THE ROLE OF PARENTAL IDENTITY ON REACTION AND ADAPTATION TO THE BIRTH OF A CHILD

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ABSTRACT

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Parental identity is a conceptually important psychological construct, yet past work evaluating this construct is scant and its causes, its correlates, and its trajectory over time are poorly understood. Further, little is known about its consequences on well-being and the role parental identity plays in how people respond to the birth of a child. The present research is the first to provide a comprehensive look at the nature of parental identity, its correlates and its implications on reactions to becoming a parent. This research is also the first to evaluate the trajectory of parental identity over the life course and its pattern of change in response to the birth of a child. Nationally representative panel studies from German, British, and Australian households were used to examine these questions – utilizing data from over 55,000 respondents collected over 30 years. Results show that parental identity is associated with several important demographic characteristics and outcomes, and that these associations are generally consistent across three distinct national samples. Parental identity shows a consistent trajectory across the lifespan, appearing to rise gradually from adolescence into early adulthood, then leveling off as individuals move into their 30s and remaining relatively stable into older age. Childbirth is also associated with large changes in parental identity, and these changes persist for many years following birth. Finally, the results of this research indicates that parental identity is positively associated with increased SWB in the years before birth, and is associated with an added, long term boost in SWB following childbirth in Germany, Great Britain and Australia.

For my children. May knowledge light your way.

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INTRODUCTION

There is little debate that reproduction is a fundamental human need (Kenrick, Griskevicius, Neuberg, & Schaller, 2010). Indeed, many individuals view the birth and rearing of children as important life experiences that require great effort and resources. There are many reasons why individuals may choose to have children, and both scientific and intuitive theories predict that satisfaction of this fundamental human need would ultimately lead to increases in subjective well-being for many individuals (e.g., Lyubomirsky & Boehm, 2010). However, recent research findings suggest that those who have children are not necessarily happier than those that do not have children in the long term (e.g., Anusic, Yap & Lucas, 2014a; 2014b; Dyrdal & Lucas, 2013; Yap, Anusic, & Lucas, 2012) and, in some instances, having children has been linked to decreased well-being (e.g, Baumeister, 1991; Dyrdal & Lucas, 2013; Glenn & Weaver, 1979).

Although past research may indicate that having children does not lead to long term average increases in SWB, it is important to note that this research also indicates that substantial variability exists between individuals in how they are affected by having children. For some individuals the experience of childbirth is associated with permanent increases or decreases in happiness, whereas others showed no long-term changes in happiness (e.g., Belsky, Spanier, & Rovine, 1983; Galatzer-Levy, Mazursky, Mancini, & Bonanno, 2011). Relatively little empirical work has been done to explain why individuals show such marked variation in their reactions to major life events such as childbirth and identifying the factors that can account for this variation is an important empirical concern. Although recent work has examined whether this variability in reactions to childbirth may be accounted for by personality traits (Anusic et al.,2014a; Dyrdal & Lucas, 2013; Yap et al., 2012), one construct that has not been examined as a potential moderator

is *parental identity* - the degree of importance one places in being a parent. Theoretically, parental identity may be psychologically important, yet little is known about this construct and its implications.

Thus, the goals of the current research project were two-fold. The first goal of this project was to gain a better empirical understanding of parental identity, its stability and change over time and the degree that life transitions (such as onset of parenthood) affect it. Second, this project aimed to evaluate how parental identity affects the relationship between childbirth and well-being, and whether this construct accounts for the variability in individuals' response to the birth of a child.

Life Events and Subjective Well-Being

Happiness, or *subjective well-being* (SWB) as it is known in the research literature, is defined as the subjective evaluation of one's own overall quality of life (Diener, 1984). SWB is highly valued, and the possibility of obtaining high levels of well-being is a strong motivator of behavior (Lyubomirsky, Sheldon, & Schkade, 2005) and understanding the factors that explain SWB have been an important area of psychological study. However, this body of research has generally shown that the relationships between life circumstances and SWB are relatively small (e.g., physical health; Okun & George, 1984; see also Diener, Suh, Lucas, & Smith, 1999). As such, some scholars have argued that the weak links between the objective circumstances of one's life and well-being suggest that individuals are able to adapt to most major positive and negative life events over time.

Adaptation theories (e.g., Frederick & Loewenstein, 1999; see Diener, Lucas, & Scollon, 2006 for a review) posit that SWB is a homeostatic phenomenon that fluctuates around a stable, genetically pre-determined set-point. These theories suggest that changes in an individual's life

circumstances and the experience of major life events may be associated with temporary changes in well-being levels, but individuals will inevitably adapt to these life events. In turn, adaptation theories predict that SWB will quickly and inevitably return to genetically predetermined baseline levels of SWB experienced prior to the experience of the life event (Lykken & Tellegen, 1996). One implication of these adaptation theories is that they suggest it is futile to attempt to change one's life circumstances in order to improve one's quality of life as any gains in SWB will inevitably disappear.

The proponents of these theories have suggested that the process of adaptation to life events may serve several important functions. For example, adaptation to positive and negative life events may help people cope with major life changes and buffer people from the potentially negative emotional consequences of these life events. Adaptation to persistent aspects of the environment may also be advantageous because these processes allow individuals to habituate to changes in life circumstances and free one's cognitive resources to attend to novel environmental stimuli (Frederick & Loewenstein, 1999). Indeed, the predictions of adaptation theories contradict most intuitive theories about the long term effects that positive and negative major life events (e.g., getting married; death of a family member) would have on individuals' SWB. Consequently, these theories raise the question of whether individuals adapt to major life events (as adaptation theories predict) or are these events actually associated with lasting increases and decreases in SWB.

Although some past research indicates that individuals do generally adapt to major life events and that life circumstances are poor predictors of well-being, much of this research has been restricted to relatively limited cross-sectional studies (e.g., Campbell, Converse, & Rodgers, 1976; Okun & George, 1984; see Diener, 1984 for a review). Recent research,

however, has begun to examine questions of whether changes in life circumstances and major life events are associated with changes in SWB using large, nationally representative panel studies (for review, see Lucas, 2007a).

There are several advantages to using this type of design. First, these studies are longitudinal studies that span many years and typically include relatively large samples of participants. For example, the German Socio-Economic Panel (GSOEP), which has been used in past studies examining reaction and adaptation to life events (e.g., Galatzer-Levy, Bonanno, & Mancini, 2010; Lucas, 2007b; Pagán-Rodríguez, 2012; Stutzer & Frey, 2006), includes a nationally representative sample of Germans numbering in the tens of thousands. These participants have been assessed at yearly intervals for multiple decades. Using samples such as this allows researchers to examine how life events (even relatively rare ones) affect SWB over a long span of time in a large number of people.

A second advantage to using this type of data is that they are prospective. That is, participants' pre-event levels of life satisfaction are known and comparisons of pre-event and post-event levels of life satisfaction are possible. The advantage of these prospective designs over non-prospective alternative designs is that prospective designs eliminate the possibility that any differences between those who have experienced the event and those who have not are due to pre-existing differences (i.e., individuals who experience certain events might simply be higher or lower in subjective well-being before the event occurred). Thus, prospective designs can rule out at least one important confound of cross-sectional studies.

A third advantage of this type of design concerns the fact that participants are not selected into the study precisely because they experienced the event. Because certain major life events are very rare, researchers are often only be able to obtain large enough samples by explicitly

recruiting participants who have experienced (or are likely to experience) the event in question. However, this recruiting strategy makes the focus of the study known, which can introduce demand characteristics (e.g., Smith, Schwarz, Roberts, & Ubel, 2006). Specifically, when participants know that they are being recruited on the basis of experiencing a particular life event, the event may become particularly salient and the respondent may have ideas about how their experience of the particular life event should have affected their subjective well-being. The participant may also be motivated to appear better adjusted than they actually are. In turn, these factors may cause individuals to over- or under-report their life satisfaction based on these preconceived notions. In contrast, using large nationally representative samples minimizes the possibility of demand characteristics, while still providing enough participants for meaningful results.

Despite the strengths of using these national panel studies, use of such data is not without its limitations. One of the most notable disadvantages of using these panel studies is that individual researchers are limited to using measures and preexisting items that are already included in the surveys. Generally speaking, researchers have no control of over the design of the panel study used and the variables that are being assessed. Thus, the variables one evaluates, one's analytic approach, and design of an individual researcher's study is limited to the existing design and the items available at each wave of the panel being used. Another oft cited concern of using data from national panel studies is that, because of the breadth of these studies, many constructs are assessed with very brief measures – including many that are assessed with single items. Use of brief measures in these national panel studies is usually done to minimize participant burden given the wide breadth and length of these large-scale longitudinal studies. The main criticism of using such measures is that they may not be as internally consistent as one

would typically expect in psychology, especially when compared to the internal consistency of longer measures. Another concern about brief measures is that they may not have the breadth to capture all the relevant or important aspects of many important constructs.

Although it is important to keep these issues in mind when interpreting results of such studies, recent research suggests that these concerns may not be as problematic as expected. For instance, Lucas and Donnellan (2011) used strategies for estimating reliability from longitudinal data to show that the reliability of a single-item life satisfaction measure like the one that is typically included in these panel studies is about .73, which is at a similar level to many measures typically used in psychology.

Another criticism of using brief or single-item measures is that they potentially lack the bandwidth necessary to adequately capture many of the psychological constructs researchers are interested in studying. However, past research has shown that many constructs are captured relatively well using a single-item and many commonly used multi-item measures used in psychology (e.g., The Satisfaction with Life Scale; Diener et al., 1985) often contain items that are simply rewordings of the same idea. Further, single-item measures of psychological construct and in many instances, single-item measures have been shown to be valid and used extensively in past research (e.g., Cheung & Lucas, 2014; Kobau, Sniezek, Zack, Lucas, & Burns, 2010; Robins, Hendin, & Trzesniewski, 2001).

Much of the research with panel studies is correlational and cannot definitively establish causality. However, they often provide more descriptive information about the nature of the associations between life circumstance and life event variables and SWB than can simpler crosssectional designs. Indeed, past research that has examined the effect of life events on SWB using

nationally representative panel data suggests that experiencing major positive and negative life events may have substantial effects on an individual's life satisfaction (Anusic et al., 2014a; 2014b; Lucas, 2007a; Yap et al., 2012). However, the precise nature of these effects appears to vary across different events. For instance, research using the GSOEP shows that individuals typically do react to major life events (like marriage, divorce, disability, widowhood, and unemployment), but the length of time that these reactions last varies across events (Lucas, 2007a).

Parenthood and Subjective Well-Being

One major life transition that has been the subject of study and debate in recent SWB research is the experience of becoming a parent (e.g., Dyrdal & Lucas, 2013; Nelson, Kushlev, & Lyubomirsky, 2014; Anusic et al., 2014a; 2014b; Yap et al., 2012). The notion that human beings are intrinsically motivated to have children is relatively non-controversial (Kenrick et al., 2010). However, the effect of satisfying this fundamental human need to reproduce on SWB and psychological adjustment is more uncertain. Although past research has shown that satisfaction of basic human needs such as hunger, self-protection and social affiliation are often associated with increases in well-being and positive feelings (Macht & Dettmer, 2006; Smith, Kendrick, Maben, & Salmon, 1994; Tay & Diener, 2011; Wong & Csikszentmihalyi, 1991), the extant research literature suggests that the link between well-being and having children is more ambiguous (e.g., Lyubomirsky & Boehm, 2010; Nelson et al., 2014). For instance, although several studies indicate that parenthood is consistently associated with declines in marital satisfaction, SWB, and higher levels of negative outcomes such as anxiety and depression (e.g. Belsky et al., 1983; Belsky, Lang & Rovine, 1985; Glenn & McLanahan, 1982; Glenn & Weaver, 1979; Lawrence, Nylen, & Cobb, 2007; McLanahan & Adams, 1987a; Twenge,

Campbell, & Foster, 2003; Umberson & Williams, 1999), the sizes of these effects are typically small. There are also a number of studies that fail to find evidence that parenthood is associated with substantial changes in global well-being (e.g., Rothrauff & Cooney, 2008), or report that parenthood is associated with increased well-being (Aassve, Goisis, & Sironi, 2012; Nelson, Kushlev, English, Dunn, & Lyubomirsky, 2013).

Much of the past literature evaluating the effects of parenthood on SWB has also relied on cross-sectional designs, which are limited in several important ways (discussed above). However, longitudinal studies on the impact of parenthood on well-being have also yielded varied findings. For instance, a substantial body of longitudinal research indicates that parenthood is consistently associated with long-term decreases in various well-being and adjustment variables, mirroring much of the cross-sectional literature review above (e.g., Clark, Diener, Georgellis, & Lucas, 2008; Doss, Rhoades, Stanley, & Markman, 2009; Dyrdal & Lucas, 2013; Dyrdal, Røysamb, Nes, & Vittersø, 2011; Grote & Clark, 2001; Rholes, Simpson, Campbell, & Grich, 2001). However, other longitudinal research findings suggest that the experience of becoming a parent itself is not linked to long term increases or decreases in SWB (Anusic et al., 2014a; 2014b) and that overall decreases in SWB following childbirth may actually reflect normative, age related changes in SWB that would have been observed even if individuals remained childless (e.g., Yap et al., 2012).

Taken as a whole, much of the extant research literature demonstrates an ostensive paradox. Parenthood may be associated with lower SWB despite the high value many individuals place on achieving parenthood. Nevertheless, the research literature is mixed regarding the impact of parenthood on SWB (Nelson et al., 2014) and further research evaluating the factors that explain the discrepancies in this literature is needed.

Variability in Reactions to Parenthood

Research examining the impact of major life events on SWB typically reports the effects of events on SWB as an average level effect across a given sample. However, past research also indicates that there is a substantial amount of variability in how people respond to various life events and these experiences are clearly not associated with uniform patterns of SWB change in all people (e.g., Lucas, 2005, 2007b; Lucas, Clark, Georgellis & Diener, 2003; 2004). For example, Lucas and colleagues (2003) reported that there was substantial variability in the degree of adaptation following marriage, and observed that the trajectory of adaptation varied as a function of one's reaction to marriage. Some individuals remained happier than they were before marriage, whereas others were less happy compared to their pre-marriage levels. Research also indicates that there is substantial variability in individuals' reactions of grief to traumatic events and other major personal loss. These studies show that some individuals experience large declines in well-being when faced with traumatic events, while others show little long term change (e.g., Bonanno, 2004; Bonanno & Kaltman, 2001; Bonanno & Keltner, 1997).

In regards to childbirth, past research indicates that there is also a substantial amount of variability in how people respond to the birth of a child (e.g., Belsky et al., 1983; Galatzer-Levy, et al., 2011). For instance, although the results of a study by Belsky and colleagues (1983) suggest that parenthood is associated with average declines in marital adjustment, these authors also showed that there are individual differences in this negative effect. Similarly, Galatzer-Levy et al. (2011) demonstrated that there were substantial individual differences in how people reacted to the birth of a child. Using data from the German Socio-Economic Panel, these authors found that although the onset of parenthood may be associated with average declines in SWB, the vast majority of parents in their sample showed no long term changes in SWB in response to

childbirth. A relatively small portion of their sample showed evidence of a lasting decline following childbirth, and some individuals showed evidence of long term gains in SWB following the onset of parenthood.

To be sure, there is clear evidence that variability exists in how individuals react to having children and whether these potential changes are long lasting. This evidence suggests that reactions to parenthood are not homogeneous across all parents, and identifying the factors that differentiate between individuals with different reactions to parenthood is an important concern. However, past research that examines the characteristics and variables that may account for this type of variability in reaction and adaptation to life events is relatively sparse.

Past work suggests that demographic characteristics play an important role and predict parents' reactions to having children. For instance, Galatzer-Levy et al. (2011) demonstrated that demographic characteristics such as marriage, income, and educational attainment predicted the response pattern of SWB exhibited by parents in their sample. In particular, parents who displayed a more stable pattern of SWB in the years surrounding childbirth were more likely to be married, have higher education, and have more income than parents who displayed other response patterns. Similarly, Kohler and colleagues (2005) demonstrate that several important demographic characteristics, including the age of parents, gender of parents, partnership status and the number of children parents have moderate the pattern of SWB change one experiences in response to having children.

Other research has demonstrated that variability in SWB reactions to parenthood are also accounted for by stable individual differences among parents such as genetic factors (see Kohler et al., 2005) and personality traits (Dyrdal & Lucas, 2013). For instance, a number of past studies suggest that personality traits moderate individuals' responses to various major life events (e.g.,

Anusic et al., 2014a; Boyce & Wood, 2011; Pai & Carr, 2010; Bonanno, 2004). In line with this work, recent research by Dyrdal and Lucas (2013) and Yap et al. (2012) evaluated whether the Big Five personality traits (Neuroticism, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness; McCrae & Costa, 1987; Goldberg, 1990) accounted for variability in reaction and adaptation to the birth of a child in nationally representative samples of German and British households, respectively. Taken together, these two studies indicate that Openness to Experience appears to play a positive role in how having children impacts SWB. Indeed, individuals higher in Openness to Experience appear to react more positively to the birth of a child, but it is important to note that there were differences among these studies in the period of time where the moderating effect of Openness to Experience emerged. Further, a third study of Australian households failed to find evidence that Openness to Experience moderated reactions to having children (Anusic et al., 2014a). The results of Dyrdal and Lucas (2013) and Yap et al. (2012) also suggested that Neuroticism has a moderating effect on reactions to childbirth. However, the nature of the moderating effect of Neuroticism on the association between parenthood and SWB is less clear given that these two studies yielded inconsistent findings in regards to the role of Neuroticism. Further, a recent study of Australian households (Anusic et al., 2014a) failed to find a moderating effect of Neuroticism on parents' responses to the birth of their first child.

There may be other relevant individual differences that may account for the variability in people's responses to childbirth. For instance, differences in the characteristics of the experience itself, such as differences in children's temperament, difficulty and complications with the actual birthing and variation in the availability of post-partum social support all could account for variability in people's responses to birth. Indeed, another possibility that has yet to be explored

in the research literature is that individuals' responses to childbirth may be explained by individual differences in the importance placed on being a parent - a notion referred to as *parental identity*.

Parental Identity and SWB

Generally speaking, identification with a group or social role appears to serve important social functions (Tajfel & Turner, 1986; Turner, Oakes, Haslam, & McGarty, 1994; Thoits, 1987). As such, major theoretical perspectives on identity and identity related processes (e.g., Tajfel & Turner, 1986) suggest that one of the main benefits of identity related processes is the maintenance of one's positive sense of self. According to this perspective, identification with important groups and social roles is one of the central mechanisms an individual uses to bolster self esteem and positive self image (Tajfel & Turner, 1986) and a substantial body of literature has shown that various group identities are beneficial to psychological adjustment and subjective well-being (e.g., Kiang, Yip, Gonzales-Backen, Witkow, & Fuligni, 2006; Phinney, Cantu, & Kurtz, 1997; Settles, 2004; Yap, Settles, & Pratt-Hyatt, 2011). For instance, research evaluating racial and ethnic identity indicates that racial and ethnic group membership is relatively salient for many racial/ethnic minority group members and identification with one's racial and ethnic group is associated with outcomes such as life satisfaction (Yap et al., 2011), depression (Settles, Navarrete, Pagano, Abdou, & Sidanius 2010) and self-esteem (Kiang et al., 2006; Phinney et al., 1997).

People typically identify with several simultaneous social groups and roles, and research suggests that parental roles are particular salient for many adults (Thoits, 1992). Identification with these parental roles also appear to have important psychological implications. *Parental identity* is defined as the degree to which an individual sees parenthood as important to the self.

In other words, it is the extent to which "being a parent" is central to an individual's self image (Maurer, Pleck, & Rane, 2001). Despite the theoretical and intuitive importance of this construct, the research literature examining this construct is extremely small. Very little is known about the construct itself, and no research has examined important questions such as how the importance of being a parent develops and changes over the life span and whether it is affected by significant life events such as the birth of a child. There are a handful of studies that show that parental identity is associated with positive well-being outcomes. For example, a study by Martire and colleagues (2000) reported that the self-rated importance of being a mother was associated with life satisfaction in a sample of middle-aged women. Other research also suggests that parental identity is linked to self-esteem (Reitzes & Mutran, 1994). However, other studies have also failed to find evidence for such direct effects on individual well-being and adjustment (Noor, 2004; Thoits, 1992) and virtually nothing is known about the robustness and generalizability of these existing effects given the limited research examining the consequences of parental identity on well-being and adjustment.

The reasons for these discrepancies in the literature are unclear. One potential reason is the way in which the notion of parental identity is conceptualized and measured across studies. For instance, both studies that find evidence for associations between parental identity and wellbeing operationalize the construct of parental identity using continuous Likert scale measures (i.e., Martire et al., 2000; Reitzes & Murtran, 1994). In contrast, the studies that failed to find evidence of an association between parental identity and well-being operationalized the construct in a different manner. Thoits (1992) measured parental identity by asking respondents to rank order the importance of one's parental role compared to two other roles (e.g., worker, spouse). Noor's (2004) scale items reflected broader notions of identification with and importance of

family and the questionnaire was in the context of work-family balance. Indeed, it is possible that such differences in the operationalization of parental identity led to the observed differences in results across studies. Overall, it is important to note that there is little consensus on the optimal way to assess parental identity. There is also little consensus as to the core features of this construct, and the specific feelings, attitudes and behaviors that would be considered part of parental identity. Further, individual researchers often utilize measures of parental identity that are unique to their own program of research and it appears that little effort has been made to bring unique streams of research together to develop a unified model for thinking about and assessing parental identity.

There could also be other reasons for these discrepancies. For instance, there could be group differences in how parental identity and well-being are related among sampled populations, but without a greater body of research in this area, it is difficult to predict the robustness of these effects or the precise reasons for these discrepancies. Generally speaking, much further research is needed before stronger conclusions can be made about whether there is a link between parental identity and well-being.

The direct importance of parental identity on psychological adjustment is also demonstrated by other studies linking parental identity to other important parenting behaviors, such as caregiving behavior (Maurer & Pleck, 2006), and involvement with child rearing (Bruce & Fox, 1999; Ihinger-Tallman, Pasley, & Buehler, 1993) which in turn may have positive wellbeing outcomes for both individual parents and their families and offsping. Indeed, the notion of parental identity has been identified as one of the single most important theoretical antecedents of parental involvement, particularly for fathers (e.g., Pleck, 1997). However, it is again worth noting that multiple studies do not find evidence for associations between parental identity and

parental involvement (e.g., McBride & Rane, 1997; Minton & Pasley, 1996) and that this literature is extremely small.

Other research indicates that parental identity may act primarily as a moderator of the relationship between parental-role related stress and well-being outcomes. Under this perspective, parental identity and the experience of parental-role related stressors are viewed to have an interactive effect on well-being. Parental-role related stressors may have a particular impact on individuals' well-being if the domain of these experiences is especially important or salient to the individual. Conversely, if being a parent is a domain that is relatively unimportant to a person, his or her response and the relative permanence of this individual's response to stressors in this domain may be small.

Past evidence is mixed regarding the direction of the moderating effect of parental identity, and whether it serves to exacerbate or protect against the negative effects of parental stressors on various well-being outcomes. For example, a study by Simon (1992) suggested that increased levels of parental identity were associated with increased vulnerability to parental role strains and exacerbated the positive association of these strains on individuals' depression and anxiety. This finding is consistent with the notion that negative events and stressors that are related to an important identity are going to be more detrimental to one's overall well-being than threats related to an unimportant identity (Thoits, 1992).

In contrast, other studies have found evidence showing parental identity to be a protective factor against parental role related stressors. For example, Martire et al. (2000) found that paternal identity buffered mothers from the negative effects of mother stress on depression. This study showed that mother stress was related to depression for mothers low in parental identity, but no relationship between mother stress and depression was observed for mothers high in

parental identity. Similarly, Luchetta (1995) also found evidence for a protective role of parental identity against the negative effects of family related stressors on psychological distress. These findings are consistent with past theory regarding the functions of identity (e.g., Tajfel & Turner, 1986). Under this perspective, individuals for whom being a parent is an important part of the self will be especially motivated to feel good about their role as a parent, even in the face of significant stressors associated with this role. These individuals may simply be more committed to focus on positive attributes of being a parent, which may provide justification for the negative aspects of being a parent.

Existing evidence regarding the role that parental identity plays in the association between parental and family related stressors and well-being outcomes is mixed and does not offer a consistent overall picture of the nature of this moderating effect. The reasons for these discrepancies in this literature are unclear. One possible reason may be that there are differences in the outcomes each of these studies are evaluating. Thus, it is possible that these discrepancies may simply reflect real differences in how parental identity moderates the relation between stressors and various outcomes. There are also differences in the specific predictor variables being examined in each study. Again, although each of these predictors could be characterized as stressors related to one's role of being a parent, there may be subtle differences among these constructs in how they interact with parental identity. Of course, there have been an extremely small number of studies examining the moderating role of parental identity on the relation between parental role related stressors and well-being, and it is clear that more work is needed before stronger conclusions should be drawn and this area can move forward. Further, it is possible that with more research evaluating this question, a more consistent picture of this effect would emerge and the apparent discrepancies regarding the direction of this moderating effect

may fade away.

In summary, there are several unanswered questions regarding the development and nature of parental identity, the role of parental identity on the effects of parental role related stressors (such as childbirth) on well-being. Largely due the small number of existing studies, the main issue in this area of research is that there is simply no consistent picture on the nature and importance of parental identity, the role parental identity plays in individuals' overall well-being (for both parents and non-parents) and how individuals react to parenthood. The little research that does exist suggests that there may be a direct positive relation between parental identity and various well-being outcomes and that one's level of parental identity may moderate how one reacts to stressful events associated with one's role of being a parent (such as childbirth). These predictions would also be consistent with past theory and research evaluating other types of identity, such as ethnic identity, and their implications. Clearly, the scientific understanding of parental identity and its significance would benefit from more systematic research evaluating the importance and overall implications of parental identity and whether parental identity affects reaction and adaptation to new parenthood.

The Current Studies

Given these theoretical gaps, this project had two main goals. The first overall goal of this project was to gain a better empirical understanding of parental identity. For instance, little is known about the construct of parental identity itself, its stability and change over time, and its correlates. Thus, this project will evaluate the extent to which parental identity changes over the lifespan, and whether having a child leads to significant increases or decreases in self-rated parental identity. Further, this project also evaluated the nature of parental identity and sought to identify associations between parental identity and other important psychological constructs

(e.g., well-being, demographics).

Evaluating the degree to which parental identity changes over the course of one's life is an important developmental question as it speaks directly to the psychological process of becoming a parent. For example, it is possible that individuals at different life stages may display differences in the importance they place in being or becoming a parent, and understanding these differences across the life span may lead to a better understanding of the development of parenthood and its relevant psychological processes. Few unifying theories speak to the psychological processes involved in one's transition to parenthood and past scholars have highlighted the need for a better scientific understanding of the psychological processes involved in becoming a parent (Cabrera et al., 2000).

Further, it is also possible that the importance one places in having children or becoming a parent is a relatively enduring individual difference across various stages in one's life course. As such, it is important to understand how individual differences in this construct predicts various characteristics of one's life, such as whether an individual has children, the number of children one has and the age at which one became a parent. The second overall goal of this project was to evaluate the degree to which individual differences in parental identity account for variability in the association between having children and life satisfaction and variability in the observed patterns of life satisfaction change following the onset of parenthood. In other words, does parental identity moderate individuals' short and long term responses to the birth of a child? Although some past research has examined whether other individual differences (e.g., personality traits) moderate individuals' responses to childbirth (e.g., Anusic et al., 2014a; Dyrdal & Lucas, 2013; Yap et al., 2012), the current paper extends this literature by examining a construct that has yet to be explored as a moderator of individuals' responses to the birth of a

child.

Past research suggests that parental identity may be important to several well-being and parenting outcomes, and that it moderates the relationships between parental stress and wellbeing (e.g., Martire et al., 2000). Indeed, the literature described above supports two competing predictions regarding the role of parental identity in individuals' responses to childbirth. The first prediction is that individuals high in parental identity may react more *positively* to the birth of a child. This pattern of results could have multiple explanations. As discussed above, many individuals are fundamentally motivated to have children (Kenrick et al., 2010). In addition to these basic motivations, some individuals may also place high psychological importance on being a parent. Fulfilling this important identity (i.e., actually having a child) may be particularly beneficial to these individuals' sense of self compared to other people who place lower importance on being a parent. Becoming a parent is also considered a very stressful experience for many individuals, and is rated among the most stressful life events one can experience (Holmes & Rahe, 1967). Clearly, such levels of stress may have direct detrimental effects on an individual's well-being, but as some past research suggests, at least some of the potential negative effects of the stress associated with parenthood may be mitigated by having a strong parental identity (e.g., Luchetta, 1995; Martire et al., 2000).

Some past theories also suggest that individuals have a tendency to place particular emphasis on the positive aspects of the identities one holds as a way to bolster one's own self image (e.g., Tajfel & Turner, 1986). Thus, individuals for whom being a parent is an important part of the self may be especially motivated to feel good about their role as a parent, even in the face of the high stress associated with events such as the birth of a child. In other words, these individuals may simply be more committed to focus on positive attributes of their newfound role

as a parent and the psychological benefits that may come with this role.

A competing prediction regarding the role of parental identity on responses to the birth of a child is that individuals high in parental identity may react more *negatively* to the birth of a child. As some past research indicates (e.g., Simon, 1992), the stress of having a child could also be particularly taxing for individuals who place high importance on being a parent, especially if these individuals have difficulty coping with the disruptions associated with having children. Despite the importance one places on being a parent, one may still have difficulty incorporating their new parental responsibilities into their lives. As such, failure to adequately cope with the stresses associated with this centrally important identity may be particularly threatening to these individuals' sense of self compared to threats and disruptions related to individuals' unimportant identities (Thoits, 1991).

In sum, I predicted that parental identity played a role in how individuals respond to the experience of childbirth itself. However, given the mixed past evidence regarding the direction of potential moderating role of parental identity in the association between childbirth and wellbeing, my predictions regarding the direction of this potential moderator of individuals' reactions and pattern of adaptation to childbirth were more tentative.

METHOD OVERVIEW

Overview of Studies

In order to address these questions, I conducted two interrelated studies. Study 1 evaluated the first goal of this project and sought to understand the nature of parental identity itself, the degree of stability and change of parental identity over the life course, its relationship to other constructs (e.g., income, marital age), and the extent to which mean levels of parental identity were affected by a major life transition of becoming a parent. Study 2 evaluated the second goal of this project, and explored the moderating role of parental identity on individuals' responses to childbirth.

Each of these studies used data from large, nationally representative samples of German, British and Australian households. The German Socio-Economic Panel Study (GSOEP), the British Household Panel Survey (BHPS), and the Household, Income and Labour Dynamics in Australia Survey (HILDA) are large studies of individuals from Germany, Great Britain and Australia that span multiple decades and include large samples of people. One of the main advantages to using these data was that I was be able to examine these questions using large representative samples of people (over 50,000 in the GSOEP alone) from three distinct nations over multiple decades.

Overall Sample Characteristics

The data used in these studies was drawn from waves 1 through 27 of the GSOEP, waves 1 through 18 of the BHPS, and waves 1 through 10 of the HILDA. The GSOEP is a nationally representative study of German households that has been assessing households annually since 1984 (Haisken-DeNew & Frick, 2005). Households were selected using clustered multistage random sampling. Members of each selected household, 16 years of age and older, were

surveyed using face-to-face interviews. General household-related information was collected from the head of each household using a questionnaire. Initially, the GSOEP included individuals residing in West Germany, but was later expanded to include households in East Germany as well. Over the course of the study, there was some attrition and refreshment samples of households were added. Thus, many individuals did not participate in every wave of the GSOEP. Overall, the GSOEP includes data from over 50,000 individuals that participated in at least one wave of data collection.

The BHPS is a nationally representative study of households in Great Britain that has been assessing individuals annually since 1991 (Institute for Social and Economic Research, University of Essex, 2010; Taylor, Brice, Buck, & Prentice-Lane, 2009). The BHPS sampled households using a multistage clustered probability design and systematic sampling (Taylor et al., 2009). Members of each sampled household age 16 or over were asked to participate. As with the GSOEP, some attrition occurred in the BHPS sample and there were new subsamples of participating households added. As such, many respondents in the BHPS did not participate in every wave of data collection. Overall, the BHPS includes over 30,000 individuals that participated in at least one wave.

The HILDA is a nationally representative study of households in Australia which began in 2001(Summerfield et al., 2012). The HILDA sampled households using a probability design (see Summerfield et al., 2012 for more details). Members of each sampled household age 16 or over were invited to participate. Eligible members of selected households were asked to complete a face-to-face interview and a paper questionnaire. Overall, over 19,000 individuals participated in at least one wave of the HILDA.

STUDY 1

The goal of this first study was to evaluate the nature of parental identity and its correlates, its stability and change over time, and how it changes in response to becoming a parent.

Method

Sample Selection

To examine the characteristics of parental identity, I selected a sample of individuals from each study that responded to the parental identity item in at least one wave. These samples of people in the GSOEP, BHPS and HILDA served as the basis for all analyses in Study 1.

Measures

Parental identity. One of the biggest challenges to achieving the goals of this research was the lack of clarity regarding the assessment of parental identity. As the literature on parental identity is relatively small, there is not a clear set of well-validated, standard measures used to assess this construct. Past research has assessed parental identity using various instruments, ranging from multi-item scales assessing various theorized dimensions of parental identity (e.g., Maurer et al., 2001) to single-items assessing the importance of being a parent or having children (e.g., Martire et al., 2000). In each of the datasets used in this project, parental identity was assessed using a single-item, capturing this notion of importance.

In relation to other measures, these single item measures are narrow in scope. For instance, Maurer et al.'s *Caregiving and Breadwinning Identity and Reflected-Appraisals Inventory* is a 70-item measure that assesses importance of parenthood, but also captures evaluations and self-rated importance of various caregiving and breadwinning behaviors of respondents, their partners, and their beliefs about how partners see respondents in terms of their

caregiving and breadwinning roles. Maurer et al.'s measure offers researchers greater breadth in the features they may wish to evaluate when considering the causes and consequences of parental identity. Other measures like Thoits' (1992) role sorting task assessed relative importance of parental roles compared to other roles the respondent identified with and casts the importance of this role in relativistic terms. Thoits' measure captures and quantifies importance, which is theoretically congruent with the measure used in the current study, but operationalizes the idea of importance in a different way.

Although not much is known about the measurement of this construct, nor is there consensus as to the ideal way to assess it, the way parental identity has been *theoretically* defined in the literature is conceptually narrow – often simply characterized by the extent to which being a parent or having children is important to an individual's self image (e.g., Maurer et al., 2001). Further, the notion of importance is also an area of convergence in most existing measures of parental identity and is not only viewed as a core feature of each of these operationalizations of parental identity but many major theoretical frameworks of identity as well (e.g., Sellers, Smith, Shelton, Rowley, & Chavous, 1998). Thus, parental identity is likely to be captured reasonably well when assessed as the importance of parenthood or having children in this manner.

In the GSOEP, parental identity was measured using a single item that asked individuals to rate the importance of having children on a Likert scale ranging from 1 (*very important*) to 4 (*unimportant*), which I reverse coded so that higher numbers represent higher importance. This item was assessed at 5 waves of data collection (1990, 1992, 1995, 2004, and 2008).

In the BHPS, parental identity was measured with a single question that asked respondents to rate the importance of having children on a Likert scale ranging from 1 (*not important at all*) to 10 (*very important*). This item was assessed at 3 waves of data collection

(waves 8, 13, 18).

In the HILDA, parental identity was measured with a single item that asked respondents to rate the current importance of having children on a Likert scale ranging from 0 (*not at all important*) to 10 (*very important*). These items were administered only at wave 4 of the survey and administered only to individuals aged 15 to 29.

Demographic and other variables. The GSOEP, BHPS and HILDA each include questions at each wave assessing gender, marital status, education, income. BHPS and HILDA also include a question about number of children at each wave, whereas the GSOEP simply keeps a biographical datafile with total number of children in the family, and the birth year of youngest and oldest child. There are also variables in each study assessing various psychological characteristics including measures of personality and life satisfaction. Attitudes and values related to work and family are also assessed in certain waves of the BHPS and HILDA. Generally speaking, questions about basic demographics (e.g., marital status) are asked to all respondents and at every wave. Psychological characteristics and attitudes, however, are measured in some waves and not others.

Analytic Approach

The first step in these analyses was a descriptive analysis describing the correlates of parental identity to evaluate the association between parental identity and several important demographic and psychological constructs. As past research evaluating this construct is scant, little empirical work has explored the individual differences and characteristics of one's life that predict parental identity in great detail. Indeed, descriptive analyses identifying the important constructs that are part (and not part) of parental identity's nomological net is an important step to understanding parental identity, its causes, and its consequences. Thus, I evaluated the

association between parental identity and demographic characteristics such as gender, education, income, number of children, marital status, and age. I also evaluated the association between parental identity and some psychological variables, including Big Five personality traits, overall life satisfaction, and various measures of attitudes and values related to family, children, marriage and gender roles.

Covariation between parental identity and other constructs can be conceptualized in multiple ways. It can be conceptualized as a within-person effect – to what degree does a does a variable in question change as an individual's parental identity changes across the lifespan (e.g., does a person's life satisfaction change as their own parental identity changes?). Covariation can also be conceptualized as a between-person effect – what is the difference between people with different levels of parental identity (e.g., is there a difference in life satisfaction between people with different levels of parental identity?). This latter conceptualization is often operationalized as a cross-sectional bivariate correlation.

In order to take advantage of the longitudinal nature of these datasets, whenever possible I specified a series of regression models for each variable of interest that separated within-person and between-person effects. Such analyses account for the longitudinal structure of the data and allow one to estimate the unique contribution of within-person and between-person processes to an association between the variable in question and parental identity. Following this logic, each model specifies one variable as a function of within-person change in the other variable, between-person change in the other variable, an intercept parameter and error.

The main disadvantage to this approach is that there's no clear way to standardize regression coefficients and compare the magnitude of within-persons and between-persons effects. One way is to use within- and between-person standard deviations obtained from an

intercept-only model with random intercept effects for each variable being evaluated to estimate standardized effect size of the association between the two variables. For example, one can use the following formula to compute a standardized estimate of association similar to a correlation from the regression coefficient and the estimated standard deviations of the two variables:

standardized effect = regression coefficient *
$$(SD_X / SD_Y)$$

where X and Y are the variables being evaluated and the SDs used are the within-person SDs or between-person SDs (depending whether one is evaluating a within- or between-person effect). I applied this approach to each analyses where comparisons of within-person and between-person effects are made. Evaluation of variables where within-person effects are not meaningful (e.g., gender) or were not possible due to limited data availability (i.e., in HILDA where only one wave of parental identity was available), associations with parental identity were assessed with traditional correlational methods. Within- and between-person standard deviations estimated in this way are presented in Table 1.

Within- and between-person standard deviations.	
GSOEP	BHP

Table 1

	GSOEP		BHPS		HILDA
	Between-	Within-	Between-	Within-	Between-
	person SD				
Parental identity	0.666	0.596	2.293	1.709	3.702
Life satisfaction	1.201	1.353	0.884	0.900	1.481
Income/10,000	5.186	2.601	1.611	1.945	3.900

The next step was to evaluate the pattern of change in parental identity over the life course. To understand the association between age and parental identity, I first evaluated a regression model separating within-person and between-person linear effects of age. To account for the possibility that parental identity is characterized by a curvilinear trajectory over the life span, I also estimated a quadratic growth model, where within-person and between-person estimates of curvature in the trajectory of parental identity can be evaluated. Higher-order
models of change in parental identity (e.g., cubic models) were evaluated in an exploratory fashion. However, the added complexities of these models placed more demands on the data needed to estimate the models (Singer & Willet, 2003), and it was not possible to estimate these more complex models with these data.

The next major step of this analytic plan was to evaluate the degree to which parental identity changes in response to the birth of a child. The critical test of this question in these analyses involved comparing one's levels of parental identity after the birth of a child to parental identity levels before the experience of birth (see Lucas, 2007a). Models that allow for this within-person comparison can test whether a particular event or experience is associated with change in parental identity. For instance, if one found evidence that parental identity levels prior to the birth of a child were similar to parental identity levels in the years that followed the birth, then one could conclude that birth did not elicit growth or decline in parental identity. Alternatively, if one observed significant increases in parental identity in the years surrounding birth compared to pre-birth levels, and these increases persisted in the years that followed birth, then one could take this as evidence that the birth of a child was associated with lasting increases in parental identity.

There are multiple ways one could model these changes in parental identity. In ideal circumstances, one could try to capture changes in parental identity using non-linear models that estimate a baseline level of parental identity before an event followed by gradual, curvilinear change in parental identity, eventually leading to a new stable asymptote level following the major life transition being evaluated (see Yap et al., 2012). However, these types of models require large amounts of data to accurately estimate the two asymptotic parameters in this model (i.e., baseline and long term adaptation). Given that I had limited numbers of waves where

parental identity was assessed (five at most in the GSOEP), it was necessary in these data to test theoretically simpler models. Simpler models, like those used in past research evaluating how subjective well-being is affected by major life events (see Lucas 2007a for review) may be less precise in describing the trajectory of parental identity over time, but are easier to estimate while still offering an adequate description of the data.

As such, following models used in past research (Lucas, 2007a), I simplified these nonlinear models by dividing the time surrounding the experience of childbirth into three distinct periods. The *baseline period* reflects the years before birth of the first child, the *reaction period* reflects the years around the time of childbirth, and the *adaptation period* reflects the years following childbirth. Such models are often referred to as *reaction-adaptation models* because they simply capture average levels of parental identity before, during, and after the experience of an event, they are advantageous due to their relative ease of interpretation and estimation. These models are especially accurate if the change in parental identity following the event being evaluated occurs quickly. However, if the change in parental identity happens more gradually in the years before and after the event being evaluated, then the accuracy of these reactionadaptation models in describing patterns of change in parental identity is compromised.

In these reaction-adaptation models, parental identity was modeled as a function of an overall intercept (which reflects the average baseline level of parental identity), a reaction parameter (which reflects average change from baseline during the reaction period), and an adaptation parameter (which reflects average change from baseline during the adaptation period). Following past research (e.g., Lucas, 2007a; Lucas et al., 2003), I defined the reaction period as the year before the event, the year of the event and the year after the event. The baseline period was defined as the period before the reaction period and the adaptation period was defined as the

period after the reaction period in all models.

To estimate these models, dummy variables were created at the within-person level and coded for each time period in this model. The reaction dummy variable was coded as 1 in the year before, the year of, and the year after birth, and 0 for all other years. The adaptation dummy variable was coded as 1 for all years that were at least 2 years following birth, and 0 in all other years. I included estimates of random effects where possible to allow for between-person variability in the baseline, reaction and adaptation parameters.

Once I estimated the overall pattern of change in parental identity in the years that surround the birth of a child using the reaction-adaptation model, I proceeded to evaluate whether gender, age, marital status and income can meaningfully explain variability in people's response in parental identity to the birth of a child. These questions are important because they can help us understand and identify which characteristics predict individual differences in the trajectory of parental identity, individual differences in how it changes in response to life events, and the factors that underlie the development of this construct over time. For example, although it is clearly not necessary for individuals to be married to have children, marital status may be important to parental identity because establishing long-term romantic partnerships with others often precedes having children (e.g., Bumpass & Lu, 2000) and the experience of marriage (at least in Western society) is often associated with a transition to a new life stage where the possibility of having children becomes more salient (e.g., Erikson, 1950). Further, one's decisions about parenting and child rearing are often made in conjunction with a partner – and establishing a long-term partnership with another individual could predict differences in how parental identity changes in response to becoming a parent as a result of this process.

To evaluate the moderating effect of these demographic variables, a new reaction-

adaptation model was specified in each dataset for each of the four moderators. Each new model included parameters estimating moderating effects on each time period in the model (i.e., baseline, reaction, adaptation).

Modeling normative changes. One disadvantage of within-person designs such as the reaction-adaptation model is that they confound changes that can be attributed to an event with normative, age related changes that may have been observed even if the event had not occurred. For instance, finding that parental identity scores increased following childbirth may indicate that parental identity changes in response to the onset of parenthood, but it also could reflect a normative, developmental increase as one ages, which would have been observed even if individuals did not ultimately have children. Thus, although these within-person models can help us understand trajectories of parental identity before and after major life transitions such as the birth of a child, they confound change due to the experience of life events with change due to other developmental processes. It is important to account for this analytically.

In order to evaluate whether respondents have higher or lower parental identity after the experience of childbirth than they would have had if they did not experience the event, one needs to separate changes in parental identity due to the experience of childbirth from normative changes that would have happened in the absence of the birth. As such, my next set of analyses included a matched control group of people who did not become parents during the study to estimate this normative change (which should occur in both event and non-event groups). The matched controls of non-parents were selected to be similar to parents in ways that are potentially relevant to parenthood. Specifically, I selected people who reported having no children throughout the duration of the study, and used propensity score matching (Gelman & Hill, 2009) to match individual control participants to the target childbirth group on important

demographic characteristics at the start of the study. This procedure involves generating a propensity score for each person in the sample using a logistic regression model. First, I specified a model that predicts the occurrence of childbirth (using a variable coding the childbirth group as 1 and the control group as 0) from their gender, age, age squared, marital status, education, household income, and the initial parental identity level. This model results in a propensity score for each individual that reflects the probability that a given individual (with a particular set of demographic characteristics) will experience childbirth while in the study. The matching function of the arm package (Gelman et al., 2011) in R software (R Development Core Team, 2010) was used to match each individual in the childbirth group to a corresponding individual in the control group with the closest propensity score. The goal of this procedure is to create two groups that are, on average, similar on the important demographic characteristics used in matching, and differ only in whether or not they experienced childbirth.

Following this, I estimated the reaction-adaptation models again, but this time in addition to the people who experienced childbirth, these models also included matched comparison groups in each dataset. These statistical models will include an additional parameter for both event and control groups estimating a linear trajectory for parental identity to account for time related changes that are not due to the experience of the event. This yearly change parameter will be estimated using the number of years the participant has been in the study as the time variable. To do this, I included a time variable that is set to zero in the first year in which the individual was in the study and increases by one in each subsequent year. These models will also include a group effect parameter which will reflect pre-existing differences between people in each event group and those in each respective control group. This will be estimated with a dummy variable coded as 0 for people in the event group (i.e., parents) and 1 for people in the control group (i.e.,

non-parents). As such, parental identity will be modeled as a function of the intercept (which reflects the average parental identity of parents in the first year of participation in this study), the group effect (initial difference in parental identity between parents and non-parents), the linear trend in parental identity (i.e., normative changes in identity that exist in both groups), a reaction parameter (change from the linear year trend in parental identity for the parent group in the years around childbirth) and an adaptation parameter (change from the linear tread in the years that follow in the parent group). Reaction and adaptation periods in these models will be defined the same way as in the traditional reaction-adaptation models described earlier using dummy codes where the reaction period is coded as 1 in the years that follow the reaction period. For the non-parent control group, these will be set to 0 in all years.

Summary of Study 1

Overall, Study 1 makes several important contributions to the scientific understanding of the psychological implications of parenthood. This study will allow researchers to gain a better understanding the nature of parental identity, the degree of stability and change of parental identity over the life course, the extent to which mean levels of parental identity are affected by the major life transition of becoming a parent.

Results

Sample Characteristics

GSOEP. In total, N = 32,028 people completed at least one wave of parental identity. Of these participants, 52% identified as female and 48% identified as male. N = 2,681 completed all 5 waves. The mean age at time of survey was 46.3 years (SD = 17.5 years; Range = 16-99 years). On average, participants completed 2.2 waves of parental identity.

BHPS. In total, N = 20,457 people completed at least one wave of parental identity. Of these participants, 54% identified as female and 46% identified as male. N = 5,296 completed all three waves. The mean age at time of survey was 46.1 years (SD = 18.8 years; Range = 16-99 years). On average, participants completed 1.8 waves of parental identity.

HILDA. Parental identity was measured only in wave 4 of the HILDA, and was only asked of participants 15-29 years of age. In total, N = 3,058 people completed parental identity in wave 4. Of these participants, 51% identified as female and 49% identified as male. The mean age at time of survey was 21.5 years (*SD* = 4.3 years; *Range* = 15-29 years). Thus, the GSOEP and BHPS samples were very similar in basic demographic characteristics, whereas the HILDA sample was substantially younger.

Correlates of Parental Identity

First, I evaluated the association between some basic demographic constructs that are associated with parental identity. As discussed previously, very little research has evaluated this construct and how it relates to basic demographic variables and understanding the characteristics of one's life that predict parental identity is important to understanding this construct and its implications.

Gender. In order to evaluate gender differences in parental identity, I computed an overall parental identity score for each person, which was an aggregate of all available waves of parental identity information. The results were quite consistent across the three studies. In the GSOEP, women reported higher parental identity than men (3.27 vs. 3.08; t (32,026) = 20.46, p < .05 d = 0.23 (95% CI = 0.21, 0.25)). In the BHPS, women also reported higher parental identity that men (7.95 vs. 7.24; t (20,454) = 18.76, p < .05 d = 0.26 (95% CI = 0.24, 0.29)). Similar results were observed in the HILDA, with women rating parental identity higher than

men (4.21 vs. 3.46; t (3,056) = 5.66, p < .05 d = 0.20 (95% CI = 0.13, 0.28)). Taken as a whole, there is evidence that in general, women experience higher parental identity than men. Data suggest that this gender difference is relatively small, but consistent in both size and direction across three distinct nationally representative samples, with Cohen ds ranging from .20 to .26.

Marital status. Figure 1 shows a simple plot of parental identity by marital status in the GSOEP, BHPS, and HILDA. I separated within- and between-person effects of marital status in the GSOEP and the BHPS because there were multiple waves of parental identity and people's marital status could change over these waves. Because the HILDA included only one wave of parental identity, within-person effects could not be assessed in this dataset. To estimate between-person effects in the GSOEP and BHPS, I used marital status in the first year in which parental identity was reported. To estimate within-person effects I included marital status at each wave for each person. I also allowed for random effects in the intercept. Dummy variables were used to represent marital status categories, with the 'Married' category used as the reference in all analyses. Results from the analysis of GSOEP data can be seen in Table 2. Married individuals reported higher parental identity than all other groups when evaluating between- and within-person differences. Table 2 also reports the model estimates in units of standard deviations, for comparison purposes.

An interesting finding is that within-person changes associated with going from singlemarried are larger than corresponding between-person differences. One explanation for this may be that overall age differences between the group of single and married people were larger than within-person changes in age as people go from single to married. Indeed, the data showed that married people were typically older than single people (mean age for single individuals = 26.1, for married = 48.5). To test the possibility that this is the reason for differences in sizes of

within- and between-person effects I included age in the model, modeling both within- and between- person age effects. For between-person age effects I used age at first wave in which parental identity was reported, and which I centered around the grand mean. For within-person age effects I used age reported at each wave and centered around age at the first wave for each person. I also include quadratic age terms at both within-and between-person level. The estimates of model that adjusted for age can be seen in the last column of Table 2. Although the difference between within- and between-person effects of single vs. married status were reduced, they still persisted suggesting that factors other than age are responsible.

Figure 1 Overall means in parental identity across marital status categories in the three samples.



Note: Error bars represent 95% bootstrapped confidence intervals around the mean.

					SD of PI
				SD of	(adjusted
	Estimate	SE	t	PI	for age)
Intercept	3.450*	0.005	643.6		
Between-person					
Single	-0.132*	0.016	-8.2	198*	480*
Separated	-0.231*	0.037	-6.3	347*	393*
Divorced	-0.181*	0.025	-7.2	272*	282*
Widowed	-0.195*	0.029	-6.8	293*	177*
Within-person					
Single	-0.636*	0.015	-42.9	-1.067*	-1.086*
Separated	-0.174*	0.025	-7.1	292*	285*
Divorced	-0.247*	0.020	-12.6	404*	394*
Widowed	-0.126*	0.023	-5.6	211*	107*

Results of the model evaluating associations between marital status and parental identity in the GSOEP.

Note: * *p* < .05.

Table 2

Results from the analysis of BHPS data can be seen in Table 3. As in the GSOEP, the largest differences were seen between single and married groups both at the within- and the between-person level, with larger differences occurring at the within-person level. Adjusting for age diminished difference between within- and between-person effects of comparison between single and married individuals, but it did not eliminate it. Differences between other marital status groups were typically smaller than those in the GSOEP and less consistent across within- and between-person level.

Results from the analysis of HILDA data can be seen in Table 4. As in the other two datasets, married individuals report higher parental identity than individuals that were never married. The married group also reported higher parental identity than those in common-law partnerships, a difference that was seen at the within-person but not the between-person level of the BHPS. As in the GSOEP and the BHPS, those that were divorced reported lower parental identity than married individuals, however caution should be taken in weighing this finding too heavily as only 7 people were divorced in this sample.

					SD of PI
				SD of	(adjusted
	Estimate	SE	t	PI	for age)
Intercept	8.487*	0.025	342.2		
Between-person					
Never married	-0.753*	0.074	-10.2	-0.328*	-0.633*
Common law	0.149	0.623	0.2	0.065	0.030
Separated	0.008	0.153	0.1	0.003	-0.030
Divorced	-0.378*	0.097	-3.9	-0.165*	-0.135*
Widowed	-0.008	0.121	-0.1	0.003	0.135*
Within-person					
Single	-1.595*	0.068	-23.5	-0.933*	-0.858*
Common law	-0.864*	0.261	-3.3	-0.506*	-0.544*
Separated	-0.197	0.113	-1.8	-0.115	-0.115
Divorced	-0.252*	0.080	-3.2	-0.147*	-0.180*
Widowed	-0.069	0.102	-0.7	-0.040	-0.072

Results of the model evaluating associations between marital status and parental identity in the BHPS.

Note: * *p* < .05.

Table 4

Table 3

Results of the model evaluating associations between marital status and parental identity in the HILDA.

					SD of PI
				SD of	(adjusted
	Estimate	SE	t	PI	for age)
Intercept	8.010*	0.159	50.4		
Never married	-5.462*	0.173	-31.6	-1.475*	-1.197*
Common law	-2.265*	0.207	-11.0	-0.612*	-0.508*
Separated	-2.972	0.632	-4.7	-0.803*	-0.829*
Divorced	-3.868	1.189	-3.3	-1.045*	-1.092*
Note: $* n < 05$					

Note: * *p* < .05.

When all three sets of results are taken as a whole, we see consistent evidence that marriage is associated with higher parental identity than other marital status groups, particularly in comparisons to singlehood and divorce. Moreover, these effects persist even when age is included in each model to account for the possibility of these effects being the result of age related changes, suggesting that there are factors other than age that are responsible for the observed differences in parental identity across marital status categories.

Education. Figure 2 shows a simple plot of parental identity by education level in the GSOEP, BHPS, and HILDA. Because the HILDA included only one wave of parental identity, within-person effects of education could not be assessed in this dataset, but was assessed in the GSOEP and BHPS. To evaluate between-person effects in the GSOEP and BHPS, I used education level in the first year of participation. In the final model I controlled for age in the same way as described in the marital status analyses section. Education was operationalized using a different categorical variable (see Figure 2) in each dataset, however the order in which they are presented can be interpreted to range from less education to more education. As a result, direct comparisons of these results cannot be made across samples. In each dataset, the most common educational level completed was used as a reference category. For the GSOEP, the reference category was 'Middle vocational'. In the BHPS 'Low secondary-vocational' was used. In the HILDA, 'Year 11 or below' was used as the reference category. Results from the analysis of GSOEP data are presented in Table 5, BHPS results are shown in Table 6, and HILDA results are shown in Table 7.



Overall means in parental identity across educational achievement categories in the three samples.



Note: Error bars represent 95% bootstrapped confidence intervals around the mean.

					SD of PI
					(adjusted
	Estimate	SE	t	SD of PI	for age)
Intercept	3.213*	0.006	496.9		
Between-person					
In school	-0.350*	0.032	-10.9	-0.526*	-0.146*
No education completed	-0.025	0.051	-0.5	-0.038	0.087
General elementary	-0.006	0.018	-0.4	-0.009	0.117*
Vocational plus abi	-0.056	0.033	-1.7	-0.084	-0.062
Higher vocational	0.013	0.028	0.5	0.020	-0.038
Higher education	-0.054*	0.026	-2.0	-0.081*	-0.131*
Within-person					
In school	-0.189*	0.030	-6.2	-0.317*	-0.216*
No education completed	-0.174*	0.045	-3.9	-0.292*	-0.329*
General elementary	-0.118*	0.015	-7.8	-0.198*	-0.221*
Vocational plus abi	0.057*	0.027	2.1	0.096*	0.096*
Higher vocational	0.090*	0.022	4.1	0.151*	0.151*
Higher education	0.157*	0.024	6.6	0.263*	0.237*

Table 5Results of the model evaluating associations between education level and parental identity in theGSOEP.

Note: * *p* < .05

Table 6

Results of the model evaluating associations between education level and parental identity in the BHPS.

					SD of PI
				SD of	(adjusted
	Estimate	SE	t	PI	for age)
Intercept	7.643*	0.034	224.74		
Between-person					
No education completed	-0.194	0.241	-0.80	-0.085	0.078
Primary	0.514*	0.193	2.67	0.224*	0.090
Low secondary	0.715	0.698	1.02	0.312	0.101
Hisec-mivoc	-0.428*	0.135	-3.18	-0.187*	-0.111
Higher voc	0.110	0.181	0.61	0.048	-0.088
First degree	-0.207	0.151	-1.37	-0.090	-0.143*
Higher degree	-0.548*	0.270	-2.03	-0.239*	-0.278*
Within-person					
No education completed	-0.478*	0.220	-2.17	-0.280*	-0.225
Primary	-0.218	0.189	-1.15	-0.128	-0.112
Low secondary	-0.474	0.687	-0.69	-0.277	-0.081
Hisec-mivoc	-0.036	0.126	-0.29	-0.021	0.019

Table 6 (cont'd)

Higher voc	-0.017	0.176	-0.10	-0.010	0.026
First degree	0.064	0.136	0.47	0.037	0.035
Higher degree	0.348	0.239	1.46	0.204	0.122

Note: * p < .05

Table 7

Results of the model evaluating associations between education level and parental identity in the HILDA.

					SD of PI
				SD of	(adjusted
	Estimate	SE	t	PI	for age)
Intercept	2.937*	0.107	27.42		
Year 12	0.853*	0.163	5.22	0.230*	-0.085*
Cert not defined	4.813*	1.809	2.66	1.300*	1.044*
Cert I/II	1.686*	0.549	3.07	0.455*	0.139
Cert III/IV	2.151*	0.204	10.56	0.581*	0.026
Diploma	2.014*	0.321	6.27	0.544*	-0.176*
Bachelors/honours	1.597*	0.216	7.40	0.431*	-0.272*
Graduate	2.234*	0.538	4.16	0.603*	-0.263
Postgraduate	1.382	0.777	1.78	0.373	-0.527*

Note: * *p* < .05

Taken together, these analyses do not offer strong evidence that education level is associated with parental identity. In the GSOEP, there appears to be a slight within-person trend toward increased parental identity at as people move towards higher levels of education (in comparison to middle vocational as a reference point). This trend persists even when the effects of age are taken into account. However, this pattern was not observed in the BHPS – once age was taken into account, none of the within-person effects reached significance. Results were also inconsistent in the HILDA, and initial analysis suggests that people with more than 11 years of education have higher parental identity than those with fewer years, but after controlling for age the direction of these effects switches for those with higher education levels). Indeed, across three datasets an inconsistent picture emerges regarding the association between education and parental identity, and further work would be needed before conclusions could be made about an association between these constructs.

Income. Because household income range was much larger than that of parental identity I transformed the income variable by dividing it by 10,000 in each of the datasets. I then created a model that evaluated between- and within-person effects of income on parental identity. To model between-person effects I first took the mean of income across waves for each person and centered these scores about the grand mean. For within-person effects I used reported income at each wave centered about the individual's mean taken across waves. Thus, the intercept in this model can be interpreted as average parental identity for a person of average income at the time that their income is at their average. Between-person effects can be interpreted as difference in parental identity between individuals who differ in income by 10,000 monetary units (Euros in the GSOEP, British pounds in the BHPS, Australian dollars in the HILDA). Within-person effects can be interpreted as changes in parental identity for each 10,000 monetary units change in income. Standardized estimates were obtained by using appropriate person-level standard deviations (see Table 1) and are conceptually similar to correlations. Model results evaluating the association between income and parental identity in the GSOEP and the BHPS are shown in Table 8. Because the HILDA did not have a longitudinal component I used the Pearson correlation between income and parental identity, r = -.063, p < .05. Because of the skewed nature of income I evaluated both raw income scores and log transformed scores in these models. Results showed minimal differences when raw scores or transformed scores were used, so estimates using raw scores are reported for ease of interpretation. Overall, across all three national samples, results indicated that association between income and parental identity are extremely low (i.e., smaller than .1). Thus, there is no strong evidence here that income is

associated with parental identity.

Model results predicting parental identity from income in the GSOEP and the BHPS.										
			BHPS							
				Std.				Std.		
	Estimate	SE	t	estimate	Estimate	SE	t	estimate		
Intercept	3.189*	0.004	712.9	-	7.643 *	0.019	407.9	-		
Between-person	0.001	0.001	0.7	.008	0.022*	0.008	2.6	.015*		
Within-person	0.002	0.001	1.3	.009	0.025*	0.007	3.6	.028*		

Table 8

Model results predicting parental identity from income in the GSOEP and the BHPS

Note: * p < .05.

Number of children. Table 9 displays number of participants reporting each number of children at each wave where parental identity is assessed in the BHPS and HILDA.¹ For BHPS I used number of children in the first wave of participation to model between-person effects, and the reported number of children at each wave for within-person effects. These variables were not centered because the natural zero in this case lends to an interpretable intercept (i.e., parental identity for people with no children). Model estimates are differences in parental identity that are observed for each additional child. Results of the model evaluating the association between number of children and parental identity are shown in Tables 10 and 11. Standardized estimates were obtained by dividing the model estimate by the within- or between-person standard deviation of parental identity and it represents the difference in parental identity for each additional child in units of standard deviations. Plot of parental identity vs. number of children also suggested a quadratic trend (see Figure 3), leading me to also evaluate a quadratic model. Results in the BHPS revealed significant linear and quadratic effects at both the within-person and between-person levels (where number of children at the first wave in the study was used as the between-person variable) indicating that parental identity increases as individuals go from childlessness to one child, and levels off once people have more than two children. Inspection of

¹ Wave-to-wave information about number of children was not available in the GSOEP.

Figure 3 shows that the quadratic model fits the data well, particularly where more data are available (i.e., number of children <6).

Number of <i>j</i>	people r	eporting	each n	umber of	childre	en in the	внрз а	nd the F	IILDA.
	0	1	2	3	4	5	6	7	8
BHPS									
Wave 8	7,464	1,263	1,172	458	92	13	12	4	2
Wave 13	9,043	1,500	1,499	450	83	11	6	0	0
Wave 18	9,776	1,636	1,451	463	86	22	1	2	2
HILDA									
Wave 4	2,138	231	133	29	8	5	1	1	0

Table 9Number of people reporting each number of children in the BHPS and the HILDA.





Notes: Points represent raw means obtained from the data. Error bars represent 95% bootstrapped confidence intervals around the mean. Solid gray line shows model estimated parental identity from the quadratic model.

		Line	ar		Quadratic			
				SD of				SD of
	Estimate	SE	t	PI	Estimate	SE	t	PI
Intercept	7.240*	0.020	354.4		7.162*	0.021	345.0	
Between-person								
Number of kids	0.394*	0.026	14.9	0.172*	0.770*	0.058	13.3	0.336*
Number of	-	-	-					
kids ²					-0.131*	0.018	-7.2	-0.057*
Within-person								
Number of kids	0.437*	0.021	20.7	0.256*	0.794*	0.045	17.6	0.465*
Number of	-	-	-					
kids ²					-0.126*	0.014	-8.9	-0.074*
<i>Note:</i> * <i>p</i> < .05.								

Table 10Model results evaluating association between number of kids and parental identity in the BHPS.

Table 11 Model results evaluating association between number of kids and parental identity in the HILDA.

	Linear				Quadratic				
				SD of					SD of
	Estimate	SE	t	PI		Estimate	SE	t	PI
Intercept	3.585*	0.075	47.9			3.446*	0.074	46.4	
Number of kids	1.619*	0.102	15.8	0.437*		3.595*	0.206	17.4	0.971*
Number of kids ²	-	-	-			-0.689*	0.063	-11.0	-0.186*

Note: * *p* < .05.

Analyses of the HILDA data also revealed significant linear and quadratic effects at the between-person level (estimates of within-person effects were not possible given the lack of longitudinal parental identity data), indicating that parental identity was positively associated with number of children, however the estimates of quadratic effects in the HILDA is less meaningful in this analysis due to the fact that very few participants had more than two children in this sample (see Table 8). Overall, we see clear, consistent evidence in both datasets that those with children report higher parental identity than those without children, and there is some evidence that parental identity levels off once individuals have multiple children.

	Wave	Wave	Wave
	8	13	18
Pre-school child is likely to suffer if his or her mother works.	-	.16*	-
All in all, family life suffers when the woman has a full-time job.	-	.07*	-
A woman and her family would all be happier if she goes out to			
work.	-	04*	-
Both the husband and wife should contribute to the household			
income.	-	03*	-
Having a fulltime job is the best way for a woman to be an			
independent person.	-	.01	-
A husband's job is to earn money; a wife's job is to look after home			
and family.	-	.11*	-
Children need a father to be as closely involved in their upbringing			
as the mother.	-	.10*	-
Employers should make special arrangements to help mothers			
combine jobs and childcare.	-	07*	-
A single parent can bring up children as well as a couple.	-	21*	-
Adult children have an obligation to look after their elderly parents.	.15*	-	.14*
It is better to divorce than to continue an unhappy marriage.	06*	-	11*
It is alright for people to live together even if they have no interest in			
considering marriage.	.01	-	01
When there are children in the family, parents should stay together			
even if they don't get along.	.18*	-	.23*
It makes no difference to children whether their parents are married			
to each other or just living together.	03*	-	05*
Homosexual relationships are always wrong.	.17*	-	.21*
<i>Note:</i> * <i>p</i> < .05.			

Table 12Correlations of parental identity and values and attitudes in the BHPS.

Attitudes and values. Measures of attitudes and values were available in the BHPS and the HILDA. However, in the BHPS not all variables were assessed at each wave. To evaluate relationships with parental identity I used measures that were available in the same waves at which parental identity was assessed. Namely, some of the variables were assessed at waves 8 and 18, and some at wave 13 (see Table 12). As Table 12 shows, correlations tended to be close to zero and were greater than .2 in magnitude in only 3 cases (single parents good, parents stay together, gay wrong). However, there was a general pattern of parental identity being positively associated with endorsement of some items that represent stereotypically 'traditional' values (e.g., Pre-school child is likely to suffer if his or her mother works) and negatively associated with less traditional values (e.g., A single parent can bring up children as well as a couple), although these correlations were small in magnitude.

Another relevant item that was available during all three waves at which parental identity was assessed in the BHPS asked parents "Who is mainly responsible for looking after the child(ren)?". Response options were "Mainly you", "Mainly your husband/wife/partner", "Jointly with your husband/wife/partner", or "Someone else". To evaluate how parental identity was related to provision of childcare I compared the means of parental identity across the response categories. Table 13 shows these means and the overall ANOVA tests that showed that means differed across the response categories. I followed these analyses with multiple t-tests comparing each of the response categories with each other and applied the Bonferroni correction to account for multiple comparisons. As the table shows, the main consistent finding was that parents who are mainly responsible for childcare reported higher parental identity than parents whose partners primarily care for the children.

Table 13

	Wave	Wave	Wave
	8	13	18
Means			
Mainly respondent	9.18 ^a	9.15 ^a	9.43 ^a
Mainly partner	8.77 ^b	8.84^{b}	9.02 ^b
Joint with partner	8.83 ^b	8.98 ^{a, b}	9.29 ^a
Someone else	8.24 ^b	8.28 ^b	8.66 ^b
Overall ANOVA test			
F	10.04*	7.96*	15.12*
$d\!f$	3, 2,250	3, 2,670	3, 2,753

Means of parental identity across responses to the question of who is primarily responsible for care of the child(ren).

Notes: * p < .05. Same superscripts indicate no significant difference between groups based on t-tests and after applying Bonferroni correction for multiple comparisons.

In the HILDA, attitudes and values items were assessed at waves 5 and 8. I used the

average score taken across these two waves and correlated them with parental identity measured at wave 4. These correlations are shown in Table 14, as are the test-retest correlations between the attitudes and values items at waves 5 and 8. As in the BHPS, correlations tended to be close to zero, with only two items exceeding .2 in magnitude ("Whatever career a woman may have, her most important role in life is still that of being a mother" and "Whatever career a man may have, his most important role in life is still that of being a father."). However, taken together, analyses of two large datasets reveal that parental identity is not strongly related to measures of attitudes and values that concern family issues.

Table 14

Correlations of parental identity and values and attitudes in the HILDA.

		Test-
	r	retest
Whatever career a woman may have, her most important role in life is still		
that of being a mother	.20*	.45*
Whatever career a man may have, his most important role in life is still that		
of being a father	.20*	.43*
Mothers who don't really need the money shouldn't work	.13*	.42*
As long as the care is good, it is fine for children under 3 years of age to be		
placed in child care all day for 5 days a week	09*	.42*
A working mother can establish just as good a relationship with her		
children as a mother who does not work for pay	08*	.41*
It is better for everyone involved if the man earns the money and the		
woman takes care of the home and children	.07*	.52*
If parents divorce it is usually better for the child to stay with the mother		
than with the father	.05*	.41*
A working father can establish just as good a relationship with his children		
as a father who does not work for pay	04*	.34*
Many working mothers seem to care more about being successful at work		
than meeting the needs of their children	.04*	.34*
A pre-school child is likely to suffer if his/her mother works full-time	.03	.41*
Many working fathers seem to care more about being successful at work		
than meeting the needs of their children	03	.31*
If both partners in a couple work, they should share equally in the		
housework and care of children	.02	.39*
A father should be as heavily involved in the care of his children as the		
mother	02	.36*
Children often suffer because their fathers concentrate too much on their		
work	.02	.38*

Table 14 (cont'd)

On the whole, men make better political leaders than women do	01	.50*
It is not good for a relationship if the woman earns more than the man	01	.35*
Children do just as well if the mother earns the money and the father cares		
for the home and the children	.00	.44*
Notes: $* n < 05$ Test notest completions are between attitudes and values its	mag of who	was 5 and

Notes: * p < .05. Test-retest correlations are between attitudes and values items at waves 5 and 8.

Personality. Correlations between parental identity and measures of Big Five Personality

traits and parental identity in the GSOEP, BHPS and HILDA are shown in Table 15. In the

GSOEP, personality was measured at waves 22 & 26. In the BHPS, it was assessed at wave 15,

and in the HILDA at wave 5. To simplify presentation of results I averaged all available waves of

parental identity, averaged all available waves (if there were multiple waves available) of

personality, and correlated these two scores. The correlations are shown in Table 15.

Table 15

Correlations between parental identity (averaged across waves) and the Big Five (averaged across waves when assessed in more than one wave).

	GSOEP	BHPS	HILDA
Neuroticism	.050*	.015	012
Extraversion	.053*	.037*	013
Openness to experience	.017*	032*	093*
Agreeableness	.148*	.119*	.078*
Conscientiousness	.162*	.100*	.131*

Note: * *p* < .05.

The results were fairly consistent across datasets. Correlations were close to zero between parental identity and Neuroticism, Extraversion, and Openness, and somewhat higher, but still smaller than .2 for Agreeableness and Conscientiousness in all three samples. Overall, results do not suggest robust evidence that parental identity is strongly linked to the Big Five traits.

Life satisfaction. Both life satisfaction and parental identity were assessed longitudinally in the GSOEP and the BHPS, and I was able to use the model that separated within- and between-person associations between the two variables in these two datasets. The models

predicted life satisfaction from parental identity. At the between-person level I first took the mean of parental identity for each person across all available waves and centered this score about the grand mean. At the within-person level I used parental identity scores at each wave and centered them about each person's mean parental identity score. I also allowed for random variation in the intercept in both datasets. Table 16 shows the results of these models. As specified, the intercept can be interpreted as life satisfaction level for people of average parental identity level, and regression coefficients can be interpreted as change in life satisfaction for each unit change in parental identity. I also provide standardized estimates that were obtained by using appropriate standardized deviations of both variables, and can be interpreted as a correlation (i.e., change in life satisfaction in units of standard deviations for each standard deviation change in parental identity and life satisfaction are significant, but relatively small in the GSOEP and BHPS. Further, in both GSOEP and BHPS data, the association between parental identity and life satisfaction is slightly higher at the between-person level than at the within-person level.

Table 16

|--|

	GSOEP				BHPS			
				Std.				Std.
	Estimate	SE	t	estimate	Estimate	SE	t	estimate
Intercept	6.929*	0.009	797.5	-	5.262 *	0.008	650.3	-
Between-person	0.168*	0.011	15.5	0.093*	0.031*	0.003	10.2	0.080*
Within-person	0.108*	0.013	8.5	0.048*	0.016*	0.004	3.7	0.030*
$N_{atal} * n < 05$								

Note: * *p* < .05.

In the HILDA, life satisfaction was also assessed in the wave in which parental identity was assessed and so I used the Pearson correlation, which was r = .041 (p < .05). Overall, these results indicate that there is a consistent, but weak positive association between parental identity and life satisfaction. Life satisfaction tends to be higher in people with higher average levels of

parental identity and appears to increase as individuals' experience parental identity increases.

Parental Identity and its Pattern of Change across the Lifespan

One of the central goals of this study was to gain a better understanding of the nature of parental identity itself, the degree of stability and change of parental identity over the life course. To gain a better understanding of this, I first evaluated the interwave correlations of parental identity within the GSOEP and BHPS². Correlations across time within each dataset are shown in Tables 17 and 18. As these tables show, test-retest correlations across time are relatively strong across datasets, and range between .41-.66. Notably, the retest correlations remain above .40 even over relatively long periods of time across each dataset (e.g., r = .61 across a 10 year retest interval in the BHPS). These correlations suggest that there is stability across time in individuals' reports of parental identity across time, and that stability of parental identity across time may be comparable with established similar measures of other important psychological constructs.

Test-retest of	correlation	s of parent	al identity a	icross waves in
	Wave 7	Wave 9	Wave 12	Wave 21
Wave 9	.61*	-		
Wave 12	.54*	.58*	-	
Wave 21	.45*	.46*	.50*	-
Wave 25	.41*	.44*	.46*	.61*
<i>Note:</i> * <i>p</i> <	.05.			

Table 17Test-retest correlations of parental identity across waves in the GSOEP.

Table 18<u>Test-retest correlations of parental identity across waves in the BHPS.</u>Wave 8Wave 13Wave 18

Wave 13	.64*	-	
Wave 18	.61*	.66*	-
<i>Note:</i> * <i>p</i> < .	.05.		

Next, I evaluated the trajectory of parental identity across the lifespan separately in the GSOEP, BHPS and HILDA. The aim here was to gain a better understanding of how parental

² HILDA was not included here because this dataset only included parental identity in a single wave.

identity changes across the lifespan. First, I plotted the average level of parental identity across age in each sample (see Figure 4). Visual inspection of the plots suggests that parental identity follows a curvilinear (quadratic) trend in the GSOEP and the BHPS. I proceeded with attempts to fit a model separating the within- and between-effects for age (including quadratic age terms) in the GSOEP and BHPS. In these datasets, for the between-person variables I used mean age for each person that was also grand-mean centered. For the within-person variables I used age at each wave centered around personal mean. I also divided age by 10 because regression coefficients were otherwise too small, and so the unit of age in the regression was a decade. Thus, the regression included a grand-mean centered personal mean (and its quadratic term), and wave-specific age centered around personal mean (and its quadratic term) as well as the random intercept to allow for any additional variation in parental identity across individuals. As such, the intercept in these analyses can be interpreted as parental identity for a person of average age, the between-person regression estimate is the difference in parental identity between people who are 10 years apart in age, and a within-person estimate is the change in parental identity for each decade that a person gets older. The standardized estimates are differences in parental identity in units of standard deviation for each 10-year change in age. These results can be seen in Table 19 (for GSOEP) and Table 20 (for BHPS). Table 21 shows the model results for HILDA, which included only one wave of parental identity, and thus did not include within-person effects. Rather, the regression included a centered age variable and its quadratic term.

Figure 4 Parental identity across the lifespan in the three datasets.



Notes: Points are raw means obtained from the data. Gray lines are model predictions of parental identity from the quadratic models for GSOEP and BHPS and the linear model for HILDA.

			0		~			
		Linear			Quadratic			
	Estimate	SE	t	SD PI	Estimate	SE	t	SD PI
Intercept	3.187*	0.004	716.3		3.335*	0.006	524.7	
Between-person								
Age	0.056*	0.003	22.1	0.084*	0.084*	0.003	32.3	0.126*
Age ²	-	-	-		-0.046*	0.001	-34.1	-0.069*
Within-person								
Age	0.020*	0.006	3.3	0.034*	0.025*	0.006	3.9	0.042*
Age^2	-	-	-		-0.032*	0.012	-2.7	-0.054*
$M_{ada} * a < 05$								

Table 19Model results for the association between age and parental identity in the GSOEP.

Note: * *p* < .05.

Table 20

Model results for the association between age and parental identity in the BHPS.

	Linear			Quadratic				
				SD of				SD of
	Estimate	SE	t	PI	Estimate	SE	t	PI
Intercept	7.635*	0.018	413.2		7.961*	0.027	291.3	
Between-person								
Age	0.239*	0.01	24.9	0.104*	0.309*	0.010	30.0	0.135*
Age^2	-	-	-		-0.091*	0.005	-18.4	-0.040*
Within-person								
Age	0.433*	0.029	14.8	0.253*	0.433*	0.029	14.8	0.253*
Age^2	-	-	-		0.132	0.105	1.3	0.077
M (* (05								

Note: * *p* < .05.

Table 21Model results for the association between age and parental identity in the HILDA.

		Linear				Quadratic			
	Estimate	SE	t	SD PI	Estimate	SE	t	SD PI	
Intercept	3.843*	0.061	63.5		3.943*	0.091	43.3		
Age	3.669*	0.140	26.2	0.991*	3.702*	0.142	26.1	1.000*	
Age ²	-	-	-		-0.535	0.366	-1.5	-0.145	

Note: * *p* < .05.

Overall, the plots and the models from three distinct national samples show marked consistencies in the shape of the trajectory and pattern of change that parental identity takes over the life span. Generally, parental identity appears to, on average, rise steadily from adolescence into early adulthood, leveling off when individuals move into their 30s and remains relatively stable into older adulthood.³ Results of the quadratic model in the GSOEP suggest that every 10 years of change in age is associated with a between-person linear change of 0.126 SD in parental identity. I observed a similar between-person linear effect in the BHPS, where 10 years of change in age was associated with 0.135 SD change in parental identity. The between-person standardized quadratic effects were -0.069 GSOEP and -0.040 in the BHPS, indicating a similar, significant curvilinear effect in both national samples.

Model results also suggest that there are significant within-person linear effects in both the GSOEP and BHPS, but there is divergence in the size of the effects. In the German sample, a 10 year increase in age is associated with 0.042 SD within-person change in parental identity. In contrast, the BHPS linear within-person effect is higher, and suggests that a 10-year increase in age is associated with 0.253 SD within-person change in parental identity. The within-person quadratic effect in the GSOEP was significant (.042), but the quadratic term for within-person change in the BHPS was similar in magnitude and direction to the within-person quadratic effect from the GSOEP, but failed to reach significance. One possible explanation is that in the BHPS there were less waves available than in the GSOEP (3 vs. 5) and thus the model may have had more difficulty estimating more complex curvilinear trends from more sparse data that was available in the BHPS.

Results from the HILDA show a strong linear effect, indicating that a 10 year increase in age is associated with a whole standard deviation increase in parental identity. Results indicate that there is no quadratic effect in the HILDA. A likely reason for this is that the HILDA surveyed only people 15 to 29 years of age, during which time there is a substantial linear

³ Although there appear to be larger changes in the HILDA across age than in the the BHPS and GSOEP during the comparable age groups in the latter datasets, the between-person SD in parental identity in the HILDA is larger than in the GSOEP and BHPS. As such, age related changes during the 15-29 year age range in each sample are similar when evaluated in units of SD during this period.

increase in parental identity that is evident in both the GSOEP and the BHPS. Thus, parental identity change during this time period can be captured with a linear model.

In sum, parental identity appears to show substantial growth during early adulthood, tapering off in the early 30s. This change was evident in all three datasets. After the age of 30, parental identity appears to remain fairly stable on average across the lifespan. This is consistent with identity theories (e.g., Erikson, 1968; Marcia, 1966; Phinney, 1990), which note that adolescence and young adulthood are the periods during which most of identity development occurs.

Parental Identity and Response to the Birth of a Child

A theoretically important life event for parental identity is birth of the first child. Here I present the analyses of trajectories of parental identity during this time in two steps. First, I discuss trends in parental identity change during the period before, during and after the experience of birth of a child across the GSOEP and BHPS. These analyses will allow one to evaluate the degree to which parental identity changes in response to the birth of a child and evaluate the replicability of these effects across two national samples. Second, I present results on analyses evaluating the potential moderating role of gender, age, marital status and income on individuals' response to childbirth.

In both the GSOEP and BHPS, I modeled response to childbirth using a reactionadaptation model. As described earlier, the basic model included an intercept (interpreted as level of parental identity before childbirth), a reaction parameter (change in parental identity in the years surrounding childbirth), and an adaptation parameter (change in parental identity in the years that followed). I also allowed for random variation in all three parameters in the GSOEP. In the BHPS, it was not possible to allow for random variation in all three parameters, likely

because the data in this dataset were sparse, so I allowed for random variation in baseline and adaptation parameters.

Each model used data for individuals who had no children at the beginning of the study, but had their first child at some point of the study. Further, I only included participants who had at least one wave of parental identity data before the birth of their child, and one wave after. In total, the final sample in the GSOEP was 1,611 people (54% women) and 895 people (57% women) in the BHPS. Model results for GSOEP and BHPS are shown in Table 22. Figure 5 displays parental identity plots as a function of years from the birth of a child in the GSOEP and BHPS for the overall sample and with gender, age, marital status and income as moderators. As the table and the top panel of the figure show, parental identity in both datasets increased during the reaction period by 0.58 points (0.97 within-person standard deviations) in the GSOEP, and by 1.88 points (1.10 within-person standard deviations) in the BHPS. Rather than returning to baseline, parental identity remained higher than the pre-childbirth levels in the adaptation period, by 0.82 points (1.38 standard deviations) in the GSOEP and 2.35 points (1.38 standard deviations) in the BHPS. Thus, across both datasets I found a consistent increase in parental identity that occurred around the time of birth of the first child, and that remained even several years afterwards.

	G	SOEP	BHPS			
	Estimate	SE	t	Estimate	SE	t
Basic model						
Baseline	2.89*	0.02	138.5	6.95*	0.07	93.1
Reaction	0.58*	0.03	21.9	1.88*	0.09	20.0
Adaptation	0.82*	0.02	36.1	2.35*	0.09	27.4
Gender as moderator						
Baseline						
Estimate	2.89*	0.02	139.1	6.93*	0.07	92.5
Gender	-0.09*	0.02	-4.3	-0.20*	0.07	-2.7

Table 22	
Results of reaction-adaptation models in the GSOEP and the BHPS.	

Table 22 (cont'd)

Estimate 0.57^* 0.03 21.6 1.89^* 0.09 20.0 Gender 0.00 0.03 -0.1 0.11 0.09 1.1 AdaptationEstimate 0.82^* 0.02 36.1 2.37^* 0.09 27.4 Gender 0.02 0.02 0.9 0.15 0.09 1.7 Age as moderatorBaseline 4.02 0.02 0.9 0.15 0.09 81.2 Age -0.13^* 0.05 -2.9 0.05 0.14 0.3 $Age2$ 0.02 0.05 0.3 -0.31^* 0.14 -2.2 ReactionEstimate 0.62^* 0.03 19.6 1.93^* 0.11 17.4 Age 0.03 0.06 0.6 0.57^* 0.18 3.3 Age2 -0.18^* 0.07 -2.5 -0.22 0.19 -1.1 AdaptationEstimate 0.83^* 0.03 31.4 2.28^* 0.10 22.6 Age 0.09 0.05 1.7 0.05 0.16 0.4 Age2 -0.05 0.06 -0.9 0.18 0.16 1.1 Marital status as moderatorEstimate 0.25^* 0.04 5.5 0.84^* 0.12 5.5 ReactionEstimate 0.55^* 0.04 12.5 1.71^* 0.14 19.1 Married 0.05 0.9 0.25 0.20 1.3 $Adeptation$ Estimate 0.93^* <td< th=""><th>Reaction</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></td<>	Reaction							
Gender 0.00 0.03 -0.1 0.11 0.09 1.1 AdaptationEstimate $0.82*$ 0.02 36.1 $2.37*$ 0.09 27.4 Gender 0.02 0.02 0.9 0.15 0.09 1.7 Age $as moderator$ Baseline $aseline$ $aseline$ $aseline$ Estimate $2.89*$ 0.02 119.7 $7.08*$ 0.09 81.2 Age $-0.13*$ 0.05 -2.9 0.05 0.14 0.3 Age2 0.02 0.05 0.3 $-0.31*$ 0.14 -2.2 ReactionEstimate $0.62*$ 0.03 19.6 $1.93*$ 0.11 17.4 Age 0.03 0.06 0.6 $0.57*$ 0.18 3.3 Age2 $-0.18*$ 0.07 -2.5 -0.22 0.19 -1.1 AdaptationEstimate $0.83*$ 0.03 31.4 $2.28*$ 0.10 22.6 Age 0.09 0.05 1.7 0.05 0.16 0.4 Age2 -0.05 0.06 -0.9 0.18 0.16 1.1 Marital status as moderatorEstimate $2.74*$ 0.03 80.6 $6.43*$ 0.12 5.5 Reaction $-1.7*$ 0.14 19.1 0.16 10.8 Married 0.05 0.9 0.25 0.20 1.3 Adaptation $-1.5*$ $-3.7*$ $-0.57*$ 0.18 -3.2 $1.3*$ $1.4*$ 19.1 <td>Estimate</td> <td>0.57*</td> <td>0.03</td> <td>21.6</td> <td>1.89*</td> <td>0.09</td> <td>20.0</td> <td></td>	Estimate	0.57*	0.03	21.6	1.89*	0.09	20.0	
AdaptationEstimate 0.82^* 0.02 36.1 2.37^* 0.09 27.4 Gender 0.02 0.02 0.9 0.15 0.09 1.7 Age as moderatorBaselineEstimate 2.89^* 0.02 119.7 7.08^* 0.09 81.2 Age -0.13^* 0.05 -2.9 0.05 0.14 0.3 Age2 0.02 0.05 0.3 -0.31^* 0.14 -2.2 ReactionEstimate 0.62^* 0.03 19.6 1.93^* 0.11 17.4 Age 0.03 0.06 0.6 0.57^* 0.18 3.3 Age2 -0.18^* 0.07 -2.5 -0.22 0.19 -1.1 AdaptationEstimate 0.83^* 0.03 31.4 2.28^* 0.10 22.6 Age 0.09 0.05 1.7 0.05 0.16 0.4 Age2 -0.05 0.06 -0.9 0.18 0.16 1.1 Marital status as moderatorBaselineEstimate 0.23^* 0.04 5.5 0.84^* 0.12 53.2 Married 0.05 0.05 0.9 0.25 0.20 1.3 $Adaptation$ Estimate 0.93^* 0.04 24.6 2.71^* 0.14 19.1 Married 0.05 0.3 0.3 0.3 0.8 ReactionEstimate 0.93^* 0.04 24.6 2.71^* 0.14 19.1 <tr<< td=""><td>Gender</td><td>0.00</td><td>0.03</td><td>-0.1</td><td>0.11</td><td>0.09</td><td>1.1</td><td></td></tr<<>	Gender	0.00	0.03	-0.1	0.11	0.09	1.1	
Estimate $0.82*$ 0.02 36.1 $2.37*$ 0.09 27.4 Gender 0.02 0.02 0.9 0.15 0.09 1.7 Age as moderatorBaselineEstimate $2.89*$ 0.02 119.7 $7.08*$ 0.09 81.2 Age $-0.13*$ 0.05 -2.9 0.05 0.14 0.3 Age2 0.02 0.05 0.3 $-0.31*$ 0.14 -2.2 ReactionEstimate $0.62*$ 0.03 19.6 $1.93*$ 0.11 17.4 Age 0.03 0.06 0.6 $0.57*$ 0.18 3.3 Age2 $-0.18*$ 0.07 -2.5 -0.22 0.19 -1.1 Adaptation -2.5 -0.22 0.19 -1.1 Adaptation -2.5 -0.05 0.06 -0.9 0.18 0.16 0.4 Age2 -0.05 0.06 -0.9 0.18 0.16 1.1 Marital status as moderator $-0.23*$ 0.04 5.5 $0.84*$ 0.15 5.5 Reaction $-1.1*$ 0.05 0.05 0.9 0.25 0.20 1.3 Adaptation $-2.74*$ 0.03 80.6 $6.43*$ 0.12 53.2 Married $0.55*$ 0.04 12.5 $1.71*$ 0.16 10.8 Married $0.93*$ 0.04 24.6 $2.71*$ 0.14 19.1 Married $0.03*$ 0.05 -3.7 $-0.57*$ <	Adaptation							
Gender 0.02 0.02 0.9 0.15 0.09 1.7 Age as moderator Baseline Estimate $2.89*$ 0.02 119.7 $7.08*$ 0.09 81.2 Age $-0.13*$ 0.05 -2.9 0.05 0.14 0.3 Age2 0.02 0.05 0.3 $-0.31*$ 0.14 -2.2 Reaction $Estimate$ $0.62*$ 0.03 19.6 $1.93*$ 0.11 17.4 Age 0.03 0.06 0.6 $0.57*$ 0.18 3.3 Age2 $-0.18*$ 0.07 -2.5 -0.22 0.19 -1.1 Adaptation $Estimate$ $0.83*$ 0.03 31.4 $2.28*$ 0.10 22.6 Age 0.09 0.5 1.7 0.05 0.16 0.4 Age2 -0.05 0.06 -0.9 0.18 0.16 1.1 Marital status as moderator $Baseline$ $Estimate$ $2.74*$ 0.03 80.6 $6.43*$ 0.12 53.2 Married $0.23*$ 0.04 5.5 $0.84*$ 0.15 5.5 Reaction $Estimate$ $0.55*$ 0.04 12.5 $1.71*$ 0.16 10.8 Married 0.05 -3.7 $-0.57*$ 0.18 -3.2 Income as moderator $Baseline$ $Estimate$ $0.93*$ 0.04 24.6 $2.71*$ 0.14 19.1 Married $-0.18*$ 0.05 -3.7 $-0.57*$ 0.18 -3.2 Inc	Estimate	0.82*	0.02	36.1	2.37*	0.09	27.4	
Age as moderator Baseline2.89* 0.02 0.02119.7 $7.08*$ 7.08* 0.09 0.09 81.2 Age 0.13* 0.05 0.21 2.9 7.08* 0.05 0.09 0.14 81.2 0.3 $Age2$ 0.02 0.02 0.05 0.3 0.05 $0.31*$ 0.14 0.14 0.3 -2.2 Reaction U	Gender	0.02	0.02	0.9	0.15	0.09	1.7	
Age as moderator Baseline 2.89^* 0.02 119.7 7.08^* 0.09 81.2 Age -0.13^* 0.05 2.9 0.05 0.14 0.3 Age2 0.02 0.05 0.3 -0.31^* 0.14 -2.2 Reaction -2.2 Reaction -2.2 -0.31^* 0.11 17.4 Age 0.03 0.06 0.6 0.57^* 0.18 3.3 Age2 -0.18^* 0.07 -2.5 -0.22 0.19 -1.1 Adaptation -2.5 -0.22 0.19 -1.1 Adaptation -2.6 -0.9 0.18 0.16 0.4 Age2 -0.05 0.06 -0.9 0.18 0.16 1.1 Marital status as moderator -2.5 0.22^* 0.28^* 0.10^* 22.6 Baseline 2.74^* 0.03 80.6 6.43^* 0.12^* 53.2 Married 0.23^* 0.04 5.5 0.84^* 0.15^* 5.5 Reaction -1.1^* 0.16^* 10.8 0.25^* 0.20^* 1.3^* Adaptation -2.74^* 0.03 80.6 6.43^* 0.12^* 53.2 Married 0.55^* 0.04^* 12.5^* 1.71^* 0.16^* 10.8 Married 0.05^* 0.04^* 24.6 2.71^* 0.14^* 19.1^* Married -0.18^* 0.05^* -3.7^* -0.57^* 0.18^* -3.2^* Income as mode								
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Income as moderator Baseline $2.89*$ 0.02 138.3 $6.96*$ 0.08 92.7 Income 0.00 0.01 0.5 0.03 0.03 0.8 Reaction $1.87*$ 0.09 19.8 Income -0.01 0.01 -1.0 $0.08*$ 0.04 Adaptation $1.82*$ 0.02 36.1 $2.36*$ 0.09 27.3 Income 0.01 0.01 1.3 0.02 0.04 0.5	Married	-0.18*	0.05	-3.7	-0.57*	0.18	-3.2	
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Income 0.00 0.01 0.5 0.03 0.03 0.8 Reaction Estimate 0.58* 0.03 21.8 1.87* 0.09 19.8 Income -0.01 0.01 -1.0 0.08* 0.04 2.1 Adaptation Estimate 0.82* 0.02 36.1 2.36* 0.09 27.3 Income 0.01 0.01 1.3 0.02 0.04 0.5	Estimate	2.89*	0.02	138.3	6.96*	0.08	92.7	
Reaction 0.58* 0.03 21.8 1.87* 0.09 19.8 Income -0.01 0.01 -1.0 0.08* 0.04 2.1 Adaptation Estimate 0.82* 0.02 36.1 2.36* 0.09 27.3 Income 0.01 0.01 1.3 0.02 0.04 0.5	Income	0.00	0.01	0.5	0.03	0.03	0.8	
Estimate0.58*0.0321.81.87*0.0919.8Income-0.010.01-1.00.08*0.042.1Adaptation	Reaction							
Income-0.010.01-1.00.08*0.042.1AdaptationEstimate0.82*0.0236.12.36*0.0927.3Income0.010.011.30.020.040.5	Estimate	0.58*	0.03	21.8	1.87*	0.09	19.8	
Adaptation Estimate 0.82* 0.02 36.1 2.36* 0.09 27.3 Income 0.01 0.01 1.3 0.02 0.04 0.5	Income	-0.01	0.01	-1.0	0.08*	0.04	2.1	
Estimate0.82*0.0236.12.36*0.0927.3Income0.010.011.30.020.040.5	Adaptation							
Income 0.01 0.01 1.3 0.02 0.04 0.5	Estimate	0.82*	0.02	36.1	2.36*	0.09	27.3	
	Income	0.01	0.01	1.3	0.02	0.04	0.5	

Note: **p* < .05.

Figure 5





Notes: For models moderated by age, average trajectories are estimates for those of average age, and younger/older are estimates for people 1SD lower/higher in age than the average. For models that include income as a moderator average trajectories are estimates for people with average household income, and lower/higher trajectories are for people with household incomes that are 1SD lower/higher than the average.

Gender as a moderator. Gender was coded -1 for women and 1 for men. When gender is included as a moderator in each model, results show that although there is a gender difference in parental identity during the baseline period (where men report lower parental identity than women) in the GSOEP and BHPS, the moderating effect of gender did not reach statistical significance during the reaction and adaptation periods in either sample. Thus, gender differences persist to some degree regardless of parental status.

Age as a moderator. Age at the year first child was born is used as the moderator. Age was centered on the sample mean and then divided by 10 (to be consistent with the analyses above). Results in the GSOEP show that there is a small linear effect of age at baseline, indicating that older people having lower parental identity when they are childless than younger childless people. In the BHPS, the corresponding linear effect at baseline was not significant. There was, however, a small quadratic trend of age at baseline indicating that older people have lower parental identity, and that these differences increase with age. During the reaction period in the GSOEP, a significant quadratic effect of age emerged, suggesting that older people do not increase as much in parental identity in the years surrounding childbirth, and that these differences increase with age. This quadratic trend at reaction was not replicated in the BHPS, where only the linear effect of age was significant, suggesting that older people increase more on parental identity than younger people in the years surrounding birth. As for the adaptation period, these analyses indicate that there are no moderating effects of age in the adaptation period for either GSOEP or BHPS participants, so the age differences seen in the reaction period do not persist long-term in the years that follow birth. Figure 5 visualizes these age effects in each dataset with three lines, one for people of average age, one for people 1 SD older than the mean, and one for people with 1 SD lower than the mean. As can be seen, any age differences during

childless years are quite small, and during parenthood become not practically significant.

Marital status as a moderator. Majority of people in these samples were either married (GSOEP: 62%, BHPS: 63%) or never married (GSOEP and BHPS: 33%) in the year of childbirth. Only 1% were separated in both datasets, 3% in GSOEP and 2% in BHPS were divorced, and 1% of individuals in the BHPS were in a common-law partnership. Because the initial analyses above indicated that the married group tended to report higher parental identity than other groups, I combined never married, separated, divorced, and common-law partnership groups and contrasted this "not married" group (coded as 0) with the group of married individuals (coded as 1). Model results for both GSOEP and BHPS are shown in Table 23. Results were remarkably consistent across both the GSOEP and BHPS, and indicated that people who were married in the year in which they had a child reported higher parental identity at baseline in both samples. There were no differences between married and not married groups in changes in parental identity from baseline during the reaction period. However, in both the GSOEP and BHPS, the differences between the two groups were largely reduced in the adaptation period because people who were not married in the year of childbirth showed larger increases in this period from their pre-childbirth baseline levels of parental identity.

Income as a moderator. Household income reported in the year of childbirth was used to evaluate the moderating role of income in individuals' responses to the birth of a child. Income was centered on the sample mean and divided by 10,000. Model results can be viewed in Table 20. Overall, results across the GSOEP and BHPS were fairly consistent and indicated that income differences account for little variability in how people respond to the birth of a child. There was no differences in baseline parental identity based on income in either the GSOEP and BHPS, but people with higher income tended to report somewhat larger increases in parental
identity around the time their first child was born in the BHPS. However, this effect was not observed in the GSOEP. In the years that followed childbirth these differences were reduced, as evidenced by the lack of moderating effects of income on change in parental identity during the adaptation period in the GSOEP and BHPS. Figure 5 shows a plot of these income effects in the GSOEP and BHPS. Again, each plot contains three lines: one for people of average income, one for people with household income 1 SD lower than the mean, and one for people with household income 1 SD higher than the mean. The figure shows visually that any differences in reaction to childbirth between people of differing income levels are small in the BHPS and virtually non-existent in the years that follow in both datasets.

Parental identity and normative change. As described above, it is important to consider and account for normative changes in constructs such as parental identity when evaluating this construct's pattern of change and its implications across the lifespan. For instance, the results of these analyses in the GSOEP and BHPS suggest that there are substantial increases in the years surrounding the birth of a first child, and that these increases persist in the years that follow birth. This pattern of change could be attributable to the experience of childbirth, with the pattern of change resulting from something unique about having children. However, it is also possible that these findings are attributable to normative development, and this pattern of change would have been observed regardless of whether one experienced childbirth or not. To account for normative change, I identified group of people who are similar in important ways the group who does have children, but do not have children during the course of the study using propensity score matching. This control group was matched on gender, age (and age²), marital status, educational attainment, income, and the initial parental identity level. I included the initial parental identity level as one of the matching variables because it may be a

variable that plays an important role in whether people decide to have children. Thus, I wanted the control group to be initially as close as possible to the group of parents in their feelings of importance of having children. I used this group, who are on average similar to those who become parents in order to get an estimate of what normative change for this group of parents (i.e., if they did not have children) would have been.

I modified the reaction-adaptation models above to include information about this control group. Namely, the new models include an intercept, which is now interpreted as the initial parental identity, a non-parent control variable (coded as 0 for parents and 1 for non-parents) that reflects the difference in the initial parental identity levels between parents and non-parents, a linear change parameter that captures year-to-year change in parental identity in both groups, and reaction and adaptation parameters, coded in the way described above for parents and set to zero for non-parents. I also included all variables used for matching as covariates except the initial parental identity level. I excluded this variable from the covariates because it was used as an outcome variable and its inclusion would complicate the interpretation of the regression coefficients.

Table 23

	G	SOEP		BHPS					
	Estimate	SE	t	Estimate	SE	t			
First year	3.07*	0.05	57.0	7.20*	0.39	18.7			
Non-parent control	-0.03	0.03	-1.0	-0.65*	0.12	-5.6			
Linear change	-0.03*	0.00	-6.8	-0.14*	0.05	-2.8			
Reaction	0.59*	0.03	21.1	1.96*	0.11	17.1			
Adaptation	0.96*	0.03	32.0	2.56*	0.12	21.0			

Results of the reaction-adaptation model for parental identity including control groups in the GSOEP and the BHPS.

Note: * *p* < .05.

Results for these reaction-adaptation models with control groups in the GSOEP and BHPS are shown in Table 23. Plots of each of these models in the GSOEP and BHPS are shown in Figure 6. Taken together, model results in the GSOEP and the BHPS are largely consistent. Reaction and adaptation parameters were statistically significant and positive in both samples, suggesting that those who become parents in the GSOEP and BHPS reported higher ratings of parental identity than non-parents after an equivalent amount of time, even after accounting for expected normative increases in parental identity. In other words, these results suggest that parents report higher parental identity than they would have had if they had not had children In contrast with the GSOEP, there was a significant difference between the two groups on the initial levels of parental identity in the BHPS (as evidenced by a significant "non-parent control" estimate). This is notable because it suggests that the matching procedure was not completely successful in matching the two groups in the BHPS, although matching did substantially reduce this initial difference.

Figure 6

Predicted parental identity trajectories from reaction-adaptation models including non-parent matched controls.



Notes: Black solid lines represent predicted parental identity trajectory for parents in the study. Dashed line shows predicted trajectory for non-parent controls. Gray line shows predicted trajectory that the parent group would have if they did not have any children in the study.

STUDY 2

Method

This study evaluated the second main goal of this project, which was answering the question of whether parental identity moderates people's SWB responses to having children. As with the first study, Study 2 used data from the GSOEP, BHPS and HILDA. This data allowed for a prospective design evaluating whether parental identity moderates the pattern of pre- to post-childbirth SWB change in new parents.

Sample Selection

To examine the effect of childbirth on well-being, I selected a sample of individuals from each dataset that indicated that they had no children at the beginning of their participation in the study and had a first child at some point during the study. In order to get better estimates of within-person changes in life satisfaction in the years surrounding childbirth, I also limited each sample to individuals who rated their life satisfaction at least one wave before and one wave after childbirth (following the procedures of previous studies by Yap et al., 2012 and Anusic et al., 2014a).

Measures

Life satisfaction. In the GSOEP, life satisfaction was measured with a single item, "how satisfied are you at present with your life as a whole?" Participants responded to this question with a Likert scale ranging from 0 (*totally unsatisfied*) to 10 (*totally satisfied*). This item was assessed at every wave of the GSOEP. Past research has shown that life satisfaction scores in the GSOEP are subject to panel conditioning effects (Baird, Lucas & Donnellan, 2010). These effects are unique to the GSOEP data and indicate that scores decline by about .03 points every year as a function of length of time in the study. Baird et al. revealed this effect to be

independent of age or calendar year, instead reflecting a unique testing effect observed in the GSEOP data. To adjust for the general changes associated with panel conditioning effects, I followed the method of Dyrdal and Lucas (2013) and added .03 for each wave that a participant was in the study. Past research does not indicate that there are similar panel conditioning effects in the BHPS and HILDA (e.g., Baird et al., 2010).

In the BHPS, life satisfaction was measured with a single item that asked participants to rate how dissatisfied or satisfied they were with their life overall on a Likert scale from 1 (not satisfied at all) to 7 (completely satisfied). This construct was assessed from 1996 onwards, excluding 2001. As such, my analyses included data from 12 waves of data collection, taken over 13 years (1996-2008, omitting 2001).

In the HILDA, life satisfaction was measured with the following item, "all things considered, how satisfied are you with your life?" Respondents rated how dissatisfied or satisfied they were with their life overall on a Likert scale from 0 (totally dissatisfied) to 10 (totally satisfied).

Parental identity. Parental identity was assessed as described in Study 1 in all three datasets.

Analytic Approach

The main goal of this analysis is to examine the extent to which people's parental identity explains the variability in patterns of SWB change that are associated with the experience of childbirth.

For the sake of consistency across datasets and interpretability of results, I used the reaction-adaptation model to estimate the pattern of change in life satisfaction in the years surrounding childbirth in each dataset. Although recent past research has relied on an alternative,

nonlinear model (e.g., Yap et al., 2012) to examine reaction and adaptation to various life events (including childbirth) with some success, these more complex models place larger demands on the data than simpler models of change. A major factor that affected my ability to use this model is sample size. Modeling such nonlinear changes in a multilevel framework requires a large amount of data to get meaningful estimates. This was less of a challenge in the GSOEP and BHPS, but the HILDA includes fewer waves of data (10 waves) and a substantially smaller sample than the GSOEP and BHPS. Coupled with the fact that the parental identity item was only administered to individuals aged 15 to 29 years of age during a single wave, the HILDA sample was much smaller than in the other datasets and a simpler model was necessary.

Indeed, the pattern of SWB change in the years surrounding the birth of a child has already been evaluated in great detail in previous research using these datasets (GSOEP, Dyrdal & Lucas, 2013; BHPS, Yap et al., 2012; HILDA, Anusic et al., 2014a) and the main aim of the present analyses were the evaluate whether parental identity moderates previously established associations between childbirth and patterns of SWB change in the years surrounding the event. As such, I applied the *reaction-adaptation model* to all three datasets to estimate changes in SWB associated with childbirth to ease interpretability and the ability to contrast results across samples in order to best evaluate the role of parental identity in responses to the birth of a first child.

This statistical model allowed me to evaluate two questions regarding the role of parental identity. First, I evaluated the moderating effect of parental identity on immediate reactions to childbirth by looking at whether the extent to which people's SWB changes from baseline differ as a function of their parental identity levels. Second, this model allows evaluation of whether parental identity helps (or hinders) adaptation to childbirth by comparing change in SWB in the

years that follow birth between individuals reporting different levels of parental identity.

One important issue to consider when evaluating the moderating effect of parental identity in prospective longitudinal data such as these is the operationalization of the construct and how it changes across different periods of one's life. For instance, one approach could be to use average parental identity score across all available waves of data as a moderator. However, this approach has some important limitations. First, this approach does not account for the fact that past research has shown that major life events such as childbirth are associated with subsequent changes in personality traits and other individual differences (Löckenhoff, Terracciano, Patriciu, Eaton, & Costa, 2009; Mroczek & Spiro, 2003; Roberts, Caspi, & Moffit, 2003; Roberts, Walton, Bogg, & Caspi, 2006; Specht, Egloff, & Schmukle, 2011; Vaidya, Gray, Haig, & Watson, 2002), an effect that findings from Study 1 of this paper suggest may occur with parental identity as well. By using average parental identity (which may also include postbirth ratings of parental identity), one cannot be certain whether associations between average parental identity and post-birth changes in SWB reflect a protective/exacerbating effect of parental identity or simply the tendency of parents who are most affected by childbirth (in terms of their SWB) to experience the most subsequent change in parental identity.

Another approach to operationalizing parental identity would be to limit analyses to include only prospective measures of parental identity. In other words, to focus only on the moderating effects of parental identity ratings measured prior to childbirth on the reaction and adaptation to the subsequent birth. Clearly, this approach is not without its limitations, the major limitation being the relative infrequency to which the parental identity items were assessed in each dataset. The major implication of this for our analyses is that the subsample of people who completed measures of parental identity prior to experiencing childbirth are likely to be much

smaller than they would be otherwise. This approach also makes the explicit assumption that parental identity is a meaningful construct to individuals that do not yet have children.

Given these issues, I used two separate operationalizations of parental identity at two relevant periods (pre-childbirth and post-childbirth) to evaluate this construct's role in responses to birth. Specifically, this approach involved fitting four distinct models to each dataset to examine the main questions of the study. All analyses were conducted using the R Statistical Software (R Development Core Team, 2010). The first model was a basic reaction-adaptation model to estimate the basic trajectory of life satisfaction before and after childbirth. This model was examined simply to verify what was already known from previous research about childbirth and SWB in these datasets. The second model evaluated the moderating effects of pre-childbirth parental identity on SWB during the baseline, reaction and adaptation periods in the years surrounding the birth of a first child. A third model evaluated the moderating effects of postchildbirth parental identity on SWB during the baseline, reaction and adaptation periods in the years surrounding the birth of a first child. Finally, I specified a fourth model that included both pre-childbirth and post-childbirth parental identity simultaneously in order to test the unique effects of parental identity before and after childbirth. In essence, this model allows one to account for the stable "trait" aspects of parental identity and consider the unique influence of pre-childbirth and post-childbirth parental identity on the extent that people react and adapt to the birth of a child. In the table reported below, I show estimates from all 4 models for each dataset (with the exception of the HILDA), but focused my reporting of the results of the fourth model as they were the most relevant to the target question of this study. With this model, I could evaluate the moderating effect of two operationalizations of parental identity, from two theoretically distinct periods play a role in SWB change following birth.

In the HILDA, it was not possible to include the model that evaluated both parental identity before and after childbirth as moderators because parental identity was measured in only one wave. Thus, I report and interpret the moderating effects of pre-childbirth and post-childbirth parental identity from estimates of the second and third models where pre-childbirth and post-childbirth parental identity were specified singly.

Finally, to examine the question of whether there are differences in the moderating effect of pre-childbirth and post-childbirth parental identity among mothers and fathers, I evaluated a final reaction-adaptation model where I specified moderating effects of gender, pre-childbirth parental identity, post-childbirth parental identity and the interaction between gender and each parental identity effect in each dataset. The critical test here was whether any moderating effects of parental identity across the baseline, reaction and adaptation periods differ among men and women in a consistent way across the GSOEP, BHPS and HILDA. Note that in the GSOEP and the BHPS the gender as a moderator was included in the full model (model 4) that included both pre-childbirth and post-childbirth parental identity. In the HILDA, that model was not available so gender was included in the two models that tested the moderating effects of pre-childbirth and post-childbirth parental identity separately.

Results

Sample Characteristics

GSOEP. In total, N = 3,729 people reported having their first child at some time during the study and completed at least one wave of life satisfaction before and one wave after childbirth. Of these participants, 57% identified as female and 43% identified as male. The mean age at time of birth of first child was M = 28.7 years (SD = 5.4 years; Range = 18-60 years).

BHPS. In total, N = 1,518 people reported having their first child at some time during the

study and completed at least one wave of life satisfaction before and one wave after childbirth. Of these participants, 57% identified as female and 43% identified as male. The mean age at time of birth of the first child in was M = 29.3 years (SD = 6.4 years; Range = 17-56 years).

HILDA. In total, N = 1,137 people reported having their first child at some time during the study and completed at least one wave of life satisfaction before and one wave after childbirth. Of these participants, 51% identified as female and 49% identified as male. The mean age at the time of birth of the first child was M = 30.2 years (SD = 7.1 years; Range = 17-84 years).

Basic Models

All model results for the GSOEP can be seen in Table 24. Model results for the BHPS are shown in Table 25. Results for the HILDA are displayed in Table 26. All model estimates are visually presented in Figure 7. First, I specified a basic reaction-adaptation model to evaluate participants' overall response to the birth of a child in each dataset. As expected, results in the GSOEP suggest that participants react positively to childbirth, but these changes are not long-lasting and people eventually adapt to baseline (see Figure 7; see also Dyrdal & Lucas, 2013). Results in the BHPS indicate that participants react positively to childbirth, but in contrast to the results in the GSOEP, BHPS participants report experiencing a small, but lasting negative drop in SWB in the years that follow childbirth. Results in the HILDA suggest that SWB remained stable from baseline into reaction period, but in the long run, childbirth is associated with long-term decline in the years that follow.

Figure 7

Life satisfaction trajectories for basic model and models with parental identity before and after birth of the first child as moderators in the three datasets.



Notes: Average trajectories are representative of people with average parental identity scores before/after childbirth. Low/high trajectories are representative of people with parental identity scores 1SD lower/higher than average.

Table 24

										PI before and after			
	Basic model		PI before childbirth			PI after	r childl	oirth	childbirth				
	Estimate	SE	t	Estimate	SE	t	Estimate	SE	t	Estimate	SE	t	
Baseline													
Estimate	7.41*	0.02	344.0	7.37*	0.03	276.1	7.40*	0.02	316.8	7.38*	0.03	250.1	
PI before childbirth	-	-	-	0.14*	0.04	3.9	-	-	-	0.12*	0.04	3.1	
PI after childbirth	-	-	-	-	-	-	0.30*	0.05	5.9	0.13*	0.07	2.0	
Reaction													
Estimate	0.24*	0.02	11.1	0.30*	0.03	11.5	0.24*	0.02	10.3	0.30*	0.03	10.6	
PI before childbirth	-	-	-	-0.03	0.03	-0.9	-	-	-	-0.06	0.04	-1.6	
PI after childbirth	-	-	-	-	-	-	0.12*	0.05	2.3	0.20*	0.06	3.1	
Adaptation													
Estimate	0.01	0.02	0.6	0.11*	0.03	3.5	0.01	0.02	0.6	0.10*	0.03	3.1	
PI before childbirth	-	-	-	0.01	0.04	0.4	-	-	-	-0.04	0.04	-0.9	
PI after childbirth	-	-	-	-	-	-	0.22*	0.05	4.1	0.29*	0.07	4.0	

Model results for basic life satisfaction reaction-adaptation model and models with parental identity as moderators in the GSOEP.

Notes: * p < .05. PI = parental identity.

Table 25

	Basic model		PI before childbirth			PI after	r childl	birth	PI before and after childbirth			
	Estimate	SE	t	Estimate	SE	t	Estimate	SE	t	Estimate	SE	t
Baseline												
Estimate	5.36*	0.03	212.5	5.35*	0.03	187.9	5.37*	0.03	204.4	5.36*	0.03	181.3
PI before childbirth	-	-	-	0.04*	0.01	3.6	-	-	-	0.04*	0.01	3.1
PI after childbirth	-	-	-	-	-	-	0.10*	0.02	5.0	0.08*	0.02	3.6
Reaction												
Estimate	0.12*	0.02	5.0	0.11*	0.03	4.4	0.11*	0.02	4.6	0.11*	0.03	4.0
PI before childbirth	-	-	-	0.01	0.01	0.9	-	-	-	0.01	0.01	0.8
PI after childbirth	-	-	-	-	-	-	0.04*	0.02	2.2	0.04	0.02	1.9
Adaptation												
Estimate	-0.07*	0.03	-2.5	-0.06	0.03	-1.8	-0.07*	0.03	-2.5	-0.06*	0.03	-2.0
PI before childbirth	-	-	-	-0.02	0.01	-1.4	-	-	-	-0.03*	0.01	-2.0
PI after childbirth	-	-	-	-	-	-	0.03	0.02	1.4	0.08*	0.03	2.8

Model results for basic life satisfaction reaction-adaptation model and models with parental identity as moderators in the BHPS.

Notes: * p < .05. PI = parental identity.

Table 26

	Basi	c mode	el	PI befor	e child	birth	PI after childbirth			
	Estimate	timate SE t Estimate SE t		t	Estimate	SE	t			
Baseline										
Estimate	7.95*	0.03	244.7	7.97*	0.05	160.0	7.90*	0.14	55.9	
PI before childbirth	-	-	-	0.03*	0.01	2.1	-	-	-	
PI after childbirth	-	-	-	-	-	-	0.15*	0.06	2.5	
Reaction										
Estimate	0.05	0.03	1.8	-0.01	0.04	-0.2	0.22	0.13	1.6	
PI before childbirth	-	-	-	0.00	0.01	0.2	-	-	-	
PI after childbirth	-	-	-	-	-	-	0.01	0.06	0.2	
Adaptation										
Estimate	-0.13*	0.04	-3.5	-0.17*	0.06	-2.7	-0.13	0.14	-0.9	
PI before childbirth	-	-	-	0.00	0.02	-0.1	-	-	-	
PI after childbirth	-	-	-	-	-	-	0.00	0.06	-0.1	

Model results for basic life satisfaction reaction-adaptation model and models with parental identity as moderators in the HILDA.

Notes: * p < .05. PI = parental identity.

This finding is consistent with similar analyses in past studies of HILDA, which suggest that this pattern of change could be due to the fact that people in this age range tend to show normative declines in life satisfaction (e.g., Anusic et al., 2014a). Nevertheless, the positioning of these within-person estimates relative to baseline are not as crucial in the current study because the main question of interest here is not the nature of change itself, but to see whether parental identity moderates change over time.

Moderating Effect of Pre-Birth Parental Identity

Model results in the GSOEP indicate that there is a statistically significant (but small) effect of parental identity on baseline that persists to some degree throughout the years. In particular, those with higher parental identity before childbirth tend to have slightly higher life satisfaction before they become parents and in the years that follow birth (see Figure 7).

In the BHPS, results differed from those garnered in the GSOEP in important ways. Consistent with the GSOEP, BHPS results suggest that there is a difference before people become parents (at baseline) – those with higher parental identity appear to report higher life satisfaction. Results suggest that this difference persists (but is not further amplified) during the reaction period (evidenced by the non-significant moderation by parental identity in this period), but eventually fades in the years that follow birth (evidenced by negative moderating effect of parental identity on SWB change during adaptation). Indeed, regardless of parental identity before childbirth, results in the BHPS suggest that everyone ends up at the same levels of SWB in the years that follow birth, and there is no evidence for lasting boosting effect of parental identity on life satisfaction.

Results in the HILDA⁴ suggest that there is a small moderating effect of parental identity

⁴ As noted previously in the analytic approach, it was not possible to include the model that evaluated both parental identity before and after childbirth as moderators because parental identity was measured in only one wave in this

before childbirth at baseline, and this small difference persists through time. Indeed, the effect of parental identity did not change during reaction or adaptation period, which was evidenced by non-significant moderating effects of pre-childbirth parental identity on reaction and adaptation parameters. This means that people who start off higher on parental identity do not increase any more or less on life satisfaction after having a child.

Overall, there is no strong evidence that pre-childbirth parental identity plays a meaningful role in how individuals respond to birth of a child and whether the experience affects an individual's SWB in the years surrounding the event. Pre-childbirth parental identity does appear to consistently positively predict SWB differences at baseline, but there is no evidence that pre-childbirth parental identity is associated with any lasting meaningful added boosts or declines in SWB in the years that surround birth and the years that follow.

Moderating Effect of Post-Birth Parental Identity

In the GSOEP, there is a small effect of post-birth parental identity at baseline, indicating that those that report increased in parental identity after childbirth report being more satisfied with their lives before childbirth than people with lower post-birth parental identity. Larger positive effects are seen in reaction and adaptation periods, suggesting that these differences between participants who report higher parental identity and those who are lower in parental identity are amplified in the years surrounding birth and the years that follow. Indeed, those who report higher parental identity levels after becoming parents appear to show bigger increases in life satisfaction as a result of having a child and this added boost appears to persist following birth.

Results in the BHPS are consistent with the GSOEP. The BHPS sample also shows a

dataset. As such, unlike the GSOEP and BHPS results, these results are obtained from estimates from separate models for before/after parental identity and must be interpreted with this in mind.

difference at baseline, again suggesting that people who report increased in parental identity after childbirth report being more satisfied with their lives before childbirth. These differences persist in the reaction phase, and then continue to be amplified in the adaptation phase. Those who report higher parental identity after becoming parents also tend to report added increases in life satisfaction in the years that follow birth.

HILDA data showed there is an association between post-childbirth parental identity and baseline levels of SWB, and this difference persists throughout the reaction and adaptation phases (see Figure 7). However, there were no significant moderating effects of post-childbirth parental identity on the extent to which parents reacted or adapted to the birth of their first child. Thus, people who report higher parental identity after birth of a child are also those who start off highest in SWB, and these individuals (who are highest in SWB to begin with) maintain this difference throughout birth and the years that follow.

Overall, there is some evidence that post-childbirth parental identity is associated with an added, long term boost in SWB following the birth of a first child. This suggests that people who report higher parental identity not only start out with higher life satisfaction, but also are especially likely to report higher life satisfaction in response to the experience of birth compared to those who are lower in parental identity. The moderating effects of post-childbirth parental identity also appear to be somewhat robust across samples, and I observed some consistency across distinct national samples of parents.

Does Parental Identity Matter more for Mothers or Fathers?

Model results evaluating the interactive effects of gender and parental identity on SWB and responses to parenthood in the GSOEP, BHPS and HILDA are presented in Table 27. When taken as a whole, results indicate that there is little evidence that the role of parental identity in

how people respond to the birth of a child differs for mothers and fathers. There was no consistency in the findings across samples. For instance, in the GSOEP, men reacted less positively to childbirth than women as evidenced by the negative moderating effect of gender on reaction to childbirth in this dataset, but there were no gender differences any datasets during baseline or adaptation periods. There were no significant interactions between parental identity prior to childbirth and gender during baseline, reaction, or adaptation periods in any of the datasets. In the BHPS, there was some evidence that parental identity after childbirth mattered less for men overall (i.e., significant moderating effect of parental identity after childbirth on baseline), but this did not replicate in other datasets. There were no other significant interactions between post-childbirth parental identity and gender. As such, there is little reason to suggest that the role that parental identity plays in responses to childbirth differs meaningfully among mothers and fathers.

	G	SOEP		В	HPS		HILDA					
	Estimate	SE	t	Estimate	SE	t	Estimate	SE	t	Estimate	SE	t
Baseline												
Estimate	7.38*	0.03	245.2	5.36*	0.03	178.0	7.98*	0.05	159.6	7.87*	0.15	53.2
Gender	0.03	0.03	0.9	0.02	0.03	0.6	-0.05	0.05	-1.0	-0.06	0.15	-0.4
PI Before	0.13*	0.04	3.2	0.04*	0.01	3.0	0.03	0.01	1.9	-	-	-
PI Before x												
Gender	0.01	0.04	0.2	0.01	0.01	0.8	0.02	0.01	1.6	-	-	-
PI After	0.14*	0.07	2.1	0.09*	0.02	3.7	-	-	-	0.19*	0.07	2.8
PI After x Gender	-0.02	0.07	-0.3	-0.05*	0.02	-2.2	-	-	-	0.07	0.07	1.1
Reaction												
Estimate	0.30*	0.03	10.4	0.10*	0.03	3.7	-0.02	0.04	-0.4	0.20	0.14	1.4
Gender	-0.06*	0.03	-2.1	-0.03	0.03	-1.1	-0.05	0.04	-1.2	-0.05	0.14	-0.4
PI Before	-0.07	0.04	-1.8	0.01	0.01	0.6	0.00	0.01	0.1	-	-	-
PI Before x												
Gender	0.02	0.04	0.4	-0.01	0.01	-1.0	-0.01	0.01	-1.1	-	-	-
PI After	0.18*	0.07	2.8	0.04	0.02	1.7	-	-	-	0.01	0.07	0.2
PI After x Gender	0.01	0.07	0.2	0.00	0.02	-0.2	-	-	-	-0.01	0.07	-0.1
Adaptation												
Estimate	0.10*	0.03	3.2	-0.06	0.03	-1.8	-0.18*	0.06	-2.7	-0.13	0.15	-0.9
Gender	0.02	0.03	0.7	0.02	0.03	0.5	0.00	0.06	-0.1	0.03	0.15	0.2
PI Before	-0.04	0.04	-0.8	-0.03*	0.01	-2.2	0.00	0.02	-0.1	-	-	-
PI Before x												
Gender	0.00	0.04	0.1	-0.01	0.01	-1.0	0.00	0.02	-0.3	-	-	-
PI After	0.29	0.07	3.9	0.07*	0.03	2.5	-	-	-	0.01	0.07	0.1
PI After x Gender	0.06	0.07	0.8	0.00	0.03	-0.1	-	-	-	0.02	0.07	0.3
	1 . 1	•		-								

Table 27. Model results evaluating the role of gender and parental identity for SWB responses to the birth of a child.

Notes: * < .05. PI = parental identity.

GENERAL DISCUSSION

There is a notable lack of empirical research aimed at understanding the construct of parental identity and its theoretical underpinnings, leading to a clear lack of understanding of this conceptually important characteristic. Past research has discussed the importance of this construct for parental well-being and sense of self at a conceptual level (e.g., Rane & McBride, 2000), but this body of work has presented limited evidence that parental identity is associated with important psychological outcomes. Indeed, the present work is an important contribution to this area of research, and offers the first systematic evaluation of the trajectory of parental identity over the life course, its patterns of change, and how it relates to important demographic and psychological characteristics.

This work is also the first to evaluate the role of parental identity in how individuals react and subsequently adapt to a theoretically important life event, that is, the birth of a first child. Indeed, there is a healthy body of recent literature exploring the link between parenthood and well-being outcomes (e.g., Nelson et al., 2013) and the moderators of these processes (e.g., Anusic et al., 2014a; Yap et al., 2012) and the present research adds to this literature by introducing and evaluating a conceptually important moderator of this important research question. Overall, these studies are valuable because they give us a better understanding of parental identity, its causes and consequences, and the role it plays in how people respond to the onset of parenthood. All of which are important factors to consider in future research as this area of study moves forward.

Beyond its implications for basic research in this field, this work also has clear applied value, and has potential to inform public policy decisions regarding support for parents in the years surrounding the birth of a child and the years that follow. As policy makers and

organizational leaders in the public and private sectors move towards a greater emphasis on datadriven decision making, studies like these are vital to inform decisions regarding the most efficient ways to allocate resources and efforts in supporting new parents. Determining what types of interventions and policies (and what specific constructs and processes they could affect) that would lead to the greatest returns in individuals' adaptation to parenthood needs to be a central goal of this area of research. Moving forward, I hope research in this area continues with these applied goals in mind.

Correlates of Parental Identity

The results of these studies clearly indicate that parental identity is associated with several important demographic characteristics and outcomes. First, there is a clear gender difference in parental identity where women, on average, report modestly higher parental identity levels than men. Further, this effect shows remarkable consistency among all three national samples. Given the replicability of these findings across three distinct national samples in the current study, coupled with the consistency of the present findings with those in the previous literature (e.g., Maurer et al., 2001; Reitzes & Murtran, 1994) one can have a fair degree of confidence that this is a reliable effect.

It is hard to say at this point what processes underlie gender differences in parental identity, and past theories suggest that this difference could be a result of socialization, a biological difference, or some combination of the two. For example, societal expectations continue to prescribe the primary responsibilities of childcare to women, who continue to be more likely to be the primary caregiver of children in western households, regardless of employment status (Yap & Anusic, 2016). Past studies also suggest that women report more competence and confidence in their ability to care for children (Reitzes & Mutran, 1994), which

is may also lead to greater parental identity. Other research also suggests that there may have been selective pressures for female humans (among many other mammalian organisms) to display a greater degree of parental investment than males (e.g., Trivers, 1972). Indeed, through the course of human evolution, one way that this could have psychologically manifested itself in people is feelings of parental identity, and future research could benefit by evaluating the link between parental investment and parental identity.

These studies also revealed some interesting findings regarding the association between parental identity and marital status. Perhaps the most important finding here is that people who are married, whether one is evaluating within-person or between-person comparisons, report the highest levels of parental identity compared to all other marital status groups. This finding is makes theoretical sense. Although one does not necessarily need to be legally married to have children, marriage is often considered a rite of passage in many cultures where individuals commit to long term romantic partnership, a characteristic that often precedes having children. Further, this major life transition often is seen as the point where you enter the life stage where it is normative to have children, and for some people in our society, a necessary condition before it is morally appropriate to bear children (Thornton & Young-DeMarco, 2001). For these reasons, it makes sense that married individuals place greater importance than other groups on having children. The causal direction, of course, is unclear in these findings, and it is possible that marriage predicates increases in parental identity, or that individuals higher in parental identity are more likely to seek out marriage.

Another interesting finding is that the within-person effects of going from single to married are larger than the between-person effect across individuals who start off married vs. start off single in both the GSOEP and BHPS. Similarly, these analyses also indicate that the

within-person effects of going from married to divorced are larger than the corresponding between-person effects. One possible explanation for this finding is that there is something unique about the transition or process involved with changing marital status (i.e., the actual process of establishing a long term romantic partner or dissolving a marriage) that affects parental identity and gives individuals an added boost or reduction in parental identity over and above the change in status itself. Analyses also reveal that these marriage effects are mitigated, but not eliminated, when age is taken into account, suggesting that this effect is not wholly attributable to just normative effects of age in parental identity. Again, it is noteworthy to mention that several of these effects, although small, were consistent in magnitude and direction across datasets, suggesting a robust relationship between marital status and parental identity.

It is important to understand the interplay between marital status, parental identity, and the underlying mechanisms through which these constructs are related. From an applied perspective, an understanding of these mechanisms could shed some light on when and how people ultimately decide to have children and the factors that predicate this important decision. In this case, identifying the unique features of long-term relationship formation that could predict parental identity, for example, may help demographers understand and develop strategies to curtail declining birth rates in many industrialized western countries (Bongaarts, 1999). Overall, there are many contexts where an understanding of the demographic factors that predict parental identity, and the processes through which these constructs affect one another could have tremendous applied value.

Another robust correlate of parental identity appears to be number of children. The most interesting findings here are the within-person effects of number of children on parental identity in the BHPS. These results suggest that having more children is associated with a rise in parental

identity, leveling off after the second child (refer to Figure 3). This suggests that not only does individuals' self-rated parental identity increase when individuals initially become parents, but that there is an added boost when individuals become parents of multiple children. But once people have multiple children, data suggest that having additional children is not associated with additional boosts in parental identity.

These findings have clear implications on the understanding of transition to parenthood and the psychological implications of having additional children. For instance, this is the first study to evaluate the question of how people's parental identity and the self-rated importance of having children changes as a function of the number of children born to the individual. Indeed, a better understanding of the processes through which individuals transition to parenthood, and how these transitional processes differ depending on the number of children an individual already has could be of great value to policy makers interested in supporting parents and families through these major life transitions. To give a concrete example, there have been large scale campaigns in the United States targeting fathers to promote greater involvement in their children's lives (Levere, 2010). These ad campaigns were, in essence, publically sponsored efforts (by the United States Department of Health and Human Services) to actively boost fathers' parental identity and encourage men to increase the value and importance they place in their role as a parent as a means to improve the lives of families across the nation. Knowledge of the dynamics of parental identity change and how number of children is related to parental identity change could have informed the design of this campaign and what audience segments were specifically targeted by this campaign to get the best public return on investment.

It is important to note that there were relatively few people with more than three children in these data, and although there is a clear, consistent trend that going from no children to having

a child is associated with substantial increases in parental identity, conclusions about the pattern of change in parental identity as individuals have more than three kids should be interpreted with caution. Data from the HILDA was also more limited than that of the BHPS because parental identity was limited to only one wave of data and the measure was only administered to participants between 15-29 years of age. As a result, there are very few individuals in this dataset that have two or more children and only between-persons comparisons are possible.

Overall, these data do show clear differences in parental identity between childless and those with a single child – but it is unclear in the HILDA what pattern takes shape beyond having a single child. Further, just as it is plausible that parental identity predicts whether or not an individual chooses to have children or remains childless, it is also plausible that the experience of becoming a parent is associated with subsequent changes in parental identity. Thus, strong conclusions cannot be made about the causal direction of this association.

These results also shed some light on how it relates to psychological characteristics and outcomes as well. For instance, I was also able to evaluate the association between parental identity and several measures of attitudes and values related to parenthood, childrearing and attitudes towards work-life balance. When these analyses are taken as a whole, the main finding that is consistent across waves is that people who are mainly responsible for childcare report higher parental identity than people whose partner is primarily responsible for childcare. Of course, the causal direction here is unknown, and it is unclear whether individuals who are primarily responsible for their children do so because they are higher in parental identity, or they are higher in parental identity because they have assumed the role of a primary caregiver. Regardless of the causal direction, this finding is consistent with past literature linking parental identity to caregiving behavior (Maurer & Pleck, 2006), and involvement with child rearing

(Bruce & Fox, 1999; Ihinger-Tallman et al., 1993). This association could also partially account for the gender differences in parental identity. Indeed, if women assume the role of primary caregiver more often than men (which data suggests is still the case in modern western society; Yap & Anusic, 2016), then regardless of the causal direction of this effect women would report higher parental identity as a result.

This study also suggests that parental identity is related to other important outcomes, and shows a small but consistent positive association with life satisfaction in each national sample. Overall, these findings suggest that placing importance in parenthood is associated with increased life satisfaction both when you evaluate the association between people with different overall levels of parental identity and when you evaluate how within-person variability in parental identity relates to changes in one's own life satisfaction across time. Although these effects are very small (r < .1), it is also noteworthy how consistent they are across samples. Referring back to Table 16, one can see that the between-person and within-person correlations between life satisfaction and parental identity in the GSOEP are each within .02 of the corresponding estimates in the BHPS. The HILDA did not include a longitudinal component for parental identity since there was only one wave of parental identity data. Thus, I was not able to separate between-person and within-person effects in this sample. However, zero-order correlations between parental identity and life satisfaction in HILDA were consistent in magnitude to the results shown in the GSOEP and BHPS.

These findings are consistent with findings in the past literature showing that parental identity is associated with positive well-being outcomes (e.g., Martire et al., 2000) and offer some of the first evidence of the robustness and generalizability of these effects. As discussed earlier, the past literature evaluating the link between parental identity and well-being is

extremely limited and relied solely on small, unrepresentative samples (e.g., middle-aged mothers). In terms of resolving the discrepancies in the past literature, the size and representativeness of these national samples gives us evidence that the link between parental identity and well-being that is not just limited to small subpopulations of society, and is observed across the populations of three distinct nations. However, the magnitude of the associations between life satisfaction and parental identity observed in the present study are very small compared to the effect sizes observed in past research (e.g., Martire et al., 2000) and further studies would be needed before I would draw strong conclusions about the nature of the discrepancies in the literature and the robustness of these effects.

Parental Identity Across the Lifespan

Results regarding the trajectory of parental identity across the lifespan were remarkably consistent across the datasets. Indeed, parental identity appears to rise gradually from the period of adolescence into early adulthood, leveling off when individuals move into their 30s and remaining relatively stable into older adulthood. In the HILDA, results at first glance appear to differ from findings in the GSOEP and BHPS. However, assessments of parental identity were limited only to participants aged 15-29 in the HILDA. Thus, the parental identity plot in the HILDA only captures the period of adolescence and early adulthood, which one can see is consistent with the period of relatively rapid positive change observed in the GSOEP and BHPS.

As this is the first longitudinal study of parental identity in the literature and the first to evaluate the trajectories of parental identity over time, these results are noteworthy because they provide first insight into the stability and pattern of change of this construct. Indeed, having information about the pattern of change in parental identity is central to the understanding of parental identity, its implications, and the understanding of the development of parenthood and

its relevant psychological processes. Not surprisingly, individuals at different life stages do differ in the importance they place in having children – and it appears that adolescence and early adulthood are the periods of greatest change, consistent with theories of identity formation and development across the lifespan (e.g., Erikson, 1950) However, once individuals reach 30, it appears that parental identity becomes a relatively enduring individual difference, a pattern of change that is consistent with past research evaluating the stability of other many other important personality traits and individual differences (e.g., Terracciano, Costa & McCrae, 2009). From an applied perspective, this type of information may give practitioners insight into the normative pattern of change for parental identity across the lifespan. By helping them understand how the importance of parenthood typically changes over the course of one's life, this work could inform counseling and therapy strategies surrounding issues related to parenthood and parental mental health.

Parental Identity and Response to the Birth of a Child

Another novel aspect of the current study was that it is also the first study to evaluate whether the experience of having children is associated with changes in parental identity in the years that surround birth and the years that follow – questions which have not been addressed in the past research literature. Overall, the results of this study clearly show that childbirth is associated with large changes in parental identity, and these changes persist for many years following birth. These findings are also very consistent across datasets, which suggest this pattern of change is replicable and a robust description of how parental identity is affected by childbirth.

I also evaluated several potential demographic moderators of how parental identity changes in response to the birth of a child, but results revealed little consistent evidence that

people vary in how parental identity changes in response to birth along the lines of gender, age, and income. Lack of a moderating effect of gender is particularly surprising as the importance of gender for parental identity is clear from past research suggesting that parental identity has different implications across men and women (e.g., Martire et al., 2000; Maurer et al., 2001). This would lead one to predict that the experience of this construct (and its pattern of change following major life events) would differ meaningfully across these groups.

The only consistent moderator of parental identity change in response to birth appears to be marital status. In both the GSOEP and BHPS, it appears that people that are married when they have children report higher initial levels of parental identity before the birth of their first child than unmarried respondents. However, in the years that follow birth, unmarried people increase in parental identity to a greater extent than married respondents, and these initial differences between married and unmarried people are largely reduced. Like our findings that suggest the process of getting married is associated with increases in parental identity, this pattern of results also suggest that something about marriage, whether it is just existence of a long-term partner or social expectations regarding what being married means, leads to increased in parental identity in the years before an individual even becomes a parent. These findings are also consistent with past research suggesting that marriage is associated with changes in attitudes towards having children (e.g., Cox, Owen, Lewis, & Henderson, 1989). It is clear however, that regardless of marital status, having children leads to clear increases in parental identity for all groups, and any differences due to "preparatory" parental identity experienced by those who are married before having children is largely dissolved.

Evaluating this question with this type of within-person model is advantageous for several reasons. For instance, if the critical comparison was a between-person comparison, this

study would not be able to rule out the possibility of selection effects. That is, finding differences in parental identity (and its trajectory) between those who have children and those who do not does not rule out the possibility that these differences in parental identity trajectory do not result from the experience of childbirth itself and instead are due to a preexisting, dispositional difference. In contrast, this within-person approach is able to rule out the possibility of selection effects because the critical comparison in this design is the contrast between one's baseline levels of parental identity in the years before birth of a first child and one's levels of parental identity in the years that follow birth.

Using a propensity score matched control group, I was also able to rule out normative, age related change as an explanation of this pattern of parental identity change in the years that follow birth. Across both the GSOEP and BHPS, childbirth was still associated with increases in parental identity even after accounting for the estimated change that would have occurred even if childbirth had not happened. Indeed, this can be interpreted as evidence that this pattern of change in parental identity is not due to normative change and instead provides first evidence that the experience of childbirth itself is associated with substantial, long lasting increases in parental identity. However, when using such techniques, it is important to consider the assumptions are being made about the appropriateness of this control group and the conclusions that can be drawn about normative change using controls groups matched in this way. For instance, a control group selected in this manner will inevitably be diverse in the reasons they have not had children. Some individuals in this group are people who have chosen not to have children at any time during their lives, whereas others may plan to have children, but just not had children yet. Still others may be strongly motivated to have children, but for some reason are not able to have children (e.g., fertility, finances, lack of partner). By using this approach to

identifying a matched control group, each of these heterogeneous subsamples would be included in this control group that is used to assess normative change. This issue clearly raises the question of whether estimates derived from this group are really "normative" and whether it would serve as an effective comparison group (i.e., are members of this group really alike in every way other than the fact that they do not have a child?). For instance, the person who was highly motivated to have children throughout their lives, but ultimately did not due to the lack of an adequate partner is likely to have other characteristics that make them unique. Even in the results reported here, there was a significant difference between the event and matched control groups on the initial levels of parental identity in the BHPS. This suggests that the propensity score approach to matching groups still resulted in important differences between the two groups on a key variable of interest. As a result, care should be taken when interpreting these results and drawing conclusions about how these findings could be used in applied settings.

The Role of Parental Identity in Reactions to the Birth of a Child

The final goal of this study was to evaluate whether parental identity plays a meaningful role in how people respond to the birth of a child and predicts variability in patterns of SWB change surrounding birth. Generally speaking, the findings of these studies suggest that parental identity does in fact play an important role in SWB responses to the birth of a child, but that it also depends on how one operationalizes this construct. In particular, both pre and post-childbirth parental identity are positively associated with increased SWB in the years before birth, but only post-childbirth parental identity is associated with an added, long term boost in SWB following childbirth in three national samples.

These findings are most consistent with the theoretical perspective suggesting that constructs like parental identity serve a positive function, and may be a protective factor against

parental role related stressors (e.g., Luchetta, 1995; Martire et al., 2000). Under this perspective, individuals high in parental identity will be especially motivated to feel good about their role as a parent, which in turn buffers individuals from the stressors associated with this role and other negative aspects of being a parent. Drawing from past theory regarding the functions of identity constructs (e.g., Erikson, 1950; Tajfel & Turner, 1986), these individuals may simply be more committed to focus on positive attributes of being a parent, which may provide added justification for assuming this role when faced with the negative aspects of parenthood in the years that follow birth. As a result, people's SWB and their judgements of their quality of life may be more protected from declines.

Although more research would be needed before one could say definitively that the apparent discrepancies regarding the direction of this moderating effect are resolved. The consistency of these findings across three distinct national samples, as well as the size and representativeness of these samples lends weight to these results as strong evidence for a buffering model of parental identity on response to childbirth. Of course, one still cannot make definitive statements about causality from this design and it remains possible that people who experience parenthood more positively report higher parental identity as a result, or that being highly identified as a parent leads one to experience parenting more positively.

Another issue to consider when evaluating the strength of conclusions that can be drawn from these findings is the meaningfulness of measuring parental identity with individuals who do not have children. Critics of this approach might argue that when one assesses the importance of having children with a non-parent you are actually assessing a distinct construct that is not an evaluation of about their identity as a parent (since they are not a parent) but a more general value or belief about the role of children in the respondent's life. On the other hand, a case could

be made that even for most non-parents, parenthood is a possible role that most people eventually *choose* to fulfill. Indeed, the psychological process through which one decides to become a parent likely involves a meaningful increase in the importance of that role (or at least their precocieved notions of that role) and what that role means to them. Further, this role is unique that there is an expectation that most people will eventually occupy this role, thus notions about the role and what it will mean for an individual's sense of self likely begin to form long before one actually becomes a parent.

Limitations and Future Directions

An important advantage of this study was that it was the first study to evaluate change in parental identity longitudinally in large, nationally representative samples. The data used in this study allowed me to examine parental identity in samples of people that were approximately representative of the general populations of Germany, Great Britain and younger populations of Australia. Previous studies of parental identity have often focused on small samples of middleaged parents, and often only include mothers. As the results of the current study indicate, the implications of parental identity are not limited to mothers, and this construct has important implications for people of many groups across the lifespan. Indeed, these panel studies provided a unique opportunity to explore stability and change in parental identity, its correlates over time and its long term implications on responses to birth for the first time in the literature.

Despite the strengths of using these large scale, nationally representative datasets to evaluate the nature of parental identity, the use of such datasets are not without their limitations. Use of preexisting data limits the control I had over the data that was available at each wave, the items used to assess key variables and how important constructs were operationalized. For instance, although parental identity is typically conceptualized as a narrow construct, little work

has gone into understanding the assessment of this construct, its dimensions, and the psychometric properties of existing assessment tools. Importance of a role is often seen as a part of identity and considered a good indicator of one's strength of identification with a role or social group, which is a core aspect of most big theories of identity. (e.g., Sellers et al., 1998; Tajfel & Turner, 1986). However, it does remain possible that simply asking about the importance of having children may not adequately capture the construct of parental identity, or simply does not capture the full breadth and complexity of this construct, which may include dimensions such as commitment to parenthood or general evaluations and attitudes towards the role of being a parent.

The implications of this narrow focus for the interpretation of this work are important to consider because it speaks to the conceptualization of the construct itself and the conclusions we can draw from this research. For instance, it is plausible that some of the null findings emerging out of the present analyses were not due to the absence of an effect (e.g., absence of a robust association between income and parental identity) but instead could be due to the fact that these measures of parental identity are simply too narrow to capture what would be robust effects had other aspects or features of parental identity been considered (e.g., income may be associated with other aspects of parental identity that are not captured by just the importance of the role). Alternatively, some of the effects and associations that did emerge from this work could be unique to the notion of importance, and might not have been observed in other aspects of parental identity. Granted, the notion of importance may be considered a core aspect of parental identity of consequence. Further, the item we used to measure parental identity was also not included at each wave of data collection, and at times was not asked of everyone in the sample, which

limited the analyses I was able to perform to examine this study's main research questions.

Another potential limitation is of this study involves the use of single item measures of parental identity. Typically, single item measures are criticized because they are not as internally consistent as expected in traditional assessment tools, especially when compared to other measures of greater length. Use of brief measures in large scale panel studies is often necessary to minimize participant burden given the usual length of these types of studies. These issues are important to keep in mind when interpreting the results as there has been no research examining the reliability of this single item measure of parental identity, nor has there been research examining the validity of such a measure of parental identity. As such, this literature would benefit tremendously from more research being devoted to understanding how to assess parental identity. Other longer measures of parental identity (e.g., Maurer et al. 2001) do capture more breadth in the features of the parental identity that may be of psychological consequence, but such measures were not available in these panel datasets. Even if such measures were included in future primary research evaluating these questions, the added length of these measures would place substantially more burden on participants and researchers would have to trade off on other potential strengths in their research designs.

Finally, it is possible that the results of this study are biased by selective attrition. In other words, there could have been important differences between individuals that remained in the study versus those who dropped out, and it is possible that these selective differences may influence the conclusions one could draw from these findings. Nonetheless, this issue and others discussed above are typically seen as trade-offs inherent in any study that involves secondary data analysis where one is trading off lack of control over the design of the study for the benefits associated with use of large nationally representative samples without the burden of collecting

such samples.

The results of these studies help to increase the scientific community's understanding of parental identity and its role in the lives of parents, and this work also raises other important questions about the causes and consequences of healthy parenthood. For instance, these panel studies are rich sources of data, and future research could continue to take advantage of these datasets to evaluate other potential factors that moderate individuals' response to the birth of a child. These panel datasets include measures of many characteristics that are potentially relevant to how people react and adapt to childbirth, such as post-partum social support, perceived physical health, and relationship satisfaction. Further research using these data could also make use of some of the variables already evaluated in the present studies as potential moderators of individuals' responses to childbirth. For example, the variables related to division of labor and childcare may play an important role in how individuals react (and adapt) to having a child. Indeed, it is possible that the burden of childcare, or the balance of childcare responsibilities between partners may ultimately affect how the birth of a child impacts parent's long term well being.

One of the key challenges for future research is refining the assessment of parental identity, developing more robust measures of this construct, and more depth in the work to validate existing measures of the construct. Assessment of parental identity was a key limitation of this study, and will continue to be a challenge in this area of research until further progress is made in the measurement of this construct. Although the indicators of parental identity used in the current studies do assess the importance of having children, these items could have multiple interpretations to respondents. For example, rather than assessing the importance of having children to individuals' own identity or sense of self, respondents may interpret these items as
asking about the larger societal importance of having children. Thus, individuals may feel that having children is important in a general, societal sense, but do not necessarily see having children or being a parent to be a central part of who they are. This is important to consider when interpreting these results, as each respective interpretation of these items lend themselves to vastly different implications one would draw from the findings of these studies. One interpretation frames what is measured with these items as an identity construct, where the other interpretation frames what is measured as a more general belief about the importance of children to societal progression. Moreover, these items assess the importance of "having children" rather than the importance of "being a parent" which are related, but could be argued to be theoretically distinct constructs. Secondary data analysis limits the control a researcher has on the variables that are included in the study and the way in which various constructs are measured.

Efforts to develop a valid, psychometrically sound measure of parental identity are necessary to allow for greater precision in the measurement of this construct. These measures could take multiple forms. For instance, they could be designed to capture more breadth and assess other dimensions of parental identity (e.g., extent of caregiving behaviors; issues related to work-life balance) and used as multi-dimensional scales. However, they could also continue to focus on the notion of importance or some other narrowly defined operationalization of parental identity. The path this work takes largely depends on how researchers in this field continue to conceptualize parental identity and define the nature of the construct. This is vital to the future of this area of research, and these efforts would need to move beyond the limitations of panel data.

Additional studies could also evaluate other potential moderators of people's reaction and subsequent adaptation to the birth of a child. For instance, physical complications due to birthing, or complications with the health of one's newborn baby may also play an important role

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how people's well-being changes in response to birth. Sleep deprivation is also known to be an important factor in post partum well-being in parents (Dennis & Ross, 2005). However, little is known about whether the negative effects of sleep deprivation on parental well-being persist in the years beyond infancy and affect long-term adaptation to the birth of a child. Other, more policy driven factors should also be evaluated as potential moderators of reaction and adaptation to childbirth in future research. For instance, parental leave is a multifaceted, often contentious area of public policy. As past research suggests that the availability of parental leave is associated with an array of parental and child outcomes (Galtry & Callister, 2005), understanding the long term well-being implications of parental leave on parental well-being could have huge implications on policy in this area.

Conclusions

This study speaks to the scientific understanding of parental identity, but it also clearly speaks to the larger issue of parental well-being and this area of research can have far reaching implications for public policy. For policy makers tasked with improving quality of life for new mothers, new fathers and growing families, having a clear understanding of the factors that may contribute to long term well-being and adjustment to new parenthood is critical. Creating policies that serve to improve parental adjustment, and ultimately contribute to the development of healthy children and healthy societies need to rely on data describing the factors that relate to well-being and improve outcomes for parents and children. Overall, this work identifies parental identity as one of these vital factors that may contribute to long-term adjustment to parenthood, and considering ways to foster parental identity and create feelings of importance for this role in expectant parents, particularly those that are at risk, may be a fruitful applied avenue for this area of research to pursue.

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REFERENCES

REFERENCES

- Anusic, I., Yap, S. C. Y., & Lucas, R. (2014a) Does personality moderate reaction and adaptation to major life events? Analysis of life satisfaction and affect in an Australian national sample. *Journal of Research in Personality*, 51, 69-77.
- Anusic, I., Yap, S. C. Y., & Lucas, R. E. (2014b). Testing set-point theory is a Swiss national sample: Reaction and adaptation to major life events. *Social Indicators Research*, 119, 1265-1288.
- Aassve, A., Goisis, A., & Sironi, M. (2012). Happiness and childbearing across Europe. Social Indicators Research, 108, 65–86.
- Baird, B. M., Lucas, R. E., & Donnellan, M. B. (2010). Life satisfaction across the life span: Findings from two nationally representative panel studies. *Social Indicators Research*, 99, 183-203.
- Baumeister, R.F. (1991). Meanings of life. New York: Guilford Press.
- Belsky, J., Lang, M. E., & Rovine, M. (1985). Stability and change in marriage across the transition to parenthood: A second study. *Journal of Marriage and the Family*, 47, 855-865.
- Belsky, J., Spanier, G. B., & Rovine, M. (1983). Stability and change in marriage across the transition to parenthood. *Journal of Marriage and the Family*, 45(3), 567-577.
- Blanchflower, D. G., & Oswald, A. J. (2008). Is well-being U-shaped over the life cycle? *Social Science & Medicine*, *66*, 1733-1749.
- Bonanno, G. A. (2004). Loss, trauma, and human resilience: Have we underestimated the human capacity to thrive after extremely aversive events? *American Psychologist*, 59(1), 20-28.
- Bonanno, G. A., & Kaltman, S. (2001). The varieties of grief experience. *Clinical Psychology Review*, 21, 705–734.
- Bonanno, G. A., & Keltner, D. (1997). Facial expressions of emotion and the course of conjugal bereavement. *Journal of Abnormal Psychology*, *106*, 126–137.
- Bongaarts, J. (1999). Fertility decline in the developed world: Where will it end? *The American Economic Review*, 89, 256-260.
- Boyce, C. J., Wood, A. M., & Brown, G. D. A. (2010) The dark side of conscientiousness: Conscientious people experience greater drops in life satisfaction following unemployment. *Journal of Research in Personality*, 44, 535-539.

- Boyce, C. J. & Wood, A. M. (2011). Personality prior to disability determines adaptation: Agreeable individuals recover lost life satisfaction faster and more completely. *Psychological Science*, 22, 1397-1402.
- Bruce, C., & Fox, G. L. (1999). Accounting for patterns of father involvement: Age of child, father-child coresidence, and father role salience. *Sociological Inquiry*, *69*(*3*), 458-476.
- Bumpass, L., & Lu, H. H. (2000). Trends in cohabitation and implications for children's family contexts in the United States. *Population Studies*, 54, 29-41.
- Cabrera, N. J., Tamis-LeMonda, C. S., Bradley, R. H., Hofferth, S., & Lamb, M. E. (2000). Fatherhood in the twenty-first century. *Child Development*, *71*(1), 127-136.
- Cambell, A. Converse, P. E., & Rodgers, W. L. (1976). *The quality of American life: Perceptions, evaluations and satisfactions*. New York: Russell Sage Foundation.
- Cheung, F. & Lucas, R. E. (2014). Assessing the validity of single-item life satisfaction measures: Results from three large samples. *Quality of Life Research, 23*, 2809-2818.
- Clark, A. E., Diener, E., Georgellis, Y., & Lucas, R. E. (2008). Lags And Leads in Life Satisfaction: A test of the baseline hypothesis. *The Economic Journal*, 118(529), F222-F243.
- Cox, M. J., Owen, M. T., Lewis, J. M., & Henderson, V. K. (1989). Marriage, adult adjustment, and early parenting. *Child Development*, 1015-1024.
- Deaton, A. (2008). Income, health and well-being around the world: Evidence from the Gallup World Poll. *Journal of Economic Perspectives*, 22, 53–72.
- Dennis, C. L., & Ross, L. (2005). Relationships among infant sleep patterns, maternal fatigue, and the development of depressive symptomatology. *Birth*, *32*, 187-193.
- Diener, E. (1984). Subjective well-being. Psychological Bulletin, 95, 542-575.
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment*, 49, 71–75.
- Diener, E., Lucas, R. E., & Scollon, C. N. (2006). Beyond the hedonic treadmill: Revising the adaptation theory of well-being. *American Psychologist*, *61*(4), 305-314.
- Diener, E., Suh, E. M., Lucas, R. E., & Smith, H. L. (1999). Subjective well-being: Three decades of progress. *Psychological Bulletin*, 125(2), 276-302.
- Doss, B. D., Rhoades, G. K., Stanley, S. M., & Markman, H. J. (2009). The effect of the transition to parenthood on relationship quality: An 8-year prospective study. *Journal of Personality and Social Psychology*, 96(3), 601-619.

- Dyrdal, G. M., & Lucas, R. E. (2013). Reaction and adaptation to the birth of a child: A couplelevel analysis. *Developmental Psychology*, 49(4), 749-761.
- Dyrdal, G. M., Røysamb, E., Nes, R. B., & Vittersø, J. (2011). Can a happy relationship predict a happy life? A population-based study of maternal well-being during the life transition of pregnancy, infancy, and toddlerhood. *Journal of Happiness Studies*, *12*(6), 947-962.
- Erikson, E. H. (1950). Growth and crises of the "healthy personality". In M. J. E., Senn (Ed.), Symposium on the healthy personality (pp. 91-146). Oxford, England: Josiah Macy, Jr. Foundation.
- Erikson, E. H. (1968). Identity, youth, and crisis. New York: Norton.
- Frederick, S., & Loewenstein, G. (1999). Hedonic adaptation. In D. Kahneman, E. Diener, & N. Schwarz (Eds.), *Well-being: The foundations of hedonic psychology* (pp. 302–329). New York: Russell Sage Foundation.
- Galatzer-Levy, I. R., Bonanno, G. A., & Mancini, A. D. (2010). From marianthal to latent growth mixture modeling: A return to the exploration of individual differences in response to unemployment. *Journal of Neuroscience, Psychology, and Economics*, 3(2), 116-125.
- Galatzer-Levy, I. R., Mazursky, H., Mancini, A. D., & Bonanno, G. A. (2011). What we don't expect when expecting: Evidence for heterogeneity in subjective well-being in response to parenthood. *Journal of Family Psychology*, 25(3), 384-392.
- Galtry, J., & Callister, P. (2005). Assessing the optimal length of parental leave for child and parental well-being: How can research inform policy? *Journal of Family Issues*, 26, 219-246.
- Gelman, A., & Hill, J. (2009). *Data analysis using regression and multilevel/hierarchical models*. New York: Cambridge University Press.
- Gelman, A., Su, Y., Yajima, J., Hill, J., Pittau, M. G., Kerman, J., & Zheng, T. (2011). arm: Data analysis using regression and multilevel hierarchical models. R package version 1.4-14. <u>http://cran.r-project.org/web/packages/arm/arm.pdf</u>.
- Glenn, N. D., & McLanahan, S. (1982). Children and marital happiness: A further specification of the relationship. *Journal of Marriage and the Family*, 44, 63-72.
- Glenn, N. D., & Weaver, C. N. (1979). A note on family situation and global happiness. *Social Forces*, *57*, 960–967.
- Grote, N. K., & Clark, M. S. (2001). Perceiving unfairness in the family: Cause or consequence of marital distress? *Journal of Personality and Social Psychology*, 80(2), 281-293.

- Haisken-DeNew, J. P., & Frick, R. (2005). *Desktop companion to the German Socio-Economic Panel (SOEP)*. Berlin: German Institute for Economic Research.
- Holmes, T. H., & Rahe, R. H. (1967). The social readjustment rating scale. Journal of Psychosomatic Research, 11, 213-218.
- Ihinger-Tallman, M., Pasley, K., & Buehler, C. (1993). Developing a middle-range theory of father involvement postdivorce. *Journal of Family Issues*, 14(4), 550-571.
- Institute for Social and Economic Research, University of Essex (2010). *British Household Panel Survey: Waves 1–19, 1991–2009* (computer file). Colchester, England: UK Data Archive (distributor).
- Kenrick, D. T., Griskevicius, V., Neuberg, S. L., & Schaller, M. (2010). Renovating the pyramid of needs: Contemporary extensions built upon ancient foundations. *Perspectives on Psychological Science*, 5(3), 292-314.
- Kiang, L., Yip, T., Gonzales-Backen, M., Witkow, M., & Fuligni, A. J. (2006). Ethnic identity and the daily psychological well-being of adolescents from Mexican and Chinese backgrounds. *Child Development*, 77, 1338–1350.
- Kobau, R., Sniezek, J., Zack, M. M., Lucas, R. E., & Burns, A. (2010). Well-being assessment: An evaluation of well-being scales for public health and population estimates of wellbeing among US adults. *Applied Psychology: Health and Well-Being*, 2, 272–297.
- Kohler, H. P., Behrman, J. R., & Skytthe, A. (2005). Partner+ Children= Happiness? The effects of partnerships and fertility on well-being. *Population and Development Review*, *31*(*3*), 407-445.
- Lawrence, E., Nylen, K., & Cobb, R. J. (2007). Prenatal expectations and marital satisfaction over the transition to parenthood. *Journal of Family Psychology*, 21(2), 155-164.
- Levere, J. L. (2010). *Ads Urge Fathers to 'Take Time' to Be a Dad*. Retrieved from http://www.nytimes.com/2010/10/19/business/media/19adnewsletter1.html.
- Löckenhoff, C. E., Terracciano, A., Patriciu, N. S., Eaton, W. W., & Costa, P. T. (2009). Selfreported extremely adverse life events and longitudinal changes in five-factor model personality traits in an urban sample. *Journal of Traumatic Stress*, 22, 53-59.
- Lucas, R. E. (2005). Time does not heal all wounds: A longitudinal study of reaction and adaptation to divorce. *Psychological science*, *16*(12), 945-950.
- Lucas, R. E. (2007a). Adaptation and the set-point model of subjective well-being: Does happiness change after major life events? *Current Directions in Psychological Science*, *16*(2), 75-79.

- Lucas, R. E. (2007b). Long-term disability is associated with lasting changes in subjective wellbeing: Evidence from two nationally representative longitudinal studies. *Journal of Personality and Social Psychology*, 92(4), 717-730.
- Lucas, R. E., Clark, A. E., Georgellis, Y., & Diener, E. (2003). Reexamining adaptation and the set point model of happiness: Reactions to changes in marital status. *Journal of Personality and Social Psychology*, 84(3), 527-539.
- Lucas, R. E., Clark, A. E., Georgellis, Y., & Diener, E. (2004). Unemployment alters the set point for life satisfaction. *Psychological Science*, *15*(1), 8-13.
- Lucas, R. E., & Donnellan, M. B. (2011). Estimating the reliabiloty of single-item life satisfaction measures: Results from four national panel studies. *Social Indicators Research*, *105*, 323-331.
- Luchetta, T. (1995). Parental and work role salience, everyday problems, and distress: A prospective analysis of specific vulnerability among multiple-role women. *Women & Health*, 22(4), 21-50.
- Lykken, D., & Tellegen, A. (1996). Happiness is a stochastic phenomenon. *Psychological Science*, 7(3), 186-189.
- Lyubomirsky, S., & Boehm, J. K. (2010). Human Motives, Happiness, and the Puzzle of Parenthood Commentary on Kenrick et al.(2010). *Perspectives on Psychological Science*, *5*(3), 327-334.
- Lyubomirsky, S., Sheldon, K. M., & Schkade, D. (2005). Pursuing happiness: The architecture of sustainable change. *Review of General Psychology*, 9(2), 111–131.
- Macht, M., & Dettmer, D. (2006). Everyday mood and emotions after eating a chocolate bar or an apple. *Appetite*, 46(3), 332-336.
- Marcia, J. E. (1966). Development and validation of ego identity status. *Journal or Personality* and Social Psychology, 3, 511-558.
- Martire, L. M., Stephens, M. A. P., & Townsend, A. L. (2000). Centrality of women's multiple roles: Beneficial and detrimental consequences for psychological well-being. *Psychology and Aging*, *15*(1), 148-156.
- Maurer, T. W., & Pleck, J. H. (2006). Fathers' caregiving and breadwinning: A gender congruence analysis. *Psychology of Men & Masculinity*, 7(2), 101-112.
- Maurer, T. W., Pleck, J. H., & Rane, T. R. (2001). Parental identity and reflected-apprasials: Measurement and gender dynamics. *Journal of Marriage and Family*, 63(2), 309-321.

- McBride, B. A., & Rane, T. R. (1997). Role identity, role investments, and paternal involvement: Implications for parenting programs for men. *Early Childhood Research Quarterly*, *12*(2), 173-197.
- McLanahan, S., & Adams, J. (1987). Parenthood and psychological well-being. *Annual Review* of Sociology, 13, 237-257.
- Minton, C., & Pasley, K. (1996). Fathers' parenting role identity and father involvement A Comparison of nondivorced and divorced, nonresident fathers. *Journal of Family Issues*, *17*(1), 26-45.
- Mroczek, D. K., & Spiro, A., III (2003). Modeling intraindividual change in personality traits: Findings from the normative aging study. *Journal of Gerontology: Psychological Sciences, 58*, 153-165.
- Nelson, S. K., Kushlev, K., English, T., Dunn, E. W., & Lyubomirsky, S. (2013). In defense of parenthood: Children are associated with more joy than misery. *Psychological Science*, 24, 3–10.
- Nelson, S. K., Kushlev, K., & Lyubomirsky, S. (2014). The pains and pleasures of parenting: When, why, and how is parenthood associated with more or less well-being? *Psychological Bulletin*, 140, 846-895.
- Noor, N. M. (2004). Work-family conflict, work-and family-role salience, and women's wellbeing. *The Journal of Social Psychology*, *144*(4), 389-405.
- Okun, M. A., & George, L. K. (1984). Physician-and self-ratings of health, neuroticism and subjective well-being among men and women. *Personality and Individual Differences*, 5(5), 533-539.
- Pagán-Rodríguez, R. (2012). Longitudinal analysis of the domains of satisfaction before and after disability: Evidence from the German Socio-Economic Panel. *Social Indicators Research*, *108*, 365-385.
- Pai, M., & Carr, D. (2010). Do personality traits moderate the effect of late-life spousal loss on psychological distress? *Journal of Health and Social Behavior*, *51*, 183-199.
- Phinney, J. S. (1990). Ethnic identity in adolescents and adults: A review of research. *Psychological Bulletin, 108,* 499-514.
- Phinney, J. S., Cantu, C. L., & Kurtz, D. A. (1997). Ethnic and American identity as predictors of self-esteem among African American, Latino, and White adolescents. *Journal of Youth and Adolescence*, *26*(2), 165-185.
- Pleck, J. H. (1997). Paternal involvement: Levels, sources, and consequences. In M. E. Lamb (Ed.). *The Role of the Father in Child Development* (3rd ed., pp.66-103). Hoboken, NJ:

John Wiley & Sons Inc.

- R Development Core Team (2010). *R: A language and environment for statistical computing*. Vienna, Austria: R Foundation for Statistical Computing.
- Reitzes, D. C., & Mutran, E. J. (1994). Multiple roles and identities: Factors influencing selfesteem among middle-aged working men and women. *Social Psychology Quarterly*, 57 (4), 313-325.
- Rholes, W. S., Simpson, J. A., Campbell, L., & Grich, J. (2001). Adult attachment and the transition to parenthood. *Journal of Personality and Social Psychology*, 81(3), 421-435.
- Roberts, B. W., Caspi, A., & Moffit, T. (2003). Work experiences and personality development in young adulthood. *Journal of Personality and Social Psychology*, 84, 582-593.
- Roberts, B. W., Walton, K., Bogg, T., & Caspi, A. (2006). De-investment in work and nonnormative personality trait change in young adulthood. *European Journal of Personality*, 20, 461-474.
- Robins, R. W., Hendin, H. M., & Trzesniewski, K. H. (2001). Measuring global self-esteem: Construct validation of a single-item measure and the Rosenberg Self-Esteem Scale. *Personality and Social Psychology Bulletin*, 27, 151-161.
- Rothrauff, T., & Cooney, T. M. (2008). The role of generativity in psychological well-being: Does it differ for childless adults and parents? *Journal of Adult Development*, 15, 148-159.
- Sellers, R. M., Smith, M. A., Shelton, J. N., Rowley, S. A. J., & Chavous, T. M. (1998). Multidimensional Model of Racial Identity: A reconceptualization of African American racial identity. *Personality and Social Psychology Review*, 2, 18–39.
- Settles, I. H. (2004). When multiple identities interfere: The role of identity centrality. *Personality and Social Psychology Bulletin*, *30*(4), 487-500.
- Settles, I. H., Navarrete, C. D., Pagano, S. J., Abdou, C. M., & Sidanius, J. (2010). Racial identity and depression among African American women. *Cultural Diversity and Ethnic Minority Psychology*, 16(2), 248-255.
- Singer, J. D., & Willett, J. B. (2003). *Applied Longitudinal Data Analysis: Modeling Change and Event Occurrence*. New York: Oxford University Press.
- Simon, R. W. (1992). Parental role strains, salience of parental identity and gender differences in psychological distress. *Journal of Health and Social Behavior*, 33, 25-35.
- Smith, A., Kendrick, A., Maben, A., & Salmon, J. (1994). Effects of breakfast and caffeine on cognitive performance, mood and cardiovascular functioning. *Appetite*, 22(1), 39-55.

- Smith, D.M., Schwarz, N., Roberts, T. R., & Ubel, P. A. (2006). Why are you calling me? How survey introductions change response patterns. *Quality of Life Research*, *15*, 621-630.
- Specht, J., Egloff, B., & Schmukle, S. C. (2011). Stability and change of personality across the life course: The impact of age and major life events on mean-level and rank-order stability of the Big Five. *Journal of Personality and Social Psychology*, *101*, 862-882.
- Stutzer, A., & Frey, B. S. (2006). Does marriage make people happy, or do happy people get married? *The Journal of Socio-Economics*, *35*(2), 326-347.
- Summerfield, M., Freidin, S., Hahn, M., Ittak, P., Li, N., Macalalad, N, & Wooden, M. (2012). HILDA User Manual – Release 11. Melbourne Institute of Applied Economic and Social Research, University of Melbourne.
- Tajfel, H. & Turner, J. C. (1986). The social identity theory of intergroup behavior. In S. Worchel & W. G. Austin (Eds.), *Psychology of Intergroup Relations* (2nd ed., pp.7-24). Chicago: Nelson-Hall.
- Tay, L., & Diener, E. (2011). Needs and subjective well-being around the world. *Journal of Personality and Social Psychology*, *101*(2), 354-365.
- Taylor, M. F., Brice, J., Buck, N., & Prentice-Lane, E. (2010). British Household Panel Survey user manual. Introduction, technical report, and appendices (Vol. A). Colchester, England: University of Essex.
- Terracciano, A., Costa Jr, P. T., & McCrae, R. R. (2006). Personality plasticity after age 30. *Personality and Social Psychology Bulletin*, *32*(8), 999-1009.
- Thoits, P. A. (1987). Negotiating Roles. In F. J. Crosby (Ed.), *Spouse, Parent, Worker: Gender* and Multiple Roles (pp. 11-22). New Haven: Yale University Press.
- Thoits, P. A. (1992). Identity structures and psychological well-being: Gender and marital status comparisons. *Social Psychology Quarterly*, 55, 236-256.
- Thornton, A., & Young-DeMarco L. (2001) Four decades of trends in attitudes toward family issues in the United States: The 1960s through the 1990s. *Journal of Marriage and Family*, *63*, 1009-1037.
- Turner, J. C., Oakes, P. J., Haslam, S. A., & McGarty, C. (1994). Self and collective: Cognition and social context. *Personality and Social Psychology Bulletin*, 20, 454-463.
- Trivers, R. (1972). Parental investment and sexual selection. In *Sexual selection and the decent* of man: 1871-1971. Chicago: Aldine de Gruyter.
- Twenge, J.M., Campbell, W.K. & Foster, C.A. (2003). Parenthood and marital satisfaction. Journal of Marriage and Family, 65(3), 574–583.

- Umberson, D., & Williams, K. (1999). Family status and mental health. In *Handbook of the Sociology of Mental Health* (pp. 225-253). Springer US.
- Vaidya, J. G., Gray, E. K., Haig, J., & Watson, D. (2002). On the temporal stability of personality: Evidence for differential stability and the role of life experiences. *Journal of Personality and Social Psychology*, 83, 1469-1484.
- Wong, M. M., & Csikszentmihalyi, M. (1991). Motivation and academic achievement: The effects of personality traits and the duality of experience. *Journal of Personality*, *59*(3), 539-574.
- Yap, S. C. Y., Anusic, I., & Lucas, R. E. (2012). Does personality moderate reaction and adaptation to major life events? Evidence from the British Household Panel Survey. *Journal of Research in Personality*, 46, 477-488.
- Yap, S. C. Y., & Anusic, I. (2016). *Women still take up the bulk of household labour and childcare*. Retrieved from <u>http://insightaresearch.com/2016/05/17/time-use-by-gender/</u>.
- Yap, S. C. Y., Settles, I. H., & Pratt-Hyatt, J. S. (2011). Mediators of the relationship between racial identity and life satisfaction among a community sample of African American women and men. *Cultural Diversity and Ethnic Minority Psychology*, 17, 89-97.