In general, would you say your physical health is poor, fair, good, very good, or excellent?”). Responses ranged from 0= poor to 5= excellent.

*Received emotional support from family/friends.* Participants were asked how much emotional support they received from parents, in-laws, siblings, friends and other family members. Participants were asked three questions at each wave concerning the amount of love, understanding and reassurance they received from their family members. Responses ranged from 0=not at all to 4 = a lot. A mean score was calculated with higher values indicating more support from family members (pregnancy α= .73; 1-month α= .70; 4-months α= .77; 9-months α= .63).
Perceived emotional support from spouse. Perceived emotional spousal support was assessed using items from a scale of spousal support from the National Comorbidity Survey (Kessler et al. 1994), which has consistently demonstrated reliability and validity. Fathers reported the amount of support they felt from their spouses during the last month by answering seven items (e.g., “How much did your partner show you that she really cares about you?”). Responses were recorded using a 5-point Likert scale ranging from 0 = not at all to 4 = a lot. The spousal support variable was trichotomized into low (0-2.9), moderate (3.0-3.49) and high (3.5-4.0) support categories. Dummy variables were then created for each of the categories. High spousal support was the reference group for all regression analyses. I trichotomized spousal support in order to distinguish between fathers who received low, mid and high levels of spousal support, and ensure that enough participants were in each group.

Overview of Analyses

I first examined changes in new fathers’ physical health across the transition to parenthood (Aim 1) by conducting paired t-tests from pregnancy, 1-month, 4-months, and 9-months postpartum. Specifically, I conducted three paired t-tests: 1) pregnancy to 1-months postpartum, 2) pregnancy to 4-months postpartum, and 3) pregnancy to 9-months postpartum, on each of the outcome variables: self-rated health, 4-item sum score of physical health symptoms, and 4 individual health symptoms. Next, I used OLS regression to study the effects of low perceived spousal support on fathers’ physical health (Aim 2). Potential covariates included race, education, household income and
number of hours worked. Health at pregnancy was the only significant covariate that was retained. Last, I used OLS regression to examine the moderating effects of external family and friend social support at 4-months postpartum on the relationship between low spousal support at 1-month postpartum and fathers’ physical health at 9-months postpartum.
RESULTS

Table 1 provides sociodemographic information about the study sample. On average, fathers reported “good” self-rated physical health and experienced somatic symptoms once or twice a week across all four waves of data. Overall, approximately 37-42% of fathers did not report a change in self-rated health and 16-21% did not report a change in somatic symptoms during the first postpartum year. Finally, both self-rated health and the 4-item sum score had normal distribution.

Aim 1. To examine changes in first-time fathers’ physical health using longitudinal data during pregnancy, 1-month, 4-months, and 9-months postpartum.

Table 2 shows the means and standard deviations of fathers’ physical health at pregnancy, 1-month, 4-months and 9-months postpartum. I calculated change scores by conducting two-tailed paired t-tests from pregnancy to each of the subsequent waves of data. Physical health was measured using three metrics: self-rated health, 4-item sum score, and individual somatic symptoms. Fathers reported a marginally significant ($p < .10$) increase in self-rated health from pregnancy to 1-month postpartum and significantly ($p < .01$) better self-rated health at 4-months postpartum. However, fathers reported a significant ($p < .001$) increase in frequency of health symptoms, measured by the 4-item sum score, from pregnancy to 1-month, a marginal increase ($p < .10$) at 4-months and a significant increase ($p < .001$) at 9-months postpartum. With respect to the individual symptoms, the data show that fathers experienced a marginal increase ($p < .10$)
in the frequency of headaches from pregnancy to 9-months postpartum. Furthermore, fathers reported feeling more easily tired at each follow up during the first year postnatally \((p < .001)\), but no significant changes concerning trouble sleeping. Finally, fathers reported an increase in back pain at 1-month \((p < .05)\), 4-months \((p < .10)\) and 9-months \((p < .05)\) postpartum. All other changes in self-rated health, the 4-item sum score and individual symptoms across the four waves of data were non-significant.

**Aim 2: To study the effects of low perceived spousal support on fathers’ physical health.**

To test Aim 2, I used OLS regression to examine the main effects of spousal support on new fathers’ self-rated physical health, controlling for self-rated health at pregnancy. I also conducted OLS regression to examine the main effects of spousal support on fathers’ physical health measured by the 4-item sum score, controlling for health at pregnancy measured by the 4-item sum score. No other sociodemographic variables were retained as covariates due to non-significance. Table 3 shows the main effects of low and moderate spousal support compared to reported high spousal support at each wave on the physical health variables at 9-months postpartum. Analyses showed that fathers who reported receiving moderate levels of spousal support at pregnancy experienced marginally \((p < .10)\) worse health outcomes measured by the 4-item sum score at 9-months postpartum, compared to fathers who reported high levels of spousal support. Additionally, fathers who reported low spousal support at 1-month postpartum reported a marginal increase \((p < .10)\) in the frequency of somatic symptoms, including headaches, back aches, fatigue and trouble sleeping (4-item physical health scale), at 9-months postpartum, compared to fathers who received high spousal support. Finally,
fathers who reported low spousal support at 4-months postpartum reported significantly worse health, measured by the 4-item physical health scale, at 9-months postpartum, compared to fathers who reported high spousal support. There were no significant main effects of spousal support on self-rated health at any wave.

**Aim 3. To examine the moderating effects of external social support (received from persons other than the spouse) at 4-months postpartum on the relationship between low spousal support at 1-month postpartum and fathers’ physical health at 9-months postpartum.**

To test Aim 3, I used OLS regression to examine the moderating relationship of external support on the link between spousal support and health outcomes, controlling for health at pregnancy. No other sociodemographic variables were retained as covariates due to non-significance. The moderating effect of external social support at 4-months postpartum was significant ($p<.05$) on the relationship between moderate levels of spousal support at 1-month postpartum and self-rated health at 9-months postpartum, compared to fathers who reported high levels of spousal support. Table 4 shows the main effects of external social support (from family and friends) on self-rated health (Model 1) and the 4-item physical health sum score (Model 3), controlling for the effects of the respective health variable at pregnancy and spousal support; and the moderating effects of external social support on the relationship between low and moderate levels of spousal support on self-rated health (Model 2) and the 4-item physical health sum score (Model 4) at 9-months postpartum. Model 3 shows that fathers who received social support from
family and friends at 4-months postpartum reported fewer somatic symptoms \((p < .05)\).

Model 2 shows the moderating effect of external social support on self-rated health. A decomposition of the interaction effects showed that compared to fathers who reported low levels of spousal support but high levels of external support, fathers who report low levels of spousal support and low levels of external social support rated their health worse at 9-months postpartum (Fig. 1). Moreover, fathers who report moderate levels of spousal support and low levels of external social support rated their health better at 9-months postpartum, compared to those fathers who reported moderate levels of spousal support and high levels of external support. Finally, fathers who reported high levels of both spousal and external support rated their health the best, whereas fathers who report high levels of spousal support and low levels of external social support rate their health the worst at 9-months postpartum.
DISCUSSION

Fathers’ physical health is impacted during the transition to parenthood

The results of this study show that first-time fathers undergo significant changes in physical health during the first year after their babies are born. Overall, new fathers report better health after the birth of a baby up to 4-months postpartum; however, fathers simultaneously reported increased frequency of somatic health problems, such as back pain and feelings of being tired throughout the first year postnatally. These data show that fathers experience changes in both self-rated health and somatic symptoms – albeit in the opposite direction. These results provide evidence that fathers’ physical health is impacted during the transition to parenthood.

Furthermore, the results add to the body of literature on fathers’ experiences of the transition to parenthood by using health data collected during pregnancy through the first year postnatally. The opposite direction of changes in self-rated health and somatic symptoms was unexpected. One study evaluating gender differences in self-assessments of health suggest that men’s assessments reflect only major, life-threatening diseases, as opposed to a wider array of everyday fluctuations in general physical health (Benyamini, Leventhal, and Leventhal 2000). As such, I propose that new fathers’ reports of self-rated health reflect an overall assessment of the absence of life-threatening conditions (i.e., heart attack) during the first year after the birth of their babies, rather than a monthly reflection of physical health, which is likely more accurately captured by the frequency of
specific individual health symptoms (e.g., headaches, back aches and fatigue). Previous research in psychosomatic medicine and mental health have established that self-rated health is not just a measure of somatic health, but rather a complex relationship between mental and physical health (Breidablik, Meland, and Lydersen 2009; Galenkamp et al. 2011; Jones et al. 2003; Verkuil, Brosschot, and Thayer 2007). As such, the "self-appraisal of health is significantly associated with objective health, but an individual's self-report of health is not determined exclusively by health status" (Levkoff, Cleary and Wetle 1897:114).

Additionally, self-rated health is a more general reflection of health functioning, while somatic morbidity is context specific (e.g., role transitions). As such, future research on physical health outcomes as the result of changes in role transitions should include both self-rated health as well as somatic symptoms, since each reflects a different aspect of health. Another possible explanation for the opposite changes in direction for self-rated health and somatic symptoms may be due in part to fathers’ social desirability to report good health as a component of “doing gender” and masculinity (Courtenay 2000; Schrock and Schwalbe 2009; West and Zimmerman 1987). Positive reports of self-rated health are reflective of fathers’ gendered socialization, such that normative masculine behavior prescribes that men do not reveal poor health, which is perceived as physical weakness. A strength of my study is that physical health is measured by both self-rated health and somatic symptoms.

Further research should also investigate the ambiguous wording of self-rated health (e.g., “In general, would you say your physical health is poor, fair, good, very
good, or excellent?”). As it is worded now, the question does not provide a specific reference to compare one’s health. It would be an interesting study to manipulate the question and ask participants to rate their overall physical health in comparison to different groups or persons, such as the individual ten years ago, to peers, to neighbors or to a spouse.

Moreover, the context-specific nature of somatic health allows me to draw conclusions about the unique experiences new fathers undergo during the first postnatal year. The increases in fathers’ somatic symptoms after the birth of their babies may reflect difficulties as a result of the transition to the parental role. To date, most research on men’s self-rated health has focused on their socioeconomic roles (e.g., “breadwinner”), rather than their transition to the paternal role within the household. Yet, we know that the role transition from spouse to parent is stressful. New fathers are faced with challenges of simultaneously navigating the roles of spouse and father. Instead, I argue that the role strain fathers feel during the transition to parenthood may manifest itself through increases in physical health symptoms across the first year after the birth of a baby. It is also well established from the mental health literature that psychological stress and daily worries negatively impact one’s physical health (DeLongis et al. 1982; Lazarus 1986; Pearlin and Johnson 1977; Pearlin et al. 1981). Furthermore, we know that there are gender differences in anxiety and depression morbidity rates, such that women are more likely to suffer from unipolar depression, while men are more likely to experience anxiety (Nolen-Hoeksema 1987; Radloff 1975). Therefore, it is reasonable to conclude that new fathers’ experiences and reports of numerous stressors after the birth
of a new baby are manifesting themselves through somatic symptoms, which are context specific to the transition to the parental role, rather than general reports of health measured by self-rated health. Future research on new fathers’ role transition to the parental role should include mental health predictors of physical health, including anxiety or daily worries.

Finally, research shows that new fathers need encouragement to develop parental skills and responsibilities in order to legitimize their new role as parent (Genesoni and Tallandini 2009; Schytt and Hildingsson 2011). Schytt and Hildingsson (2011) propose that fathers’ postpartum physical health might improve if medical professionals’ attitudes towards new fathers would focus on their role as co-parent, not just a supportive role to the mother. To conclude, I support Schytt and Hildingsson’s (2011) suggestion that fathers should be viewed as a co-parent with shared responsibilities. Future research on fathers’ physical health across the transition to parenthood should include examining the role strain fathers feel in the first postpartum year and its effects on self-rated health compared to physical health symptoms. Additionally, I propose that medical professionals should give equal concern for both the mother’s and father’s physical health during the child’s regularly scheduled medical visits, especially during the first year after the baby’s birth.
Spousal support and social support from close friends and family have significant main effects on physical health symptoms, but not perceptions of health.

Second, I studied the main effects of low perceived spousal support on fathers’ physical health. The data show a positive relationship between low levels of spousal support and experiencing worse health, such that fathers who received low levels of spousal support reported more frequent somatic symptoms. Additionally, high external social support significantly affects reporting fewer somatic symptoms of health, but not perceptions of health. I did not find any significant relationships between spousal support and self-rated health, or between external support and self-rated health. These findings demonstrate that spousal support has a positive, significant effect on physical health symptoms, but not perceptions of health, suggesting a difference between perceptions versus manifestations of health for men. The results show that fathers experience a significant increase in somatic symptoms five months after receiving low spousal support, compared to only marginal increases in physical health symptoms after receiving low support. Moreover, post-hoc cross-sectional analyses showed no significant results on the relation of low spousal support to somatic health at any of the four waves. These findings suggest that there is somewhat of a lagged effect with respect to when the effects of low spousal support on health is most greatly felt or presented in somatic manifestations. I argue that poor physical health as the result of low spousal support is not an immediate cause-and-effect process, Rather, fathers are more likely to experience significantly more somatic symptoms as the result of low spousal support during the transition to parenthood within five to eight months. Further research is needed to
investigate the appropriate lag effect between received spousal support and its effect on physical health. Also, more research should examine short-term longitudinal effects to determine other factors that may influence the relationship between low spousal support and physical health. I speculate that significant patterns of results will likely emerge from 1-month postpartum to 4-months postpartum and from 4-months postpartum to 9-months postpartum. I believe that these time points may be an appropriate time span for the lag effect of low spousal support on somatic health to occur.

While the positive relationship between low levels of spousal support and worse physical health is expected and consistent with previous literature (Cohen and Syme 1985), the non-significant findings of the effects of low spousal support on self-rated health is also of theoretical importance. As mentioned earlier, research suggest that men’s self-assessments of health reflect only major, life-threatening diseases, as opposed to a wider array of everyday fluctuations in general physical health (Benyamini et al. 2000). As such, I propose that new fathers’ reports of self-rated health reflect an overall assessment of the absence of serious mental or physical health conditions during the first year after the birth of their babies, rather than a reflection of general physical health, which is likely more accurately captured by individual somatic symptoms. Interestingly, with respect to mental health, post-hoc regression analyses controlling for fathers’ depression at pregnancy (in addition to the corresponding health variable at pregnancy) showed no changes in the significance of the results presented in Table 3, suggesting that mental health is not contributing to any of the results.
Moreover, the difference between the two health metrics is reflected in debates in the current literature on psychological resources and health outcomes. The debate is over the temporal order between the perception and reality of health problems (Eriksson, Undén, and Elofsson 2001; Farmer and Ferraro 1997; Manderbacka, Lahelma, and Martikainen 1998). In other words, does the perception of low self-rated health result in an increase in somatic symptoms, or does an increase in the frequency somatic symptoms lead individuals to rate their overall health lower? While this paper specifically operationalized and examined social support as a moderator attenuating the detrimental outcomes of low spousal support on physical health, further research should examine social support as mediator. A mediational model operationalizes support seeking behavior as a state in which individuals encounter a stressor and perform a behavior that in turn affects an outcome (Baron and Kenny 1986). In other words, fathers who experience low spousal support may seek support from family and friends that, in turn, compensates for the deficit in support new fathers experience after birth. I speculate that one possible explanation for the lack of significant findings concerning self-rated health is that other psychosocial coping resources besides social support may influence fathers’ perceptions of health, such as positive affect, self-esteem, and/or mastery. As mentioned earlier, these results may also represent the role strain new fathers experience across the transition to parenthood. Further research is needed to explain why new fathers experience a discrepancy between perceived health and somatic symptoms.

Yet another future direction of research would include examining differences in support seeking behavior and health outcomes of new fathers based upon socio-economic
status (SES). Do the effects of low spousal support and external support on physical health remain constant across other samples of fathers who are not considered low risk? In other words, do the changes in fathers’ physical health across the transition to parenthood presented in this study hold true for all fathers in general, or do differing socioeconomic statuses differentially effect physical health outcomes and support seeking behavior? For instance, do low SES fathers engage in “tend-and-befriend” responses to the stress of a new baby in a similar pattern to the fathers in this study? According a gendered lifecourse perspective (Moen 1996, 2001), there is an implicit assumption that while both men and women live linked lives, women are more likely to have irregular or interrupted lifecourse trajectories (i.e., disrupted labor force participation, delayed retirement, widowhood), whereas men experience a more lockstep trajectory that is anchored by marriage and having children. Consequently, the majority of the lifecourse literature has focused on women’s changing roles and transitions. From this perspective, one would conclude that the answer to the question proposed earlier is that all fathers would experience similar effects of spousal and external support on physical health.

However, I propose that low SES fathers would experience different changes in physical health from the fathers in this sample across the transition to parenthood due in part to: 1) appraisal of available coping resources; 2) social capital; and, 3) Maslow’s (1943) hierarchy of needs. First, it is known from the mental health and stress literature that both the appraisal of a stressor and available coping resources available to an individual impact health outcomes in stressful situations (DeLongis et al. 1982; Pearlin et al. 1981). In the case of low SES fathers, access to psychological and material resources
will affect their appraisal of whether or not they are able to adequately cope with the stress of a new baby. Second, it is important to consider the influence of social capital and the mobilization of resources, not just access. In the present study sample, the majority of fathers are college educated, working full-time and middle-class. Therefore, it is reasonable to assume that these fathers have the social capital and knowledge to mobilize resources, which includes seeking external sources of social support.

Comparatively, low SES fathers may have external social support ties, but may not also have the social capital to mobilize resources necessary to access support when they need it during the transition to parenthood specifically. Third, individual developmental needs of fathers from differing SES backgrounds may affect physical health outcomes across the transition to parenthood. According to developmental psychology, individuals have needs that must be satisfied in a specific order (hierarchy), beginning with basic needs (e.g., water, food, and sleep). As individuals progress up the hierarchy, the needs become more social (e.g., respect, love/belonging and self-actualization), rather than physiological requirements to live (Maslow 1943). It is reasonable to assume that low SES fathers will be at a different echelon of Maslow’s hierarchy of needs compared to fathers of higher SES who have basic physiologic needs met and likely have some social needs met also. To conclude, I propose that all fathers do not experience the transition to parenthood and resulting physical health changes in the same fashion, as implied by the gendered lifecourse perspective. Second, researchers should consider low SES fathers’ differential appraisal of and coping with stressors, social capital and Maslow’s hierarchy of needs when compared to fathers from different SES backgrounds.
Social support from family and close friends compensates for a lack of spousal support and significantly affects self-rated health for some fathers

Last, I examined the moderating effects of external social support on the relationship between low spousal support and fathers’ physical health using longitudinal data. This result demonstrates that men do seek and benefit from sources of social support other than their spouses; therefore, suggesting support for new fathers’ use of the tend-and-befriend response to the stress of a new baby. While the main effects of spousal support on health is straightforward, the moderating effects of external social support on perceived health depict a more complex relationship and application of social support substitution and compensation theory (Rook and Schulster 2006). The data show that social support from family and friends does compensate for a lack of spousal support for some fathers (Fig. 1). Social support received from family members and close friends buffers against poor health outcomes for some fathers. In other words, external social support attenuates the detrimental effect of low spousal support on fathers’ perception of health. This outcome provides support for the effectiveness of substitutive ties that fill the void new fathers feel due to low levels of spousal support.

However, if the substitutive ties do not adequately fill the void, social network compensation may result in more distress. In addition to the compensatory effects of external support on perceived health, the results also show evidence for the exacerbation of self-rated health for fathers who receive moderate levels of spousal support and high external social support (Fig. 1). This result is consistent with previous literature, such that the effectiveness of social network compensation depends on the extent to which the
substitutive ties, old or new, can minimize the impact of the loss of the social network member (Lang and Carstensen 1994). This pattern of health exacerbation is parallel to East and Rook’s (1992) study that found that socially isolated children who substituted their siblings for a deficiency in school social ties were more distressed than those children who had school social ties. One possible explanation for poor perceived health of fathers who had increased contact with or social support from family or friends is that increased support made fathers more aware of the lower than desired spousal support they were receiving, which in turn, leads to increased distress, and ultimately fathers’ impaired perceptions of health.

The results from this study also show additive effects for fathers who experience high levels of both spousal and external support. These fathers likely already experienced better health as the result of receiving high spousal support. Receiving high levels of external support merely increases perceived health on top of the preexisting benefits of receiving high levels of spousal support. On the other hand, fathers who reported the lowest self-rated health received high levels of spousal support and low levels of external support. This result is unexpected. One possible explanation for such low levels in health for this group is that although these fathers do not feel a loss in spousal support, the demands of a new baby, marital concerns, and work strains likely constrict men’s recreational and physical activities. It is common knowledge that physical activity and leisure time is beneficial for physical activity and that men are more likely than women to engage in physical activity overall (Loprinzi and Cardinal 2012; Matud 2004). Therefore, it is reasonable to assume that if new fathers experience increased stress, increased
demands and constraints across the transition to parenthood, coupled with a decrease in physical activity (i.e. less external support), they will perceive lower levels of health. Future directions in the transition to parenthood literature should not only focus on fathers’ physical health outcomes, but also should examine the relationships between frequency of physical activity and leisure activities, coupled with mental health and physical health outcomes. For example, research could utilize a mediational model to investigate how constraints on fathers’ physical activity (e.g., decreased time playing recreational sports) negatively affect receiving external support that, in turn, affects somatic and self-rated physical health. I speculate that not receiving external support will negatively affect some fathers’ physical health if they are also experiencing low levels of spousal support.
LIMITATIONS

While the results of this study offer insight into the physical health changes first-time fathers experience during the transition to parenthood, there are some limitations to the present study. The first limitation of this study is the small sample size, with only 84 participants in the last wave of data collection. Small sample sizes can be problematic due to power issues (Kline 2011). However, the results do show significant main and moderation effects, which contribute to the current body of literature on the transition to parenthood. Given that significant effects were found, I expect even stronger effects using data with a larger sample size. A second limitation is that the results presented are reflective of a relatively homogenous sample. This sample is not representative of the larger US population, which restricts generalizability of the findings presented in this study. Another limitation includes the lack of significant sociodemographic variables, such as income, race and number of hours worked. Despite the homogeneity of the study sample, it is a “low risk” sample and significant effects were still found. A large body of literature demonstrates the relationships between low socioeconomic status (SES), race/ethnicity and job strain to health outcomes (e.g., Kivimäki et al. 2002; Link and Phelan 1995; Ren, Amick, and Williams 1999; Schulz et al. 2006; Williams et al. 1997). While these areas are not the focus of the present study specifically, future studies examining health changes after the birth of the baby should include these covariates as they may be significant in larger samples.
CONCLUSION

In conclusion, the present study examined changes in fathers’ physical health across the transition to parenthood using cross-sectional and longitudinal data. The transition to parenthood is an important developmental milestone and a major life transition for first-time fathers, because it involves significant changes in self-identity and marital relationship dynamics. The effects of role transitions on physical health outcomes are important for new fathers; however, most of the literature concerning the transition to parenthood focuses primarily on the psychological and physical health of the mother. I proposed that a lack of received social support from a partner predicts poor physical health outcomes in the father. As a result of the increased stress of the birth of a new baby and a decrease in spousal support, fathers will utilize the alternative stress response of tend-and-befriend and seek social support in existing social ties in family and close friends. Furthermore, the alternative sources of social support will compensate for the lack of spousal support.

The results show that new fathers experienced changes in self-rated health and physical somatic symptoms across the first year after birth, such that fathers report better self-rated health while also reporting an increase in the frequency of somatic symptoms. Additionally, low levels of spousal support have a direct effect on later poor physical health outcomes. Finally, social support from family and friends has health benefits for fathers who receive low spousal support. These results provide support for social network
compensation theory for men who received low levels of spousal support; however, social support from family and friends may result in poorer perceived health for fathers who receive moderate levels of social support from their spouses. The results of this study contribute to researchers understanding of the physical health changes new fathers undergo as a result of the new challenges that accompany parenthood.
REFERENCES


Parent, and Non-Stepfamily Settings: Findings from a Community Study.”


Fägerskiöld, Astrid. 2006. “Support of Fathers of Infants by the Child Health Nurse.”


*Nursing Research* 39(1):11–16.


Okamoto, Kazushi, and Yuko Tanaka. 2004. “Gender Differences in the Relationship between Social Support and Subjective Health among Elderly Persons in Japan.” 


APPENDIX
(Tables and Figures)
Table 1. Descriptive Statistics of Sociodemographic Variables for Males

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>29.99</td>
<td>4.77</td>
</tr>
<tr>
<td>Hours worked</td>
<td>45.68</td>
<td>10.97</td>
</tr>
<tr>
<td>Married (years)</td>
<td>3.29</td>
<td>2.10</td>
</tr>
</tbody>
</table>

**Race/Ethnicity**

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Hispanic White</td>
<td>87.5%</td>
</tr>
<tr>
<td>African American</td>
<td>2.9%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>1.9%</td>
</tr>
<tr>
<td>Asian</td>
<td>2.9%</td>
</tr>
<tr>
<td>Other</td>
<td>4.8%</td>
</tr>
</tbody>
</table>

**Education**

<table>
<thead>
<tr>
<th>Education</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>High school</td>
<td>9.6%</td>
</tr>
<tr>
<td>Some college</td>
<td>24.0%</td>
</tr>
<tr>
<td>College</td>
<td>41.3%</td>
</tr>
<tr>
<td>Advanced degree</td>
<td>25.0%</td>
</tr>
</tbody>
</table>

**Employment Status**

<table>
<thead>
<tr>
<th>Employment Status</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Full time</td>
<td>89.4%</td>
</tr>
<tr>
<td>Part time</td>
<td>2.9%</td>
</tr>
<tr>
<td>Self-employed</td>
<td>5.8%</td>
</tr>
<tr>
<td>Not working</td>
<td>1.9%</td>
</tr>
</tbody>
</table>

**Household Income†**

<table>
<thead>
<tr>
<th>Household Income†</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than $20,000</td>
<td>3.9%</td>
</tr>
<tr>
<td>$20,001-$40,000</td>
<td>9.8%</td>
</tr>
<tr>
<td>$40,001-$60,000</td>
<td>15.7%</td>
</tr>
<tr>
<td>$60,001-$80,000</td>
<td>29.4%</td>
</tr>
<tr>
<td>$80,001-$100,000</td>
<td>17.6%</td>
</tr>
<tr>
<td>$100,001-$120,000</td>
<td>11.8%</td>
</tr>
<tr>
<td>More than $120,000</td>
<td>11.8%</td>
</tr>
</tbody>
</table>

†Corrected total household income
Table 2. Fathers’ physical health across the first year

<table>
<thead>
<tr>
<th></th>
<th>Pregnancy (n=104)</th>
<th>1 month (n=93)</th>
<th>4 months (n=86)</th>
<th>9 months (n=81)</th>
<th>Δ1-mo.-Preg</th>
<th>Δ4-mo.-Preg</th>
<th>Δ9-mo.-Preg</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>Self-rated health (0-5)</td>
<td>3.50</td>
<td>0.86</td>
<td>3.59</td>
<td>0.83</td>
<td>3.69</td>
<td>0.86</td>
<td>3.44</td>
</tr>
<tr>
<td>4 Item Sum Score of Physical health symptoms (0-16)</td>
<td>4.11</td>
<td>3.08</td>
<td>5.14</td>
<td>3.17</td>
<td>4.52</td>
<td>2.81</td>
<td>4.85</td>
</tr>
<tr>
<td>Individual symptoms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Headaches</td>
<td>.88</td>
<td>.90</td>
<td>.94</td>
<td>.92</td>
<td>.93</td>
<td>.86</td>
<td>1.00</td>
</tr>
<tr>
<td>Easily Tired</td>
<td>1.38</td>
<td>1.12</td>
<td>2.08</td>
<td>1.24</td>
<td>1.69</td>
<td>1.16</td>
<td>1.86</td>
</tr>
<tr>
<td>Back Pain</td>
<td>.77</td>
<td>1.13</td>
<td>1.04</td>
<td>1.24</td>
<td>.92</td>
<td>1.17</td>
<td>1.00</td>
</tr>
<tr>
<td>Trouble Sleeping</td>
<td>1.08</td>
<td>1.21</td>
<td>1.09</td>
<td>1.27</td>
<td>.99</td>
<td>1.01</td>
<td>0.99</td>
</tr>
</tbody>
</table>

Note: Paired t-test, 2-tailed. *** p<.001; ** p<.01; *p<.05; †p<.10
Table 3. Main Effects of Low Spousal support on Health at 9-months postpartum

<table>
<thead>
<tr>
<th></th>
<th>Self-rated health‡</th>
<th>PH Sum 4-item‡</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>b</td>
<td>SE</td>
</tr>
<tr>
<td><strong>Pregnancy</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low support</td>
<td>0.00</td>
<td>0.21</td>
</tr>
<tr>
<td>Mid Support</td>
<td>-0.11</td>
<td>0.19</td>
</tr>
<tr>
<td><strong>1-month postpartum</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low support</td>
<td>-0.05</td>
<td>0.20</td>
</tr>
<tr>
<td>Mid Support</td>
<td>0.12</td>
<td>0.22</td>
</tr>
<tr>
<td><strong>4-months postpartum</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low support</td>
<td>0.00</td>
<td>0.19</td>
</tr>
<tr>
<td>Mid Support</td>
<td>-0.07</td>
<td>0.20</td>
</tr>
<tr>
<td><strong>9-months postpartum</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low support</td>
<td>0.10</td>
<td>0.23</td>
</tr>
<tr>
<td>Mid Support</td>
<td>-0.14</td>
<td>0.25</td>
</tr>
</tbody>
</table>

Note: *** p<.001; ** p<.01; * p<.05; † p<.10
‡ Controlling for respective health variable at pregnancy

Table 4. Moderating effects of External support on Health at 9-months postpartum

<table>
<thead>
<tr>
<th></th>
<th>Self-rated health‡</th>
<th>PH Sum 4-item‡</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model 1</td>
<td>Model 2</td>
</tr>
<tr>
<td></td>
<td>b</td>
<td>SE</td>
</tr>
<tr>
<td><strong>Lo support T2 (0.1)</strong></td>
<td>0.09</td>
<td>0.23</td>
</tr>
<tr>
<td><strong>Mid support T2 (0.1)</strong></td>
<td>0.24</td>
<td>0.24</td>
</tr>
<tr>
<td>External support 4mo (T3)</td>
<td>0.09</td>
<td>0.08</td>
</tr>
<tr>
<td><strong>Lo support x Ext support</strong></td>
<td>-0.21</td>
<td>0.23</td>
</tr>
<tr>
<td><strong>Mid support x Ext support</strong></td>
<td>-0.55</td>
<td>0.25</td>
</tr>
</tbody>
</table>

Note: *** p<.001; ** p<.01; * p<.05; † p<.10
‡‡ Controlling for respective health variable at pregnancy
Figure 1: Moderating Effects

Moderating Effects of External Social Support on the Relationship Between Low Spousal Support and Self-Rated Health (9-months postpartum)