PSYCHOLOGICAL IMPLICATIONS OF PARENTHOOD IN MIDLIFE: EVIDENCE FROM SIBLING MODELS

by

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ABSTRACT

The demands and rewards of parenthood change over the life course. Research suggests that young adult parents of minor children report more distress than their childfree peers and older parents whose adult children live on their own. Yet, few studies have examined the psychological implications of having both minor (i.e., under age 18) and adult children, which is often the case among midlife parents. The objectives of this dissertation are to examine (a) how middle-aged parents compare to their childfree peers with respect to positive and negative mental health outcomes, and (b) how diverse configurations of children's age and living arrangements as well as the quality of relationships with children are related to parents' distress and psychological well-being. Further, I study gender differences in the psychological implications of parenthood and the extent to which associations between parental experiences and mental health observed at midlife reflect genetic and environmental influences experienced by parents early in life.

To explore these questions, I use graduate and sibling data from the 1993-1994 wave of the Wisconsin Longitudinal Study as well as samples of main respondents and their siblings and a twin sample from the two waves of the National Survey of Midlife Development in the United States. My analysis compares siblings of different degrees of genetic similarity using between-family models, within-family fixed-effects models, and multilevel linear random-coefficient models.

Findings reveal that parental status per se is not related to depressive symptoms and psychological well-being at midlife; main differences in mental health arise from specific structural configurations of the parental role. Empty-nest middle-aged parents have better mental health compared to all other subgroups of parents. In contrast, having at least one coresiding child is associated with higher levels of distress and lower levels of psychological well-being.

Parenthood is beneficial only under conditions of positive relationships with children and positive perceptions of one's performance as a parent. A comparison of mental health of middle-aged siblings who differ with respect to their parental experiences revealed that unobserved genetic and early-life environmental influences shared by siblings within families appear to operate at midlife by increasing the likelihood of having coresidential adult children while simultaneously reducing parents' mental health.

The psychological costs and rewards of parenthood are conditional on parents' gender and marital status. Remarriage and sharing one's household with both minor and adult children threatens psychological well-being of women but not men. Fathers derive greater psychological benefits than mothers from having high-quality intergenerational relationships. I conclude that parenthood is an important influence on well-being of middle-aged men and women. This study emphasizes the need to move beyond parental status as a monolithic category and instead focus on the specific contexts within which midlife parenthood is experienced as detrimental or beneficial to well-being. The findings reveal remarkable heterogeneity of the parental experience at midlife based on the structural and qualitative characteristics of the parental role, parents' gender and marital status, and the intersection of parents' and children's life-course trajectories.

CHAPTER 1. LITERATURE REVIEW AND HYPOTHESES

In recent years, there has been a proliferation of research on parenting adult children and parent-adult child relationships (Greenfield & Marks, 2006; Koropeckyj-Cox, 1998; Pillemer & Suitor, 2002; Ryff & Seltzer, 1996; Umberson, 1996). Studies range from broad comparisons of older parents and their childfree peers (Koropeckyj-Cox, 2002) to detailed examinations of specific aspects of parent-child interactions (Fingerman, 1998; 2001; Suitor & Pillemer, 2007). Overall, research consistently indicates that parental involvement persists over the life course, and the role of a parent does not end when children grow up and leave the parental home (Allen, Blieszner, & Roberto, 2000; Umberson, 1992), especially given that a substantial minority of adult children live with their parents at some point in the family life course (Goldscheider & Goldscheider, 1999; White, 1994). Moreover, parenthood has important implications for mental health in mid- and later life. Psychological well-being of middle-aged and older parents is related to the quality of intergenerational ties (Koropeckyj-Cox, 2002; Pillemer & Suitor, 1991), the structural configurations of the parental role (Aquilino & Supple, 1991; Kohler, Behrman, & Skytthe, 2005; Stewart, 2005; Ward, Logan, & Spitze, 1992), and the circumstances of adult children's lives (Greenfield & Marks, 2006; Pillemer & Suitor, 1991).

Most previous research has assumed that specific experiences of parenthood lead to higher or lower levels of parents' psychological well-being and distress. Whereas there is little doubt that parenthood influences psychological functioning, it is possible that the relationship between parenthood and mental health does not reflect only a causal effect of parenthood but is partly driven by confounding factors that may affect both configurations of the parental role and mental health. Studies based on survey data typically adjust for observed adult characteristics of parents that may create a spurious relationship, such as marital status, education, employment,

financial resources, and physical health. However, there are other potential sources of spuriousness that remain unobserved in most studies, such as early-life environmental influences, experiences in the family of origin, and genetic predispositions.

In this dissertation, I examine psychological consequences of parenthood in midlife by focusing on two major themes of recent research on parenthood: (a) heterogeneity among parents with respect to the structural context of the parental role and the quality of parent-child relationships; (b) gender differences in the psychological implications of parenthood. My study extends existing research by examining whether previously documented associations partly reflect genetic and early-life environmental endowments that can influence both the configurations of the parental role and mental health and, thus, confound the relationship between parenthood and psychological well-being.

This study explores the following research questions:

1. How do middle-aged parents compare to their childfree peers with respect to positive and negative mental health outcomes?

2. How are diverse configurations of children's age and living arrangements related to parents' distress and psychological well-being?

3. How are qualitative aspects of the parental role related to parents' depressive symptoms and psychological well-being?

4. Do psychological implications of parental status, and structural and qualitative aspects of the parental role differ for mothers and fathers?

5. To what extent do these associations observed at midlife reflect genetic and environmental influences experienced early in life?

I use graduate and sibling data from the 1993-1994 wave of the Wisconsin Longitudinal Study (WLS) as well as data for main respondents, their siblings, and twin sample from the two waves of the National Survey of Midlife Development in the United States (MIDUS). My analysis is based both on *individual-level* models that compare individuals across families while adjusting for the fact that family members are not independent observations, *within-family* models that compare siblings from the same family to each other, and *multilevel linear random-intercept and random-coefficient* models that incorporate between- and within-family effects.

An exploration of the role of genetic predispositions and early-life environmental influences may provide important substantive insights. Freese, Li, and Wade (2003) suggest that correlations and interactions between genetic endowments and environmental influences can compromise estimates in conventional sociological models that typically do not consider the possible role of genetic variables. Yet, if genes associated with an individual outcome are also correlated with environmental variables in the model, then estimated effects of the environmental variable could be spurious and reflect the confounding effects of genetic factors. Therefore, incorporating genetic and other family influences into an analysis of psychological implications of parenthood can contribute to a better understanding of the causal effects of specific aspects of the parental role on parents' mental health. Associations that persist after genetic and early-life environmental endowments are taken into account are more likely to reflect the causal influences of parenthood than associations that are appreciably reduced in magnitude. It is important to distinguish those aspects of the parental role that have real implications for mental health from aspects whose effects are spurious artifacts of selection.

Research has documented the importance of early-life family factors for health and well-being in adulthood (Elo & Preston, 1992; Hayward & Gorman, 2004). Yet, most studies of adult

well-being rely on individual-level models and do not account for the fact that individuals are members of families. If the association between parenthood and psychological well-being observed in midlife reflects early-life family influences and genetic endowments, this finding will shed new light on the importance of familial influences on the individual life course. Research has indicated intergenerational transmission of parenting practices and characteristics, on the one hand (Barber, 2001; Baumrind, 1993; Kahn & Anderson, 1992; Maccoby, 2000), and psychological distress and well-being, on the other hand (O'Connor, Caspi, DeFries, & Plomin, 2000; Taylor, Repetti, & Seeman, 1997). However, family influences may be even more complex. It is possible that not only are parenthood and mental health separately affected by early-life factors, but also the *interrelationships* among parental experiences and parents' well-being may stem from familial environmental and genetic endowments. Family researchers and sociologists should think about early-life family influences as affecting both specific adult characteristics and *interconnections* among various domains of adult lives.

This dissertation consists of five chapters. *Chapter 1* provides an overview of existing research on parenthood, gender, and mental health; an explanation of the significance of this topic and the potential for extending current research; and a formulation of research questions and hypotheses for this study. *Chapter 2* describes the data used in the study, measures, and the analytic approach.

Chapter 3 is based on the 1993 and 1994 graduate and sibling WLS data, and examines psychological implications of parenthood at midlife. Using individual-level models, within-family models comparing siblings of different degrees of genetic similarity, and two-level linear random-coefficient models, I explore heterogeneity among middle-aged parents based on specific structural configurations of the parental role, in particular, children's age and living

arrangements. In addition, I examine the effect of the quality of parent-child relationships on parental mental health, and analyze whether the psychological consequences of the structural characteristics are explained or moderated by the quality of intergenerational ties. Further, I explore gender differences in the psychological implications of parenthood, i.e. the extent to which mental health of middle-aged mothers and fathers is differentially related to each structural and qualitative characteristic of parenthood. Finally, I incorporate genetic and environmental early-life influences that can potentially create a spurious relationship between parenthood and psychological well-being (Kohler, Behrman, & Skytthe, 2005). The WLS data enable me to control for (a) family background characteristics measured prospectively in 1957 and 1975-1977, and (b) retrospective measures of early-life relationships in the family of origin assessed in 1993-1994. In addition to these *observed* measures, I use fixed-effects sibling models to account for *unobserved* genetic and early-life environmental factors that may affect the association between parenthood and mental health in midlife. The WLS contains different types of sibling dyads: full nontwin siblings, identical and fraternal twins, half-, step-, and adopted siblings. Thus, I can compare the relationship between parenthood and mental health among sibling dyads of various degrees of genetic similarity, although this approach does not take into account differences in the environmental similarity among different types of siblings.

Chapter 4 is based on a subsample of main respondents and their siblings as well as a sample of twin dyads in MIDUS I and MIDUS II. Using individual-level models with lagged dependent variables, within-family fixed-effects models, and three-level linear random-intercept models, I explore the associations between the qualitative aspects of the parental role and parents' mental health. I compare identical twins, fraternal twins, and full nontwin siblings to examine the extent to which the relationship between the qualitative aspects of parenthood and

parents' mental health reflects unobserved influences shared by siblings within families. In addition, the MIDUS data set contains retrospective measures of family background and relationships with parents in early life; thus, I consider observed — albeit retrospective — measures of some early-life characteristics that can potentially confound the association between the qualitative aspects of parenthood and mental health at midlife.

Finally, *Chapter 5* contains discussion, conclusions, limitations, and directions for future research.

1. 1. Overarching Theoretical Framework

This dissertation is based on a theoretical framework that incorporates three broad areas: (a) social psychological and life-course perspectives on the psychological consequences of major social roles; (b) research on the gendered enactment of family roles; (c) analytic approaches distinguishing causal effects of family roles on mental health from selection mechanisms.

1.1.1. Social Roles and their Psychological Consequences over the Life Course

From the life-course perspective, individual psychological development is intertwined with historical, cultural, and social structures and processes (Bengtson & Allen, 1993). The role of a parent unfolds within the context of personal development, historical and environmental factors, and "within a set of life-course influences, reflecting the socially constructed norms, expectations, opportunities, and constraints" associated with people's locations in the social system (Blieszner, Mancini, & Marek, 1996, p. 608).

Social statuses and roles that people enact on a daily basis link individual health and well-being to the positions in the larger systems of society (Pearlin, 1999). Behavioral expectations associated with these roles and statuses are internalized and, thus, become important elements of the self-concept (Stryker & Burke, 2000). Because occupying different

configurations of social roles is associated with different psychological outcomes, individual well-being may provide a way to examine larger social structures and institutions (Pearlin, 1999). Such an approach is consistent with the sociological goal of identifying the ways that individuals' conditions and experiences at the micro-level are shaped by macro-social forces (Miech & Chilcoat, 2004).

Research shows that major social roles, such as marriage and employment, are associated with increased mental health for both men and women (Booth & Amato, 1991; Mastekaasa, 1994; Ross & Mirowsky, 1995; Ross, Mirowsky, & Goldsteen, 1990; Umberson & Williams, 1999; Waite, 1995; Williams & Umberson, 2004), even under conditions of multiple role involvement that can be potentially stressful (Barnett & Marshall, 1992; Voydanoff & Donnelly, 1999). Yet, findings on the psychological implications of parenthood differ across the stages of the family life course. On the one hand, parents of minor children tend to report elevated levels of psychological distress compared to their childfree peers (Evenson & Simon, 2005; McLanahan & Adams, 1987; Umberson & Gove, 1989). These findings have led some researchers to conclude that psychological benefits associated with parenthood are cancelled out or outweighed by the strains of parenting. Although parenthood provides individuals with the sense of meaning and purpose in life — similar to other major social roles, the emotional gratification derived from parenthood may be counterbalanced by the demands and stressors (Evenson & Simon, 2005; Menaghan, 1989). On the other hand, middle-aged and older parents with nonresidential adult children are similar to nonparents in terms of depression (Koropeckyj-Cox, 1998), and report higher levels of affective well-being, life satisfaction, and meaning (Umberson & Gove, 1989).

Thus, previous studies underscore the life-course variation in parental experiences by documenting that the demands and rewards of parenthood are contingent on the interplay of parents' and children's life-course trajectories (Umberson, 1996). Middle age is characterized by the unique configurations of the parental role, and the psychological rewards and costs of these configurations need to be studied in the context of this specific life-course stage.

1.1.1.1. Parenthood in Midlife

The transition to parenthood in young adulthood and the period in late life when aging parents need care from adult children have been studied extensively. Yet, few studies have examined the association between parental status and mental health among middle-aged adults (Aquilino & Supple, 1991; Ryff & Seltzer, 1996). This gap in research on parenthood is surprising given that midlife is the longest and most diverse period of the parental experience. The boundaries of midlife are not well defined, and the most common conception is that middle age begins at 40 and ends at 65 (Lachman, 2004). Chronological age may not be an ideal marker of midlife because age norms are less stringent for this life-course stage than for young adulthood or late life. Middle-aged individuals follow vastly different family and work trajectories; therefore, midlife may be better defined by statuses in different domains rather than by chronological age (Lachman, 2004; Neugarten, 1968). Contemporary middle age is characterized by a remarkable complexity of roles, relationships, and resources; thus, adults in the middle are potentially exposed to multiple developmental and environmental challenges.

Midlife is an important stage of parenthood when parents develop adult-to-adult relationships with their children and begin to see children's early accomplishments in adult roles (Ryff & Seltzer, 1996). Moreover, midlife is characterized by a diversity of the structural configurations of the parental role. Many parents may simultaneously have minor children at

home and adult children who live independently, whereas some parents coreside with their adult children, and others have only minor children (Goldscheider & Goldscheider, 1999; Umberson, 1992; 1996).

A developmental perspective also emphasizes the importance of midlife parenthood. Erikson's (1950) model of life-span development holds that each stage presents a challenge or crisis that needs to be resolved successfully. The middle-age stage of *generativity*, which is particularly relevant to fathers, involves moving beyond a narrow focus on the self to guiding the next generation and the accomplishments of one's children (Erikson, 1950). Using data from the first wave of the National Survey of Families and Households (NSFH), Cooney and colleagues (1993) found that middle-aged fathers were typically more involved in childrearing than their younger counterparts. The study's analytic sample was restricted to 307 men, all of whom had become first-time fathers within five years of the survey and who had a biological child under age 5 in the household. The sample did not include men who had nonbiological children under 5 in the household or were unemployed. The race and SES composition of the study's sample was not specified.

Nydegger and Mitteness (1996) reported that many middle-aged fathers felt that their influence strengthened as children matured, perhaps, because fathers' salience as a resource for their children peaked at this time. Young children, especially daughters, reported being closer to their mothers than fathers. Yet, by the time these children were adults, a significant shift had been made toward equal closeness with both parents. The study's findings were based on data from a sample of 267 men in the greater San Francisco Bay area, aged 45 to 80 years. The respondents had a total of 582 children 18 years or older. All men were White and middle-class,

completed at least some college education, and had traditional marriages, with few wives working while their children were young.

An important implication of the generativity perspective is that psychological costs and rewards of parenthood may become more similar for mothers and fathers in midlife than in young adulthood. However, gender differences and similarities in the psychological implications of parenthood at this life-course stage have not received adequate attention. Thus, given the potential diversity of the structural contexts of parenthood in midlife, Ryff and Seltzer (1996) emphasize the necessity of exploring heterogeneity among middle-aged parents to uncover conditions under which midlife parenthood is stressful or gratifying. Consistent with this emphasis, my study focuses on psychological implications of the diverse structural and qualitative aspects of the parental role in midlife. Further, given that the gendered nature of the parental role changes over the life course, I examine differences and similarities in the psychological implications of parenthood for middle-aged mothers and fathers.

1.1.1.2. Cohort Differences

Consistent with the life-course perspective, distinctive experiences of *birth cohorts* should be considered in conjunction with age-related maturational aspects of parenthood. The WLS graduates and most of their older siblings were born in the 1930s and, thus, belong to the so-called "Silent Generation." Members of the Silent Generation came of age in the 1950s and early 1960s, the decades characterized by nearly universal and early marriage (median age of 19-20 for women), high fertility, and the traditional gender division of family labor (Casper & Bianchi, 2002; Rindfuss, Morgan, & Swicegood, 1988). The prosperity of the 1950s represented a dramatic increase in economic well-being that occurred as individuals born in the late 1930s and early 1940s were reaching adolescence and young adulthood, getting married, and having

children. This decade offered unprecedented opportunities for home ownership, higher education, and comfortable lifestyles (Koropeckyj-Cox, Pienta, & Brown, 2007; Modell, Furstenberg, & Hershberg, 1976).

The 1950s was a unique period characterized by the vibrant economy, on the one hand, and the lack of opportunities outside the family for women, on the other hand (Casper & Bianchi, 2002). Men and women were socialized to perform distinct family roles. Women were responsible for maintaining the household and taking care of children. Among White middle-class individuals (a social groups widely represented in the WLS sample), marriage and motherhood were considered the most important realms for women, and women's achievement was overwhelmingly defined by their success in the wife and mothers roles (Bernard, 1972; Coontz, 1992; 2005). Only 8-10% of women born between 1928 and 1941 remained permanently childless, and voluntary childlessness was regarded as nearly extinct (Koropeckyj-Cox, Pienta, & Brown, 2007; Whelpton, Campbell, & Patternon, 1966).

Men were expected to become the primary breadwinners. The father's parental role was that of the provider for the children's material needs. Men who had large families in the 1950s and 1960s experienced the pressures of being a good provider, especially given that their wives were unlikely to work for pay (Carr, 2005). Carr's (2005) study was based on data from the 1993 wave of the WLS. The analytic sample comprised 542 men aged 53-54 (a) who completed the 1993 mail and phone questionnaires; (b) who had any living children; (c) whose randomly selected child was a son; (d) who were included in the random 50% subsample that received the social comparison question and the 90% subsample about depression history; (e) whose randomly selected son was employed at the time of the interview. Fifty-two percent of men in

the subsample had high school diplomas, and 30% had a bachelor's degree or higher. Seventy-nine percent were married, and the average number of children was 3.12.

Both men and women experienced cultural pressures toward early parenthood. The personal and social implications of marrying late or being permanently single, remaining childless, or having children later than one's generational peers, therefore, may have been especially salient for this cohort. Moreover, because this ethos was particularly prominent among White middle-class families, the WLS participants might have been more strongly than other population groups affected by the cultural images of a nuclear family with traditionally allocated roles of the breadwinner and the homemaker. Yet, it should be noted that the socialization messages of the 1950s and 1960s may have changed over the individual life course. Middle-aged participants in this study are likely to have experienced developmental changes in attitudes, behaviors, and preferences, especially given the social transformations of the 1970s and 1980s.

This dissertation is based on two data sets comprising several birth cohorts. Some younger siblings of the WLS graduates and some of the MIDUS participants belong to the Baby Boom generation. Women and men who entered adulthood in the late 1960s and beyond faced a new set of expectations for work and family responsibilities. Younger cohorts of mothers and fathers have been more likely to combine work and family roles (Carr, 2002). Although men were still expected to fulfill the role of provider, they were also increasingly expected to be involved fathers who participated in childrearing and household labor more actively and directly than did their own fathers. In turn, women began to devote more time and energy to their careers than did older cohorts of women, and younger married women with children were more likely to be employed than their mothers (Carr, 2002). The findings in Carr (2002) are based on data from the first wave of MIDUS collected in 1995-1996. The analytic sample was limited to the 2,446

(1,309 men and 1,137 women) employed persons under age 65 who completed both the telephone interview and the self-administered questionnaire. Seventy percent of men and 66% of women had post-high school education. Seventy-one percent of men and 55% of women were married. About 14% of participants in the subsample were non-White.

Thus, men and women who came of age in the late 1960s and beyond experienced both more egalitarian division of family labor and greater gender equity in labor force participation than their parents; yet, both husbands and wives of younger cohorts still tended to view themselves as only helping their partner in the nonstereotypical role (Wilkie, Ferree, & Ratcliff, 1998). The findings reported by Wilkie et al. (1998) are based on a 1989 telephone survey of a random sample of 382 employed, married, Connecticut women and their husbands. All husbands and wives were employed at least one hour in the previous week, and 57% of the wives worked full-time. The sample is predominantly White (95%) and middle-class: 41% of women and 48% of men held a bachelors degree or higher, and the median family income was over $50,000. Catholics — comprising 51% of the sample — were over-represented compared to the general U.S. population.

It is important that generational differences in the work and family involvement may complicate the relationships between older parents and their adult children. Both younger and older generations may not fully understand work and family experiences and choices of the other. Parents might hold expectations for their children based on their own socialization, and evaluate their children's accomplishments through the prism of the "traditional" family model. This may result in increased strain in parent-child relationships, especially in situations involving children's inability to achieve and maintain "normative" adult statuses. These generational

differences in the expectations regarding work and family roles emphasize that gender is a fundamental dimension of parental experiences and parent-child relationships.

1.1.2. Gendered Enactment of Family Roles

One of the main arguments in research on parenthood and gender is that men and women experience childrearing differently and, thus, the parenting role has different meanings and psychological implications for the well-being of mothers and fathers. Most studies of gender differences in the psychological consequences of parenthood have focused on young adults raising minor children (e.g., Nomaguchi & Milkie, 2003; Ross & Van Willigen, 1996). This research suggests that mothers of young children experience more distress than fathers because women are exposed to greater strains of childrearing. An important question is whether these gender differences in psychological well-being persist later in life when children grow up and do not require parental care. Yet, little attention has been directed to the ways that psychological implications of motherhood and fatherhood might depend on the life-course stage (Umberson, Williams, Powers, Chen, & Campbell, 2005). First, marital and family roles vary over the life course. If the division of family labor equalizes somewhat with age, as children grow up and leave the parental home, this might contribute to more similar effects of parenthood on psychological well-being in later life. Second, developmental and structural changes may occur over time so that couples become more similar in their attitudes, beliefs, roles, and behaviors with advancing age (Umberson et al., 2005).

Existing research suggests two views regarding gender differences in psychological well-being of parents: the parental role and the gendered role perspectives. The *parental role perspective* (Scott & Alwin, 1989) holds that mothers of young children experience more distress than fathers because the maternal role is more demanding and stressful (Ross & Van Willigen,

1996; Umberson, 1996). Yet, as children grow up and become self-sufficient adults, the parenting roles of mothers and fathers may gradually converge because women are no longer involved in labor-intensive and time-consuming childcare. In turn, comparable role involvement appears to have similar psychological consequences for men and women (Barnett, Brennan, Raudenbush, & Marshall, 1994).

Conversely, the *gendered role perspective* suggests that regardless of the life-course stage, women are more responsive than men to psychological costs and rewards of parenthood because women were socialized to be particularly attuned to family roles. Scott and Alwin (1989) show that the higher levels of the parental strain reported by mothers compared to fathers stem not only from the "objective" differences in the experience of the parenting role, but also from the differential orientations men and women bring to parenthood. Women are socialized more than men into taking responsibilities for relationships and, thus, are more likely than men to experience greater strains associated with intimacy and emotional involvement. Thus, actual experiences of parenting can interact with subjective perceptions of the parental role. This could also be manifested in the grandparental role, with women being more involved in grandchild care. Interestingly, in the Scott and Alwin study, the gendered role hypothesis was supported among White parents but not among Black parents. Once the gender-linked differences in role experiences were controlled, gender was no longer a significant predictor of parental strain for Black mothers and fathers.

Scott and Alwin's (1989) study was based on data from the 1982 Detroit Area Study. All respondents (N = 1,051) were parents with a child aged 2-17 years living at home. One randomly selected parent was interviewed from each household. Sixty-one percent of participants were

female. The sample comprised 41% of Black parents and 59% of White parents. Parents' age range and SES were not reported.

Further, some research supporting the gendered role perspective has invoked identity theory to explain why parenthood is a more salient role for women than for men. Sociocultural conceptions and normative expectations of adult roles emphasize the centrality of motherhood for women's self-definitions. From childhood on, women are socialized to view the mother role as primary. Macrosocial factors in adulthood reinforce women's commitment to their parental identity. Because women are expected to bear the brunt of childcare responsibilities, the structure of social life reinforces earlier socialization. As a result, women invest more emotionally in the parental role, and their sense of self is tied more closely to parenthood than is men's (Simon, 1992).

In sum, the parental role hypothesis predicts that because men's and women's parenting roles tend to converge in mid- and later life, the structural configurations of parenthood and the quality of parent-child relationships are related in a similar way to mothers' and fathers' mental health. According to the gendered role hypothesis, women are more strongly than men affected by the structural and qualitative aspects of parenthood, regardless of the life-course stage.

1.1.3. Parenthood and Mental Health: Causation and Selection Mechanisms

Previous research on parenthood and mental health has viewed parenthood as a major social role and assumed that the causal arrow is directed from the parental role to mental health (e.g., Evenson & Simon, 2005; McLanahan & Adams, 1989; Nomaguchi & Milkie, 2003). Yet, it is also possible that the association between parenthood and mental health reflects, to some extent, selective pressures. To my knowledge, a selection mechanism with respect to mental health and early-life factors has not been considered in studies of the psychological implications

of parenthood. Of all family statuses, the issue of potential selection versus causation has been examined with respect to marital status and mental health (e.g., Marks, 1996a; Wade & Pevalin, 2004). This research revealed that although selection into marriage plays some role in explaining health differentials, it does not fully account for the advantages enjoyed by married persons (Marks, 1996a; Waite, 1995).

Because selection and causation explanations have not been fully explored with respect to parenthood and psychological well-being, I can speculate about specific mechanisms that might be driving this association. First, the *social causation* explanation suggests that specific experiences of parenthood lead to different mental health outcomes (Evenson & Simon, 2005; McLanahan & Adams, 1989; Nomaguchi & Milkie, 2003).

Second, according to the *social selection* explanation, individuals' mental health may select them into parenthood and specific configurations of the parental role. Therefore, I include retrospective lifetime history of depression to address the issue of endogeneity to some extent. Moreover, the selective effects of mental health with respect to the parental role are likely to be confounded with marital status because the transition to marriage preceded the transition to parenthood for the overwhelming majority of participants in the WLS and MIDUS. It is possible that individuals who were less desirable marriage partners because of their psychological attributes were also less likely to become parents. In a similar vein, individuals who experienced a divorce triggered by their mental health problems may have also been more likely to have strained relationships with their children or to live away from their biological children. In addition, divorce and subsequent remarriage or cohabitation may have increased the likelihood of having nonbiological children. Thus, I expect that adjustment for marital status and marital

history may largely account for the selection effects of mental health on parenthood, if such effects exist.

Third, the relationship between parenthood and psychological well-being may be *spurious* and driven by factors that select individuals into specific configurations of the parental role and at the same time affect their mental health. Such confounding influences may reflect adult characteristics, in particular, marital status and history, marital quality, employment, socioeconomic resources, physical health, and social support. Many of these factors have been typically included in sociological studies of parenthood and psychological well-being (e.g., Evenson & Simon, 2005; McLanahan & Adams, 1989; Nomaguchi & Milkie, 2003). The contribution of my study is that, in addition to parents' characteristics measured in adulthood, I also account for observed and unobserved genetic and early-life environmental endowments that might influence both parenthood and psychological well-being in adulthood and, thus, produce a spurious association.

In the rest of this chapter, I apply the theoretical framework outlined in this section to review research relevant to the three major themes of my study: diversity among parents; gender differences in the psychological implications of parenthood; and genetic and early-life environmental influences.

1.2. Parental Status and Diversity among Middle-Aged Men and Women

In this section, I review studies of parenthood as a major social role that may have different psychological consequences for mothers and fathers over the life course. This large body of research indicates that the experience and meaning of parenthood as well as psychological and social consequences of parenting may differ depending on the specific

configurations of the parental role and the quality of parent-child relationships (Umberson, 1996; Umberson & Williams, 1999).

1.2.1. Childfree Individuals

Although still relatively uncommon and "nonnormative", childlessness has been increasingly accepted over the past four decades (Thornton, 1989; Thornton & DeMarco, 2001). The growth of voluntary childlessness has challenged conventional assumptions about well-being, resources, and resilience of childless adults (Koropeckyj-Cox, Pienta, & Brown, 2007; Lang, 1991; Veevers, 1980). Research comparing childfree middle-aged and older adults with parents has found little consistent evidence of increased psychological problems among the childless. Koropeckyj-Cox, (1998, 2002) and Zhang & Hayward (2001) showed that childlessness did not significantly increase the prevalence of loneliness and depression in midlife and old age. Koropeckyj-Cox used data from the 1988 wave of the NSFH. The analytic subsample included 3,820 respondents between the ages of 50 and 84, of whom 579 (15%) have never given birth or fathered a child. Never married parents, parents who had only adopted children, and parents who outlived all their children were excluded because the number of respondents in these categories was very small. Zhang and Hayward (2001) used the first wave (1993) of the Asset and Health Dynamics Among the Oldest Old (AHEAD). These data are nationally representative of community-dwelling persons aged 70 years and older. Excluded were cohabitors or married persons with absent spouses and persons for whom information was obtained by proxy reports. The analytic sample included 4,081 women and 2,436 men. Average age was 77 years old. Thirty-seven percent of women and 76% of men were married, whereas 57% percent of women and 19% of men were widowed. Roughly 85% of respondents were White.

The finding that childless middle-aged and older adults are not more depressed or lonely than parents is somewhat surprising given the deeply held beliefs in the American culture regarding the value of children and the importance of family (Koropeckyj-Cox, 1998). Being childless represents the absence of a normatively expected life transition. Childless women of older cohorts, comparable in age to the WLS and MIDUS cohorts, are particularly likely to report feeling stigmatized (Houseknecht, 1977; Koropeckyj-Cox, Pienta, & Brown, 2007; May, 1995; Veevers, 1980).

In addition to cultural beliefs, structural factors, such as availability of assistance and support from kin, have been used to suggest that the childless may be disadvantaged compared to parents. The availability of kin has been traditionally used as an objective measure of social integration and potential sources of support. Older adults with larger family networks have been defined as possessing more social resources, whereas individuals with few family ties have been viewed as vulnerable and lonely (Antonucci, 1990; Beckman & Houser, 1982; Bengtson, Rosenthal, & Burton, 1990). Recent work has criticized this structural approach for ignoring nonkin networks and for focusing on the quantity of ties while ignoring the content and quality of relationships (Dykstra, 1990; Umberson, Chen, House, Hopkins, & Slaten, 1996). Although childless older adults tend to report higher levels of *"objective"* social isolation, such as living alone, having fewer face-to-face contacts, and not having a family caregiver (Kivett & Learner, 1980; Soldo, Wolf, & Agree, 1990), survey studies find few differences between the childless and parents on *subjective* measures of distress and psychological well-being (Glenn & McLanahan, 1981; Koropeckyj-Cox, 1998; 2002).

Moreover, to understand psychological implications of childlessness, it is necessary to take into account the role of personal values, goals, and expectations. Research shows that the

meaning and consequences of childlessness depend on individuals' preferences — whether childlessness was voluntary or involuntary (Ireland, 1993; Kikendall, 1994; Miall, 1986; Veevers, 1980). Koropeckyj-Cox (2002) argues that parental status is a less powerful influence on psychological well-being than the "mismatch" between personal values and attitudes, on the one hand, and actual circumstances, on the other hand. Mental health of childfree adults depends on the extent to which their childless status is consistent or inconsistent with their preferences. Voluntary childlessness is not associated with elevated distress in later life. Yet, older adults who view their childlessness as unwanted and problematic are more likely to report diminished well-being. This study is based on data from the first wave of the NSFH. The analytic sample was restricted to respondents aged 50 to 84 years. Biologically childless respondents who had only adopted children, biological parents who had outlived all their children, and never-married parents were excluded. The subsample consisted of 1,259 men and 2,073 women. Eighty-eight percent of women and 77% of men were White. Sixty percent of women and 80% of men were married.

1.2.1.1. Gender Differences in Psychological Implications of Childlessness

The gendered role perspective would suggest that women are affected more adversely than men by the childless status. The normative emphasis on the centrality of motherhood for women's identities and fulfillment reinforced by the popular culture may challenge self-concepts of childless women (Koropeckyj-Cox, Pienta, & Brown, 2007). Negative attitudes about childlessness are likely to be more detrimental to women's well-being than to men's (Koropeckyj-Cox, 2002). Using data from the NSFH subsample of middle-aged and older adults aged 50- 84 years, Koropeckyj-Cox (2002) found that childless men, regardless of their attitudes about childlessness, were not significantly different from fathers in terms of well-being.

Childlessness was related to mental health among women only. Specifically, childless women with incongruent attitudes about their status were more lonely and depressed than childless women with congruent attitudes. In this study, congruent and incongruent attitudes were defined based on the agreement or disagreement with the statement: "It is better to have a child than to remain childless." Childless individuals who agreed or strongly agreed with this statement were believed to hold attitudes incongruent with their childless status.

Consistent with the gendered role perspective, Menaghan (1989) found that in a sample of adults born between 1912 and 1956, childlessness that persisted beyond age 30 had a greater negative effect on women than men. Menaghan's study used the second wave of data collected in 1976 from a panel study of adults living in the Chicago metropolitan area. The analytic subsample comprised 945 adults 22-64 years old, 86% of whom were parents. Eighty-nine percent of men and 45% of women were employed, and 80% of women and 71% of men were married.

Biological changes in the reproductive capacity may potentially shape differential psychological reactions to childlessness among middle-aged men and women. Unlike their male peers, women experience the cessation of fertility at midlife with the onset of menopause. Women reevaluate their childless status at various stages of the life course, and negative feelings about childlessness may increase with age (Alexander, Rubinstein, Goodman, & Luborsky, 1992). For midlife women, such reevaluation may be prompted by menopause — a transition that is a prominent biological marker of the inevitability of the aging process in cultures than value youthfulness (Avis, 1999). The menopause is believed to represent a major cultural, psychological, and physiological milestone for middle-aged women while signifying the end of childbearing capacities and the permanent nature of biological childlessness (Avis, 1999;

Koropeckyj-Cox, Pienta, & Brown, 2007). Because of the transition to menopause, childfree middle-aged women may be distressed by the realization of the permanence of childlessness and, thus, experience lower levels of psychological well-being than men for whom biological parenthood may still be a viable option.

In contrast, the parental role perspective would predict that childlessness has similar psychological implications for men and women. Consistent with this prediction, Zhang and Hayward (2001) found that being childless was not significantly associated with the prevalence of loneliness and depression among men and women born between 1900 and 1923. Moreover, incorporating marital status differences revealed that childless unmarried men had significantly higher rates of loneliness and depression compared to men and women in other marital and parental status categories. This finding suggests that childlessness may be particularly detrimental to the well-being of older unmarried men. Alternatively, it is possible that depressed men of older cohorts were more likely to be selected out of marriage and, thus, to remain childless.

1.2.2. Children's Age and the Presence of Minor Children at Home

Parents of minor children tend to report lower levels of psychological well-being and higher levels of distress than their childfree peers (Evenson & Simon, 2005; McLanahan & Adams, 1989), largely because of the demands and strains that are associated with having young children at home (Ross & Van Willigen, 1996).

The samples used by McLanahan and Adams (1989) and Ross and Van Willigen (1996) are described in Section 1.2.1. Evenson and Simon's (2005) study was based on data from the first wave of the National Survey of Families and Households. Their analytic sample consisted of respondents whose parental status was unambiguous and who had complete data on all variables

in the models (N = 11,473). Seventy-three percent of their participants were White and 17% were Black. The mean age of childless adults was 36 years, whereas the mean age of parents was 44 years.

The strains of parenthood attenuate when children become adults and leave the parental household. Compared to nonparents, parents whose adult children live separately report lower levels of depression (Koropeckyj-Cox, 1998) and higher levels of affective well-being, satisfaction, and life-meaning (Umberson & Gove, 1989). The findings in Koropeckyj-Cox (1998) were based on data from the 1987-1988 wave of the National Survey of Families and Households. The analytic sample included 3,968 respondents between the ages of 50 and 84 years, of whom 620 had never had children. The sample comprised survivors of the birth cohorts born between 1904 and 1938, thus, including low fertility cohorts of the Great Depression and high fertility cohorts of the Baby Boom. Roughly 80% of participants were White.

Umberson and Gove (1989) used data from a nationwide survey of respondents aged 18 and over that was conducted in 1974-1975 (N = 2,246). The widowed and the divorced (especially males) were over-represented. The never-married were excluded from analysis; thus, their study was based on 1,753 respondents. Age range of the analytic sample was not reported. The sample contained Black and White respondents, although the proportion of non-White participants was not specified.

Based on existing research, I hypothesize that having minor children at home is associated with elevated distress among parents. Being a middle-aged parent of a minor child is likely to be confounded either with very late age at first birth, or a late higher-order marriage among men who married younger women. Therefore, I adjust for age at first birth and marital history. I also include age of the youngest child as a structural variable to differentiate parents

whose minor children are high school seniors from parents whose minor children are preschoolers and, thus, require more time- and labor-intensive supervision and care on a daily basis.

With respect to gender differences, mothers of young children are more likely than fathers to be exposed to daily strains, such as childcare and housework, and to face constraints in employment and social activities (Gove & Geerken, 1977; Nomaguchi & Milkie, 2003; Ross & Van Willigen, 1996; Sanchez & Thomson, 1997; Simon, 1992).

Using data from the Work, Family, and Well-Being study based on a 1990 telephone survey of a U.S. national probability sample, Ross & Van Willigen (1996) reported that among mothers but not among fathers, each additional child appeared to increase anger. The study's sample comprised 2,031 individuals ranging in age from 18 to 90 years, with the mean age of 43.5 years. Twenty-eight percent of the sample held a bachelor's degree or higher; 60% were married or cohabiting; 90% were White.

Gove and Geerken's (1977) study was based on data from a survey conducted in Chicago in mid-1970s. Their analytic sample comprised only married men and women aged 18-60 years, including employed husbands, employed wives, and unemployed wives. There were considerably more married women than men in the study. The race and SES composition of the sample were not reported.

Nomaguchi & Milkie (2003) used longitudinal data from the first and second waves of the NSFH. Their subsample included respondents who were aged 18-44 years at Time 1 and had never had a child by the first survey; whose spouse had never had a child; and who had no missing values on any control variables (N = 1,933). Forty-eight percent of their analytic sample

were married and 52% were unmarried at Time 2. Eighty percent were White. The mean age was 32.5 years at Time 2, and participants completed 14 years of education on average.

Similarly, Sanchez & Thomson's (1997) analysis was based on the two waves of the National Survey of Families and Households (1987-1988 and 1992-1994). Their analytic sample comprised 337 married couples in which the wife was aged 40 or younger and neither spouse had children at baseline. Eighty-seven percent of couples were non-Hispanic White.

Simon (1992) used data from a study of the stress experiences of Indianapolis adults conducted in 1988. Her sample included a subset of 448 men and women who had at least one child under 18. Employed women were over-represented in the study. The mean age for the sample was 36 years old. Over 90% of respondents were White, and about two thirds had some post-high school education.

Based on these findings and consistent with the gendered role perspective, I hypothesize that mothers who have children under 18 in midlife report lower levels of psychological well-being and higher levels of distress than fathers of minor children.

Conversely, another strand of research suggests that fathers' involvement in the care of minor children may become more similar to mothers' with advancing parental age (Lachman, 2004). For example, using data from the first wave of the NSFH, Heath (1994) showed that midlife fathers who had minor children tended to be more involved in child care than younger fathers. Moreover, older fathers exhibited significantly greater amounts of nurturant behavior toward their children by praising and hugging them more frequently. Heath's (1994) study included two subsamples: late-time fathers and on-time fathers. The subsample of late-time fathers comprised 47 men who had their first biological child after 35 years old, resided with their minor children, and answered the relevant questions about father-child relationships. The

fathers in this subsample ranged in age from 36 to 63 years. The comparison group of on-time fathers included 1,205 men who had their first biological child between 15 and 35 years old. Eighty percent of fathers in both subsamples were White. Marital status and SES of participants were not reported.

Similarly, based on the analysis of the 1987-1988 NSFH data, Coltrane (1990) suggests that increasing paternal involvement with age may be explained by greater maturity and other-orientation of older fathers. His subsample contained all two-parent households in their first marriage with biological children under the age of 18 (N = 1,087). Mothers' median age was 40 years, and fathers' age was 42 years. Sixteen percent of wives and 29% of husbands were past the age of 27 when they became parents for the first time (late childbearing). Fifty percent of men and 46% of women had at least some college education. No information about the racial composition of the subsample was reported.

These findings are consistent with the parental role hypothesis predicting that middle-aged mothers and fathers of minor children experience similar levels of psychological well-being and distress.

1.2.3. Coresidence of Adult Children and Middle-Aged Parents

Intergenerational coresidence may reflect either the needs of parents or the needs of children. On the one hand, adult children may use the parental home as a safety net in response to failures in marital or work roles. On the other hand, parents may coreside with children because of the needs associated with declining health or widowhood (Ward, Logan, & Spitze, 1992). Yet, research shows that coresidence is more often a response to the needs and circumstances of adult children than parents, especially in midlife when parents are relatively young (Aquilino, 1990; Ward et al., 1992). Although some adult children are caring for their

parents, the dependence of parents on children is unlikely to be a causal factor in the decision of parents and children to share a household at any stage of the life course (Aquilino, 1990). In the majority of cases, children live in parents' households rather than vice versa.

Ward, Logan, & Spitze (1992) used data from a personal interview survey conducted in the Albany-Schenectady-Troy, New York, metropolitan area in 1988 and 1989. 1,200 persons aged 40 and over were interviewed. Respondents' age ranged from 40 to 100, with a median age of 58. Sixty-four percent of participants were female. The sample was predominantly White and middle-class. Sixty percent were married. The analytic subsample in Ward et al.'s study was based on 811 persons who had at least one child aged 22 or older. The parent respondents in the subsample had a mean age of 62. Among adult children of these respondents, the mean age was 34 years. Forty-nine percent of children were female, and 59% were married.

Aquilino's (1990) study was based on data from the 1987-1988 National Survey of Families and Households. His subsample included all parents who had at least one living child or stepchild age 19 or over ($N = 4,893$). Seventy-eight percent of parents were White, 17% were Black, and 5% were Hispanic. Eighty-three percent of parents were over 45 years old.

Research documents sociodemographic variation in the patterns of intergenerational coresidence. Young Black and Hispanic adults tend to leave home later than non-Hispanic Whites (Goldscheider, Goldscheider, St. Clair, & Hodges, 1999). This finding is based on data from the first wave of the NSFH. The analytic sample comprised 12,205 cases available after excluding those with missing values on the dependent variables (ages at first leaving and returning home), as well as those 95 years old or older at the interview, those who left home at the age of 15 or younger, and those who were living in a nonfamily setting when they left home.

Sixty-five percent of respondents were White, 18% were Black, and 7% were Hispanic. Women comprised 60% of the sample.

Using data from 1972, 1973, 1974, 1976, and 1979 waves of the National Longitudinal Study of the High School Class of 1972, DaVanzo & Goldscheider (1990) found that among the unmarried, Hispanic young adults were significantly more likely to return home after initial nest leaving than members of other race groups. In contrast, among the married, only Black young adult children appeared to be more likely to return home (DaVanzo & Goldscheider, 1990).Yet, these findings are suggestive rather than definitive because over 90% of their sample were White.

Overall, married children are much less likely to live with parents and to return to the parental home than unmarried adult children (DaVanzo & Goldscheider, 1990). As for gender differences, women leave the parental nest earlier than men largely due to women's earlier age at marriage, and are less likely to return home (DaVanzo & Goldscheider, 1990). A counterbalancing factor is that unmarried mothers are more likely to live with their parents than unmarried fathers (Aquilino, 1991). Aquilino's (1991) study was based on the first wave of the NSFH. The analytic subsample consisted of respondents from 19 to 34 years old who had complete retrospective data on childhood family characteristics ($N = 5{,}264$). Sixty-seven percent of the subsample were women, and roughly 80% were non-Hispanic White.

With respect to psychological implications of coresidence, Clemens & Axelson (1985) concluded that the presence of adult children in the parental home adversely affected intergenerational relationships and reduced parents' opportunities for personal growth. This study was based on a sample obtained in western Virginia in 1983 that included 39 parents (8

men and 31 women). These parents had 47 coresidential adult children that ranged in age from 18 to 39.

In contrast, Aquilino and Supple (1991) suggest that most parents who coreside with young adult children report high levels of satisfaction with the presence of children at home, particularly when the quality of parent-child relationships is high. This finding may partly reflect a selection effect because prolonged coresidence is more likely when parents and children have a rewarding relationship. Yet, parental satisfaction is adversely affected by adult children's inadequate income and inability to maintain independent household. Aquilino and Supple (1991) demonstrate that children's employment status and their financial dependence on parents are significantly related to the experiences of parent-child conflict. Aquilino and Supple's (1991) data were taken from the 1987-1988 National Survey of Families and Households. Their subsample included 609 parents who had at least one child aged 19-34 in their household and who completed the self-administered interview segment concerning parent-child relations. Over three quarters of parents were between the ages of 40 and 59, while 90% of focal children were under age 30. There were twice as many mothers (n = 407) as fathers (n = 202) in the subsample. Sixty-seven percent of participants were White, 22% were African-American, and 11% were Hispanic. Nearly 70% of parents were married.

Parents are distressed when their children have problems (Greenfield & Marks, 2006), and this distress is particularly pronounced if the children live in the parental home (Pillemer & Suitor, 1991). Greenfield & Marks (2006) used data from the 1995 MIDUS study. Their analytic sample was limited to the 1,188 respondents who completed both mail and phone interviews, and whose youngest child was at least 19 years old. Fifty-eight percent of their subsample were female, 90% were White, 67% were married, 54% were employed, 24% had a bachelor's degree

or higher. Respondents' mean age was 59 years, and they had 3.3 children on average. Pillemer & Suitor's (1991) study was based on a telephone survey of the noninstitutionalized older population in Canada conducted in 1989. Their analytic sample consisted of 1,421 older Canadians who had at least one living child and whose age ranged from 65 to 100 years, with a mean age of 73. Only English-speaking respondents were included in their study. Sixty-seven percent of their participants were women and 33% were men. Fifty-two percent of the sample were married, 39% were widowed, 5% were divorced or separated, and 5% were never married.

In sum, coresidence with adult children may be stressful for parents because it is more likely to indicate children's failure to establish normative adult roles rather than to reflect parents' needs and dependence. I hypothesize that parents who coreside with adult children report lower levels of psychological well-being and higher levels of psychological distress compared to parents whose children live independently. To capture the circumstances that might underlie intergenerational coresidence, my analysis includes indicators of parental health, marital and socioeconomic statuses, which can reflect parents' need for assistance or, conversely, parents' resources to help their children.

1.2.3.1. Gender Differences in the Psychological Implications of Coresidence

The gendered role perspective suggests that mothers are more adversely affected by coresidence with adult children than fathers. Existing research has identified potential mechanisms through which having a coresident adult child may contribute to mothers' parental strain and, thus, elevate their distress.

First, mature children who coreside with parents are less likely to be married and employed, and have lower levels of education than children living independently (Goldscheider, Goldscheider, St. Clair, & Hodges, 1999; Mitchell, Wister, & Gee, 2002). Similarly, in the WLS,

among children aged 23 or older that live with their parents, over 90% are unmarried and over 80% do not have a bachelor's degree. The study by Mitchell, Wister, & Gee (2002) used a subset of young adults aged 25 to 34 (N = 1,760) from the 1995 Canadian General Social Survey. Of these young adults, 262 coresided with their parents, whereas 1,498 lived independently. Fifty-six percent of respondents were Anglophone, 27% were Francophone, and 17% spoke other languages.

Compared to fathers, mothers may be more attuned to their children's accomplishments and be more concerned about children's delay or failure to achieve desirable adult statuses (Aldous, 1987). For example, in the WLS mothers are much more likely than fathers to report that a child has a developmental disability, which may be explained by mothers' greater sensitivity to their children's needs and the feeling of being responsible for children's problems.

Second, the presence of an adult child in the household may entail more housework for mothers compared to having an empty nest (Aldous, 1987; Goldscheider & Goldscheider, 1993). Goldscheider and Goldscheider's (1993) finding is based on data from the High School and Beyond surveys collected in the U.S. nationwide from about 60,000 members of high school classes of 1980 and 1982. The first wave of data was collected in the spring of 1980, and the participants were re-interviewed every two years after high school graduation through the spring of 1986. In addition, a 10% sample of the parents was surveyed during the fall of 1980. Sixty-three percent of the parents were mothers. Goldscheider & Goldscheider (1993) used 5,000 cases that had information on living arrangements expectations from parents and their children. The subsample comprised Hispanic, Black, Asian American, and White respondents, although exact proportions reflecting the racial composition were not reported. Aldous (1987) used data from a

sample of 124 White middle-class couples in their early and mid-60s, with all husbands having graduated from a Midwestern Catholic University in 1936-1940.

Third, parents whose mature children have failed to maintain expected adult statuses may feel less competent in their parental role, and older parents' feelings of parental competence are positively related to their well-being (Carr, 2004; 2005). For many older women, raising successful children to adulthood has been one of the greatest accomplishments a woman could aspire to (Carr, 2004). The findings in Carr (2004) were derived from a WLS subsample of 489 White women aged 53-54 who completed the 1975 and 1993 telephone surveys (including the questions on social comparisons and depression history) and the 1993 mail questionnaire, and whose randomly selected child was a daughter. Women in the subsample completed on average 13.3 years of education, and had 3.25 children. Eighty-four percent were married.

Therefore, mothers may be more adversely affected by potential indicators of their lack of parental success than fathers who had more opportunities for achievement outside the family.

Conversely, the parental role perspective predicts that psychological well-being of mothers and fathers is affected equally by intergenerational coresidence. Existing research suggests that men may be also vulnerable to children's statuses. For example, Aquilino and Supple (1991) showed that the coresident child's marital status was significantly related to satisfaction among fathers but not among mothers. Fathers' lower satisfaction with coresidence, especially when coresident adult children are sons, may stem from fathers' beliefs that their sons are slow to make the transition to adulthood and, thus, have fewer traditional signifiers of success, such as home ownership or job seniority (Carr, 2005). In their review of current research on fatherhood, Marsiglio, Day, & Lamb (2000) summarize that fathers can derive the benefits of social status when their adult children are successful as reflected by school performance and

career attainment. This implies that fathers whose children lack the traditional indicators of success may experience lower levels of parental satisfaction and well-being.

1.2.4. The Quintessential Situation at Midlife: Having Both Minor and Adult Children

Having both minor and adult children may be considered the quintessential midlife situation. Although it is not the most prevalent structural configuration at midlife among the WLS parents (see Chapter 3), the "almost empty nest" (Umberson, 1996) is overwhelmingly more likely at midlife than at any other life course stage. By their 50s, mothers who began childbearing early have launched at least one of their young adult children. Their concerns at midlife focus both on the transitions of young adult children and on the needs of younger children still at home (Koropeckyj-Cox, Pienta, & Brown, 2007).

The psychological implications of being an "almost-empty-nest" parent have received little attention in research. Delayed mothers who are still actively engaged in the demands of parenting in their 50s may experience elevated distress compared to their peers with earlier fertility who may be redirecting their energy into work or other spheres after launching their young adult children (Koropeckyj-Cox, Pienta, & Brown, 2007). Having both minor and adult children may be associated with added strains on financial resources and social relationships. Choi (2002) found that at comparable levels of engagement in paid work, mothers in late midlife with at least one child at home were less likely to see themselves as retired compared to childless women and empty-nest mothers. Umberson (1992) showed that parents who still have young children in the home experienced more strained relationships with their nonresidential adult children than empty-nest parents. In turn, chronic stressors elevate distress and reduce psychological well-being (Pearlin, 1999).

In the WLS, 40% of families who have both minor and adult children have been formed by remarriage. Although remarriage is becoming increasingly common for recent cohorts, it is still an incomplete institution lacking clear social norms and expectations; therefore, members of stepfamilies are particularly likely to experience problems in relationships (Cherlin, 1978). Moreover, family boundary ambiguity in stepfamilies, or a lack of clarity with respect to family membership, is associated with family stress, dysfunctional relationships, and depression (Stewart, 2005). White and Booth (1985) showed that parents with stepchildren reported significantly less satisfaction with their family life than people with biological children. The presence of stepchildren is a destabilizing influence within remarriage and a major contributor to the somewhat greater rate of divorce.

Cherlin's (1978) argument was based on a review of studies that used several data sets, including 1973, 1974, 1975 General Social Surveys; a sample of 4,452 Alameda County, CA, households; and the Survey of Economic Opportunity, a nationwide study of 30,000 households. Stewart (2005) used data from the first wave of the NSFH. The analytic sample included 3,357 married and cohabiting couples with minor step-, biological, or adopted children. Eighty-two percent of the sample were White. Ninety-four percent of the couples were married, and 5.5% were cohabiting. In 31% of couples, either one or both partners were previously married. White and Booth's (1985) findings come from a nationwide panel study of married people interviewed in 1980 and 1983 (N = 1,578). The authors did not provide information about race, gender, and SES composition of their sample, but mentioned that racial minorities and lower-SES people were less likely to participate in the second wave.

Few existing studies in this area suggest that the situation of having minor and adult children may be particularly likely to give rise to chronic stressors embedded in the parental role,

which may take a toll on parents' mental health. I hypothesize that having at least one minor child at home and at least one adult child — whether living with parents or separately — is associated with elevated distress and reduced psychological well-being among both mothers and fathers. According to the gendered role perspective, psychological implications of this structural configuration should be more adverse for women than men. Conversely, the parental role perspective suggests that men and women exhibit similar levels of distress and psychological well-being in the context of this complex family arrangement. Finally, it is possible that psychological implications of having at least one minor child and at least one adult child depend on the age difference between the youngest and oldest children in a family. When the age difference is large, for example, when parents have a fifth-grader and a college freshman, children are at vastly different developmental stages, and parents face multiple challenges unique to each child. In contrast, when the younger and older children are closely spaced, for example, when parents have a high school senior and a college junior, parental experiences with each child may be more similar than different. Therefore, I examine whether the effects of this configuration of the parental role are conditional on the age difference between the youngest and oldest children in a family.

1.2.5. The Quality of Parent-Child Relationships

Because relationships between parents and children are a fundamentally important source of social integration and support, the strains and rewards of these relationships have important consequences for the psychological functioning of parents and children (Umberson, 1992). Despite concerns expressed about the weakening of intergenerational ties, the evidence consistently demonstrates the continued importance of these relationships for both generations (Pillemer & Suitor, 1998). The overwhelming majority of adult children report close

relationships with their parents (Lye, 1996). Although most individuals are not involved in ongoing, routine exchanges of practical and financial assistance with their parents and adult children, support linked to key life-course transitions is quite common (Rossi & Rossi, 1990).

The socioemotional selectivity theory (Carstensen, 1992) suggests that the importance of family relationships may increase in later life. Studies based on White and Black participants of different ages and socioeconomic status indicate that older adults proactively regulate their emotions by being selective about their social interactions (Carstensen, Isaacowitz, & Charles, 1999). A perception of the future as limited is related to the desire to spend time with close friends or family rather than peripheral social partners (Fredrickson & Carstensen, 1990). Older adults are often more invested psychologically in their relationships than are younger people because relationships with peripheral network members are no longer maintained (Lang & Carstensen, 1994; Lansford, Sherman, & Antonucci, 1998).

Although socioemotional selectivity is particularly pronounced among older adults who have poor health, a shortened life span, and who have recently experienced deaths of spouses and generational peers, research shows that *relative* age is important, e.g., middle-aged adults are more selective in their social relationships than young adults, and older people are more selective than the middle-aged (Fung, Carstensen, & Lutz, 1999). Thus, this theory is applicable to the samples used in my study that focuses on midlife.

Hogan, Eggebeen, & Clogg (1993) showed that emotional help and support were the most common types of exchange between adult children and their parents. Whereas no race differences were found, women were more likely to be involved in intergenerational exchanges than men, with women both receiving and providing more support. The data for Hogan, Eggebeen, & Clogg's (1993) study were drawn from the 1987-1988 National Survey of Families

and Households. A total of 5,071 respondents had at least one living parent, were living with a child 18 years old or younger, and provided information about patterns of intergenerational exchange. This subsample included 964 Black, 3,575 non-Hispanic White, and 518 Hispanic participants. The mean age for the subsample was 35 years, and 81% were married.

Existing research emphasizes the importance of the quality of relationships with adult children for parents' mental health. Studies consistently indicate that gratifying parent-adult child relationships are associated with high levels of parents' psychological well-being, whereas poorer intergenerational ties are linked to worse psychological outcomes for both mothers and fathers (Koropeckyj-Cox, 2002; Pillemer & Suitor, 1991). The negative aspects of intergenerational relationships are more strongly associated with psychological distress of parents than are the positive aspects. Parental dissatisfaction and strains in relationships with adult children are associated with higher levels of distress among parents (Umberson, 1992). Umberson's (1992) findings were based on a national probability sample of 3,618 persons living in noninstitutionalized housing in the contiguous United States. Face-to-face interviews with persons aged 24 an older were conducted in 1986. Black individuals and adults over 60 were sampled at twice the rate of White individuals and persons aged 40 to 59.

In addition, Umberson (1992) shows that the psychological implications of parent-adult child relationships may differ by race and gender. Black parents report more parental dissatisfaction and less social support from their adult children than do White parents. Compared to fathers, mothers report that they see their children more often, receive more social support, and experience less dissatisfaction in relationships with adult children. Older mothers are more affected than older fathers by the *quality* of relationships with adult children, whereas fathers are more affected by *frequency* of contact with adult children.

Yet, even positive intergenerational relationships may involve problematic aspects. Pillemer and Suitor (2002) provide evidence of older women's ambivalence toward their children. They suggest that women may feel more child-related ambivalence than men do because of more intense mother-child relations and greater mothers' dependence due to widowhood. Pillemer and Suitor (2002) argue that because parent-child relationships are characterized by ambivalence, it is necessary to incorporate both positive and negative elements in a single study. This conclusion is based on a subsample of 189 mothers aged 60 and over from the Pathways to Life Quality Study conducted in Tompkins County, New York, in 2000. The analytic sample was limited to mothers of two or three children. All women were White, and most were middle-class. Twenty percent of mothers were between the ages of 60-69, 51% were between 70-79 years, and 30% were 80 years old and above.

However, maturational changes may alter the gendered balance of psychological costs ad rewards of parenthood. Women's greater provision of family services in young adulthood may lead to greater access to support in midlife and old age (Spitze & Logan, 1989; Rossi & Rossi, 1990). Older mothers receive more emotional support from adult children than do fathers (Umberson, 1992). Conversely, divorce of parents has lasting negative effects on the quality of father-child relationships (Cooney, 1994), as shown by a study of 485 White young adults, ages 18 to 23, surveyed in a mid-Atlantic state in early 1990s. 257 respondents were selected for inclusion because their parents divorced within 15 months of the study. The other 228 respondents whose parents were married to one another represented the intact family comparison group.

I hypothesize that satisfying intergenerational relationships are related positively to parents' psychological well-being, whereas problematic parent-child relationships are associated

negatively with parental mental health. In addition, I examine whether the psychological consequences of the structural characteristics of parenthood depend on the quality of parent-child relationships. With respect to gender differences, the gendered role perspective predicts that women are more attuned to the quality of relationships with their children and, thus, are more psychologically responsive to these relationships than men. In other words, high-quality relationships benefit women more than men, whereas strained relationships have more adverse effects on women's than men's psychological well-being. In contrast, the parental role hypothesis suggests that middle-aged mothers and fathers experience similar psychological costs and benefits of intergenerational relationships.

1.3. Limitations of Existing Research on Parenthood and Mental Health

Despite its breadth, existing research on the psychological implications of parenthood is characterized by a number of important limitations that the present study attempts to address. First, a substantial proportion of previous studies have focused on the experiences of one parent only — overwhelmingly the mother (e.g., Dunn, Plomin, & Daniels, 1986; Fingerman, 1996; Pillemer & Suitor, 2002; Suitor & Pillemer, 2006; 2007; Vinick & Lanspery, 2000). Moreover, psychological implications of motherhood tended to be considered with respect to only one selected child per family, most often dyads comprising the mother and a selected daughter (Fingerman, 1996; Pillemer & Suitor, 2002). To address this limitation, I explore psychological consequences of the structural and qualitative aspects of parenthood for both mothers' and fathers' mental health. Moreover, in the WLS, the data on the context of parenthood are based on information about all children the parent has ever had, in addition to more detailed questions about a randomly selected child. Therefore, my analysis incorporates variables reflecting each child in the participant's family and, thus, capturing the entire context of the parental experience.

Second, few studies examined multiple types of parents. Some studies included married parents raising their biological children together (Aldous & Klein, 1991; Nydegger & Mittenes, 1996), biological parents only (Heath, 1994; Koropeckyj-Cox, 2002; Nomaguchi & Milkie, 2003), adoptive parents only (Cudmore, 2005), step- and biological parents only (Manning & Smock, 2000). In contrast, my study includes childless individuals as well as a wide variety of the structural configurations of the parental role: biological parents of minor children, biological parents whose adult children living independently, biological parents of coresidential adult children, adoptive parents, stepparents, etc.

Third, many existing studies were based on small nonrepresentative samples, e.g., local samples of participants residing in a specific area, such as Boston, western Virginia, or upstate New York (Aldous, Klaus, & Klein, 1985; Clemens & Axelson, 1985; Dunn, Plomin, & Daniels, 1986; Fingerman, 1996; Suitor & Pillemer, 2006; 2007; Vinick & Lanspery, 2000). Further, most of these samples comprised one cohort only or were critically limited with respect to the age range (e.g., Aldous, Klaus, & Klein, 1985; Clemens & Axelson, 1985; Suitor & Pillemer, 2006; 2007). Therefore, it is not clear whether findings reported in these studies are cohort-specific or, alternatively, reflect maturational and developmental processes in the parental experience. My study is based on two large representative samples of multiple birth cohorts: born in 1939 (the WLS graduates); born between 1915 and 1965 (siblings of the WLS graduates); born between 1921 and 1970 (MIDUS).

Fourth, research on parenthood and gender differences in the parental experience has overwhelmingly focused on the transition to parenthood in young adulthood and on young adults parenting minor children at home (Dunn, Plomin, & Daniels, 1986; Evenson & Simon, 2005; Gove & Geerken, 1977; Heath, 1994; Nomaguchi & Milkie, 2003; Ross & Van Willigen, 1996;

Sanchez & Thomson, 1997; Simon, 1992). Long-term effects of parenthood on parents' well-being and the parental experiences at midlife and late life have not received adequate attention. My study considers psychological implications of motherhood and fatherhood in midlife, and shows that parenthood is the role that persists over the life course and has important consequences for parents' mental health even when children are adults.

Fifth, many studies focused on adult children as a unit of analysis and a source of information about the context of parenthood (e.g., Mitchell, Wister, & Gee, 2000). Parents were not included as participants and, thus, their perceptions of their parental experiences were not represented. For example, answers to questions about parent-adult child relationships, such as emotional closeness or intergenerational exchange of support, reflected perceptions of adult children only and not their parents (Hogan, Eggebeen, & Clogg, 1993). In contrast, my study has middle-aged parents as units of analysis, thus, reflecting parents' description of the structural context of parenthood and parents' perceptions of the quality of intergenerational ties.

Sixth, very few previous studies included early-life family characteristics and experiences in the family of origin as potential influences on the relationship between parenthood and mental health in adulthood. Studies that considered early-life influences relied exclusively on retrospective measures (Aquilino, 1991; Mitchell, Wister, & Gee, 2000; Rossi & Rossi, 1990). My analysis incorporates detailed information about sociodemographic family background collected prospectively in the WLS when most participants were adolescents and young adults. I also include rich retrospective measures of early-life family environment and relationships with parents available in the WLS and MIDUS.

Seventh, most studies have examined trends in, and predictors of, the structural configurations of the parental role, such as determinants of parent-adult child coresidence

(Aquilino, 1990; Mitchell, Wister, & Gee, 2000; Ward, Logan, & Spitze, 1992), predictors of intergenerational exchange of support (Hogan, Eggebeen, & Clogg, 1993; Spitze & Logan, 1990), trends in home leaving and returning (DaVanzo & Goldscheider, 1990), and correlates of the nature and quality of parent-child relationships (Aldous, Klaus, & Klein, 1985; Aldous & Klein, 1991; Pillemer & Suitor, 2002; Silverstein & Bengtson, 1997). However, few studies explored the consequences of these characteristics of parenthood for mothers' and fathers' mental health.

Moreover, sociological studies that did focus on the psychological implications of parenthood largely included only negative outcomes, such as distress (Gove & Geerken, 1977; Simon, 1992), depression (Evenson & Simon, 2005; Koropeckyj-Cox, 1998; Pillemer & Suitor, 1991; Umberson, 1992), loneliness (Koropeckyj-Cox, 1998; Zhang & Hayward, 2001), and anger (Ross & Van Willigen, 1996). When studies considered positive psychological outcomes, these outcomes were limited to specific domains of well-being, such as parental satisfaction with coresidence (Aquilino & Supple, 1991) and, thus, did not reflect parents' general well-being. In contrast, my study is based on a multidimensional approach to mental health. Because parenthood may be simultaneously stressful and rewarding (Umberson, 1996), I include measures of distress and positive psychological well-being to capture both psychological rewards and costs of parenthood.

Eighth, the overwhelming majority of studies that examined psychological consequences of parenthood for parents' mental health were cross-sectional and, thus, did not address the issue of endogeneity: to what extent parenthood causes mental health, and to what extent psychologically healthy individuals are more likely to become certain types of parents and have satisfying relationships with their adult children than individuals who have mental health

problems (Evenson & Simon, 2005; McLanahan & Adams, 1989; Umberson, 1992). Moreover, most previous research in this area was based on simple regression analyses and included only observed variables (Aquilino & Supple, 1991; Evenson & Simon, 2005; Gove & Geerken, 1977; Greenfield & Marks, 2006; Koropeckyj-Cox, 1998; 2002; Nomaguchi & Milkie, 2003; Umberson & Gove, 1989; Ward, Logan, & Spitze, 1992). These studies assumed social causation, i.e. that parenthood causes mental health, but did not test this assumption empirically and largely ignored two types of selection: (a) selection into specific configurations of the parental role based on mental health, and (b) unobserved heterogeneity based on early-life family influences and genetic endowments that can affect both parenthood and mental health in adulthood.

The only study of parenthood and psychological well-being that used sibling fixed-effects models to account for unobserved heterogeneity has several limitations (Kohler, Behrman, & Skytthe, 2005). The measure of psychological well-being used in this study was a one-item measure of life satisfaction. Relying only on one outcome can lead to a misleading portrait of parenthood. Moreover, this psychological outcome is an ordinal variable that has four categories from "very satisfied" to "not satisfied at all," yet the authors treated it as an interval variable. Finally, the study's sample included only twins, and twins are not representative of the general population.

My dissertation extends previous research by addressing the issue of selection in two ways. First, I include retrospectively measured lifetime history of depression to account for endogeneity between parenthood and mental health to some extent. Unlike the study by Kohler et al. (2005), psychological outcomes in my analysis reflect both positive and negative dimensions of parents' psychological functioning and were measured with multiple items in

1993-1994 in the WLS as well as in 1995 and 2005 (MIDUS). Second, I use fixed-effects sibling models based on data from two large representative samples that comprise different types of sibling groups to take into account unobserved early-life environmental and genetic endowments shared by siblings within families. In addition, I include a wide array of prospective and retrospective measures of early-life family characteristics, with some of them capturing circumstances not shared by siblings.

1.4. Unobserved Genetic and Early-Life Environmental Influences

The associations between parenthood and psychological well-being observed in previous studies may reflect the causal effect of parenthood on mental health or, alternatively, the influence of factors that select individuals into specific configurations of the parental role and at the same time influence mental health. Genetic and early-life environmental endowments are important selection factors that remain unaccounted for in most studies, but may create a spurious relationship between parenthood and psychological well-being (Kohler et al., 2005).

Researchers have examined a wide array of early-life factors that can potentially influence both parenthood and mental health. Sociological studies emphasize the role of socioeconomic and demographic characteristics of the family of origin, including family size (Barber, 2001), parental divorce (McLanahan & Sandefur, 1994), parents' socioeconomic resources (Cherlin, Kiernan, & Chase-Lansdale, 1995), and religious beliefs and affiliation (Pearce, 2002). For example, early-life hardships and parental divorce can lead to offspring's enduring psychological problems either via environmental channels (McLeod, 1991; Pudrovska, Schieman, Pearlin, & Nguyen, 2005) or via a genetic route (O'Connor, Caspi, DeFries, & Plomin, 2000). Similarly, parental divorce, economic disadvantage, and low educational

attainment are associated with an increased risk of offspring's early childbearing and a larger subsequent number of children (Barber, 2001; Kahn & Anderson, 1992).

Research in developmental psychology reveals the importance of parenting styles (Baumrind, 1993; Maccoby, 2000) and parent-child relationships in childhood and adolescence (Jacob & Johnson, 2001). Parental negativity, low levels of emotional involvement, and an autocratic parenting style are strongly associated with offspring's maladjustment, depression, antisocial behavior, and other psychological problems that may persist into adulthood (Taylor, Repetti, & Seeman, 1997). At the same time, parenting behaviors influence children's attachment styles. An insecure attachment style is related to offspring's early maturation, earlier sexual activity, and a greater number of births (Belsky, Steinberg, & Draper, 1991). Conversely, secure attachment is associated with later maturation and the ability to form lasting bonds with intimate partners (Belsky et al., 1991).

Whereas sociologists and developmental psychologists focus on environmental characteristics shared by siblings within families, behavioral genetics shows the importance of nonshared environment and genetic endowments. Twin and adoption studies indicate that roughly 50% of variability in personality and mental health is due to heredity, although heritability estimates are different for other psychological traits, such as mental ability and vocational interests (Bouchard, 2004). The proportion of variance in psychological outcomes unexplained by genetic influences is mostly due to environmental factors that are not shared by siblings who were reared together, whereas the contribution of shared environment tends to be small (Plomin, 1994; Plomin, DeFries, McClearn, & McGuffin, 2000).

1.4.1. Limitations of Behavioral Genetics Approach

Heritability estimates rest on numerous assumptions that concern social processes as much as genetics (Goldberger, 1979). Specifically, behavioral genetic models assume that siblings of differing pedigree experience equal environments. Yet, because environmental similarity varies between different types of siblings, the equal environments assumption is often likely to be violated (Maccoby, 2000; Rutter, Pickles, Murray & Eaves, 2001). For example, studies suggest that the assumption that identical twins do not experience more similar environments than fraternal twins does not hold in many contexts, and this violation tends to yield inflated heritability estimates (Freese & Powell, 2003; Jencks et al., 1972; Maccoby, 2000; Rutter et al., 2001). Some of the greater concordances between identical twins compared to fraternal twins that behavior geneticists attribute to genetic influences are likely to stem from the more similar social environments shared by monozygotic twins (Horwitz, Videon, Schmitz & Davis, 2003).

A related assumption is that siblings reared together experience shared environmental influences whereas siblings reared apart have dissimilar environments. Yet, this assumption is often likely to be violated. On the one hand, siblings reared together do not share all environmental factors, e.g., parents tend to treat their children differently (Deater-Deckard, 2004). On the other hand, siblings reared apart do not necessarily experience dissimilar environments, and the "nonshared" environments can be essentially the same. For example, a corrected correlation between the SES of families of Swedish twins "reared apart" was > 0.80 (in the SATSA sample).

Other behavioral genetic assumptions that have been debated include: that genetic effects are additive; that mating is random with respect to the trait under consideration and, thus,

nonbiological siblings have no shared genetic material; and that there are no gene-environment interactions or correlations (Freese, 2006; Freese, Li, & Wade, 2003). On a practical level, the concept of heritability has been challenged for being uninformative for designing environmental interventions and policy decisions (Baumrind, 1993; Goldberger, 1979).

Despite these limitations, comparison of siblings of different degrees of genetic similarity in combination with observed measures of early-life shared and nonshared environmental influences is useful for my analysis because such an approach may account — to some extent — for unobserved heterogeneity with respect to early-life environmental and genetic endowments that can potentially confound the associations between parenthood and mental health observed in adulthood.

Moreover, advances in molecular genetics have made it possible to identify genes associated with complex behavioral outcomes. Research examining psychological consequences of family roles and transitions has not adequately addressed the possibility that these effects could reflect, to some extent, genetic endowments that are associated both with psychological functioning and specific configurations of family roles. If such genetic influences exist, the relationships between family roles and mental health could be partly spurious, reflecting selection of individuals based on genetic predispositions rather than causal effects of family roles. Recent research suggests that at least two polymorphisms may be of particular importance in this respect: 5-HTTLPR and DRD4.

The 5-HTTLPR s-containing genotype has been associated with anxiety-related personality traits, affective disorders, and suicide (Bondy et al., 2000; Collier et al., 1996; Lesch et al., 1996; Willeit et al., 2003), although the evidence is mixed (Middeldorp et al., 2007; Willis-Owen et al., 2005). In addition to psychological well-being, 5-HTTLPR was shown to be

related to reproductive behaviors. Research among rhesus macaques indicates that males who are homozygous for the diallelic rh5-HTTLPR polymorphism have higher fecundity during early and late adulthood than their heterozygous counterparts who reproduce mainly at an intermediate age (Krawczak et al., 2005). Suggestive findings were obtained in human studies as well. Hamer (2002) reports a statistically significant association between 5-HTTLPR and frequency of sexual activity among middle-aged men. In addition, the 5-HTTLPR variant was shown to be associated with the number of sex partners, although this association was moderated by religious attendance (Halpern, Kaestle, Guo & Hallfors, 2006). Similarly, DRD4 was shown to be associated both with psychological traits, such as novelty seeking and neuroticism (Benjamin et al., 2000; Tochigi et al., 2006), and reproductive behaviors, such as age at first sexual intercourse and the number of sexual partners (Guo & Tong, 2006; Hamer, 2002; Miller et al., 1999).

1.4.2. Direct and Indirect Estimation of Early-Life Influences

Research examining psychological consequences of family roles and transitions has not adequately addressed the possibility that these effects could partly reflect genetic and environmental early-life endowments that are associated both with psychological functioning and specific configurations of family roles. If such influences exist, the relationships between family roles and mental health could be partly spurious, reflecting selection of individuals based on genetic predispositions and early-life factors rather than causal effects of family statuses and transitions.

Ideally, to examine how heredity and early-life family factors influence outcomes in adulthood, one would need direct and prospective measures of genetic and environmental early-life endowments. Because few data sets have these, researchers have relied on other approaches. First, most researchers studying psychological well-being of middle-aged and older adults use

retrospective measures of early-life characteristics. The MIDUS data set contains detailed retrospective information about early-life factors, including sociodemographic characteristics of the family of origin and parental affection. Moreover, the strength of the WLS is that it has sociodemographic indicators of family background, such as family structure, family size, parents' education and income, measured prospectively in 1957 and 1975-1977 when participants were adolescents and young adults. The availability of these measures in the two data sets used in this study enables me to assess directly the extent to which family background characteristics examined in sociological research affect the association between parenthood and psychological well-being at midlife.

Second, it is possible to account for early-life endowments indirectly. One approach is the fixed-effects sibling models that compare siblings from the same family to factor out the influences of unobserved environmental and genetic endowments shared by individuals within families. The unobserved family influences are eliminated by taking the differences between variables pertaining to siblings and regressing the difference in the outcome variable on differences in the predictor variables (Powers, 2001). The fixed-effects models can be viewed as *within-family* models — because they compare members of the same family to each other. Fixed-effects sibling models have been widely used in sociology, economics, and demography (e.g., Conley & Bennett, 2001; Geronimus & Korenman, 1992; Kohler et al., 2005). For example, using a sample of Danish twins and fixed-effects estimation, Kohler and colleagues (2005) show that the associations between partnership/fertility behaviors and subjective well-being are affected by genetic dispositions. Moreover, random-effects models based on the WLS sibling data yield the same "within-family" estimates as fixed-effects models (Hauser, 1988; Hauser & Mossel, 1987; Hauser, Sheridan, & Warren, 1999).

One limitation of the fixed-effects models is that within-family effects are more vulnerable to random measurement error in regressors than are total or between-family effects. Another limitation is that these models do not account for genetic and environmental influences that are not shared by siblings, except to the extent that these influences have been measured directly. I can overcome this limitation to some extent by comparing siblings of different degrees of genetic similarity and including observed measures of early-life environmental factors that differed between siblings. My samples include full nontwin siblings, identical and fraternal twins, half-siblings, step- and adopted siblings. This diversity enables me to examine whether the association between parenthood and mental health differs significantly depending on the type of pedigree. Because fixed-effects models control for unobserved factors shared by siblings, the part of the psychological impact of parenthood left unexplained in these models can reflect confounding influences of nonshared genes and nonshared environment, in addition to reflecting a causal effect of parenthood. Among identical twins, the fixed-effects models account for all genetic and shared environmental influences, among fraternal twins and full nontwin siblings for 50% of the genetic make-up, and among half-siblings for 25% of genetic influences. In contrast, only a small genetic effect is eliminated among step- and adopted siblings whose genetic similarity is low and stems mostly from assortative mating. Yet, this sibling comparison approach does not account for the fact that environmental similarity varies across different types of sibling dyads, and siblings who share a larger proportion of genes are also likely to experience more similar environments (Maccoby, 2000).

I examine the contribution of genetic endowments by testing interactive effects of parenthood and the type of a sibling dyad in the fixed-effects models. If the psychological impact of parenthood is similar regardless of the degree of siblings' genetic similarity, nonshared

genetic dispositions do not contribute to the association between parenthood and psychological well-being. Conversely, if the relationship between parenthood and mental health is significantly weaker (a) among identical twins compared to all other types of sibling dyads, and (b) among full nontwin siblings and fraternal twins compared to half-, step-, and adopted siblings, this will provide evidence that the psychological implications of parenthood at midlife are partly explained by genetic influences because the more genes the two siblings share, the weaker the association between parenthood and mental health will be. However, this evidence will be tempered by the fact that environmental similarity varies across different sibling groups (Freese, Li, & Wade, 2003). In addition, I analyze the extent to which the psychological impact of parenthood differs among siblings who grew up in the same household and siblings who grew up separately. Although siblings growing up together do not share all environmental influences (Deater-Deckard, 2004), siblings reared together have more overlapping environments than siblings reared apart. Thus, if the effect of parenthood differs significantly among siblings who grew up together and siblings who did not share a household in childhood, this will suggest that shared early-life environment affects the association between parenthood and mental health observed in adulthood under the assumption that the degree of environmental similarity is lower among siblings reared apart.

1.5. Summary

I examine the associations between structural and qualitative aspects of the parental role and mental health, and the ways that these associations differ by gender. Further, I assess how the psychological implications of parenthood change when sociodemographic characteristics of family background and unobserved genetic and environmental early-life influences are taken into account.

This study extends previous research by examining midlife as a life-course stage characterized by specific configurations of the parental role; by exploring the diversity of the structural and relational contexts of parenthood; and by taking into account observed and unobserved genetic and early-life environmental endowments that can potentially confound the association between parenthood and psychological well-being in midlife.

1.5.1. Research Questions and Hypotheses:

Research question 1: How do childfree individuals compare to parents with respect to positive and negative mental health outcomes at midlife?

Hypothesis 1: Mental health of middle-aged childless adults is comparable to that of empty-nest parents. Moreover, nonparents may exhibit lower distress and higher levels of psychological well-being than parents who have minor or adult children at home.

Research question 2: How are diverse configurations of children's age and living arrangements related to parents' distress and psychological well-being?

Hypothesis 2: Having at least one child in the parental home — whether minor or adult — is related to higher distress and lower psychological well-being, especially for parents who have *both* minor and adult children.

Research question 3: How are qualitative aspects of the parental role related to parents' depressive symptoms and psychological well-being?

Hypothesis 3: Psychological implications of parenthood are conditional on the quality of parent-child relationships. Parents with high levels of perceived relationship quality report fewer depressive symptoms and higher psychological well-being than parents with low relationship quality and, possibly, nonparents.

Research question 4: Do psychological implications of parental status as well as the structural and qualitative aspects of the parental role differ for mothers and fathers?

Hypothesis 4: The parental role hypothesis predicts that parental status, children's age and living arrangements, and relationships with children are related in a similar way to mothers' and fathers' mental health. According to the gendered role hypothesis, women are more strongly affected by, and more psychologically responsive to, childlessness as well as the structural and qualitative characteristics of parenthood.

Research question 5: What is the role of unobserved family heterogeneity in the associations between parenthood and mental health at midlife?

Hypothesis 5: The associations between parenthood and mental health observed at midlife partly reflect genetic and environmental influences experienced by parents early in life in the family of origin.

CHAPTER 2. DATA, MEASURES, AND ANALYTIC PLAN

2. 1. Data

Analyses in this dissertation are based on the 1993-1994 wave of the Wisconsin Longitudinal Study (WLS) and the two waves (1994-1995 and 2004-2006) of the National Survey of Midlife Development in the United States (MIDUS). Because the WLS and MIDUS share a focus on aging and health, they are similar enough to be used for estimating comparable models. Yet, the two samples are drawn from entirely different populations, and their complementarity provides a unique opportunity to assess the robustness and consistency of the associations between parenthood and mental health.

2. 1. 1. Wisconsin Longitudinal Study

The Wisconsin Longitudinal Study (WLS) is a long-term study of a random sample of 10,317 men and women who graduated from Wisconsin high schools in 1957 and of their randomly selected brothers and sisters. The primary participants were first interviewed during their senior year in high school, when they were 17-18 years old (1957). Subsequent interviews were completed at ages 36 (in 1975), 53-54 (in 1993), and 64-65 (in 2004). Survey data were collected from the original participants in 1957, 1975, 1993, and 2004, and from a selected sibling in 1977, 1994, and 2005.

In 1992-1994, the WLS collected data from surviving members of the original sample and their siblings. The graduates were 53 and 54 years old, and four fifths of their siblings were 44 to 62 years old. In 1992-1994, the WLS conducted four major surveys: telephone and mail surveys of graduates and nearly identical telephone and mail surveys of an expanded random sample of focal siblings. The surveys included a one-hour telephone interview, followed by a 20-page, self-administered questionnaire. Phone interviews were completed with 8,493 graduates,

which constitutes 82% of the original 10,317 participants and 87% of the 9,741 surviving members of the original sample. Further, 923 graduates refused to participate or were unable to be interviewed (e.g., out of the country), 587 graduates were deceased, and 314 could not be located. In addition, 6,875 graduates completed mail questionnaires in 1993.

In 1993-1994, randomly selected siblings of the WLS graduates were interviewed. Some 2,000 siblings were previously interviewed in 1977, and they and approximately 2,800 additional siblings were interviewed in the 1993-1994 round of the study. All siblings who were interviewed in 1977 and all siblings of participants who completed the telephone interview in 1992-1993 were scheduled to be interviewed by telephone in 1993-1994. Additionally, siblings who completed the 1993-1994 telephone interview were to be sent a mail questionnaire. Due to budget constraints, it was not possible to complete all these interviews. Telephone interviews were attempted for all those siblings who were interviewed in 1977 and for all other siblings from groups 2-9 (if the participant completed a telephone interview in 1992-1993). Mail questionnaires were sent to the remaining 970 siblings from groups 0 and 1 (if the participant completed the telephone interview), and for a randomly selected, stratified sample of other siblings (if the graduate had completed a telephone interview in 1992-1993). Mail questionnaires were sent to the remaining 970 siblings (if the graduate completed the telephone interview). Ultimately, 4,778 siblings completed phone interviews only, 3,478 siblings completed phone interviews and returned mail questionnaires, and 561 siblings completed mail questionnaires only but not phone interviews in 1994.

The 2003-2005 round of data collection included a one-hour telephone interview and a 48-page mail survey of more than 9,600 surviving graduates who were 64-65 years old at the time of the survey. 7,265 graduates participated in a telephone survey in 2004, which constitutes

70% of the original sample interviewed in 1957 and 80.5% of the 9,025 living graduates. 1,292 graduates were deceased. 1,313 graduates refused to participate or could not be located, whereas 447 graduates were not contacted in 2004. As for mail interviews, 6,378 graduates completed phone interviews and returned mail questionnaires, whereas 467 graduates returned mail questionnaires but did not complete phone interviews.

Parallel telephone and mail surveys of 7,150 randomly selected siblings of the graduates were conducted. Siblings vary widely in age and most were first surveyed in 1994, with about 2,100 being first interviewed in 1977. For phone interviews, 5,163 siblings were contacted, of whom 4,271 siblings participated in phone interviews in 2005. Further, 311 siblings were not located, and 1,231 siblings were deceased. As for mail questionnaires, 3,572 siblings completed phone interviews and mail questionnaires, whereas 405 siblings returned only mail questionnaires but did not complete phone interviews.

The WLS sample is broadly representative of White, non-Hispanic American men and women who have completed at least a high school education. Among Americans aged 50 to 54 in 1990 and 1991, approximately 66 percent were non-Hispanic White persons who completed at least 12 years of schooling. Some strata of American society are not well represented. It is estimated that about 75 percent of Wisconsin youth graduated from high school in the late 1950s (Sewell & Hauser, 1975). Everyone in the primary WLS sample graduated from high school; about seven percent of their siblings did not graduate from high school. About 19 percent of the WLS sample is of farm origin, and that is consistent with national estimates of persons of farm origin iaaaqon cohorts born in the late 1930s. Also, siblings cover several adjoining cohorts: they were born primarily between 1930 and 1948. In 1964, 1975, and again in 1992, about two thirds of the sample lived in Wisconsin, and about one third lived elsewhere in the U.S. or abroad.

I use the 1993-1994 WLS data for graduates and their siblings. Analysis in Chapter 3 is based on a subsample of the 1993-1994 graduate and sibling data. The analytic subsample for Chapter 3 was obtained by applying the following restrictions to the entire sample. Phone interviews were completed with 8,493 graduates in 1993. Of them 6,875 graduates completed both phone interviews and retuned mail questionnaires. Both phone interviews and mail questionnaires were completed by 2,873 siblings of these 6,875 graduates in 1994 (of all 3,477 siblings who completed both phone interviews and mail questionnaires in 1994). Thus, the subsample in Chapter 3 comprises 2,873 sibling dyads, of which 658 are male dyads, 850 are female dyads, and 1,365 are opposite-gender dyads. The analytic subsample includes 2,684 full nontwin sibling dyads, 16 monozygotic (MZ) twin dyads, 38 dizygotic (DZ) twin dyads, 90 half-sibling dyads, 26 stepsibling dyads, and 19 adopted sibling dyads.

2. 1. 2. The National Survey of Midlife Development in the United States

In 1994-1995, the MacArthur Midlife Research Network carried out a national survey of 4,242 Americans aged 25 to 74. The purpose of the study was to investigate the role of behavioral, psychological, and social factors in understanding age-related differences in physical and mental health. The study included members of the national random-digit-dialing sample, along with participants obtained via oversampling in five metropolitan areas. In addition, interviews were conducted with siblings of the national sample, and twins identified in the Twin Screening Project. Across all samples, participants included noninstitutionalized, English-speaking adults 25 to 74 years of age, selected from the working residential telephone lines in the coterminous United States. Older people and men were oversampled by varying the probability of carrying out the interview as a joint function of the age and sex of the randomly selected participant.

Siblings were identified by members of the national sample. Among those who reported that they had one or more siblings, 529 members of the national sample were randomly selected. Using only siblings within a family that had the same biological mother and father, a group of 951 siblings was identified, thus including more than one sibling in some families. The combined groups of 951 and 529 yielded 1,614 sibling groups.

The 998 twin pairs participating in the MIDUS Twin Screening Project represent the first national sample of twin pairs ascertained randomly via the telephone. Twins were recruited in a two-stage sampling design. First, screening of a representative national sample of approximately 50,000 households was conducted to identify the presence of a twin in the family. In the second stage, student recruiters from the University of Michigan contacted the twin households and attempted to recruit twins to participate in the survey. Cooperating twins were asked to provide contact information for their co-twins. On occasion, there was more than one twin pair per family.

The response rate for the MIDUS I telephone interview (RDD sample) was 70%. Among the telephone participants, 86.3% completed self-administered questionnaires (SAQ), yielding an overall response rate of 60.8%.

A longitudinal follow-up of the original MIDUS study was conducted in 2004-2006. Of the 7,108 participants in MIDUS I, 4,963 were successfully contacted to participate in another phone interview of about 30 minutes in length. The average longitudinal follow-up interval was approximately 9 years and ranged from 7.8 to 10.4 years. The longitudinal retention rate for the entire sample is 70%. With regard to socio-demographic characteristics, the gender of MIDUS II participants who completed the telephone interview was 47% male and 53% female. Age ranged from 32 to 84 with a mean of 55.

The main random-digit dialing sample in MIDUS II contained 2,257 participants (65% retention rate). The sibling sample included 733 siblings of the main participants and the twin sample included 1,484 twins. Longitudinal retention rates for sibling and twin samples were 77% and 78%, respectively.

MIDUS II also included two self-administered questionnaires (SAQs), each of about 55 pages in length, which were mailed to participants, and when completed, returned by mail. 1,805 main participants (80% of phone participants), 637 siblings (87% of the phone participants), and 1,204 twins (81% of the phone participants) completed SAQs in MIDUS II.

Analysis in Chapter 4 is based on a subsample of main participants and their siblings as well as a sample of twin dyads in MIDUS I and MIDUS II. In the MIDUS study, individuals with high levels of educational attainment are over-represented. Although I adjust for participants' education in all models, the findings reported in Chapter 4 may be particularly likely to reflect experiences of the well-educated. To the extent that high levels of education are associated with better mental health (Magee, 2006; Pearlin, 1999), the findings in Chapter 4 may overestimate psychological benefits of high-quality parent-child relationships because the analytic sample may comprise participants who report high levels of psychological well-being regardless of their experiences in the family roles.

The analytic sample in Chapter 4 includes participants from the main sample who have siblings as well as individuals from the twin sample. Main participants, siblings, and twins included in the analytic sample participated in both waves of the MIDUS study. Analysis of the likelihood of attrition showed that respondents who were lost to follow up tended to be older and had somewhat lower levels of income and education, yet they did not differ from those who were retained in terms of the focal characteristics of the parental role and mental health. The findings

in Chapter 4 may be biased toward reflecting the experience of the higher-SES individuals, yet the MIDUS sample in general is selective for high levels of educational attainment even without the attrition.

I pooled subsamples of main participants, siblings, and twins to obtain the analytic sample for Chapter 4 that comprises 1,794 full nontwin siblings, 658 identical twins, and 1,010 fraternal twins. The minimum number of full siblings per family is 2, the maximum number is 7, and the average number is 2.5 siblings. The identical and fraternal twin family groups are all dyads. The analytic sample is highly selective because it includes only individuals who have siblings and participated in a follow-up survey. To address the issue of potential bias due to the sample selectivity and pooling sibling and twins samples, I conducted a sensitivity analysis. Using a longitudinal sample of main participants who participated in both MIDUS waves, I ran the same models as with the pooled sample. I also ran the same models with a subsample of twins who participated in both waves. The direction and the effect sizes were nearly identical in the three analyses. Therefore, in Chapter 4 I report only results from the analysis based on the pooled sample of main participants, siblings, and twins.

2. 2. Measures

2.2.1. The Wisconsin Longitudinal Study

2.2.1.1. Dependent variables

To capture psychological costs and rewards of parenthood, I include both distress and psychological well-being. *Depressive symptoms* were evaluated in 1993 and 1994 using the 20-item Center for Epidemiologic Studies Depression Scale (CES-D). Participants were asked to indicate the number of days in the past week that they experienced specific symptoms, such as feeling sad, depressed, or bothered by things that usually did not bother them. Response

categories ranged from 0 to 7 days. Responses to all items are averaged to create an index, with higher scores reflecting a greater number of depressive symptoms. To reduce the positive skew, I took the natural log of the depressive symptoms scale.

It is possible that individuals are selected into parenthood on the basis of their mental health. In this cohort of men and women parenthood was almost invariably associated with marriage, and depressed individuals may be less likely to get married and stay married (Wade & Pevalin, 2004). In addition, mental health may influence the desire to become parents. To address the issue of endogeneity between characteristics of the parental role and mental health, my analysis includes a measure of the *lifetime history of depression*. In both 1993 and 1994, graduates and siblings were asked whether they had ever been depressed for two or more weeks. The ages of depression episodes and the total number of episodes were recorded as well. I adjust for the number of depression episodes that the participant had experienced prior to the transition to parenthood, with participants who reported no depressive episodes assigned the value of 0 and participants who reported at least one episode prior to the time of their first birth assigned the value of 1.

Research shows that men and women may manifest distress in different ways: women are more prone to internalizing disorders, such as depression, whereas men have more externalizing disorders, such as problem drinking. To capture potential gender difference in the manifestation of distress, I conducted preliminary analysis using an indicator of *alcohol use* measured as the total number of drinks consumed in the month prior to the interview both in 1993 and 2004. The results showed no associations between the structural characteristics of the parental role and alcohol use either among men or women. This lack of significant relationships is consistent with

similar analyses of parenthood and alcohol use conducted with the NSFH data (Robin Simon, personal communication). Therefore, I do not include alcohol use in any further analysis,

Psychological well-being was assessed in 1993 and 1994 with Ryff's six subscales of eudaimonic well-being (RPWB): autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance. Response categories are (1) agree strongly, (2) agree moderately, (3) agree slightly, (4) disagree slightly, (5) disagree moderately, (6) disagree strongly. Each dimension of the RPWB scales is measured with both positively and negatively worded items. Positively worded items are those to which individuals should respond "strongly agree" to indicate the highest level of well-being, e.g., "I have confidence in my opinions even if they are contrary to the general consensus," "People would describe me as a giving person willing to share my time with others." Negatively worded items are those to which individuals should respond "strongly disagree" to indicate the highest level of well-being, e.g., "I have not experienced many warm and trusting relationships," "The demands of everyday life often get me down." The 1993 and 1994 mail surveys contained seven items for each RPWB subscale, yielding a total of 42 items (described in detail in Springer & Hauser, 2006).

My analysis in Chapters 3 and 4 is based on seven scales of RPWB. First, I created a scale for each of the six dimensions. Second, I combined environmental mastery, personal growth, purpose in life, and self-acceptance in one scale, following the findings of Springer and Hauser (2006) and Abbott et al. (2006) that showed that these four dimensions of RPWB were virtually indistinguishable.

2.2.1.2. Independent variables

Characteristics of the parental role. Structural configurations of the parental role are represented with a series of dummy variables. *Parental status* is coded 1 if a participant had at

least one living biological or non-biological child at the time of the interview. Individuals who reported no children were assigned a value of 0. The *number of children* reflects the total number of biological and non-biological children, with non-parents having a value of 0 on this variable. A dichotomous variable for the presence of *minor children* is coded 1 if a participant has at least one living child 18 years or younger. An indicator of *female children* is coded 1 if a participant had at least one living daughter at the time of the interview. I created two dummy variables to reflect the presence of non-biological children: *adopted children* coded 1 if an individual had at least one adopted child, and *stepchildren* coded 1 if an individual had at least one stepchild. Finally, the models include the *age of the participant's youngest child* and *the age difference between youngest and oldest children*.

Coresidence with adult children is coded 1 if at least one child aged 22 or older was living in the participant's household at the time of the interview. An alternative indicator of coresidence with adult children has 18 years as a cut-off age for the child's adult status. The two cut-off points for defining minor versus adult children were used to distinguish children who might attend college while leaving in the parental home because research shows that this arrangements is increasingly becoming normative as both the costs and the importance of higher education are on the rise (Casper & Bianchi, 2002). In a preliminary analysis, I ran separate models with indicators using 18 years and 22 years as cut-off points for children's adult status. The findings for the psychological implications of coresidence with children for parents' mental health were virtually identical in these two kinds of models. Therefore, in Chapter 3, I report only the results from models using 18 years old as a cut-off age. To further clarify the circumstances of coresidence, I include a dummy variable indicating whether a child has a *disability or mental illness*.

Chapters 3 and 4 are based on data from samples comprising predominantly middle-aged adults in the WLS and MIDUS, respectively. To reflect the structural context that is particularly characteristic of midlife when it is typical for parents to have *both* minor and adult children, I created a set of six mutually exclusive dummy variables. *Nonparents* equals 1 for individuals who have never had biological or nonbiological children by the time of the interview. *Minor children only* is coded 1 for parents who have one or more children 18 or younger and no children over 18. *Nonresidential adult children only* reflects the quintessential empty-nest situation and is coded 1 if parents have only children 19 or older who do not live in the parental household. *Adult children only, at least on coresidential* is equal 1 if parents have only children over 18, with at least one child living in the parental household. Finally, two dummy variables were created for parents who have both minor and adult children: *at least one minor child and at least one coresidential adult child* and *at least one minor child and at least one nonresidential adult child*.

In the WLS, additional questions were asked about a *randomly selected child* of each graduate in 1993: frequency of contact with the selected child during the last 12 months either in person, letter, or phone; similarity between the participant's and the selected child's general outlook on life; closeness between the participant and the selected child. There are four response categories ranging from 1 = *not at all similar/close* to 4 = *very similar/close*. The two items were averaged to create a scale (α = .62). Because relationship quality was assessed only among graduates but not their siblings, in Chapter 3 I use this scale in an auxiliary analysis of a subsample of graduates only.

Socioeconomic characteristics. *Education* refers to the years of schooling one has completed; categories include 12 (reference category), 13 to 15 years, 16 years, and 17 or more

years. *Net worth* reflects the participant's total household assets. *Employment status* is coded 1 if a participant was working for pay at the time of the interview. Further, I include an indicator of employment reflecting the participants' *life-course work history*: whether the participant has ever worked for pay as well as occupational income and occupational education of current or last occupation. It is important to control for SES to address potential spuriousness in the relationship between parenthood and mental health because parents' socioeconomic resources can be linked both to mental health and to most aspects of the parental role.

Parents' marital status is represented with five mutually exclusive categories: currently married in first marriage (reference category); currently married in remarriage; divorced/separated; widowed; never married.

Parents' physical health is measured as a count of chronic illnesses that have ever been diagnosed by a medical professional, and a measure of global self-rated health.

Sociodemographic characteristics. All models include participants' *gender* and *age at the time of the interview.* Gender is coded 1 for *women* and 0 for *men*. Age at the time of the interview is measured in years.

Sociodemographic family background characteristics were reported on several occasions: in 1957 and 1975 by graduates and in 1977 by siblings. Additional information was obtained from Wisconsin tax records in the late 1950s and early 1960s. In most cases, there are at least two measurements of each characteristic. Where possible, I include variables for graduates that are based on graduates' reports and variables for siblings that are based on sibling's reports in the between-family models. Yet, separate family background indicators available for graduates and siblings cannot be used in the within-family fixed-effects models because inter-sibling variation in these variables is negligible. My analysis includes indicators of family structure (1 = *intact*

family), the total number of siblings born, years of education completed by the household head, farm origin (1 = *father was a farmer*), family income, and religious affiliation represented by three mutually exclusive dummy variables: Catholic (reference category), Protestant, and other religion.

An indicator of shared household in childhood is coded 1 if *siblings had lived in the same household until at least one of them was 16* and 0 if *siblings grew up in different households*. Genetic similarity between the two siblings in each dyad is represented with five mutually exclusive dummy variables: full nontwin siblings (reference category), MZ twins, DZ twins, half-siblings, adopted, and stepsiblings.

Retrospective measures of relationships in the family of origin. In 1994, siblings were asked questions about interactions in the family of origin during the first 16 years of their lives.

I created *maternal and paternal support/affection scales* that include the following items: "How much did your father/mother want you to go to college? How much did your father/mother get to know your friends? How much did your father/mother enjoy talking to you? How much did your father/mother help when you needed? How much did your father/mother hug you? How much did your father/mother let you make your own decisions?" Response categories are 0 = *not at all*, 1 = *a little*, 2 = *some*, 3 = *a lot*. Cronbach's alpha coefficients are .77 and .74 for the paternal and maternal scales, respectively.

Childhood abuse was assessed with separate questions about each parent: "How much did your father/mother insult or swear at you? How much did your father/mother slap, shove or throw things at you?" Response categories are 0 = *not at all*, 1 = *a little*, 2 = *some*, 3 = *a lot*. Cronbach's alpha coefficients are .76 and .74 for father abuse and mother abuse scales, respectively.

The *quality of parents' relationship* in the family of origin was assessed with the following items: "How much did your parents enjoy talking to each other? How much did your parents help each other when needed? How much did your parents insult or swear at each other (reverse coded)? How much did your parents hug each other? How much did your parents slap, shove or throw things at each other" (reverse coded)? Response categories are 0 = *not at all*, 1 = *a little*, 2 = *some*, 3 = *a lot*. Cronbach's alpha coefficient for the parental relationship quality scale is .77.

In 2004-2005, graduates and siblings were asked identical questions about relationships in the family of origin during the first 18 years of their lives. Because WLS graduates did not answer questions about relationships in the family of origin in 1993, analysis in Chapter 3 includes measures based on graduates' answers in 2004.

2.2.2. MIDUS

2.2.2.1. Dependent variables

Depression. Participants were asked whether there ever was a time during the past 12 months when they felt sad, blue, or depressed for two weeks or more in a row. Those who answered yes to this screener question were asked the following questions about the two-week period during the past 12 months when these feelings were worst: "Did you lose interest in most things? Did you feel more tired out or low on energy than is usual for you? Did you lose your appetite? Did you have a lot more trouble concentrating than usual? Did you feel down on yourself, no good, or worthless? Did you think a lot about death — either your own, someone else's, or death in general?" A continuous depression scale was created by summing the number of positive responses to these questions. In addition, a dichotomous diagnosis variable for depression was coded 1 if the number of positive responses was greater than or equal to 4.

Psychological well-being was assessed with Ryff's six subscales of eudaimonic well-being: autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance. The first wave of MIDUS contains 18 RPWB items, with three items for each of the six dimensions. The second wave contains 43 items (18 items repeated from Wave 1 and 25 items that were not included in the previous wave). In MIDUS I, each item has seven response categories: "(1) agree strongly, (2) agree somewhat, (3) agree a little, (4) don't know, (5) disagree a little, (6) disagree somewhat, (7) disagree strongly." Yet, in MIDUS II, the label of the middle category was changed to "Neither agree nor disagree" (versus "Don't know" in MIDUS I).

2.2.2.2. Independent variables

Characteristics of the parental role. Structural configurations of the parental role are represented with a series of dummy variables. *Parental status* is coded 1 if a participant had at least one living biological or non-biological child at the time of the interview. Individuals who reported no children were assigned a value of 0. The *number of children* reflects the total number of biological and non-biological children, with non-parents having a value of 0 on this variable. A dichotomous variable for the presence of *minor children* is coded 1 if a participant has at least one living child 18 years or younger. An indicator of *female children* is coded 1 if a participant had at least one living daughter at the time of the interview. *Coresidence with adult children* is coded 1 if at least one child aged 22 or older was living in the participant's household at the time of the interview. An alternative indicator of coresidence with adult children uses 19 years as a cut-off age. To clarify the circumstances of coresidence, I include a dummy variable indicating whether a child has a *developmental disability* such as autism, cerebral palsy, epilepsy or mental retardation, *or a long-term serious mental health problem.* Further, I created two dummy

variables to reflect the presence of nonbiological children: *adopted children* coded 1 if an individual had at least one adopted child, and *stepchildren* coded 1 if an individual had at least one stepchild. Finally, the models adjust for the *age of the participant's youngest child*.

The *self-rated quality of relationships with children* was assessed with the following items: "How would you rate your overall relationship with your children these days?" "How would you rate the amount of control you have over your overall relationship with your children these days?" Response categories range from 0 = *worst* to 10 = *best*. "How much thought and effort do you put into your overall relationship with your children these days?" Response categories range from 0 = *none* to 10 = *very much*. I created a *scale of relationship quality* by averaging the three items (Cronbach's $\alpha = 0.74$).

Perceived satisfaction with parental provision, including opportunities and resources provided for one's children, was assessed with the following items: "I feel good about the opportunities I have been able to provide for my children." "It seems to me that family life with my children has been more negative than most people's." "As a family, we have not had the resources to do many fun things together with the children." "I believe I have been able to do as much for my children as most other people." "I feel a lot of pride about what I have been able to do for my children." Response categories are 1 = *not at all true*, 2 = *a little bit true*, 3 = *moderately true*, 4 = *extremely true*. By averaging the scores on these items, I created a *scale of perceived satisfaction with parental provision* (Cronbach's $\alpha = 0.72$).

The questions about children and relationships with children were answered only by parents. Therefore, to include nonparents in the models estimating the association between parents' mental health and the qualitative aspects of the parental role, I treat relationship variables as *internal modifiers* of the potential difference in mental health between parents and

nonparents. These models have two focal predictor variables: a dichotomous indicator of parental status that equals 1 for parents and 0 for nonparents, and an interaction term obtained by multiplying relationship quality by parental status. The interaction term equals 0 for nonparents and takes the values of relationship variables for parents

Socioeconomic characteristics. *Education* refers to the highest grade of school or year of college one has completed. Categories include 1 = no school/some grade school, 2 = eighth grade/junior high school, 3 = some high school, 4 = GED, 5 = graduated from high school, 6 = 1 -2 years of college, no degree, 7 = 3+ years of college, no degree, 8 = 2-year degree, 9 = bachelor's degree, 10 = some graduate school, 11 = master's degree, 12 = Ph.D. or professional degree. *Net worth* reflects the participant's total household assets recoded in $100. *Employment status* is coded 1 if a participant was working for pay at the time of the interview. In addition, I include the *number of hours worked for pay in an average week* on the participant's main job. This variable equals 0 for individuals who were not working for pay at the time of the interview.

Parents' marital status and marital history are represented with five mutually exclusive categories: currently married, married only once (reference category); currently married, married more than once; divorced/separated; widowed; never married.

Parents' physical health is assessed with a number of chronic illnesses that have been diagnosed or treated by a medical professional in the 12 months prior to the interview, and with a measure of global self-rated health.

Sociodemographic characteristics. All models include participants' *gender* and *age at the time of the interview.* Gender is coded 1 for *women* and 0 for *men*. Age at the time of the interview is measured in years. Race is represented with three mutually exclusive dummy variables: *White* (reference category), *Black*, and o*ther race*.

Sociodemographic family background characteristics. A dichotomous measure of *family structure* is coded 1 if a participant reported living with both biological parents in childhood and 0 if only one or no biological parents were present. Indicators of *father's and mother's education* reflect the highest grade of school the father or the mother completed, ranging from "0 = *no school/some grade school*" to "12 = *doctoral or professional degrees*." *Mother's employment* was assessed with the question: "Other than being a housewife, how much of your childhood did your mother either work for pay or work in a family business?" Response categories are 1 = *all*, 2 = *most*, 3 = *some*, 4 = *a little*, 5 = *not at all*, 6 = *worked, don't know how much*. A binary measure of *welfare* is coded 1 if there was at least one period during a participant's childhood and adolescence when his family was on welfare. The *importance of religion* in the family of origin was assessed with a question: "How important was religion in your home when you were growing up?" response categories range from 1 = *very important* to 4 = *not at all important*.

Participants' *early-life physical* and *mental health* was assessed with two separate questions: "Now, think about when you were 16 years old. Was your physical/mental health at that time: (1) *poor*; (2) *fair*; (3) *good*; (4) *very good*; (5) *excellent*?"

Relationships with parents in the family of origin. *Maternal and paternal affection* scales (α = .91 and .92, respectively) are based on seven questions that were asked separately about each of the participant's parents, including the quality of relationships with this parent, and the amount of understanding, love, affection, time, and attention this parent provided when the participant was a child. Each scale was constructed by calculating the mean of the respective seven items.

Maternal and paternal discipline scales (α = .87 and .89, respectively) reflect the level of discipline the participant received from parents as a child. The items include: "How strict was

s/he with the rules for you? How consistent was s/he about the rules? How harsh was s/he when s/he punished you? How much did s/he stop you from doing things that other kids your age were allowed to do?" Response categories are 1 = *a lot*, 2 = *some*, 3 = *a little*, 4 = *not at all*.

An indicator of shared household in childhood is coded 1 if *siblings had lived in the same household until at least one of them was 16* and 0 if *siblings grew up in different households*. *Genetic similarity* between the siblings in each family is represented with three mutually exclusive dummy variables: *full nontwin siblings* (reference category), *MZ twins*, and *DZ twins*.

2. 3. Analytic Plan

To examine psychological implications of parenthood, I use three types of models: (1) between-family ordinary least squares (OLS) models; (2) within-family fixed-effects (FE) models based on the WLS sibling dyads as well as MIDUS sibling and twin data; (3) two-level mixed random-coefficient models with individuals (level-1 units) nested within sibling groups (level-2 units) in Chapter 3; (4) three-level mixed random-intercept models with measurement occasions (level-1 units) nested within individuals (level-2 units) nested within sibling groups (level-3 units) with longitudinal MIDUS data in Chapter 4.

2.3.1. Between-Family and Within-Family Models

First, I use OLS regression models with standard errors robust to clustering of observations within families. These are individual-level models because they compare individuals across families and treat siblings from the same family as unrelated individuals (although standard errors corrected for clustering are used). Second, I estimate within-family fixed-effects models that compare siblings from the same family to each other to account for unobserved genetic and environmental influences shared by siblings. These models can be represented by the equation:

$$Y_{ij} - Y_{.j} = (\alpha_{j} - \alpha_{j}) + \beta_1(X_{ij1} - X_{.j1}) + \beta_2(X_{ij2} - X_{.j2}) + \ldots + \beta_n(X_{ijn} - X_{.jn}),$$

where Y_{ij} is the psychological outcome for sibling *i* from family *j*; α_{j} is a fixed term capturing the influence of unobserved factors related to family *j* and shared by both siblings from family *j*; X_{ijn} denotes the values of independent variables for sibling *i* from family *j*; $Y_{.j}$ and $X_{.jn}$ are overall family means that are subtracted from individual values.

The within-family analysis examines how the effect of parenthood on psychological well-being changes when genes and early-life environmental influences shared by siblings are taken into account. Fixed-effects models eliminate the part of the association between parenthood and mental health that is spurious due to unobserved family influences shared by siblings. In my analysis, fixed-effects models compare mental health of siblings who differ with respect to their children's age and living arrangements. For example, in a hypothetical sibling dyad, sibling A is an empty-nest parent, whereas sibling B has one minor child and one adult child who live in the parental home. Thus, this sibling dyad is discordant with respect to children's age and living arrangements. I use fixed-effects models to examine whether this dyad also differs with respect to mental health.

Both between- and within-family models include a wide variety of parents' sociodemographic and psychosocial characteristics that can potentially explain the relationship between parenthood and mental health, including age, gender, marital status, socioeconomic status and resources, work history, and physical health. In the OLS models, I also include observed characteristics of family background and relationships in the family of origin measured prospectively and retrospectively in the WLS and retrospectively in MIDUS. Because fixed-

effects models eliminate the effects of observed and unobserved variables that are invariant between siblings, such covariates cannot be included as predictors in the equation. Therefore, main effects of shared family background characteristics, shared household in childhood, and genetic similarity are not estimated in the within-family models. Yet, it is still possible to examine the interactive effects between sibling-invariant and sibling-varying measures (Johnson, 1995). Thus, I add genetic relatedness and shared early-life environment to the fixed-effects models as components of the respective interaction terms.

Moreover, I test whether psychological implications of parenthood differ by gender. In fixed-effects models, the main effects of gender can be estimated for mixed-gender dyads but not for same-gender dyads. Yet, it is still possible to estimate the interactive effects between configurations of the parental role and parents' gender. To examine whether the effects of parenthood on psychological well-being vary by gender, I add gender to the fixed-effects models as a component of the respective interaction terms.

If fixed-effects models account for the associations between parenthood and mental health observed in the between-family models, it will suggest that these associations are partly due to unobserved genetic and/or environmental factors shared by siblings. If the effect of parenthood observed in the between-family models persists in the fixed-effects models, it will indicate that this effect is not explained by unobserved shared early-life endowments and, thus, is either a true effect of parenthood or is driven by nonshared genetic and nonshared environmental influences.

The next step of my analysis is to use fixed-effects models and the usual assumptions of behavioral genetic theory (that has a number of limitations discussed in Chapter 1) to test the contribution of nonshared genes by using sibling dyads with different degrees of genetic

similarity. If the associations between parenthood and psychological well-being are partly due to the genes *not* shared by siblings, then the psychological implications of parenthood should be the weakest among MZ twins who share 100% of their genes and the strongest among step- and adopted siblings who are unrelated to each other. To examine whether the association between parenthood and mental health depends on the degree of siblings' genetic relatedness, I add dummy variables reflecting the type of a sibling dyad to the fixed-effects models as a component of the respective interaction terms. Using this approach, Pudrovska (2008) found that part of the observed effects of parenthood on mental health at midlife is explained by unobserved genetic and early-life environmental influences.

2.3.2. Two-Level Mixed Random-Coefficients Models

In addition to between-family OLS models and within-family FE models, I estimate mixed random-coefficients models (Rabe-Hesketh & Skrondal, 2005). Multilevel models adjust for biases in parameter estimates and provide correct standard errors because they account for the clustering of data (Guo & Zhao, 2000). In the analysis of the 1993-1994 WLS data, I estimate two-level models: level-1 units — individuals — are nested within level-2 units — families, i.e. sibling groups. These models can be represented by the following equation:

$$Y_{ij(t)} = (\beta_0 + \zeta_{0j(t)}) + \sum_{h=1}^{p} (\gamma_h + \zeta_{hj}) P_{hij} + \sum_{k=1}^{q} \delta_k X_{kij} + \sum_{l=1}^{r} \eta_l Z_{lj} + \varepsilon_{ij(t)},$$

where

$Y_{ij(t)}$ is a mental health outcome for sibling *i* in family *j* that varies by siblings' genetic relatedness *(t)*;

$\beta_0 + \zeta_{0j(t)}$ is the between-family (level-2) intercept that varies by genetic relatedness *(t)*;

$\gamma_h + \zeta_{hj}$ are random slopes for the effects of the structural configurations of the parental role;

P_{hij} are focal independent variables representing structural characteristics of the parental role;

X_{kij} are individual (level-1) explanatory variables;

Z_{lj} are level-2 explanatory variables shared by siblings within families;

γ_h are fixed coefficients for the structural characteristics of the parental role;

δ_k are fixed coefficients for individual-level explanatory variables;

η_l are fixed coefficients for family-level explanatory variables;

p is the number of focal independent variables P_{hij};

q is the number of level-1 explanatory variables X_{kij} specific to each sibling;

r is the number of level-2 explanatory variables Z_{lj} shared by siblings from the same family;

$\varepsilon_{ij(t)}$ is the individual (level-1) error term that varies by siblings' genetic relatedness *(t)*.

The between-family (level-2) intercept $\beta_0 + \zeta_{0j(t)}$ consists of the average intercept across all sibling groups β_0 and the random parameter $\zeta_{0j(t)} \sim N(0, \psi)$ that specifies deviations of family-specific intercepts from the average intercept. $\zeta_{0j(t)}$ is independently normally distributed with the mean equal 0 and the variance equal ψ. $\zeta_{0j(t)}$ is assumed to be independent of ε_{ij}. $\zeta_{0j(t)}$ is a random parameter that is not estimated directly in the model but whose variance ψ is estimated together with the variance θ of ε_{ij}.

The term $\gamma_h + \zeta_{hj}$ represents regression slopes for the structural configurations of the parental role. ζ_{hj} is a random family-specific slope for the parenthood characteristics. It represents the deviation of family j's slope from the mean slope γ_h. The model is based on the

assumption that the random intercept and random slope have a bivariate normal distribution with zero mean and covariance matrix:

$$\boldsymbol{\psi} \equiv \text{Cov}\,(\zeta_{0j(t)},\ \zeta_{hj}) = \begin{bmatrix} \psi_{11} & \psi_{12} \\ \psi_{21} & \psi_{22} \end{bmatrix},\ \psi_{21} = \psi_{12}$$

Within-family (level-1) error term $\varepsilon_{ij} \sim \text{N}\ (0,\ \theta)$ is specific to each sibling. ε_{ij} is normally distributed with the mean equal 0 and the variance equal θ. ε_{ij} represents the effects of siblings nested within families as well as any other error. $\zeta_{0j(t)}$ and ε_{ij} are mutually independent random variables (Guo & Wang, 2002).

In the analysis of the longitudinal MIDUS I and MIDUS II data, I estimate three-level models: level-1 units — measurements for a given individual at two time points — are nested within level-2 units — individuals, and individuals are nested within level-3 units — families, i.e. sibling groups. These models can be represented by the following equation:

$$Y_{ijv(t)} = (\beta_0 + \zeta_{0jv} + \zeta_{0v(t)}) + \lambda_h P_{hijv} + \gamma_h (P \times R)_{hijv} + \sum_{k=1}^{q} \delta_k X_{kijv} + \sum_{l=1}^{r} \eta_l Z_{lv} + \varepsilon_{ijv(t)},$$ where

$Y_{ijv(t)}$ is a mental health outcome measured at occasion i for sibling j in family v that varies by siblings' genetic relatedness (t);

β_0 is the fixed intercept;

ζ_{0jv} is the random intercept for sibling j in family v (level 2);

$\zeta_{0v(t)}$ is the random intercept for family *v* (level 3). It is the between-family intercept that varies by genetic relatedness *(t)*;

P_{hijv} is a dichotomous indicator of parental status;

$(P \times R)_{hijv}$ are interaction terms between parental status and relationship quality;

X_{kijv} are sibling-specific (level-2) explanatory variables;

Z_{lv} are family-specific (level-3) explanatory variables shared by siblings within families;

λ_h is the fixed coefficient for the main effect of parental status;

γ_h are fixed coefficients for the interactive effects of parental status and relationship quality;

δ_k are fixed coefficients for sibling- specific explanatory variables;

η_l are fixed coefficients for family-specific explanatory variables;

q is the number of level-2 explanatory variables X_{kijv} specific to each sibling *j*;

r is the number of level-3 explanatory variables Z_{lv} shared by siblings *j* from the same family *v*;

$\varepsilon_{ijv(t)}$ is the occasion-specific (level-1) error term that varies by siblings' genetic relatedness *(t)*.

The following assumptions are made with respect to the random intercepts and the residual error term: $\zeta^{(3)}_{0v(t)} \sim (N, \psi^{(3)})$, $\zeta^{(2)}_{0jv(t)} \sim (N, \psi^{(32)})$, $\varepsilon_{ijv(t)} \sim$ (N, θ). In addition, the random intercepts and residual error term are assumed to be mutually independent and independent across replications (Rabe-Hesketh & Skrondal, 2005).

Unlike the two-level model estimated for the WLS data, the three-level model is specified to estimate random intercepts, but not random slopes. The reason for this is that the focal predictor is an interaction term, and random slopes of interaction terms are difficult to interpret (Snijders & Bosker, 1999).

In two- and three-level models, the homoskedasticity assumption is relaxed and replaced by the weaker assumption than the variances of random effects depend on explanatory variables (Snijders & Bosker, 1999). Guo & Wang (2002) suggest that according to the behavior genetic theory, it depends on siblings' genetic relatedness whether differences in mental health outcomes between families tend to be small or large. The behavior genetic approach assumes that differences are smaller among more closely related siblings and larger among more distant relatives. Thus, I specify a heteroskedastic model in which random intercept (level-2) variance depends on siblings' genetic relatedness *(t)*.

The model specifies that the level-1 residual variance θ differs by the type of siblings' relatedness *(t)*. Allowing the variance of the error term to vary by genetic relatedness is crucial because the behavior genetic theory expects the within-cluster variance for closer related clusters to be smaller than variance for clusters of more distant relatives (Guo & Wang, 2002). Thus, to allow for heteroskedasticity of level-1 variance, a linear model for the log standard deviation can be used (Rabe-Hesketh & Skrondal, 2005):

$$\ln\left(\sqrt{\theta_{ij}}\right) = \ln\left(\theta_{ij}\right)/2 = \delta_1 x_{fullsib} + \delta_2 x_{mz} + \delta_3 x_{dz} + \delta_4 x_{adopt} + \delta_5 x_{step} + \delta_6 x_{half}$$

The reason the model is specified for the log of the standard deviation is that this forces the corresponding standard deviation and variance to be positive. In terms of the above parametrization, the within-cluster error variance θ_i becomes exp(2δ_i).

The two-level mixed random-coefficients models are estimated using the GLLAMM program within Stata/SE (Rabe-Hesketh & Skrondal, 2005), which estimates parameters using

adaptive Gaussian quadrature (Rabe-Hesketh, Skrondal, & Pickles, 2002). This estimation procedure is particularly suitable for handling small clusters (Rabe-Hesketh et al., 2002).

2.3.3. Analysis of Genetic Data

After exploring unobserved family influences shared by siblings on associations between various aspects of the parental role and psychological well-being, the next step will be to examine the potential effects of *observed* genetic influences. In the immediate follow-up of this study, I plan to use genetic data that will shortly become available for a subsample of the WLS graduates and eventually siblings to identify specific genes that may, to some extent, explain the associations between parenthood and psychological well-being. I am particularly interested in 5-HTTLPR and DRD4 polymorphisms that were shown to be related both to reproductive behaviors and mental health.

The genetic analysis will begin with the creation of variables categorizing participants based on the 5-HTTLPR and DRD4 genotypes. With respect to the 5-HTTLPR polymorphism, I will divide participants into three genotype categories: homozygous for a short allele (s/s), heterozygous with both short and long alleles (s/l), and homozygous for the long allele (l/l). In addition to the three-group categorization, I will create a dichotomous indicator distinguishing individuals with the s-allele at either locus of 5-HTTLPR (s/s or s/l) from individuals without the s-allele (l/l).

In a similar way, I will categorize participants according to the DRD4 genotypes. First, the sample will be divided into three groups: s/s, s/l, and l/l. The first group will contain individuals with two short (2, 3, or 4 repeat) DRD4 alleles. The second group will contain individuals with one short (2, 3, or 4 repeat) and one long (5-11 repeat) alleles, and the third group will contain participants with two long alleles. In addition, I will stratify the sample into

two groups: individuals with only short (2-4 repeat) alleles at the site of DRD4 versus individuals with one or two long (5-11 repeat) alleles.

Then, I will examine the distribution of genotypes across specific groups of parents, e.g., parents of one child versus parents of two children versus parent of three and more children; parents who have minor biological children at midlife versus parents whose children are adults; parents who coreside with adult children versus parents whose children live separately, etc. I will use ANCOVA to assess the magnitude of differences in the distribution of genotypes across groups.

Further, I will pool all participants in one sample and conduct multivariate analysis with the structural configurations of the parental role as focal predictors and psychological variables as outcomes. Multiple regression models will include dummy variables reflecting specific genotypes (e.g., a variable equal "1" for participants with the s/s 5-HTTLPR genotype and "0" for participants with the l/l or s/l genotypes). The primary purpose will be to examine whether the effect of parenthood on psychological well-being changes when dummy variables indicating genotypes are included in the models. If the effect of parenthood decreases in magnitude, this will suggest that part of this effect is explained by genetic influences. In other words, a certain genotype may act as a selective pressure by influencing both mental health and the likelihood of occupying a specific parental status.

Recent research has emphasized the importance of examining gene × environment interactions (e.g., Caspi et al., 2003; Halpern et al., 2006; Wilhelm et al., 2006). To analyze whether the effect of parenthood on psychological well-being differs significantly depending on the genotype, I will create interaction terms between each of the parenthood variables and each genotype. If the interaction terms are not significant after Bonferroni's correction for multiple

comparisons, this will indicate that the relationship between parenthood and psychological well-being is similar regardless of the genotype and, thus, the given polymorphism does not contribute to the association between parenthood and psychological well-being. Conversely, statistical significance of an interaction term will suggest that the psychological implications of parenthood are stronger or weaker depending on a specific variant of the given polymorphism. After testing two-way interactions, I will test whether genotype differences (if any) in the psychological effects of parenthood are similar for men and women by including three-way interaction terms: parenthood × genotype × gender.

CHAPTER 3. PARENTHOOD AND MENTAL HEALTH AT MIDLIFE: WLS, 1993-1994

In this chapter I examine psychological implications of parenthood at midlife by considering the structural configurations of the parental role that are particularly characteristic of this life course stage. Midlife is distinguished by diversity of children's ages and living arrangements. It is typical for middle-aged parents to have simultaneously minor children and adult children who either live separately or in the parental household. Thus, middle-aged parents are particularly heterogeneous with respect to the structural context of parenthood.

The analyses in this chapter are based on the 1993 and 1994 graduate and sibling WLS data. Using between-family OLS models, within-family fixed-effects models, and mixed random-coefficients models, I explore heterogeneity among middle-aged parents with respect to specific structural configurations of children's age and living arrangements. In addition, I examine the effect of the quality of parent-child relationships on parental mental health and analyze whether psychological consequences of the structural characteristics of the parental role are explained or moderated by the quality of intergenerational ties. Further, I explore gender differences in the psychological implications of parenthood.

The analysis begins with descriptive statistics for all variables summarized by gender for the pooled sample of graduate and siblings as well as for graduates and siblings separately (Table 3.1). Then I provide bivariate associations for the focal study variables in the male subsample (Table 3.2) and female subsample (Table 3.3). Further, for each mental health outcome — depressive symptoms, autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, self-acceptance, and the psychological well-being scale — I estimate between-family ordinary least squares (OLS) models that compare individuals across families and within-family fixed-effects (FE) models that compare siblings from the same family to each

other (Tables 3.4 – 3.19). Findings from models estimating moderating effects of age difference between the youngest and oldest child are shown in Table 3.20. Further, Table 3.21 shows results from two-level random coefficients models with random intercepts and random slopes for the effects of the structural configurations of the parental role. Table 3.22 is based on a subsample of the WLS graduates and contains models estimating associations between the quality of parent-adult child relationships and parents' mental health. Finally, Figures 3.1 – 3.5 illustrate significant interactive effects of parenthood, gender, and marital status.

The purpose of this empirical chapter is mainly the presentation and description of findings. The meaning and significance of the results reported below is discussed in Chapter 5 that focuses on the interpretation and discussion of findings from the two analytic chapters.

3.1. Summary Statistics for the Study Variables

Summary statistics for the study variables for the pooled sample of graduate and siblings as well as for graduates and siblings separately are shown in Table 3.1.

Table 3.1. Summary Statistics for the Study Variables: WLS, 1993-1994

Variable	Pooled Graduates and Siblings			Graduates (N = 2,873)		Siblings (N = 2,873)	
	All (n = 5,746)	Men (n = 2,681)	Women (n = 3,065)	Men (n = 1,345)	Women (n = 1,528)	Men (n = 1,336)	Women (n = 1,537)
Psychological Outcomes:							
Depressive symptoms	16.48 (15.10)	15.61*** (14.86)	17.25 (15.27)	15.44** (14.33)	17.09 (15.67)	15.77** (15.37)	17.42 (14.88)
Depressive symptoms (logged)	2.46 (.98)	2.39*** (1.01)	2.53 (.95)	2.39** (.99)	2.51 (.96)	2.38** (1.03)	2.55 (.94)
Autonomy	31.04 (5.70)	31.75*** (5.20)	30.42 (6.04)	31.68*** (5.17)	30.52 (6.11)	31.82*** (5.25)	30.34 (5.97)
Environmental mastery	33.48 (5.40)	33.42 (5.23)	33.53 (5.55)	33.51 (5.17)	33.85 (5.52)	33.32 (5.30)	33.22 (5.57)
Personal growth	32.62 (5.93)	32.18*** (5.73)	33.00 (6.07)	32.40*** (5.68)	33.40 (6.09)	31.96** (5.77)	32.61 (6.02)
Positive relations with others	33.69 (5.80)	32.63*** (5.64)	34.62 (5.78)	32.57*** (5.72)	34.94 (5.74)	32.69*** (5.56)	34.31 (5.82)
Purpose in life	33.30 (6.09)	33.25 (5.80)	33.35 (6.33)	33.55 (5.70)	33.77 (6.38)	32.96 (5.89)	32.93 (6.25)
Self-acceptance	32.77 (6.27)	32.89 (6.00)	32.66 (6.50)	32.82 (5.96)	32.83 (6.52)	32.97* (6.04)	32.51 (6.49)
Psychological well-being scale	33.03 (5.10)	32.93 (4.89)	33.13 (5.285	33.07* (4.83)	33.46 (5.34)	32.79 (4.96)	32.81 (5.21)
Depressive episode prior to parenthood	.03	.013***	.045	.017***	.041	.01***	.05
Children's age and living arrangements							
Nonresidential adult children only (reference group)	.52	.48***	.55	.52**	.57	.44**	.52
No children	.09	.09	.089	.07	.07	.12	.10
Minor children only	.05	.076**	.042	.02**	.01	.11***	.08*
Adult children only, at least one coresidential	.21	.19***	.23	.23***	.25	.14***	.20

Table 3.1 *(cont'd)*

At least one minor child and at least one coresidential adult child	.04	.05*	.036	.04*	.03	.06	.04
At least one minor child and at least one nonresidential adult child	.08	.12***	.058	.11***	.08	.13***	.06
Other characteristics of the parental role							
Total number of children	2.91 (1.77)	2.79*** (1.69)	3.00 (1.83)	2.82*** (1.53)	3.08 (1.73)	2.78* (1.84)	2.95 (1.93)
At least one daughter	.76	.74*	.77	.76	.78	.73	.75
Coresidential child 19 and older	.25	.23*	.26	.27	.28	.20**	.24
Coresidential child 22 and older	.19	.16***	.21	.20*	.24	.13***	.19
Coresidential child attending college	.04	.04	.04	.08	.09	.001	.001
Age of youngest child	21.26 (9.53)	20.04*** (9.45)	22.33 (9.47)	20.91*** (7.84)	22.62 (8.04)	19.17*** (10.77)	22.05 (10.25)
Age of oldest child	26.99 (11.05)	25.62*** (10.86)	28.19 (11.09)	26.47*** (8.73)	28.46 (9.16)	24.77*** (12.59)	27.92 (12.72)
Age difference between youngest and oldest children	5.72 (5.02)	5.58 (7.39)	5.85 (7.38)	5.56 (4.81)	5.84 (4.79)	5.60 (5.29)	5.86 (5.18)
At least one adopted child	.06	.07**	.05	.07	.06	.07**	.04
At least one stepchild	.07	.08*	.07	.07*	.05	.09	.08
At least one child with disability	.014	.013	.016	.013	.015	.013	.018
Gender	.53						
Age	52.38 (5.30)	52.40 (5.30)	52.37 (5.29)	53.26*** (.60)	53.14 (.53)	51.55 (7.40)	51.60 (7.38)
Genetic similarity & shared early-life environment:							
Shared household	.88	.89*	.87				
Full nontwin siblings (reference)	.93						
MZ twins	.005						
DZ twins	.013						

Table 3.1 *(cont'd)*

Adopted siblings	.006						
Stepsiblings	.009						
Half-siblings	.03						
Early-life characteristics:							
Intact family	.91	.90	.91				
Number of siblings born	3.38 (2.47)	3.38 (2.50)	3.38 (2.45)				
Father's education	9.90 (3.38)	9.96 (3.43)	9.84 (3.35)				
Farm origin	.21	.22	.21				
Family income	59.36 (32.11)	58.93 (31.89)	59.72 (32.31)				
Protestant (reference)	.53	.54	.52				
Catholic	.40	.40	.41				
Other religion	.06	.056	.06				
Paternal affection	1.70 (.66)	1.70 (.64)	1.70 (.68)				
Maternal affection	2.01 (.60)	2.03** (.57)	1.98 (.62)				
Paternal abuse	.37 (.65)	.39* (.64)	.35 (.65)				
Maternal abuse	.26 (.55)	.23*** (.49)	.29 (.60)				
Parents' marital quality	2.24 (.56)	2.25 (.55)	2.23 (.58)				
Marital Status							
Married in the first marriage	.69	.69	.68	.71	.70	.68	.66
Married in remarriage	.14	.16***	.12	.16***	.12	.16**	.12
Divorced/Separated	.098	.086**	.11	.08*	.10	.09*	.11
Widowed	.029	.011***	.045	.006***	.032	.016***	.058
Never married	.045	.043	.048	.039	.047	.046	.049

Table 3.1 *(cont'd)*

Socioeconomic Characteristics							
High school or less (reference)	.53	.47***	.58	.50***	.59	.46***	.57
Some college	.17	.16	.17	.15	.17	.19	.17
College degree	.15	.16**	.14	.17	.14	.17*	.13
Post-college	.15	.19***	.11	.19***	.10	.19***	.12
Net worth (logged)	11.11 (3.64)	11.56*** (3.03)	10.71 (4.07)	11.70*** (2.75)	11.03 (3.55)	11.42*** (3.28)	10.40 (4.51)
Currently employed	.81	.88***	.75	.94***	.78	.82***	.74
Ever worked for pay	.97	.99***	.95	.99***	.93	.99*	.98
Occupational education (logged)	.65 (1.31)	.64 (1.38)	.65 (1.25)	.73 (1.38)	.69 (1.25)	.56 (1.37)	.62 (1.30)
Occupational income (logged)	-.89 (1.04)	-.44*** (.89)	-1.28 (1.02)	-.38*** (.88)	-1.26 (1.01)	-.51*** (.89)	-1.31 (1.03)
Parents' Current Health:							
Global self-rated health	4.13 (.67)	4.14 (.67)	4.14 (.67)	4.17 (.65)	4.16 (.67)	4.08* (.68)	4.13 (.67)
Number of diagnosed chronic illnesses	1.58 (1.81)	1.37*** (1.66)	1.76 (1.91)	.87*** (1.15)	1.11 (1.38)	1.88*** (1.92)	2.41 (2.13)

Note: Asterisks denote significant differences between men and women: *p < .05. **p < .01. ***p < .001.

As shown in Table 3.1, women report significantly higher levels of depressive symptoms than men. Similarly, women demonstrate higher levels of personal growth and positive relations with others, whereas men report more autonomy than their female peers. In contrast, men and women are similar in terms of environmental mastery, purpose in life, self-acceptance, and the composite indicator of psychological well-being comprising environmental mastery, personal growth, purpose in life, and self-acceptance. Slightly over one percent of men and 4.5% of women had a depressive episode prior to the transition to parenthood.

With respect to the structural context of parenthood at midlife, 48% of men and 55% of women have only adult children who live separately. About 9% of men and women have never had children. Seven percent of men and 4% of women have only minor children (18 or younger). Nineteen percent of men and 23% of women have only adult children at least one of whom lives in the parental household. Roughly 5% of men and 4% of women have at least one minor child and at least one coresidential adult child, whereas 12% of men and 6% of women have at least one child 18 or younger and at least one nonresidential adult child. These patterns underscore the complexity of the structural context of parenthood at midlife. Only half of the parents conform to the expectations of the empty nest stage, whereas other families are characterized by the remarkable diversity of children's age and living arrangements.

In addition, Table 3.1 shows that the average number of children in the study sample is 2.9. The average age of the youngest child is 21 years, and the average age of the oldest child in this sample is 27 years. Women's children are on average two or three years older than men's reflecting women's younger ages at marriage and first birth. Given this gender difference in the WLS sample, it is particularly important to control for children's age in all models. With respect to intergenerational coresidence, 25% of parents have at least one coresidential adult child (19

and older). When children of college age are excluded, this percentage is reduced to 19%, and this decrease in the likelihood of having a coresidential adult child is observed among both mothers and fathers. About 4% of parents have coresidential children who attend college. Six percent of parents have at least one adopted child, and 7.5% have at least one stepchild, with men being more likely than women to have both step- and adopted children. About one percent of men but 4.5% of women reported having a child with developmental disability or mental illness. Because of the traditional division of labor in the family, women have spent more time with their children and, thus, are more than men aware of their children's chronic conditions. Further, because of differential gender role socialization, mothers may feel more responsible than fathers for their children's problems.

Nearly 89% of WLS graduates and their siblings grew up in the same household until at least one of them was 16. Ninety-three percent of sibling dyads are full nontwin biological siblings, 0.5% are identical twins, 1.3% are fraternal twins, 0.6% are adopted siblings, 0.9% are stepsiblings, and 3.1% are half-siblings. As for other early-life characteristics, 91% of participants grew up in intact families, and 21.5% were of farm origin. Fifty-three percent of families were Protestant and 41% were Catholic. WLS participants had 3.4 siblings on average. Retrospective measures of relationships in the family of origin indicate that men report higher levels of maternal affection and paternal abuse than women, whereas women report higher levels of maternal abuse.

In this sample, roughly 70% of men and women were married to their first spouse, whereas 16% of men and 12% of women were married to their second or higher-order spouse. Nine percent of men and 11% of women were divorced or separated without remarrying, and 1%

of men and 4.5% of women were widowed and not remarried in their mid-50s. Approximately 4% of men and women have never been married.

With respect to socioeconomic characteristics, 53% of participants had high school education or less, 17% had some college education, 15% had college degree, and 15% completed one or more years of post-college education. Eighty-eight percent of men and 76% of women were employed at the time of the interview, and nearly all participants had worked for pay at some point in their lives. Women and men tended to work in occupations with similar levels of occupational education, yet women's occupations were characterized by lower levels of occupational income. Moreover, at midlife men had higher levels of net worth than women. Table 3.1 also indicates that both men and women reported high levels of self-rated health, although women had on average more chronic illnesses than men.

Further, Table 3.1 shows summary statistics separately for graduates and siblings. Overall, there are few differences between graduates and siblings with respect to most study variables. A major distinction is that siblings are on average younger than graduates: graduates' average age is 53.2 years and siblings' average age is 51.5 years. More importantly, siblings are more diverse in terms of age than graduates. Graduates' age ranges from 52 to 56 years old, whereas siblings' age range is 28-76 years old. Yet, despite this seemingly broad age, very few siblings in my analytic subsample are younger than 40 years. Fifty percent of siblings are under 50 years old, and 95% of siblings in my analytic sample are under 65 years. Thus, most siblings are younger than graduates. This age difference is reflected in the structural configurations of the parental role that are closely related to parents' age. Comparisons of means between graduates and siblings show that siblings are significantly more likely than graduates to have only children under 18, and less likely to have only adult children — whether coresidential or nonresidential.

Comparison of ages of the youngest and oldest children between graduates and siblings suggests that graduates — especially men — tend to have somewhat older children than their siblings. Therefore, adjustment for children's age is important not only with respect to between-family gender differences but also because of within-family differences.

3.2. Bivariate Correlations

Bivariate correlations for men are shown in Table 3.2 and for women in Table 3.3.

Table 3.2. Bivariate Correlations among the Focal Study Variables: Men (n = 2,681)

Variable	1.	2.	3.	4.	5.	6.	7.	8.
1. Depressive symptoms								
2. Autonomy	-.298****							
3. Environmental mastery	-.497****	.509****						
4. Personal growth	-.319****	.433****	.499****					
5. Positive relations with others	-.419****	.409****	.609****	.534****				
6. Purpose in life	-.477****	.496****	.694****	.680****	.615****			
7. Self-acceptance	-.515****	.470****	.725****	.534****	.624****	.706****		
8. PWB index	-.525****	.561****	.844****	.794****	.699****	.900****	.871****	
9. No children	.040*	.028	-.040*	-.043*	-.085****	-.077****	-.075****	-.068****
10. Nonresidential adult children only	-.070****	.083****	.113****	.074****	.073****	.092****	.108****	.112****
11. Minor children only	.043*	-.059**	-.086****	-.021	-.013	-.062**	-.051**	-.064****
12. Adult children only, at least one coresidential	-.002	-.054**	-.011	-.073****	.003	-.018	-.027	-.037*
13. At least one minor child and at least one coresidential adult child	.007	-.033	-.021	.016	.019	-.001	-.024	-.008
14. At least one minor child and at least one nonresidential adult child	.036	-.020	-.045*	.019	-.029	-.002	-.011	-.009

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

Table 3.3. Bivariate Correlations among the Focal Study Variables: Women (n = 3,065)

Variable	1.	2.	3.	4.	5.	6.	7.	8.
1. Depressive symptoms								
2. Autonomy	-.301***							
3. Environmental mastery	-.497***	.517***						
4. Personal growth	-.335***	.531***	.529***					
5. Positive relations with others	-.404***	.463***	.633***	.558***				
6. Purpose in life	-.483***	.493***	.675***	.688***	.637***			
7. Self-acceptance	-.497***	.520***	.725***	.565***	.645***	.720***		
8. PWB index	-.525***	.600***	.846***	.809***	.721***	.896***	.881***	
9. No children	.013	.019	-.015	-.008	-.078***	.009	-.006	-.006
10. Nonresidential adult children only	-.067***	.042*	.130***	.071***	.084	.078***	.093***	.108***
11. Minor children only	.007	-.025	-.062***	.006	-.026	-.011	-.028	-.026
12. Adult children only, at least one coresidential	.027	-.030	-.042*	-.051**	-.014	-.059***	-.037*	-.056**
13. At least one minor child and at least one coresidential adult child	.033	-.032	-.073***	-.047**	-.026	-.050**	-.048**	-.063***
14. At least one minor child and at least one nonresidential adult child	.045*	-.013	-.072***	-.017	-.015	-.023	-.062***	-.049**

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

Tables 3.2 and 3.3 indicate that depressive symptoms are strongly and negatively correlated with each indicator of positive psychological well-being, and the magnitude of these correlations ranges from –.3 for autonomy to –.5 for self-acceptance. Specific indexes based on Ryff's scales of psychological well-being are moderately correlated with each other among both men and women, and these correlations are particularly high for environmental mastery, personal growth, purpose in life, and self-acceptance.

Mothers and fathers of nonresidential adult children consistently report lower levels of depressive symptoms and higher levels of psychological well-being than other groups of parents and nonparents. Comparisons of means between specific groups show that men who have no children report higher levels of depressive symptoms and lower levels of environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance compared to fathers of nonresidential adult children. In contrast, childfree women are similar to mothers of nonresidential adult children on almost all measures of mental health with one exception: women who have no children report lower levels of positive relations with others. Middle-aged men who have only minor children (18 or younger) exhibit slightly higher levels of depressive symptoms and lower autonomy, environmental mastery, purpose in life, and self-acceptance compared to fathers of nonresidential adult children. Yet, mothers who have only minor children are not different from mothers of nonresidential adult children in terms of mental health, the only exception being that women who have only minor children report somewhat lower levels of environmental mastery.

As shown by the bivariate correlations and comparisons of means between groups, both men and women who have at least one coresidential adult child report lower levels of autonomy than parents of nonresidential adult children. In addition, fathers of coresidential adult children

exhibit lower autonomy, whereas mothers report lower levels of mastery, purpose in life, and self-acceptance. Men who have at least one minor child and at least one coresidential adult child are similar in terms of mental health to fathers who have only nonresidential adult children. Conversely, mothers who have both minor children and coresidential adult children report lower levels of environmental mastery, personal growth, purpose in life, and self-acceptance than mothers of nonresidential adult children only. Finally, compared to empty-nest parents, men and women who have both minor and nonresidential adult children report lower levels of mastery. Moreover, mothers in this category also report more depressive symptoms and lower levels of self-acceptance.

3.3. Multivariate Regression Models

Tables 3.4 – 3.19 show results from multivariate OLS and FE regression analyses. Tables presenting OLS findings contain six models. The baseline model includes various combinations of children's age and living arrangements, other characteristics of the parental role, parents' gender, age, lifetime history of depression, and genetic relatedness and shared early-life environment for sibling dyads. Model 2 adds observed early-life environmental influences, in particular, sociodemographic characteristics of family background and retrospective measures of relationships in the family of origin. Each of the next three models adds a specific block of variables to Model 2: marital status (Model 3), socioeconomic characteristics (Model 4), and physical health (Model 5). Finally, Model 6 is the full model including all variables.

Tables presenting FE findings contain the same models as tables with OLS results with the exception of early-life characteristics of the family of origin. The main effects of these variables cannot be estimated in FE models because these characteristics are largely shared by siblings within families.

Research question 1: How do middle-aged parents compare to their childfree peers with respect to *depressive symptoms*?

As shown in Table 3.4, childfree individuals are similar to parents of nonresidential adult children in terms of depressive symptoms. Yet, when all variables are included in Model 6, individuals who have no children exhibit fewer depressive symptoms than the reference group ($b = -.238$, $p < .05$). This suppression effect is explained by differences in marital status and health between childfree persons and parents of nonresidential adult children. Most participants without children have never been married and tend to report more health problems than parents whose adult children live independently. In turn, having never been married and being in poor health are each associated with higher levels of depression. If childfree individuals had been similar to the reference group in terms of marital status and health, they would have reported even fewer depressive symptoms.

Table 3.4. Unstandardized Coefficients and Robust Standard Errors from OLS Models Predicting Depressive Symptoms: WLS, 1993-1994

Variable	(1)	(2)	(3)	(4)	(5)	(6)
Children's age and living arrangements						
Nonresidential adult children only (reference group)						
No children	.102	.051	-.096	.016	-.112	-.238*
	(.103)	(.102)	(.107)	(.102)	(.098)	(.103)
Minor children only	.061	.055	.042	.034	-.047	-.057
	(.078)	(.078)	(.078)	(.077)	(.074)	(.074)
Adult children only, at least one coresidential	.096*	.084*	.084*	.067	.037	.027
	(.039)	(.038)	(.038)	(.038)	(.037)	(.037)
At least one minor child and at least one coresidential adult child	.166*	.146	.149*	.138	.082	.080
	(.076)	(.075)	(.075)	(.075)	(.072)	(.072)
At least one minor child and at least one nonresidential adult child	.197**	.190**	.190**	.185**	.152**	.154**
	(.057)	(.056)	(.056)	(.056)	(.055)	(.054)
Other characteristics of the parental role						
Total number of children	-.017	-.023*	-.019	-.025*	-.026*	-.022*
	(.011)	(.011)	(.011)	(.011)	(.010)	(.010)
At least one daughter	-.011	-.013	-.011	-.017	-.019	-.020
	(.038)	(.038)	(.038)	(.038)	(.037)	(.036)
Coresidential child attending college	-.078	-.066	-.066	-.028	.017	.031
	(.072)	(.072)	(.072)	(.072)	(.071)	(.071)
Age of youngest child	.002	.000	.000	-.001	-.004	-.005
	(.003)	(.003)	(.003)	(.003)	(.003)	(.003)
At least one adopted child	-.069	-.071	-.066	-.066	-.084	-.077
	(.055)	(.055)	(.055)	(.055)	(.052)	(.052)
At least one stepchild	-.085	-.086	-.032	-.080	-.085	-.038
	(.052)	(.052)	(.058)	(.052)	(.050)	(.055)
At least one child with disability	.177	.178	.171	.158	.127	.113
	(.103)	(.102)	(.100)	(.101)	(.096)	(.095)
Depressive episode prior to parenthood	.320***	.301***	.285***	.296***	.251***	.242**

	(.076)	(.076)	(.076)	(.076)	(.071)	(.071)
Gender	.136***	.135***	.110***	.087**	.134***	.076*
	(.027)	(.027)	(.027)	(.033)	(.026)	(.031)
Age	-.013***	-.012***	-.013***	-.013***	-.015***	-.016***
	(.003)	(.003)	(.003)	(.003)	(.003)	(.003)
Genetic similarity:						
Shared household	.035	.037	.026	.034	.028	.021
	(.045)	(.045)	(.045)	(.045)	(.043)	(.043)
Full nontwin (reference)						
MZ twins	-.130	-.103	-.083	-.065	-.001	.034
	(.197)	(.202)	(.201)	(.198)	(.207)	(.202)
DZ twins	.016	.040	.062	.041	.067	.084
	(.117)	(.116)	(.116)	(.113)	(.114)	(.112)
Adopted	-.114	-.065	-.034	-.065	-.162	-.124
	(.216)	(.215)	(.213)	(.209)	(.187)	(.184)
Step	.023	.077	.081	.064	.038	.033
	(.142)	(.134)	(.127)	(.134)	(.125)	(.118)
Half-siblings	.084	.083	.089	.069	.031	.037
	(.078)	(.078)	(.078)	(.080)	(.074)	(.074)
Early-life characteristics:						
Family structure		.031	.040	.036	.047	.059
		(.049)	(.049)	(.049)	(.047)	(.047)
Number of siblings born		-.006	-.005	-.008	-.006	-.006
		(.006)	(.006)	(.006)	(.006)	(.006)
Father's education		-.009*	-.008*	-.006	-.004	-.002
		(.004)	(.004)	(.004)	(.004)	(.004)
Farm origin		-.036	-.037	-.034	-.027	-.032
		(.036)	(.036)	(.036)	(.034)	(.034)
Family income		.000	.000	.000	.000	.000
		(.000)	(.000)	(.000)	(.000)	(.000)
Protestant (reference)						
Catholic		.040	.035	.043	.044	.041
		(.029)	(.029)	(.029)	(.027)	(.027)

Other religion	-.007	.005	.005	.009	.021
	(.061)	(.060)	(.060)	(.058)	(.057)
Paternal affection	-.065*	-.065*	-.063*	-.066*	-.067*
	(.031)	(.031)	(.031)	(.030)	(.030)
Maternal affection	-.099**	-.102**	-.089**	-.064*	-.064*
	(.030)	(.030)	(.030)	(.030)	(.030)
Paternal abuse	.014	.012	.015	.000	-.001
	(.025)	(.025)	(.026)	(.025)	(.025)
Maternal abuse	-.010	-.018	-.015	.005	-.004
	(.030)	(.030)	(.029)	(.029)	(.028)
Parents' marital quality	-.054	-.054	-.059	-.043	-.044
	(.031)	(.032)	(.031)	(.030)	(.031)
Marital Status					
Married in the first marriage (reference)					
Married in remarriage		-.085			-.101*
		(.045)			(.042)
Divorced/Separated		.262***			.220***
		(.043)			(.042)
Widowed		.422***			.374***
		(.075)			(.074)
Never married		.298***			.250**
		(.077)			(.074)
Socioeconomic Characteristics					
High school or less (reference)					
Some college			-.032		-.014
			(.038)		(.036)
College degree			-.014		.022
			(.042)		(.040)
Post-college			-.060		-.012
			(.047)		(.045)
Net worth (ln)			-.019***		-.012**
			(.004)		(.003)
Currently employed			-.059		.024

				(.038)		(.037)
Ever worked for pay				.094		.018
				(.089)		(.086)
Occupational education				-.012		.002
				(.017)		(.016)
Occupational income				-.032		-.036
				(.021)		(.020)
Parents' Current Health:						
Global self-rated health					-.336***	-.327***
					(.021)	(.021)
Number of diagnosed chronic illnesses					.047***	.045***
					(.008)	(.008)
Constant	2.984***	3.487***	3.530***	3.735***	4.957***	5.037***
	(.152)	(.183)	(.185)	(.211)	(.197)	(.222)
Adjusted R^2	.021	.037	.050	.046	.111	.126

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

Research question 2: How are diverse configurations of children's age and living arrangements related to parents' *depressive symptoms*?

Middle-aged parents who have only minor children are not different from parents of nonresidential adult children with respect to depressive symptoms. Parents who have only adult children, with at least one child living in the parental household report more depressive symptoms than empty-nest parents. These differences persist net of early-life characteristics (Model 2) and marital status (Model 3), but are explained by socioeconomic characteristics (Model 4) and health (Model 5). Individuals with coresidential adult children tend to be of lower SES and have worse health than parents whose adult children live independently; in turn, lower SES and health problems contribute to higher levels of depression. Similarly, parents who have at least one minor child and at least one coresidential adult child exhibit higher levels of depression than the reference group, but in addition to SES and health, this difference is also explained by early-life characteristics. Parents with minor and coresidential adult children had fathers with lower levels of education, lower family income, and are more likely to have Catholic background than empty-nest parents. These characteristics of the family of origin are associated with higher levels of depression in midlife. Finally, parents who have at least one minor child and at least one nonresidential adult child report more depressive symptoms than parents who have only nonresidential adult children, and this difference remains unexplained by all variables in the models.

Research question 5: To what extent do the associations between parental status and *depressive symptoms* observed at midlife reflect genetic and environmental influences experienced by parents early in life?

Fixed-effects models in Table 3.5 indicate that when unobserved genetic and environmental characteristics shared by siblings within families are taken into account, childfree individuals, parents who have only minor children, parents with coresidential adult children, and parents of at least one minor child and at least one coresidential adult child are similar to parents of nonresidential adult children in terms of depressive symptoms. Thus, the differences revealed in OLS models do not reflect true effects of children's age and living arrangements, but are explained by unobserved family influences that affect parents' mental health in adulthood and the configurations of the parental role. For example, members of a specific family may have a genetic predisposition to shyness or neuroticism, and these personality traits are related both to delayed family formation and higher levels of distress (Caspi, Bem & Elder, 1989). Another example is an attachment style that is influenced by relationships with parents early in life. Insecure attachment style may be related both to mental health problems and to difficulties with forming stable family bonds (Bowlby, 1980; Hazan & Shaver, 1987). These family influences might select people into very late parenthood, thus increasing the likelihood of having minor children at midlife, and simultaneously elevate distress.

In contrast, parents who have at least one minor child and at least one nonresidential adult child report more depressive symptoms than the reference group, and this difference remains unexplained in the full fixed-effects Model 5. Thus, the higher level of depression among parents who have both minor children and nonresidential adult children is not due to observed adult characteristics or unmeasured early-life family influences.

With respect to other characteristics of the parental role, the total number of children is associated negatively with depressive symptoms both in the between- and within-family models. Other configurations of the parental role are unrelated to depressive symptoms. Having at least one depressive episode prior to the transition to parenthood is associated with more depressive symptoms at midlife.

Table 3.5. Unstandardized Coefficients from Fixed-Effects Models Predicting Depressive Symptoms: WLS, 1993-1994

Variable	(1)	(2)	(3)	(4)	(5)
Children's age and living arrangements					
Nonresidential adult children only (reference group)					
No children	.105	-.003	.084	-.071	-.156
	(.147)	(.153)	(.148)	(.144)	(.151)
Minor children only	-.019	-.045	-.042	-.137	-.147
	(.103)	(.102)	(.104)	(.101)	(.101)
Adult children only, at least one coresidential	.050	.048	.037	.002	-.007
	(.051)	(.051)	(.051)	(.050)	(.050)
At least one minor child and at least one coresidential adult child	.174	.168	.170	.111	.111
	(.103)	(.103)	(.103)	(.101)	(.100)
At least one minor child and at least one nonresidential adult child	.223**	.221**	.219**	.176*	.181*
	(.078)	(.078)	(.078)	(.076)	(.076)
Other characteristics of the parental role					
Total number of children	-.030*	-.026	-.031*	-.034*	-.029*
	(.014)	(.014)	(.014)	(.014)	(.014)
At least one daughter	-.021	-.019	-.021	-.025	-.022
	(.051)	(.051)	(.051)	(.050)	(.049)
Coresidential child attending college	-.061	-.054	-.029	.035	.054
	(.091)	(.091)	(.092)	(.090)	(.089)
Age of youngest child	.002	.001	.002	-.003	-.004
	(.005)	(.005)	(.005)	(.004)	(.004)
At least one adopted child	.047	.060	.045	.024	.040
	(.075)	(.074)	(.075)	(.073)	(.072)
At least one stepchild	-.109	-.028	-.112	-.114	-.025
	(.071)	(.078)	(.071)	(.068)	(.075)
At least one child with disability	.121	.095	.092	.086	.051
	(.143)	(.142)	(.143)	(.139)	(.138)
Depressive episode prior to parenthood	.324**	.307**	.314**	.305**	.291**
	(.103)	(.103)	(.103)	(.100)	(.100)

Gender	.121**	.095*	.095*	.114**	.080
	(.037)	(.037)	(.045)	(.036)	(.044)
Age	-.013**	-.014**	-.013**	-.015***	-.015**
	(.004)	(.004)	(.004)	(.004)	(.004)
Marital Status					
Married in the first marriage (reference)					
Married in remarriage		-.117*			-.135*
		(.059)			(.058)
Divorced/Separated		.273***			.252***
		(.061)			(.060)
Widowed		.438***			.388***
		(.105)			(.102)
Never married		.188			.185
		(.111)			(.109)
Socioeconomic Characteristics					
High school or less (reference)					
Some college			.011		.027
			(.053)		(.051)
College degree			.001		.031
			(.063)		(.061)
Post-college			-.023		.011
			(.070)		(.068)
Net worth (ln)			-.018***		-.011*
			(.005)		(.005)
Currently employed			-.038		.057
			(.050)		(.049)
Ever worked for pay			.071		.013
			(.119)		(.115)
Occupational education			-.025		-.018
			(.024)		(.023)
Occupational income			-.014		-.014
			(.029)		(.028)
Parents' Current Health:					

Global self-rated health				-.298*** (.027)	-.296*** (.027)
Number of diagnosed chronic illnesses				.041*** (.010)	.039*** (.010)
Constant	3.069*** (.208)	3.114*** (.211)	3.293*** (.262)	4.539*** (.238)	4.548*** (.278)
Sigma u	.719	.714	.714	.683	.678
Sigma e	.930	.924	.928	.902	.895
rho	.374	.374	.372	.364	.365

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

Research question 1: How do middle-aged parents compare to their childfree peers with respect to *autonomy*?

Research question 2: How are diverse configurations of children's age and living arrangements related to parents' *autonomy*?

Table 3.6 indicates that in OLS models childfree individuals report higher levels of autonomy than parents of nonresidential adult children, and this difference persists net of all explanatory variables (Models 2 – 6). In contrast, parents who have only minor children, and parents who have both minor and adult children are similar to empty-nest parents with respect to autonomy. Finally, individuals who have only adult children, with at least one child living in the parental household exhibit lower autonomy than the reference group, which is explained by marital status, SES, and health. Parents with coresidential adult children are more likely to be continuously married to their first spouse, to have only high school education, fewer assets, and worse self-rated health than parents of nonresidential adult children. In turn, each of these characteristics is associated with lower levels of autonomy.

Research question 5: To what extent do the associations between parental status and *autonomy* observed at midlife reflect genetic and environmental influences experienced by parents early in life?

As shown in Table 3.7, when unobserved genetic and environmental family influences are taken into account, there are no differences in autonomy based on parental status and children's age and living arrangements. Thus, higher levels of autonomy among childfree individuals observed in OLS models reflect unobserved family influences (other than sociodemographic characteristics of the family background and early-life relationships with parents) that increase the likelihood of remaining childfree and simultaneously elevate the level

of autonomy. An example of such unobserved family influences shared by siblings is maternal hormonal levels during pregnancy. Prenatal testosterone production during the second trimester of pregnancy was shown to affect gendered behavior in daughters. Daughters of mothers with high levels of prenatal testosterone were more likely to exhibit non-traditional gender behaviors, such as not marrying, assigning a lower priority to marriage, and having fewer children (Udry, Morris, & Kovenock, 1995). These prenatal influences may increase the likelihood of remaining childfree and may be also related to autonomy and assertiveness.

As for other structural characteristics of the parental role, age of one's youngest child is associated positively with autonomy in the between-family but not in the within-family models. Having at least one stepchild at midlife is related to higher levels of autonomy, and this effect persists net of all observed variables and unobserved family influences shared by siblings.

Table 3.6. Unstandardized Coefficients and Robust Standard Errors from OLS Models Predicting Autonomy: WLS, 1993-1994

Variable	(1)	(2)	(3)	(4)	(5)	(6)
Children's age and living arrangements						
Nonresidential adult children only (reference group)						
No children	1.347*	1.246*	1.570*	1.429*	1.420*	1.854**
	(.605)	(.598)	(.635)	(.604)	(.596)	(.634)
Minor children only	-.683	-.549	-.452	-.569	-.444	-.398
	(.439)	(.435)	(.438)	(.438)	(.434)	(.439)
Adult children only, at least one coresidential	-.628**	-.494*	-.414	-.369	-.407	-.218
	(.222)	(.222)	(.222)	(.222)	(.220)	(.220)
At least one minor child and at least one coresidential adult child	-.750	-.515	-.366	-.471	-.433	-.248
	(.405)	(.399)	(.398)	(.400)	(.396)	(.397)
At least one minor child and at least one nonresidential adult child	-.321	-.188	-.217	-.184	-.150	-.181
	(.334)	(.330)	(.329)	(.329)	(.330)	(.327)
Other characteristics of the parental role						
Total number of children	-.035	.020	.007	.054	.021	.036
	(.058)	(.059)	(.059)	(.059)	(.058)	(.058)
At least one daughter	-.184	-.205	-.182	-.215	-.188	-.176
	(.224)	(.223)	(.222)	(.222)	(.221)	(.220)
Coresidential child attending college	.443	.210	.220	.067	.122	.010
	(.414)	(.410)	(.410)	(.412)	(.412)	(.412)
Age of youngest child	.032	.043*	.047**	.052**	.047**	.058**
	(.018)	(.018)	(.018)	(.018)	(.018)	(.018)
At least one adopted child	.393	.408	.389	.328	.447	.350
	(.310)	(.309)	(.308)	(.310)	(.307)	(.307)
At least one stepchild	1.483***	1.329***	.629	1.230***	1.338***	.531
	(.297)	(.296)	(.326)	(.293)	(.295)	(.321)
At least one child with disability	-.352	-.395	-.425	-.332	-.311	-.308
	(.653)	(.668)	(.662)	(.667)	(.663)	(.658)
Depressive episode prior to parenthood	.076	-.140	-.284	-.193	-.097	-.302
	(.466)	(.448)	(.446)	(.443)	(.442)	(.435)
Gender	-1.385***	-1.408***	-1.380***	-1.194***	-1.465***	-1.264***

	(.156)	(.155)	(.156)	(.186)	(.156)	(.187)
Age	.011	.012	.015	.006	.018	.012
	(.019)	(.018)	(.018)	(.019)	(.018)	(.019)
Genetic similarity:						
Shared household	.460	.414	.381	.378	.416	.334
	(.265)	(.268)	(.266)	(.266)	(.264)	(.261)
Full nontwin (reference)						
MZ twins	1.614	1.198	1.269	.898	.979	.811
	(.977)	(1.024)	(1.031)	(1.018)	(1.007)	(1.006)
DZ twins	-.909	-.859	-.905	-.755	-.864	-.808
	(.631)	(.633)	(.636)	(.644)	(.627)	(.639)
Adopted	.958	.591	.448	.553	.755	.552
	(1.018)	(.999)	(1.018)	(.960)	(.998)	(.987)
Step	.628	.428	.419	.496	.611	.639
	(.594)	(.594)	(.608)	(.604)	(.616)	(.641)
Half-siblings	.375	.187	.286	.192	.313	.390
	(.510)	(.507)	(.505)	(.498)	(.494)	(.486)
Early-life characteristics:						
Family structure		-.598*	-.592*	-.622*	-.635*	-.655*
		(.280)	(.280)	(.280)	(.278)	(.277)
Number of siblings born		-.007	-.005	.018	-.007	.017
		(.034)	(.034)	(.034)	(.034)	(.034)
Father's education		.054*	.051*	.024	.040	.013
		(.025)	(.025)	(.025)	(.025)	(.025)
Farm origin		-1.118***	-1.075***	-1.083***	-1.125***	-1.037***
		(.214)	(.212)	(.212)	(.211)	(.209)
Family income		.004	.004	.002	.004	.001
		(.003)	(.003)	(.003)	(.003)	(.003)
Protestant (reference)						
Catholic		.145	.189	.127	.152	.183
		(.166)	(.166)	(.166)	(.165)	(.164)
Other religion		.898*	.845*	.818*	.840*	.738*
		(.366)	(.366)	(.360)	(.360)	(.355)

Paternal affection	.574**	.571**	.510**	.584**	.526**
	(.180)	(.180)	(.179)	(.179)	(.178)
Maternal affection	.323	.326	.205	.235	.144
	(.183)	(.183)	(.182)	(.181)	(.180)
Paternal abuse	.269	.269	.264	.292*	.288*
	(.147)	(.148)	(.146)	(.146)	(.146)
Maternal abuse	.403*	.380*	.394*	.334	.309
	(.174)	(.174)	(.171)	(.173)	(.171)
Parents' marital quality	-.151	-.131	-.101	-.177	-.112
	(.187)	(.187)	(.186)	(.187)	(.186)
Marital Status					
Married in the first marriage (reference)					
Married in remarriage		1.251***			1.302***
		(.243)			(.240)
Divorced/Separated		.748**			.788**
		(.273)			(.269)
Widowed		-.073			-.037
		(.508)			(.495)
Never married		-.363			-.290
		(.481)			(.474)
Socioeconomic Characteristics					
High school or less (reference)					
Some college			1.002***		.883***
			(.208)		(.207)
College degree			.666**		.613**
			(.235)		(.234)
Post-college			.602*		.473
			(.268)		(.266)
Net worth (ln)			.024		.021
			(.023)		(.023)
Currently employed			-.223		-.403
			(.209)		(.211)
Ever worked for pay			.830		.697

				(.535)		(.532)
Occupational education				.173		.155
				(.097)		(.096)
Occupational income				.190		.174
				(.117)		(.116)
Parents' Current Health:						
Global self-rated health					.957***	.865***
					(.114)	(.114)
Number of diagnosed chronic illnesses					.062	.042
					(.044)	(.044)
Constant	30.208***	28.256***	27.747***	27.532***	24.199***	23.906***
	(.893)	(1.062)	(1.082)	(1.240)	(1.155)	(1.326)
Adjusted R^2	.028	.052	.057	.064	.064	.079

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

Table 3.7. Unstandardized Coefficients from Fixed-Effects Models Predicting Autonomy: WLS, 1993-1994

Variable	(1)	(2)	(3)	(4)	(5)
Children's age and living arrangements					
Nonresidential adult children only (reference group)					
No children	.834	.606	.878	1.090	.838
	(.829)	(.868)	(.832)	(.834)	(.874)
Minor children only	-.520	-.408	-.513	-.354	-.306
	(.579)	(.582)	(.583)	(.582)	(.588)
Adult children only, at least one coresidential	-.286	-.251	-.215	-.203	-.111
	(.288)	(.288)	(.288)	(.288)	(.288)
At least one minor child and at least one coresidential adult child	-.407	-.301	-.395	-.333	-.223
	(.583)	(.584)	(.582)	(.582)	(.582)
At least one minor child and at least one nonresidential adult child	-.584	-.591	-.576	-.518	-.537
	(.442)	(.443)	(.441)	(.441)	(.441)
Other characteristics of the parental role					
Total number of children	.017	.014	.044	.023	.038
	(.081)	(.081)	(.081)	(.080)	(.081)
At least one daughter	-.344	-.338	-.378	-.332	-.361
	(.288)	(.288)	(.287)	(.287)	(.286)
Coresidential child attending college	-.350	-.342	-.411	-.462	-.492
	(.516)	(.515)	(.517)	(.519)	(.520)
Age of youngest child	.032	.037	.036	.039	.047
	(.026)	(.026)	(.026)	(.026)	(.026)
At least one adopted child	.419	.390	.423	.492	.445
	(.422)	(.422)	(.420)	(.420)	(.419)
At least one stepchild	1.636***	1.192**	1.558***	1.629***	1.085*
	(.398)	(.441)	(.397)	(.396)	(.438)
At least one child with disability	-.652	-.626	-.500	-.590	-.448
	(.807)	(.807)	(.806)	(.803)	(.802)
Depressive episode prior to parenthood	-.028	-.132	.039	-.031	-.084
	(.583)	(.584)	(.581)	(.580)	(.580)
Gender	-1.323***	-1.288***	-1.039***	-1.336***	-1.059***

	(.208)	(.209)	(.255)	(.207)	(.255)
Age	.033	.034	.038	.040	.042
	(.025)	(.025)	(.025)	(.025)	(.025)
Marital Status					
Married in the first marriage (reference)					
Married in remarriage		.814*			.873**
		(.337)			(.335)
Divorced/Separated		.294			.322
		(.345)			(.346)
Widowed		-.453			-.431
		(.597)			(.593)
Never married		.888			.853
		(.632)			(.631)
Socioeconomic Characteristics					
High school or less (reference)					
Some college			.874**		.823**
			(.297)		(.296)
College degree			.716*		.639
			(.355)		(.355)
Post-college			.648		.489
			(.395)		(.395)
Net worth (ln)			.028		.022
			(.027)		(.028)
Currently employed			.096		-.121
			(.281)		(.284)
Ever worked for pay			.703		.627
			(.670)		(.670)
Occupational education			.124		.115
			(.133)		(.133)
Occupational income			.235		.227
			(.161)		(.161)
Parents' Current Health:					

Global self-rated health				.837***	.757***
				(.153)	(.155)
Number of diagnosed chronic illnesses				-.007	-.011
				(.057)	(.058)
Constant	29.518***	29.194***	27.509***	25.470***	24.173***
	(1.171)	(1.195)	(1.474)	(1.374)	(1.617)
Sigma u	4.257	4.249	4.201	4.222	4.166
Sigma e	5.245	5.241	5.223	5.217	5.195
rho	.397	.397	.393	.396	.391

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

Research question 1: How do middle-aged parents compare to their childfree peers with respect to *environmental mastery*?

As shown in Table 3.8, childfree individuals are similar to parents of nonresidential adult children in terms of environmental mastery. Yet, when all variables are included in the full Model 6, individuals who have no children exhibit higher levels of environmental mastery than the reference group ($b = 1.28$, $p < .05$). This suppression effect is explained by differences in marital status and health between childfree persons and parents of nonresidential adult children. Most participants without children have never been married and tend to report more health problems than empty-nest parents. In turn, being never married and in worse health are each associated with lower levels of environmental mastery.

Research question 2: How are diverse configurations of children's age and living arrangements related to parents' *environmental mastery*?

Individuals who have only minor children at midlife report lower levels of environmental mastery than parents of nonresidential adult children net of observed early-life characteristics (Model 2), marital status (Model 3), and SES (Model 4). Yet, the effect of having minor children is explained by health in Model 5 where the coefficient is reduced nearly by half (from –1.073 in the baseline model to –.559). Parents of minor children report more health problems than the reference group, and worse health is related to lower environmental mastery. Similarly, parents who have only adult children with at least one child living in the parental household also have lower levels of environmental mastery compared to individuals who have only nonresidential adult children. This difference is explained by all variables combined in the full Model 6: early-life characteristics in combination with adult marital status, SES, and health account for declines in environmental mastery associated with intergenerational coresidence.

Finally, having at least one minor child and at least one adult child — whether living in the parental home or not — is associated with lower levels of environmental mastery. Although the effect sizes are reduced in the full Model 6 with all control variables, the coefficients remain statistically significant and large enough to be substantively important.

Table 3.8. Unstandardized Coefficients and Robust Standard Errors from OLS Models Predicting Environmental Mastery: WLS, 1993-1994

Variable	(1)	(2)	(3)	(4)	(5)	(6)
Children's age and living arrangements						
Nonresidential adult children only (reference group)						
No children	-.250	.024	.560	.237	.852	1.280*
	(.604)	(.600)	(.647)	(.598)	(.577)	(.618)
Minor children only	-1.073*	-1.075*	-1.014*	-.996*	-.559	-.543
	(.435)	(.433)	(.434)	(.427)	(.414)	(.413)
Adult children only, at least one coresidential	-.732**	-.670**	-.657**	-.539*	-.416*	-.311
	(.215)	(.213)	(.213)	(.212)	(.204)	(.203)
At least one minor child and at least one coresidential adult child	-1.235**	-1.112**	-1.102**	-1.072**	-.781*	-.748*
	(.406)	(.401)	(.399)	(.402)	(.380)	(.379)
At least one minor child and at least one nonresidential adult child	-1.090**	-1.021**	-1.031**	-.988**	-.830**	-.841**
	(.315)	(.310)	(.309)	(.307)	(.297)	(.294)
Other characteristics of the parental role						
Total number of children	.005	.031	.014	.050	.045	.034
	(.054)	(.055)	(.055)	(.055)	(.053)	(.053)
At least one daughter	-.237	-.226	-.232	-.208	-.191	-.180
	(.209)	(.210)	(.208)	(.208)	(.200)	(.197)
Coresidential child attending college	.188	.061	.063	-.202	-.356	-.495
	(.417)	(.415)	(.413)	(.414)	(.401)	(.400)
Age of youngest child	.031	.040*	.043*	.046*	.062***	.065***
	(.018)	(.018)	(.018)	(.018)	(.017)	(.018)
At least one adopted child	.310	.332	.304	.285	.408	.349
	(.284)	(.282)	(.282)	(.280)	(.266)	(.264)
At least one stepchild	.720**	.666*	.312	.624*	.759**	.325
	(.269)	(.269)	(.312)	(.268)	(.266)	(.303)
At least one child with disability	-1.539*	-1.597*	-1.575*	-1.470*	-1.327*	-1.249*
	(.645)	(.654)	(.644)	(.651)	(.616)	(.608)
Depressive episode prior to parenthood	-1.917***	-1.842***	-1.795***	-1.827***	-1.592***	-1.600***
	(.427)	(.422)	(.427)	(.421)	(.404)	(.409)

Gender	.055	.058	.159	.265	.039	.261
	(.146)	(.146)	(.146)	(.178)	(.141)	(.174)
Age	.075***	.071***	.075***	.068***	.089***	.082***
	(.018)	(.017)	(.018)	(.018)	(.017)	(.018)
Genetic similarity:						
Shared household	.068	.071	.114	.069	.112	.113
	(.244)	(.245)	(.245)	(.245)	(.234)	(.234)
Full nontwin (reference)						
MZ twins	2.389**	2.183*	2.088*	1.928*	1.625	1.411
	(.880)	(.948)	(.959)	(.878)	(.884)	(.841)
DZ twins	-.765	-.848	-.935	-.839	-.974	-1.026
	(.705)	(.700)	(.691)	(.697)	(.688)	(.677)
Adopted	.820	.522	.375	.501	1.038	.825
	(.884)	(.883)	(.876)	(.848)	(.837)	(.816)
Step	1.241	1.027	1.012	1.103	1.280	1.315*
	(.727)	(.707)	(.707)	(.684)	(.667)	(.661)
Half-siblings	-.699	-.603	-.619	-.513	-.314	-.308
	(.459)	(.464)	(.463)	(.473)	(.437)	(.439)
Early-life characteristics:						
Family structure		-.018	-.053	-.089	-.106	-.202
		(.283)	(.281)	(.282)	(.269)	(.267)
Number of siblings born		.022	.020	.038	.023	.030
		(.033)	(.033)	(.033)	(.032)	(.032)
Father's education		.015	.012	-.008	-.015	-.027
		(.023)	(.023)	(.023)	(.022)	(.022)
Farm origin		-.419*	-.406*	-.410*	-.463*	-.409*
		(.192)	(.191)	(.191)	(.184)	(.183)
Family income		.003	.003	.001	.001	.001
		(.003)	(.003)	(.003)	(.003)	(.003)
Protestant (reference)						
Catholic		.083	.106	.064	.065	.086
		(.156)	(.155)	(.155)	(.149)	(.148)
Other religion		-.336	-.389	-.414	-.431	-.494

	(.310)	(.310)	(.307)	(.293)	(.291)
Paternal affection	.410*	.413*	.394*	.418*	.425**
	(.171)	(.170)	(.170)	(.161)	(.161)
Maternal affection	.560**	.570**	.493**	.363*	.351*
	(.171)	(.171)	(.170)	(.163)	(.161)
Paternal abuse	.002	.010	.003	.076	.087
	(.139)	(.139)	(.138)	(.135)	(.134)
Maternal abuse	.070	.097	.105	-.025	.019
	(.157)	(.157)	(.157)	(.152)	(.152)
Parents' marital quality	.216	.215	.254	.155	.169
	(.173)	(.173)	(.172)	(.165)	(.164)
Marital Status					
Married in the first marriage (reference)					
Married in remarriage		.576*			.681**
		(.245)			(.229)
Divorced/Separated		-1.016***			-.711**
		(.268)			(.256)
Widowed		-1.658**			-1.364**
		(.499)			(.479)
Never married		-1.025*			-.720
		(.497)			(.480)
Socioeconomic Characteristics					
High school or less (reference)					
Some college			-.052		-.187
			(.211)		(.200)
College degree			-.058		-.268
			(.223)		(.216)
Post-college			.319		.012
			(.254)		(.245)
Net worth (ln)			.143***		.108***
			(.024)		(.023)
Currently employed			.058		-.412*
			(.211)		(.199)

Ever worked for pay				-.138 (.524)		.164 (.520)
Occupational education				.240* (.093)		.169 (.089)
Occupational income				.103 (.110)		.120 (.105)
Parents' Current Health:						
Global self-rated health					1.939*** (.126)	1.871*** (.126)
Number of diagnosed chronic illnesses					-.193*** (.044)	-.186*** (.044)
Constant	29.334*** (.851)	26.615*** (.994)	26.408*** (1.001)	25.245*** (1.188)	18.187*** (1.093)	17.888*** (1.255)
Adjusted R^2	.034	.050	.057	.067	.124	.140

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

Research question 5: To what extent do the associations between parental status and *environmental mastery* observed at midlife reflect genetic and environmental influences experienced by parents early in life?

Table 3.9 indicates that childfree individuals are similar to parents of nonresidential adult children in terms of environmental mastery when unobserved family influences shared by siblings are taken into account in the within-family fixed-effects models, which is consistent with between-family OLS models shown in Table 3.8. Parents who have only minor children and parents of coresidential adult children report lower levels of environmental mastery than the reference group. Although these differences fail to reach statistical significance in the fixed-effects models because of increased standard errors, the effect sizes remain comparable to the respective OLS models. Yet, when parents' physical health is controlled in Model 4, the coefficients for the presence of minor children and coresidential adult children decline by half and are neither close to significance nor large enough to be substantively important.

Individuals who have at least one minor child and at least one adult child — whether living in the parental household or independently — exhibit lower levels of environmental mastery than empty-nest parents even in the within-family models accounting for unobserved genetic and early-life environmental influences. The coefficient for having both minor children and coresidential adult children becomes nonsignificant after adjustment for parents' health in Model 4, although the effect size remains large in magnitude. Similarly, the lower level of environmental mastery among parents who have at least one minor child and at least one nonresidential adult child remains unexplained even in the full fixed-effects Model 6 including all explanatory variables.

With respect to other configurations of the parental role, age of the youngest child is associated positively with environmental mastery in the between-family models; however, this association becomes nonsignificant when unobserved family influences shared by siblings are taken into account in the within-family models. Having at least one stepchild is related to higher levels of environmental mastery both in the between- and within-family models. Having a child with developmental disability or mental illness is associated with decreased levels of environmental mastery in the between-family models. Yet, this effect becomes nonsignificant in the within-family models, which suggests that certain unobserved influences shared by siblings within families may simultaneously decrease environmental mastery in adulthood and increase the likelihood of having a child with disability. Alternatively, it is possible that this pattern reflects a situation when one sibling's experience with a disabled child "spills over" as a shared experience to the other sibling. In this alternative scenario, it is not shared family background that is related to a higher likelihood of having a disabled child but rather the adult experience that one sibling shares with the other.

Table 3.9. Unstandardized Coefficients from Fixed-Effects Models Predicting Environmental Mastery: WLS, 1993-1994

Variable	(1)	(2)	(3)	(4)	(5)
Children's age and living arrangements					
Nonresidential adult children only (reference group)					
No children	-.464	.016	-.374	.370	.739
	(.807)	(.843)	(.806)	(.786)	(.820)
Minor children only	-1.057	-.909	-.991	-.505	-.487
	(.563)	(.565)	(.565)	(.548)	(.551)
Adult children only, at least one coresidential	-.518	-.494	-.407	-.274	-.172
	(.281)	(.280)	(.279)	(.271)	(.270)
At least one minor child and at least one coresidential adult child	-1.238*	-1.181*	-1.246*	-.964	-.952
	(.567)	(.567)	(.564)	(.549)	(.547)
At least one minor child and at least one nonresidential adult child	-1.425**	-1.396**	-1.435**	-1.204**	-1.240**
	(.430)	(.430)	(.427)	(.416)	(.414)
Other characteristics of the parental role					
Total number of children	.030	.016	.052	.050	.044
	(.079)	(.078)	(.078)	(.076)	(.076)
At least one daughter	-.123	-.123	-.143	-.096	-.117
	(.281)	(.280)	(.278)	(.270)	(.268)
Coresidential child attending college	.435	.415	.236	.018	-.109
	(.502)	(.501)	(.500)	(.489)	(.487)
Age of youngest child	.019	.024	.024	.044	.048
	(.025)	(.025)	(.025)	(.024)	(.024)
At least one adopted child	.073	.042	.064	.234	.162
	(.410)	(.410)	(.407)	(.395)	(.394)
At least one stepchild	.998*	.714	.976*	1.002**	.640
	(.387)	(.428)	(.385)	(.373)	(.411)
At least one child with disability	-1.468	-1.385	-1.237	-1.288	-1.087
	(.786)	(.784)	(.781)	(.757)	(.753)
Depressive episode prior to parenthood	-1.800**	-1.767**	-1.711**	-1.752**	-1.694**
	(.567)	(.567)	(.563)	(.547)	(.545)
Gender	.209	.311	.389	.210	.390

	(.202)	(.203)	(.247)	(.195)	(.240)
	.103***	.109***	.100***	.119***	.113***
Age	(.024)	(.024)	(.024)	(.023)	(.024)
Marital Status					
Married in the first marriage (reference)					
		.454			.576
Married in remarriage		(.328)			(.314)
		-.665*			-.509
Divorced/Separated		(.335)			(.324)
		-1.933**			-1.706**
Widowed		(.580)			(.556)
		-.786			-.822
Never married		(.614)			(.592)
Socioeconomic Characteristics					
High school or less (reference)					
			-.084		-.205
Some college			(.288)		(.278)
			.186		.002
College degree			(.344)		(.333)
			.520		.256
Post-college			(.382)		(.370)
			.137***		.103***
Net worth (ln)			(.027)		(.026)
			.042		-.490
Currently employed			(.273)		(.267)
			.695		.846
Ever worked for pay			(.649)		(.629)
			.314*		.270*
Occupational education			(.129)		(.125)
			.059		.050
Occupational income			(.156)		(.151)
Parents' Current Health:					

Global self-rated health				1.952***	1.877***
				(.145)	(.145)
Number of diagnosed chronic illnesses				-.124*	-.123*
				(.054)	(.054)
Constant	27.970***	27.545***	25.459***	18.453***	17.330***
	(1.139)	(1.160)	(1.427)	(1.295)	(1.517)
Sigma u	3.930	3.915	3.886	3.747	3.718
Sigma e	5.104	5.090	5.058	4.915	4.874
rho	.372	.372	.371	.368	.368

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

Research question 1: How do middle-aged parents compare to their childfree peers with respect to *personal growth*?

Research question 2: How are diverse configurations of children's age and living arrangements related to parents' *personal growth*?

Table 3.10 shows that in the between-family models, childfree individuals and parents of at least one minor and at least one nonresidential adult child do not differ significantly from empty-nest parents in terms of personal growth. In contrast, parents who have only minor children, individuals with only coresidential adult children, and parents of at least one minor children and at least one adult child living in the parental household report lower levels of personal growth than the reference group. The effect of having only coresidential adult children remains unexplained by all variables in the full Model 6. The coefficients for the other two groups become formally nonsignificant in Model 6 comprising all explanatory variables, yet the effect sizes remain large relative to their standard errors.

Research question 5: To what extent do the associations between parental status and *personal growth* observed at midlife reflect genetic and environmental influences experienced by parents early in life?

As indicated in Table 3.11, in the within-family models nonparents and parents of at least one minor child and at least one nonresidential adult child are similar to the reference group with respect to personal growth, which is consistent with the results from the between-family OLS models. Conversely, parents who have only minor children, parents of coresidential adult children, and individuals who have both minor children and coresidential adult children report lower levels of personal growth than parents of nonresidential adult children. These differences — also evident in the between-family models in Table 3.10 — persist when unobserved family

influences shared by siblings, parents' adult marital status, SES, and health are taken into account. Thus, the significant effects shown in the between-family models are not likely to be spurious artifacts of unobserved family heterogeneity.

With respect to other characteristics of the parental role, having at least one nonbiological child — whether adopted or stepchild — is associated with higher levels of personal growth in the between-family models. While the effect of having adopted children is explained in the within-family model, the effect of having at least one stepchild remains significant even after adjustment for unobserved genetic and early-life environmental influences shared by siblings within families.

Table 3.10. Unstandardized Coefficients and Robust Standard Errors from OLS Models Predicting Personal Growth: WLS, 1993-1994

Variable	(1)	(2)	(3)	(4)	(5)	(6)
Children's age and living arrangements						
Nonresidential adult children only (reference group)						
No children	-.765	-.758	-.561	-.132	-.341	.333
	(.652)	(.638)	(.679)	(.627)	(.627)	(.658)
Minor children only	-1.406**	-1.263**	-1.162*	-1.087*	-1.009*	-.827
	(.448)	(.447)	(.449)	(.436)	(.434)	(.428)
Adult children only, at least one coresidential	-1.289***	-1.119***	-1.070***	-.827***	-.942***	-.651**
	(.240)	(.239)	(.240)	(.232)	(.235)	(.230)
At least one minor child and at least one coresidential adult child	-1.280**	-.991*	-.897*	-.862*	-.807*	-.619
	(.415)	(.413)	(.413)	(.409)	(.401)	(.401)
At least one minor child and at least one nonresidential adult child	-.640	-.635	-.629	-.571	-.542	-.503
	(.336)	(.329)	(.328)	(.322)	(.322)	(.317)
Other characteristics of the parental role						
Total number of children	-.046	.029	.025	.032	.033	.108
	(.059)	(.059)	(.059)	(.057)	(.058)	(.056)
At least one daughter	-.084	-.085	-.066	-.102	-.052	-.055
	(.224)	(.223)	(.222)	(.218)	(.216)	(.213)
Coresidential child attending college	.748	.746	.752	.329	.537	.215
	(.440)	(.438)	(.436)	(.429)	(.434)	(.425)
Age of youngest child	-.007	.007	.011	.036	.017	.044*
	(.020)	(.020)	(.020)	(.019)	(.020)	(.019)
At least one adopted child	.772*	.766*	.768*	.637*	.840**	.713*
	(.326)	(.322)	(.323)	(.320)	(.313)	(.311)
At least one stepchild	1.265***	1.069***	.735*	.821**	1.099***	.478
	(.294)	(.293)	(.335)	(.285)	(.288)	(.320)
At least one child with disability	-.788	-.835	-.852	-.613	-.657	-.520
	(.658)	(.651)	(.650)	(.622)	(.624)	(.608)
Depressive episode prior to parenthood	.056	-.101	-.165	-.135	.010	-.131
	(.456)	(.448)	(.448)	(.430)	(.426)	(.414)
Gender	.822***	.828***	.871***	1.478***	.739***	1.392***

	(.164)	(.163)	(.164)	(.190)	(.162)	(.190)
Age	-.061**	-.061**	-.055**	-.058**	-.048*	-.046*
	(.020)	(.020)	(.020)	(.020)	(.019)	(.019)
Genetic similarity:						
Shared household	.317	.358	.359	.358	.368	.349
	(.285)	(.277)	(.277)	(.263)	(.267)	(.256)
Full nontwin (reference)						
MZ twins	1.171	.726	.726	.054	.292	-.220
	(.946)	(.914)	(.924)	(.809)	(.823)	(.764)
DZ twins	-1.583*	-1.551*	-1.597*	-1.418*	-1.582*	-1.494*
	(.717)	(.701)	(.702)	(.706)	(.719)	(.717)
Adopted	.283	-.177	-.271	-.090	.167	.066
	(.630)	(.653)	(.672)	(.614)	(.664)	(.667)
Step	.199	-.031	-.029	.072	.292	.331
	(.671)	(.612)	(.613)	(.637)	(.614)	(.644)
Half-siblings	-.422	-.439	-.389	-.273	-.196	-.053
	(.463)	(.442)	(.441)	(.429)	(.435)	(.422)
Early-life characteristics:						
Family structure		-.043	-.041	-.083	-.117	-.144
		(.300)	(.301)	(.295)	(.291)	(.289)
Number of siblings born		.008	.009	.061	.009	.057
		(.036)	(.036)	(.036)	(.036)	(.036)
Father's education		.090**	.089**	.014	.063*	-.001
		(.026)	(.026)	(.025)	(.025)	(.025)
Farm origin		-.648**	-.620**	-.674**	-.667**	-.644**
		(.219)	(.219)	(.212)	(.213)	(.208)
Family income		.005	.005	-.002	.003	-.002
		(.003)	(.003)	(.003)	(.003)	(.003)
Protestant (reference)						
Catholic		-.121	-.094	-.168	-.114	-.123
		(.178)	(.177)	(.172)	(.173)	(.169)
Other religion		.383	.356	.116	.278	.042
		(.363)	(.364)	(.349)	(.351)	(.342)

Paternal affection	.648**	.647**	.499**	.665**	.530**
	(.199)	(.199)	(.191)	(.194)	(.188)
Maternal affection	.639**	.647**	.357	.469*	.256
	(.202)	(.202)	(.195)	(.196)	(.191)
Paternal abuse	.453**	.454**	.444**	.500**	.487**
	(.154)	(.155)	(.150)	(.149)	(.146)
Maternal abuse	.219	.216	.227	.098	.117
	(.191)	(.189)	(.179)	(.185)	(.175)
Parents' marital quality	.064	.069	.208	.014	.155
	(.191)	(.191)	(.185)	(.186)	(.183)
Marital Status					
Married in the first marriage (reference)					
Married in remarriage		.604*			.714**
		(.270)			(.256)
Divorced/Separated		.326			.419
		(.285)			(.275)
Widowed		-.926			-.919
		(.531)			(.489)
Never married		-.151			-.175
		(.503)			(.487)
Socioeconomic Characteristics					
High school or less (reference)					
Some college			1.517***		1.360***
			(.220)		(.217)
College degree			1.514***		1.351***
			(.245)		(.240)
Post-college			2.172***		1.903***
			(.261)		(.258)
Net worth (ln)			.112***		.099***
			(.026)		(.026)
Currently employed			.579*		.285
			(.228)		(.228)
Ever worked for pay			1.672**		1.635**

				(.585)		(.585)
Occupational education				.293**		.246*
				(.097)		(.096)
Occupational income				.368**		.370**
				(.115)		(.113)
Parents' Current Health:						
Global self-rated health					1.806***	1.496***
					(.136)	(.132)
Number of diagnosed chronic illnesses					.058	.044
					(.046)	(.045)
Constant	35.790***	31.406***	30.887***	27.274***	23.714***	21.102***
	(.948)	(1.112)	(1.119)	(1.277)	(1.225)	(1.370)
Adjusted R^2	.021	.047	.049	.103	.089	.133

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

Table 3.11. Unstandardized Coefficients from Fixed-Effects Models Predicting Personal Growth: WLS, 1993-1994

Variable	(1)	(2)	(3)	(4)	(5)
Children's age and living arrangements					
Nonresidential adult children only (reference group)					
No children	-1.050	-.967	-.827	-.534	-.316
	(.863)	(.904)	(.850)	(.857)	(.886)
Minor children only	-1.661**	-1.549*	-1.556**	-1.326*	-1.251*
	(.602)	(.606)	(.596)	(.598)	(.595)
Adult children only, at least one coresidential	-1.012**	-.984**	-.853**	-.852**	-.698*
	(.300)	(.301)	(.294)	(.296)	(.292)
At least one minor child and at least one coresidential adult child	-1.438*	-1.363*	-1.436*	-1.282*	-1.234*
	(.607)	(.609)	(.594)	(.599)	(.590)
At least one minor child and at least one nonresidential adult child	-.832	-.840	-.842	-.841	-.853
	(.460)	(.462)	(.450)	(.453)	(.447)
Other characteristics of the parental role					

Total number of children	.078	.076	.147	.090	.143
	(.084)	(.084)	(.083)	(.083)	(.082)
At least one daughter	-.401	-.394	-.467	-.379	-.441
	(.300)	(.300)	(.293)	(.295)	(.290)
Coresidential child attending college	.319	.321	.112	.083	-.054
	(.537)	(.537)	(.528)	(.534)	(.526)
Age of youngest child	-.007	-.003	.009	.009	.022
	(.027)	(.027)	(.026)	(.027)	(.026)
At least one adopted child	.056	.056	.065	.187	.154
	(.439)	(.440)	(.429)	(.431)	(.425)
At least one stepchild	1.204**	1.023*	1.066**	1.196**	.828
	(.414)	(.459)	(.405)	(.407)	(.444)
At least one child with disability	-1.309	-1.292	-.951	-1.190	-.892
	(.841)	(.841)	(.823)	(.826)	(.813)
Depressive episode prior to parenthood	.126	.080	.265	.132	.189
	(.606)	(.608)	(.593)	(.596)	(.588)
Gender	1.020***	1.059***	1.460***	1.002***	1.418***
	(.216)	(.218)	(.261)	(.213)	(.259)
Age	-.035	-.031	-.027	-.023	-.016
	(.026)	(.026)	(.026)	(.025)	(.026)
Marital Status					
Married in the first marriage (reference)					
Married in remarriage		.358			.474
		(.352)			(.340)
Divorced/Separated		.210			.298
		(.360)			(.350)
Widowed		-.854			-.832
		(.622)			(.601)
Never married		.078			-.134
		(.659)			(.639)
Socioeconomic Characteristics					
High school or less (reference)					
Some college			1.425***		1.333***

			(.303)		(.300)
College degree			1.339***		1.221**
			(.363)		(.359)
Post-college			1.952***		1.738***
			(.403)		(.400)
Net worth (ln)			.109***		.094**
			(.028)		(.028)
Currently employed			.493		.145
			(.287)		(.288)
Ever worked for pay			1.486*		1.472*
			(.684)		(.679)
Occupational education			.397**		.371**
			(.136)		(.135)
Occupational income			.195		.184
			(.165)		(.163)
Parents' Current Health:					
Global self-rated health				1.529***	1.292***
				(.158)	(.157)
Number of diagnosed chronic illnesses				-.035	-.037
				(.059)	(.058)
Constant	34.602***	34.196***	29.534***	27.190***	23.824***
	(1.219)	(1.245)	(1.505)	(1.413)	(1.638)
Sigma u	4.457	4.451	4.243	4.331	4.162
Sigma e	5.460	5.460	5.333	5.362	5.263
rho	.400	.399	.388	.395	.385

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

Table 3.12. Unstandardized Coefficients and Robust Standard Errors from OLS Models Predicting Positive Relations with Others: WLS, 1993-1994

Variable	(1)	(2)	(3)	(4)	(5)	(6)
Children's age and living arrangements						
Nonresidential adult children only						

(reference group)						
No children	-1.077	-.669	-.012	-.588	-.282	.239
	(.622)	(.620)	(.664)	(.619)	(.612)	(.651)
Minor children only	-.491	-.467	-.410	-.406	-.229	-.182
	(.459)	(.457)	(.457)	(.454)	(.448)	(.448)
Adult children only, at least one coresidential	-.333	-.254	-.244	-.201	-.103	-.069
	(.224)	(.221)	(.221)	(.220)	(.217)	(.217)
At least one minor child and at least one coresidential adult child	-.310	-.170	-.160	-.156	-.004	.008
	(.424)	(.424)	(.423)	(.425)	(.411)	(.412)
At least one minor child and at least one nonresidential adult child	-.625	-.538	-.541	-.531	-.451	-.466
	(.332)	(.325)	(.325)	(.325)	(.319)	(.318)
Other characteristics of the parental role						
Total number of children	.101	.148**	.136*	.149**	.153**	.132*
	(.057)	(.057)	(.057)	(.057)	(.056)	(.056)
At least one daughter	-.185	-.190	-.195	-.174	-.165	-.151
	(.215)	(.215)	(.213)	(.214)	(.209)	(.208)
Coresidential child attending college	-.318	-.450	-.449	-.580	-.645	-.697
	(.442)	(.441)	(.439)	(.442)	(.433)	(.433)
Age of youngest child	.024	.036	.038*	.036	.045*	.043*
	(.019)	(.019)	(.019)	(.019)	(.019)	(.019)
At least one adopted child	.157	.196	.184	.140	.254	.201
	(.287)	(.286)	(.288)	(.288)	(.282)	(.285)
At least one stepchild	.428	.325	.105	.338	.357	.143
	(.297)	(.300)	(.342)	(.300)	(.296)	(.335)
At least one child with disability	-1.278*	-1.320*	-1.300*	-1.226*	-1.166	-1.099
	(.628)	(.624)	(.623)	(.618)	(.608)	(.604)
Depressive episode prior to parenthood	-1.695***	-1.597***	-1.565***	-1.585***	-1.490**	-1.483**
	(.456)	(.439)	(.442)	(.441)	(.433)	(.438)
Gender	1.949***	1.946***	2.028***	1.820***	1.886***	1.787***
	(.158)	(.156)	(.157)	(.191)	(.155)	(.190)
Age	.020	.012	.016	.013	.023	.024
	(.019)	(.018)	(.019)	(.019)	(.018)	(.019)
Genetic similarity:						

Shared household	.004	-.019	.009	-.010	-.007	.008
	(.265)	(.263)	(.263)	(.264)	(.257)	(.258)
Full nontwin (reference)						
MZ twins	1.327	1.061	1.045	.935	.702	.642
	(.980)	(1.042)	(1.055)	(1.013)	(1.078)	(1.062)
DZ twins	-.761	-.841	-.926	-.857	-.879	-.965
	(.623)	(.612)	(.608)	(.618)	(.629)	(.627)
Adopted	1.886*	1.541	1.422	1.465	1.836*	1.620*
	(.804)	(.828)	(.822)	(.821)	(.812)	(.818)
Step	1.204	.903	.888	.950	1.147	1.169
	(.851)	(.793)	(.763)	(.779)	(.732)	(.696)
Half-siblings	-.539	-.509	-.508	-.457	-.311	-.299
	(.429)	(.444)	(.441)	(.451)	(.444)	(.441)
Early-life characteristics:						
Family structure		-.404	-.434	-.456	-.464	-.537
		(.294)	(.293)	(.293)	(.290)	(.289)
Number of siblings born		-.003	-.004	.007	-.002	.001
		(.037)	(.037)	(.037)	(.037)	(.037)
Father's education		-.002	-.004	-.007	-.023	-.022
		(.024)	(.024)	(.025)	(.024)	(.025)
Farm origin		-.414*	-.405*	-.380	-.433*	-.374
		(.203)	(.202)	(.203)	(.199)	(.199)
Family income		.000	.000	.000	-.001	-.001
		(.003)	(.003)	(.003)	(.003)	(.003)
Protestant (reference)						
Catholic		.032	.050	.017	.034	.047
		(.168)	(.167)	(.168)	(.164)	(.164)
Other religion		-.128	-.179	-.163	-.209	-.250
		(.334)	(.336)	(.335)	(.332)	(.335)
Paternal affection		.892***	.889***	.890***	.904***	.914***
		(.179)	(.178)	(.179)	(.174)	(.174)
Maternal affection		.656***	.666***	.649***	.518**	.552**
		(.186)	(.185)	(.186)	(.182)	(.182)

Paternal abuse	.148	.151	.148	.189	.192
	(.148)	(.148)	(.148)	(.143)	(.143)
Maternal abuse	.248	.269	.272	.157	.190
	(.167)	(.166)	(.167)	(.163)	(.163)
Parents' marital quality	.216	.222	.225	.175	.173
	(.179)	(.179)	(.179)	(.175)	(.176)
Marital Status					
Married in the first marriage (reference)					
Married in remarriage		.365			.406
		(.254)			(.247)
Divorced/Separated		-.667*			-.493
		(.273)			(.271)
Widowed		-1.361**			-1.190*
		(.500)			(.480)
Never married		-1.343*			-1.123*
		(.551)			(.547)
Socioeconomic Characteristics					
High school or less (reference)					
Some college			.020		-.096
			(.218)		(.215)
College degree			-.476		-.639**
			(.244)		(.239)
Post-college			-.341		-.562*
			(.274)		(.272)
Net worth (ln)			.080**		.058*
			(.024)		(.024)
Currently employed			.089		-.165
			(.214)		(.211)
Ever worked for pay			-.299		-.205
			(.518)		(.519)
Occupational education			.343***		.291**
			(.097)		(.096)
Occupational income			-.174		-.160

				(.117)		(.116)
Parents' Current Health:						
Global self-rated health					1.439***	1.418***
					(.132)	(.131)
Number of diagnosed chronic illnesses					.009	.018
					(.044)	(.044)
Constant	31.251***	28.306***	28.077***	27.771***	22.153***	22.114***
	(.901)	(1.062)	(1.069)	(1.239)	(1.185)	(1.341)
Adjusted R^2	.046	.073	.077	.078	.101	.108

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

Table 3.13. Unstandardized Coefficients and from Fixed-Effects Models Predicting Positive Relations with Others: WLS, 1993-1994

Variable	(1)	(2)	(3)	(4)	(5)
Children's age and living arrangements					
Nonresidential adult children only (reference group)					
No children	-1.047	-.512	-1.062	-.731	-.343
	(.858)	(.897)	(.862)	(.858)	(.900)
Minor children only	-.463	-.394	-.463	-.262	-.286
	(.598)	(.601)	(.604)	(.598)	(.605)
Adult children only, at least one coresidential	-.274	-.270	-.217	-.166	-.122
	(.298)	(.298)	(.298)	(.296)	(.296)
At least one minor child and at least one coresidential adult child	.322	.319	.306	.405	.374
	(.603)	(.604)	(.603)	(.599)	(.599)
At least one minor child and at least one nonresidential adult child	-.311	-.422	-.320	-.345	-.309
	(.457)	(.458)	(.457)	(.454)	(.454)
Other characteristics of the parental role					
Total number of children	.122	.109	.115	.129	.100
	(.083)	(.084)	(.084)	(.083)	(.083)
At least one daughter	-.341	-.347	-.358	-.323	-.344
	(.298)	(.298)	(.298)	(.295)	(.294)
Coresidential child attending college	-.524	-.550	-.613	-.648	-.706

	(.533)	(.533)	(.535)	(.534)	(.535)
Age of youngest child	.026	.029	.027	.035	.035
	(.027)	(.027)	(.027)	(.027)	(.027)
At least one adopted child	.214	.182	.169	.326	.238
	(.436)	(.436)	(.436)	(.432)	(.432)
At least one stepchild	.412	.269	.456	.397	.251
	(.412)	(.456)	(.411)	(.407)	(.451)
At least one child with disability	-.792	-.719	-.670	-.710	-.582
	(.835)	(.834)	(.835)	(.826)	(.825)
Depressive episode prior to parenthood	-1.250*	-1.173	-1.229*	-1.269*	-1.217*
	(.603)	(.603)	(.602)	(.597)	(.597)
Gender	2.150***	2.231***	1.880***	2.122***	1.882***
	(.215)	(.216)	(.264)	(.213)	(.263)
Age	.022	.026	.017	.032	.027
	(.025)	(.026)	(.026)	(.025)	(.026)
Marital Status					
Married in the first marriage (reference)					
Married in remarriage		.178			.269
		(.349)			(.345)
Divorced/Separated		-.882*			-.764*
		(.357)			(.356)
Widowed		-1.451*			-1.348*
		(.617)			(.610)
Never married		-1.113			-1.049
		(.653)			(.649)
Socioeconomic Characteristics					
High school or less (reference)					
Some college			.299		.221
			(.308)		(.304)
College degree			-.344		-.480
			(.368)		(.365)
Post-college			-.203		-.365
			(.409)		(.406)

Net worth (ln)			.079**		.056*
			(.028)		(.028)
Currently employed			-.146		-.404
			(.292)		(.293)
Ever worked for pay			-.518		-.460
			(.694)		(.690)
Occupational education			.438**		.404**
			(.138)		(.137)
Occupational income			-.314		-.308
			(.167)		(.166)
Parents' Current Health:					
Global self-rated health				1.251***	1.237***
				(.158)	(.160)
Number of diagnosed chronic illnesses				.019	.023
				(.059)	(.059)
Constant	31.048***	30.894***	31.227***	25.015***	25.901***
	(1.211)	(1.235)	(1.527)	(1.413)	(1.664)
Sigma u	4.199	4.193	4.186	4.109	4.103
Sigma e	5.426	5.416	5.412	5.365	5.346
rho	.375	.375	.374	.370	.371

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

Research question 1: How do middle-aged parents compare to their childfree peers with respect to *positive relations with others*?

Research question 2: How are diverse configurations of children's age and living arrangements related to *positive relations with others*?

Research question 5: To what extent do the associations between parental status and *positive relations with others* observed at midlife reflect genetic and environmental influences experienced by parents early in life?

As shown in Tables 3.12 and 3.13, the dimension of positive relations with others is unrelated to children's age and living arrangements in this sample of middle-aged adults. Regardless of children's age and living arrangements, parents do not differ significantly with respect to the levels of positive relations either in the between- or within-family models. As for other structural configurations of the parental role, the number of children and age of the youngest child are associated positively with this dimension of psychological well-being, whereas having a child with disability or mental illness is related to lower levels of positive relations with others. Yet, these effects become nonsignificant in the within-family models after adjustment for unobserved family influences shared by siblings. In addition, having at least one depressive episode prior to the transition to parenthood is associated with lower levels of positive relations with others at midlife.

Research question 1: How do middle-aged parents compare to their childfree peers with respect to *purpose in life*?

Table 3.14 indicates that childfree individuals are similar to parents of nonresidential adult children in terms of purpose in life. Yet, when all explanatory variables are included in the full Model 6, nonparents report higher levels of purpose in life than the reference group (b =

1.28, $p < .05$). This suppression effect is explained by differences in marital status and health between individuals who have no children and parents of nonresidential adult children. Most participants without children have never been married and tend to report more health problems than parents whose adult children live independently. In turn, being never married and having more health problems are associated with lower levels of purpose in life. If childfree individuals had been similar to the reference group in terms of marital status and health, they would have reported even higher levels of purpose in life.

Research question 2: How are diverse configurations of children's age and living arrangements related to parents' *purpose in life*?

Middle-aged parents who have only minor children report lower levels of purpose in life compared to empty-nest parents. This difference persists after adjustment for observed early-life characteristics, parents' marital status, and adult SES. Yet, this effect is explained by health in Model 5: parents of minor children report lower self-rated health and more chronic illnesses; in turn, health problems are associated with lower levels of purpose in life. Further, parents who have only coresidential adult children exhibit lower levels of purpose in life compared to the reference group. This difference is somewhat reduced after adjustment for SES and physical health in Models 4 and 5, respectively. Yet, the effect is fully explained only in the full Model 6 that includes all explanatory variables. Finally, compared to individuals who have only nonresidential adult children, parents who have both minor children and adult children — whether living with parents or separately — report lower levels of purpose in life. Although the coefficients are reduced by 39% and 23%, respectively, in the full Model 6 compared to the baseline Model 1, the differences remain statistically significant and large in magnitude even net of all explanatory variables.

Research question 5: To what extent do the associations between parental status and *purpose in life* observed at midlife reflect genetic and environmental influences experienced by parents early in life?

Table 3.15 shows the results from within-family fixed-effects models that take into account unobserved family influences shared by siblings. In the within-family models, childfree individuals are similar to empty-nest parents with respect to purpose in life. Parents who have only minor children report lower levels of purpose in life than the reference group, and this difference persists net of all explanatory variables. Thus, lower levels of purpose in life among parents of minor children revealed in the between-family models are unlikely to reflect spuriousness due to unobserved family heterogeneity.

Individuals who have only adult children, with at least one child living in the parental household, exhibit lower levels of purpose in life than the reference group. This difference is explained by parents' adult SES and health. Parents of coresidential adult children are more likely to have only high school education, fewer assets, and worse self-rated health than empty-nest parents. In turn, each of these characteristics is associated with lower levels of purpose in life. Further, parents who have at least one minor child and at least one coresidential adult child report lower levels of purpose in life than empty-nest parents, although this difference fails to reach statistical significance in the within-family models because of increased standard errors. Yet, the coefficients remain comparable in magnitude to the respective between-family models in Table 3.14. Finally, parents who have at least one minor child and at least one nonresidential adult child exhibit lower purpose in life than the reference group. This pattern is consistent with OLS models, thus suggesting that the difference revealed in the between-family models is not spurious due to unobserved influences shared by siblings within families.

With respect to other characteristics of the parental role, in the between-family models, age of the youngest child and the presence of at least one stepchild are associated positively with purpose in life, whereas having a child with disability is related to lower levels of purpose in life. However, in the within-family models, only the presence of stepchildren is significantly related to purpose in life, whereas the effects of the youngest child's age and a child's disability on parents' purpose in life are likely to reflect unobserved genetic and early-life environmental influences. Finally, having at least one depressive episode prior to the transition to parenthood is associated with lower levels of purpose in life at midlife in the between-family models, but not in the within-family models. This pattern suggests that certain unobserved family influences shared by siblings may simultaneously increase the risk of depression and reduce the levels of purpose in life.

Table 3.14. Unstandardized Coefficients and Robust Standard Errors from OLS Models Predicting Purpose in Life: WLS, 1993-1994

Variable	(1)	(2)	(3)	(4)	(5)	(6)
Children's age and living arrangements						
Nonresidential adult children only (reference group)						
No children	-.250	.024	.560	.237	.852	1.280*
	(.604)	(.600)	(.647)	(.598)	(.577)	(.618)
Minor children only	-1.073*	-1.075*	-1.014*	-.996*	-.559	-.543
	(.435)	(.433)	(.434)	(.427)	(.414)	(.413)
Adult children only, at least one coresidential	-.732**	-.670**	-.657**	-.539*	-.416*	-.311
	(.215)	(.213)	(.213)	(.212)	(.204)	(.203)
At least one minor child and at least one coresidential adult child	-1.235**	-1.112**	-1.102**	-1.072**	-.781*	-.748*
	(.406)	(.401)	(.399)	(.402)	(.380)	(.379)
At least one minor child and at least one nonresidential adult child	-1.090**	-1.021**	-1.031**	-.988**	-.830**	-.841**
	(.315)	(.310)	(.309)	(.307)	(.297)	(.294)
Other characteristics of the parental role						
Total number of children	.005	.031	.014	.050	.045	.034
	(.054)	(.055)	(.055)	(.055)	(.053)	(.053)
At least one daughter	-.237	-.226	-.232	-.208	-.191	-.180
	(.209)	(.210)	(.208)	(.208)	(.200)	(.197)
Coresidential child attending college	.188	.061	.063	-.202	-.356	-.495
	(.417)	(.415)	(.413)	(.414)	(.401)	(.400)
Age of youngest child	.031	.040*	.043*	.046*	.062***	.065***
	(.018)	(.018)	(.018)	(.018)	(.017)	(.018)
At least one adopted child	.310	.332	.304	.285	.408	.349
	(.284)	(.282)	(.282)	(.280)	(.266)	(.264)
At least one stepchild	.720**	.666*	.312	.624*	.759**	.325
	(.269)	(.269)	(.312)	(.268)	(.266)	(.303)
At least one child with disability	-1.539*	-1.597*	-1.575*	-1.470*	-1.327*	-1.249*
	(.645)	(.654)	(.644)	(.651)	(.616)	(.608)
Depressive episode prior to parenthood	-1.917***	-1.842***	-1.795***	-1.827***	-1.592***	-1.600***
	(.427)	(.422)	(.427)	(.421)	(.404)	(.409)
Gender	.055	.058	.159	.265	.039	.261

	(.146)	(.146)	(.146)	(.178)	(.141)	(.174)
Age	.075***	.071***	.075***	.068***	.089***	.082***
	(.018)	(.017)	(.018)	(.018)	(.017)	(.018)
Genetic similarity:						
Shared household	.068	.071	.114	.069	.112	.113
	(.244)	(.245)	(.245)	(.245)	(.234)	(.234)
Full nontwin (reference)						
MZ twins	2.389**	2.183*	2.088*	1.928*	1.625	1.411
	(.880)	(.948)	(.959)	(.878)	(.884)	(.841)
DZ twins	-.765	-.848	-.935	-.839	-.974	-1.026
	(.705)	(.700)	(.691)	(.697)	(.688)	(.677)
Adopted	.820	.522	.375	.501	1.038	.825
	(.884)	(.883)	(.876)	(.848)	(.837)	(.816)
Step	1.241	1.027	1.012	1.103	1.280	1.315*
	(.727)	(.707)	(.707)	(.684)	(.667)	(.661)
Half-siblings	-.699	-.603	-.619	-.513	-.314	-.308
	(.459)	(.464)	(.463)	(.473)	(.437)	(.439)
Early-life characteristics:						
Family structure		-.018	-.053	-.089	-.106	-.202
		(.283)	(.281)	(.282)	(.269)	(.267)
Number of siblings born		.022	.020	.038	.023	.030
		(.033)	(.033)	(.033)	(.032)	(.032)
Father's education		.015	.012	-.008	-.015	-.027
		(.023)	(.023)	(.023)	(.022)	(.022)
Farm origin		-.419*	-.406*	-.410*	-.463*	-.409*
		(.192)	(.191)	(.191)	(.184)	(.183)
Family income		.003	.003	.001	.001	.001
		(.003)	(.003)	(.003)	(.003)	(.003)
Protestant (reference)						
Catholic		.083	.106	.064	.065	.086
		(.156)	(.155)	(.155)	(.149)	(.148)
Other religion		-.336	-.389	-.414	-.431	-.494
		(.310)	(.310)	(.307)	(.293)	(.291)

Paternal affection	.410*	.413*	.394*	.418*	.425**
	(.171)	(.170)	(.170)	(.161)	(.161)
Maternal affection	.560**	.570**	.493**	.363*	.351*
	(.171)	(.171)	(.170)	(.163)	(.161)
Paternal abuse	.002	.010	.003	.076	.087
	(.139)	(.139)	(.138)	(.135)	(.134)
Maternal abuse	.070	.097	.105	-.025	.019
	(.157)	(.157)	(.157)	(.152)	(.152)
Parents' marital quality	.216	.215	.254	.155	.169
	(.173)	(.173)	(.172)	(.165)	(.164)
Marital Status					
Married in the first marriage (reference)					
Married in remarriage		.576*			.681**
		(.245)			(.229)
Divorced/Separated		-1.016***			-.711**
		(.268)			(.256)
Widowed		-1.658**			-1.364**
		(.499)			(.479)
Never married		-1.025*			-.720
		(.497)			(.480)
Socioeconomic Characteristics					
High school or less (reference)					
Some college			-.052		-.187
			(.211)		(.200)
College degree			-.058		-.268
			(.223)		(.216)
Post-college			.319		.012
			(.254)		(.245)
Net worth (ln)			.143***		.108***
			(.024)		(.023)
Currently employed			.058		-.412*
			(.211)		(.199)
Ever worked for pay			-.138		.164

				(.524)		(.520)
Occupational education				.240*		.169
				(.093)		(.089)
Occupational income				.103		.120
				(.110)		(.105)
Parents' Current Health:						
Global self-rated health					1.939***	1.871***
					(.126)	(.126)
Number of diagnosed chronic illnesses					-.193***	-.186***
					(.044)	(.044)
Constant	29.334***	26.615***	26.408***	25.245***	18.187***	17.888***
	(.851)	(.994)	(1.001)	(1.188)	(1.093)	(1.255)
Adjusted R2	.046	.073	.077	.078	.101	.108

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

Table 3.15. Unstandardized Coefficients from Fixed-Effects Models Predicting Purpose in Life: WLS, 1993-1994

Variable	(1)	(2)	(3)	(4)	(5)
Children's age and living arrangements					
Nonresidential adult children only (reference group)					
No children	-1.343	-.732	-.902	-.331	.483
	(.907)	(.947)	(.899)	(.890)	(.924)
Minor children only	-2.114**	-1.968**	-1.787**	-1.479*	-1.253*
	(.633)	(.634)	(.630)	(.621)	(.621)
Adult children only, at least one coresidential	-.658*	-.637*	-.505	-.404	-.284
	(.315)	(.315)	(.311)	(.307)	(.304)
At least one minor child and at least one coresidential adult child	-1.235	-1.222	-1.196	-.944	-.889
	(.638)	(.637)	(.629)	(.621)	(.615)
At least one minor child and at least one nonresidential adult child	-1.338**	-1.319**	-1.269**	-1.046*	-1.037*
	(.484)	(.483)	(.477)	(.471)	(.466)
Other characteristics of the parental role					
Total number of children	.016	-.003	.074	.044	.066

	(.088)	(.088)	(.087)	(.086)	(.085)
At least one daughter	-.136	-.141	-.180	-.119	-.172
	(.315)	(.314)	(.310)	(.306)	(.302)
Coresidential child attending college	.542	.511	.272	.024	-.138
	(.564)	(.562)	(.558)	(.554)	(.549)
Age of youngest child	-.013	-.007	.007	.018	.033
	(.028)	(.028)	(.028)	(.028)	(.027)
At least one adopted child	.222	.170	.245	.350	.281
	(.461)	(.461)	(.454)	(.448)	(.443)
At least one stepchild	1.042*	.678	.967*	1.039*	.532
	(.435)	(.481)	(.429)	(.422)	(.463)
At least one child with disability	-1.011	-.901	-.671	-.805	-.479
	(.883)	(.880)	(.871)	(.857)	(.847)
Depressive episode prior to parenthood	-1.170	-1.108	-1.019	-1.019	-.878
	(.637)	(.637)	(.628)	(.619)	(.613)
Gender	.304	.428	.581*	.321	.638*
	(.227)	(.228)	(.276)	(.221)	(.270)
Age	.019	.025	.034	.033	.045
	(.027)	(.027)	(.027)	(.026)	(.027)
Marital Status					
Married in the first marriage (reference)					
Married in remarriage		.555			.677
		(.368)			(.354)
Divorced/Separated		-1.060**			-.982**
		(.377)			(.365)
Widowed		-2.209**			-2.048**
		(.651)			(.626)
Never married		-1.087			-1.227
		(.689)			(.667)
Socioeconomic Characteristics					
High school or less (reference)					
Some college			.712*		.622*
			(.321)		(.312)

College degree			.607		.443
			(.384)		(.375)
Post-college			1.007*		.795
			(.426)		(.417)
Net worth (ln)			.116***		.078**
			(.030)		(.029)
Currently employed			1.064***		.547
			(.304)		(.300)
Ever worked for pay			.526		.756
			(.724)		(.708)
Occupational education			.530***		.482**
			(.144)		(.140)
Occupational income			.047		.052
			(.174)		(.170)
Parents' Current Health:					
Global self-rated health				1.997***	1.782***
				(.172)	(.172)
Number of diagnosed chronic illnesses				-.163**	-.147*
				(.061)	(.061)
Constant	32.959***	32.595***	28.294***	23.237***	20.624***
	(1.280)	(1.303)	(1.592)	(1.485)	(1.720)
Sigma u	4.520	4.503	4.369	4.323	4.216
Sigma e	5.737	5.716	5.642	5.567	5.487
rho	.383	.383	.375	.376	.371

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

Research question 1: How do middle-aged parents compare to their childfree peers with respect to *self-acceptance*?

As shown in Table 3.16, childfree individuals are similar to parents of nonresidential adult children in terms of self-acceptance. Yet, when all variables are included in the full Model 6, individuals who have no children exhibit a higher level of self-acceptance than empty-nest parents ($b = 2.088$, $p < .01$). This suppression effect is explained by differences in marital status and health between childfree persons and parents of nonresidential adult children. Most individuals without children have never been married and tend to report more health problems than empty-nest parents. In turn, being never married and in worse health are associated with lower levels of self-acceptance. Thus, if childfree individuals had been similar to the reference group in terms of marital status and health, they would have reported even higher levels of self-acceptance.

Research question 2: How are diverse configurations of children's age and living arrangements related to parents' *self-acceptance*?

Middle-aged parents who have only minor children do not differ significantly from parents of nonresidential adult children with respect to self-acceptance. Parents who have only coresidential adult children report lower levels of self-acceptance than the reference group. This difference persists when each block of explanatory variables is entered separately in Models 2 – 5, yet the effect becomes nonsignificant in the full Model 6 that includes all variables. Finally, individuals who have at least one minor child and at least one adult child — whether coresiding with parents or living independently — exhibit lower levels of self-acceptance than empty-nest parents. This difference becomes nonsignificant in Model 5 after adjustment for parents' physical health: parents who have both minor and adult children at midlife report more health

problems than their empty-nest peers, and worse health is related to lower levels of self-acceptance. Yet, even though the coefficients become nonsignificant in Model 5, the effect sizes still remain large in magnitude.

Research question 5: To what extent the associations between parental status and *self-acceptance* observed at midlife reflect genetic and environmental influences experienced by parents early in life?

Table 3.17 indicates that in the within-family models taking into account unobserved family influences, childfree individuals have higher levels of self-acceptance than empty-nest parents, although this effect is suppressed by marital status and health, and becomes evident only in the full Model 5 — consistent with the between-family models in Table 3.16. Parents who have only minor children are similar to the reference group in terms of self-acceptance, which is also consistent with the between-family models. Conversely, in the within-family fixed-effects models, individuals who have only coresidential adult children as well as parents of at least one minor child and at least one coresidential adult child do not differ significantly from empty-nest parents. Thus, lower levels of self-acceptance among these groups of parents revealed in the between-family models appear to reflect unobserved family influences shared by siblings rather than true effects of parenthood. Finally, consistent with the between-family models, parents who have at least one minor child and at least one nonresidential adult child exhibit lower levels of self-acceptance than empty-nest parents even when unobserved genetic and early-life environmental influences shared by siblings are taken into account in the within-family models.

As for other configurations of the parental role, the total number of children and age of the youngest child are associated positively with self-acceptance in the between-family models. In contrast, having a child with developmental disability or mental illness is related to lower

levels of parents' self-acceptance, and this association is explained by parental health in the between-family models. Parents who have a child with disability experience more health problems, and worse health is related to lower self-acceptance. In the within-family models having a child with disability is not significantly related to self-acceptance, although the coefficients remain large in magnitude and comparable to the between-family models. Finally, having at least one depressive episode prior to the transition to parenthood is associated with lower levels of self-acceptance at midlife.

Table 3.16. Unstandardized Coefficients and Robust Standard Errors from OLS Models Predicting Self-Acceptance: WLS, 1993-1994

Variable	(1)	(2)	(3)	(4)	(5)	(6)
Children's age and living arrangements						
Nonresidential adult children only (reference group)						
No children	-.133	.248	1.234	.643	1.006	2.088**
	(.677)	(.670)	(.713)	(.673)	(.653)	(.695)
Minor children only	-.545	-.528	-.514	-.411	-.058	-.058
	(.493)	(.486)	(.483)	(.482)	(.474)	(.470)
Adult children only, at least one coresidential	-.914***	-.831**	-.860***	-.625**	-.573*	-.453
	(.243)	(.241)	(.239)	(.240)	(.233)	(.231)
At least one minor child and at least one coresidential adult child	-1.343**	-1.171*	-1.253**	-1.062*	-.859	-.858
	(.463)	(.459)	(.457)	(.460)	(.441)	(.441)
At least one minor child and at least one nonresidential adult child	-.917*	-.825*	-.843*	-.773*	-.652	-.658
	(.373)	(.366)	(.365)	(.361)	(.350)	(.346)
Other characteristics of the parental role						
Total number of children	.100	.131*	.106	.179**	.142*	.153*
	(.061)	(.062)	(.062)	(.062)	(.060)	(.060)
At least one daughter	-.023	-.018	-.048	-.003	.022	.002
	(.248)	(.248)	(.245)	(.245)	(.239)	(.235)
Coresidential child attending college	.579	.409	.406	.041	.028	-.196
	(.463)	(.460)	(.459)	(.457)	(.440)	(.438)
Age of youngest child	.032	.044*	.046*	.060**	.064**	.075***
	(.020)	(.020)	(.020)	(.020)	(.020)	(.020)
At least one adopted child	.064	.086	.044	.002	.174	.060
	(.345)	(.341)	(.342)	(.339)	(.330)	(.329)
At least one stepchild	.581	.498	.281	.363	.574	.167
	(.308)	(.307)	(.351)	(.303)	(.305)	(.343)
At least one child with disability	-1.478*	-1.488*	-1.428*	-1.363*	-1.219	-1.114
	(.705)	(.701)	(.687)	(.691)	(.655)	(.641)
Depressive episode prior to parenthood	-2.699***	-2.627***	-2.474***	-2.642***	-2.405***	-2.339***
	(.510)	(.497)	(.500)	(.490)	(.486)	(.487)
Gender	-.271	-.271	-.128	.121	-.329	.146

	(.172)	(.171)	(.170)	(.204)	(.168)	(.198)
Age	.050*	.045*	.047*	.042*	.063**	.055**
	(.020)	(.020)	(.020)	(.020)	(.019)	(.020)
Genetic similarity:						
Shared household	-.013	-.056	.016	-.088	-.024	-.017
	(.303)	(.302)	(.301)	(.301)	(.288)	(.287)
Full nontwin (reference)						
MZ twins	2.050**	1.708*	1.586*	1.213	1.118	.655
	(.724)	(.781)	(.758)	(.774)	(.881)	(.859)
DZ twins	-1.060	-1.140	-1.266	-1.058	-1.238	-1.261
	(.674)	(.669)	(.672)	(.670)	(.659)	(.651)
Adopted	2.199*	1.833*	1.664*	1.827*	2.348**	2.109*
	(.849)	(.854)	(.825)	(.822)	(.874)	(.844)
Step	1.222	.921	.890	1.018	1.254	1.271
	(.929)	(.875)	(.868)	(.861)	(.842)	(.828)
Half-siblings	-.736	-.679	-.751	-.574	-.364	-.419
	(.561)	(.554)	(.545)	(.552)	(.540)	(.527)
Early-life characteristics:						
Family structure		-.426	-.495	-.492	-.522	-.638*
		(.330)	(.328)	(.329)	(.315)	(.313)
Number of siblings born		.044	.041	.078*	.045	.067
		(.037)	(.038)	(.037)	(.036)	(.036)
Father's education		.026	.022	-.018	-.007	-.041
		(.026)	(.026)	(.026)	(.025)	(.026)
Farm origin		-.147	-.154	-.126	-.186	-.144
		(.220)	(.218)	(.218)	(.210)	(.209)
Family income		.004	.005	.001	.003	.001
		(.003)	(.003)	(.003)	(.003)	(.003)
Protestant (reference)						
Catholic		.164	.177	.125	.156	.146
		(.182)	(.180)	(.180)	(.174)	(.172)
Other religion		.004	-.072	-.138	-.113	-.261
		(.370)	(.371)	(.369)	(.357)	(.359)

Paternal affection	.888***	.891***	.818***	.901***	.851***
	(.194)	(.193)	(.193)	(.188)	(.186)
Maternal affection	.570**	.582**	.433*	.353	.285
	(.202)	(.201)	(.199)	(.195)	(.193)
Paternal abuse	.159	.170	.150	.232	.230
	(.158)	(.157)	(.156)	(.153)	(.150)
Maternal abuse	.195	.248	.219	.070	.135
	(.170)	(.171)	(.168)	(.165)	(.164)
Parents' marital quality	.277	.274	.350	.211	.261
	(.200)	(.200)	(.198)	(.192)	(.191)
Marital Status					
Married in the first marriage (reference)					
Married in remarriage		.293			.408
		(.280)			(.266)
Divorced/Separated		-2.085***			-1.879***
		(.312)			(.302)
Widowed		-2.157***			-1.939***
		(.553)			(.522)
Never married		-2.206***			-2.010***
		(.560)			(.541)
Socioeconomic Characteristics					
High school or less (reference)					
Some college			.472*		.357
			(.228)		(.220)
College degree			.243		.000
			(.270)		(.258)
Post-college			.824**		.531
			(.297)		(.290)
Net worth (ln)			.122***		.075**
			(.025)		(.024)
Currently employed			.133		-.262
			(.248)		(.234)
Ever worked for pay			-.003		.364

				(.603)		(.587)
Occupational education				.365**		.280**
				(.105)		(.102)
Occupational income				.304*		.340**
				(.127)		(.122)
Parents' Current Health:						
Global self-rated health					2.205***	2.031***
					(.140)	(.137)
Number of diagnosed chronic illnesses					-.096*	-.093
					(.049)	(.048)
Constant	29.741***	25.954***	26.055***	24.489***	16.453***	16.712***
	(.980)	(1.132)	(1.127)	(1.352)	(1.240)	(1.413)
Adjusted R^2	.024	.047	.061	.072	.109	.137

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

Table 3.17. Unstandardized Coefficients from Fixed-Effects Models Predicting Self-Acceptance: WLS, 1993-1994

Variable	(1)	(2)	(3)	(4)	(5)
Children's age and living arrangements					
Nonresidential adult children only (reference group)					
No children	.590	1.652	.807	1.348	2.454*
	(.942)	(.978)	(.938)	(.928)	(.961)
Minor children only	-.156	-.156	-.019	.342	.278
	(.657)	(.655)	(.657)	(.647)	(.645)
Adult children only, at least one coresidential	-.417	-.439	-.266	-.190	-.107
	(.327)	(.325)	(.324)	(.320)	(.316)
At least one minor child and at least one coresidential adult child	-.623	-.715	-.578	-.381	-.480
	(.662)	(.658)	(.656)	(.648)	(.640)
At least one minor child and at least one nonresidential adult child	-1.563**	-1.598**	-1.530**	-1.364**	-1.424**
	(.502)	(.499)	(.497)	(.491)	(.484)
Other characteristics of the parental role					
Total number of children	.132	.099	.174	.150	.148

	(.092)	(.091)	(.091)	(.089)	(.089)
At least one daughter	-.039	-.068	-.079	-.012	-.084
	(.327)	(.325)	(.324)	(.319)	(.314)
Coresidential child attending college	-.088	-.152	-.354	-.455	-.664
	(.586)	(.581)	(.582)	(.578)	(.571)
Age of youngest child	.044	.046	.057	.067*	.075**
	(.029)	(.029)	(.029)	(.029)	(.028)
At least one adopted child	.000	-.104	.011	.164	.039
	(.479)	(.476)	(.474)	(.467)	(.461)
At least one stepchild	.746	.749	.640	.750	.592
	(.452)	(.497)	(.448)	(.440)	(.481)
At least one child with disability	-1.753	-1.604	-1.482	-1.586	-1.288
	(.917)	(.910)	(.908)	(.894)	(.881)
Depressive episode prior to parenthood	-2.167**	-1.969**	-2.053**	-2.137**	-1.889**
	(.662)	(.658)	(.655)	(.645)	(.637)
Gender	-.188	-.055	.132	-.198	.189
	(.236)	(.236)	(.288)	(.231)	(.281)
Age	.076**	.077**	.080**	.092**	.089**
	(.028)	(.028)	(.028)	(.027)	(.028)
Marital Status					
Married in the first marriage (reference)					
Married in remarriage		.330			.455
		(.380)			(.368)
Divorced/Separated		-2.302***			-2.228***
		(.389)			(.380)
Widowed		-1.930**			-1.776**
		(.673)			(.651)
Never married		-2.481**			-2.617***
		(.712)			(.693)
Socioeconomic Characteristics					
High school or less (reference)					
Some college			.536		.432
			(.335)		(.325)

College degree			.488 (.400)		.275 (.390)
Post-college			.927* (.445)		.758 (.434)
Net worth (ln)			.112*** (.031)		.064* (.030)
Currently employed			.404 (.317)		-.027 (.312)
Ever worked for pay			.332 (.755)		.644 (.736)
Occupational education			.436** (.150)		.380** (.146)
Occupational income			.199 (.182)		.214 (.177)
Parents' Current Health:					
Global self-rated health				1.950*** (.171)	1.803*** (.170)
Number of diagnosed chronic illnesses				-.089 (.064)	-.082 (.063)
Constant	27.813*** (1.330)	28.060*** (1.346)	24.741*** (1.661)	18.329*** (1.529)	17.434*** (1.776)
Sigma u	4.590	4.565	4.498	4.390	4.319
Sigma e	5.957	5.906	5.887	5.803	5.707
rho	.373	.374	.369	.364	.364

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

Research question 1: How do middle-aged parents compare to their childfree peers with respect to the *index of psychological well-being*?

Tables 3.18 and 3.19 show results from between- and within-family models for the composite indicator of psychological well-being comprising the dimensions of environmental mastery, personal growth, purpose in life, and self-acceptance. As indicated in Table 3.18, in the between-family models, childfree individuals are similar to parents of nonresidential adult children in terms of psychological well-being. Yet, when all explanatory variables are included in the full Model 6, nonparents report higher levels of psychological well-being than the reference group ($b = 1.204$, $p < .05$). This suppression effect is explained by differences in marital status, SES, and health between individuals who have no children and parents of nonresidential adult children. Most participants without children have never been married and tend to have fewer assets and more chronic illnesses than parents whose adult children live independently. In turn, being never married, fewer assets, and more health problems are associated with lower levels of psychological well-being.

Research question 2: How are diverse configurations of children's age and living arrangements related to the *index of psychological well-being*?

Middle-aged parents who have only minor children report lower levels of psychological well-being than empty-nest parents. This difference persists net of observed early-life characteristics, marital and socioeconomic statuses, but is explained by parents' health in Model 5. Parents of minor children report more health problems than their empty-nest peers, and poorer health in turn is related to lower psychological well-being. Parents who have only coresidential adult children as well as parents who have at least one minor child and at least one adult child — whether living with parents or independently — exhibit lower levels of psychological well-being

than parents of nonresidential adult children. These difference are reduced in magnitude nearly by half in the full Model 6 comprising all explanatory variables, yet the effects remain statistically significant and, thus, not explained by early-life family factors, adult marital and socioeconomic statuses, and physical health.

Research question 5: To what extent do the associations between parental status and *psychological well-being* observed at midlife reflect genetic and environmental influences experienced by parents early in life?

As indicated in Table 3.19, in the within-family models, childfree individuals are similar to empty-nest parents with respect to psychological well-being. Parents of only minor children, parents of only coresidential adult children, and individuals who have at least one minor child and at least one coresidential adult child report lower levels of psychological well-being than the reference group even when unobserved family influences shared by siblings are taken into account. Yet, these differences become nonsignificant when physical health is included in Model 5: parents in these three categories report more chronic illnesses than parents of nonresidential adult children, and poorer health is associated with lower psychological well-being. It should be noted, however, that although the coefficients for the presence of coresidential adult children lose statistical significance after adjustment for parents' physical health, the effect sizes remain relatively large compared to the standard errors; thus, physical health does not explain most of the effects of having only coresidential adult children as well as having at least one minor child and at least one coresidential adult child. Finally, being a parent of at least one minor child and at least one nonresidential adult child is associated with lower levels of psychological well-being compared to being an empty-nest parent, and this difference remains unexplained by all observed

variables and unobserved genetic and environmental influences shared by siblings within families.

With respect to other characteristics of the parental role, the total number of children and age of the youngest child are associated positively with psychological well-being in the full between-family Model 6. Yet, in the within-family models in Table 3.19 these associations become nonsignificant, which suggests that the effects of the youngest child's age and the number of children observed at midlife reflect unmeasured early-life family influences shared by siblings. Having at least one stepchild is associated with higher levels of psychological well-being, and this association is explained by parents' marital status both in the between- and within-family models. Parents with stepchildren are more likely than other parents to be in remarriage, and remarried individuals report higher scores on the composite index of psychological well-being than other marital status groups.

In addition, having a child with developmental disability or mental illness is associated with lower levels of psychological well-being among parents. This effect is explained by parents' health and SES in the between-family models in Table 3.18. Parents of children with disability have fewer financial assets and report more health problems than parents who do not have a child with disability. In turn, lower net worth and poorer health are associated with lower levels of psychological well-being. The effect of having a child with disability becomes nonsignificant in the within-family models in Table 3.19 because of increased standard errors, yet the coefficients do not decline appreciably and remain comparable in magnitude to the respective between-family coefficients. Thus, the psychological implications of having a child with disability are explained by parents' adult characteristics rather than unobserved early-life family influences.

Finally, having a depressive episode prior to the transition to parenthood is significantly associated with lower levels of psychological well-being both in the between- and within-family models. Yet, these associations are weaker in the within-family models than in the between-family OLS models, thus indicating that unobserved family influences shared by siblings are partly responsible for the link between depression in young adulthood and psychological well-being at midlife.

Table 3.18. Unstandardized Coefficients and Robust Standard Errors from OLS Models Predicting Psychological Well-Being Scale: WLS, 1993-1994

Variable	(1)	(2)	(3)	(4)	(5)	(6)
Children's age and living arrangements						
Nonresidential adult children only (reference group)						
No children	-.714	-.287	.332	.180	.401	1.204*
	(.570)	(.560)	(.606)	(.555)	(.540)	(.578)
Minor children only	-1.185**	-1.113**	-1.043**	-.945*	-.674	-.561
	(.399)	(.395)	(.395)	(.384)	(.377)	(.371)
Adult children only, at least one coresidential	-1.029***	-.914***	-.901***	-.697***	-.680***	-.501**
	(.204)	(.201)	(.200)	(.197)	(.192)	(.189)
At least one minor child and at least one coresidential adult child	-1.336***	-1.126**	-1.114**	-1.019**	-.825*	-.735*
	(.367)	(.364)	(.362)	(.364)	(.341)	(.343)
At least one minor child and at least one nonresidential adult child	-.904**	-.803**	-.806**	-.742**	-.637*	-.618*
	(.296)	(.289)	(.288)	(.281)	(.276)	(.272)
Other characteristics of the parental role						
Total number of children	.011	.060	.044	.117*	.071	.100*
	(.050)	(.051)	(.051)	(.050)	(.049)	(.048)
At least one daughter	-.088	-.084	-.090	-.078	-.039	-.040
	(.199)	(.199)	(.197)	(.196)	(.189)	(.185)
Coresidential child attending college	.708	.516	.518	.145	.116	-.121
	(.390)	(.388)	(.386)	(.382)	(.372)	(.367)
Age of youngest child	.015	.027	.031	.046**	.045**	.061***
	(.017)	(.017)	(.017)	(.017)	(.016)	(.016)
At least one adopted child	.388	.397	.377	.310	.447	.354
	(.269)	(.266)	(.266)	(.263)	(.253)	(.251)
At least one stepchild	.779**	.655**	.351	.501*	.725**	.214
	(.250)	(.250)	(.286)	(.243)	(.247)	(.273)
At least one child with disability	-1.232*	-1.266*	-1.244*	-1.092	-1.000	-.887
	(.588)	(.585)	(.576)	(.569)	(.541)	(.528)
Depressive episode prior to parenthood	-1.552***	-1.564***	-1.517***	-1.563***	-1.361***	-1.381***
	(.396)	(.382)	(.385)	(.373)	(.361)	(.359)

Gender	.176	.177	.280*	.627***	.120	.620***
	(.141)	(.140)	(.140)	(.165)	(.136)	(.161)
Age	.010	.007	.012	.010	.024	.024
	(.017)	(.017)	(.017)	(.017)	(.016)	(.016)
Genetic similarity:						
Shared household	-.007	-.012	-.054	-.014	-.046	-.056
	(.241)	(.236)	(.235)	(.230)	(.221)	(.217)
Full nontwin (reference)						
MZ twins	2.021**	1.666**	1.592*	1.163*	1.104	.683
	(.606)	(.638)	(.649)	(.576)	(.608)	(.588)
DZ twins	-1.194	-1.217	-1.312*	-1.148	-1.289*	-1.295*
	(.638)	(.625)	(.620)	(.625)	(.628)	(.617)
Adopted	.885	.477	.332	.514	.970	.786
	(.801)	(.802)	(.792)	(.774)	(.804)	(.791)
Step	.880	.617	.603	.716	.960	.994
	(.654)	(.604)	(.607)	(.592)	(.571)	(.576)
Half-siblings	-.648	-.626	-.637	-.483	-.319	-.270
	(.427)	(.419)	(.414)	(.419)	(.398)	(.392)
Early-life characteristics:						
Family structure		-.222	-.257	-.276	-.326	-.396
		(.266)	(.264)	(.265)	(.252)	(.251)
Number of siblings born		.019	.017	.054	.022	.049
		(.032)	(.032)	(.032)	(.031)	(.031)
Father's education		.048*	.045*	-.003	.016	-.023
		(.022)	(.022)	(.022)	(.021)	(.021)
Farm origin		-.355	-.342	-.366*	-.384*	-.354*
		(.186)	(.185)	(.182)	(.176)	(.174)
Family income		.004	.004	.000	.003	.000
		(.002)	(.002)	(.002)	(.002)	(.002)
Protestant (reference)						
Catholic		.015	.038	-.024	.018	.016
		(.150)	(.150)	(.148)	(.143)	(.141)
Other religion		.078	.024	-.104	-.024	-.192

	(.307)	(.308)	(.300)	(.290)	(.286)
Paternal affection	.674***	.675***	.590***	.685***	.620***
	(.161)	(.160)	(.158)	(.153)	(.150)
Maternal affection	.591***	.603***	.420**	.395*	.292
	(.165)	(.165)	(.161)	(.156)	(.153)
Paternal abuse	.206	.213	.198	.256*	.253*
	(.129)	(.128)	(.126)	(.122)	(.120)
Maternal abuse	.199	.226	.223	.091	.137
	(.146)	(.146)	(.142)	(.139)	(.136)
Parents' marital quality	.186	.187	.277	.114	.189
	(.162)	(.162)	(.159)	(.153)	(.152)
Marital Status					
Married in the first marriage (reference)					
Married in remarriage		.496*			.619**
		(.228)			(.211)
Divorced/Separated		-.937***			-.727**
		(.251)			(.237)
Widowed		-1.779***			-1.603***
		(.479)			(.437)
Never married		-1.207*			-1.014*
		(.473)			(.450)
Socioeconomic Characteristics					
High school or less (reference)					
Some college			.649**		.517**
			(.189)		(.180)
College degree			.586**		.379
			(.209)		(.200)
Post-college			1.158***		.861***
			(.229)		(.222)
Net worth (ln)			.129***		.094***
			(.022)		(.021)
Currently employed			.468*		.071
			(.201)		(.190)

Ever worked for pay				.517 (.515)		.713 (.506)
Occupational education				.317*** (.084)		.241** (.081)
Occupational income				.265** (.101)		.298** (.097)
Parents' Current Health:						
Global self-rated health					2.153*** (.118)	1.939*** (.117)
Number of diagnosed chronic illnesses					-.064 (.039)	-.064 (.039)
Constant	32.578*** (.869)	28.869*** (.971)	28.685*** (.971)	26.078*** (1.119)	19.628*** (1.036)	18.412*** (1.157)
Adjusted R^2	.022	.049	.058	.092	.132	.165

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

Table 3.19. Unstandardized Coefficients from Fixed-Effects Models Predicting Psychological Well-Being Scale: WLS, 1993-1994

Variable	(1)	(2)	(3)	(4)	(5)
Children's age and living arrangements					
Nonresidential adult children only (reference group)					
No children	-.520 (.753)	.082 (.786)	-.287 (.744)	.315 (.733)	.950 (.758)
Minor children only	-1.264* (.525)	-1.167* (.527)	-1.115* (.522)	-.752 (.511)	-.704 (.510)
Adult children only, at least one coresidential	-.660* (.262)	-.648* (.261)	-.516* (.257)	-.446 (.253)	-.331 (.249)
At least one minor child and at least one coresidential adult child	-1.137* (.530)	-1.121* (.529)	-1.107* (.521)	-.878 (.512)	-.879 (.505)
At least one minor child and at least one nonresidential adult child	-1.276** (.402)	-1.268** (.401)	-1.253** (.395)	-1.035** (.388)	-1.063** (.382)
Other characteristics of the parental role					

Total number of children	.062	.044	.108	.085	.099
	(.073)	(.073)	(.072)	(.071)	(.070)
At least one daughter	-.152	-.159	-.194	-.134	-.186
	(.262)	(.261)	(.257)	(.252)	(.248)
Coresidential child attending college	.343	.314	.102	-.061	-.224
	(.468)	(.467)	(.462)	(.456)	(.450)
Age of youngest child	.012	.016	.025	.036	.035
	(.023)	(.023)	(.023)	(.023)	(.022)
At least one adopted child	.092	.044	.099	.223	.147
	(.383)	(.382)	(.376)	(.369)	(.364)
At least one stepchild	1.052**	.772	.976**	1.035**	.615
	(.361)	(.399)	(.355)	(.348)	(.380)
At least one child with disability	-1.298	-1.208	-1.002	-1.120	-.845
	(.733)	(.731)	(.721)	(.706)	(.696)
Depressive episode prior to parenthood	-1.252*	-1.185*	-1.130*	-1.140*	-1.017*
	(.529)	(.529)	(.520)	(.510)	(.503)
Gender	.347	.447*	.645**	.344	.668**
	(.189)	(.189)	(.228)	(.182)	(.221)
Age	.039	.044	.045*	.053*	.055*
	(.022)	(.023)	(.022)	(.022)	(.022)
Marital Status					
Married in the first marriage (reference)					
Married in remarriage		.410			.535
		(.306)			(.291)
Divorced/Separated		-.979**			-.878**
		(.313)			(.300)
Widowed		-1.737**			-1.590**
		(.541)			(.514)
Never married		-1.183*			-1.270*
		(.572)			(.547)
Socioeconomic Characteristics					
High school or less (reference)					
Some college			.651*		.555*

			(.266)		(.257)
College degree			.669*		.493
			(.318)		(.308)
Post-college			1.111**		.886*
			(.353)		(.342)
Net worth (ln)			.120***		.085***
			(.025)		(.024)
Currently employed			.466		-.002
			(.252)		(.247)
Ever worked for pay			.661		.825
			(.600)		(.581)
Occupational education			.418***		.368**
			(.119)		(.115)
Occupational income			.123		.134
			(.144)		(.140)
Parents' Current Health:					
Global self-rated health				1.951***	1.778***
				(.141)	(.141)
Number of diagnosed chronic illnesses				-.090	-.086
				(.051)	(.050)
Constant	30.877***	30.648***	27.208***	21.430***	19.652***
	(1.063)	(1.082)	(1.318)	(1.223)	(1.412)
Sigma u	3.793	3.779	3.660	3.586	3.494
Sigma e	4.764	4.745	4.672	4.584	4.505
rho	.388	.388	.380	.380	.376

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

Because results reported in Tables 3.4 – 3.19 suggest that parents who have both minor and adult children may be at a particular psychological disadvantage compared to empty-nest parents, I conducted additional analysis (among parents only) to examine the potential role of the magnitude of difference in children's ages. For each parent, I calculated the difference between the age of the youngest child and the age of the oldest child. The models shown in Table 3.20 include interactive terms between the structural configurations of the parental role and children's age difference. The models test whether the psychological implications of children's age and living arrangements depend on the extent to which one's youngest and oldest children are close in age.

As indicated in Table 3.20, difference in the ages of children does not moderate the association between parental status and mental health. Regardless of the age difference between their youngest and oldest children, parents who have both minor and adult children repot more depressive symptoms and lower levels of psychological well-being than empty-nest parents. In addition, I tested interaction terms including squared age difference (not shown in Table 3.20), and there was no evidence of the moderating effects either.

Table 3.20. Moderating Effects of Age Difference between the Youngest and Oldest Child: Parents Only (N = 5,212), WLS, 1993-1994

Variable	Depressive Symptoms		PWB Scale	
	OLS	Fixed-Effects	OLS	Fixed-Effects
	(1)	(2)	(3)	(4)
Children's age and living arrangements				
Nonresidential adult children only (reference group)				
Minor children only	.125	.019	-1.072	-.993
	(.104)	(.141)	(.577)	(.724)
Adult children only, at least one coresidential	.097*	.060	-.988***	-.600*
	(.039)	(.053)	(.203)	(.272)
At least one minor child and at least one coresidential adult child	.215**	.291*	-1.634***	-1.513*
	(.080)	(.120)	(.381)	(.618)
At least one minor child and at least one nonresidential adult child	.298***	.339***	-1.265***	-1.663***
	(.059)	(.087)	(.312)	(.443)
Age difference between youngest and oldest children	-.007	-.011	-.055	-.045
	(.006)	(.008)	(.030)	(.043)
Age difference × Minor only	.017	.005	.099	.140
	(.019)	(.026)	(.107)	(.133)
Age difference × Adult only, at least one coresidential	.004	.005	.035	.045
	(.008)	(.011)	(.046)	(.059)
Age difference × At least one minor and at least one coresidential adult	-.009	-.008	.036	.046
	(.011)	(.016)	(.054)	(.084)
Age difference × At least one minor and at least one nonresidential adult	-.007	-.008	.039	.047
	(.009)	(.012)	(.045)	(.064)
Constant	2.880	2.993	32.415	30.504

Note: All models adjust for other structural configurations of the parental role, parents' gender, age, socioeconomic characteristics, marital status, physical health, and lifetime history of depression.
*p < .05. **p < .01. ***p < .001.

3.3.1. Two-Level Rando- Coefficient Models

Table 3.21 shows results from two-level models with random intercepts and random slopes. The first level of these models consists of individuals that are nested within level-2 units — sibling dyads. Each model in this table corresponds to a specific psychological outcome. All models include structural characteristics of the parental role, parents' lifetime history of depression, gender, age, and siblings' genetic similarity and shared early-life environment. Thus, the focus of the models is on the variation in the psychological effects of parental characteristics within and between sibling dyads.

Fixed regression coefficients representing average levels of mental health across families indicate that childfree individuals report lower levels of personal growth and purpose in life than empty-nest parents, but are similar to the reference group with respect to all other psychological outcomes. Middle-aged parents who have only minor children do not differ from parents of nonresidential adult children in terms of depressive symptoms, autonomy, positive relations with others, and self-acceptance, yet parents of minor children report lower levels of environmental mastery, personal growth, and purpose in life. Parents of coresidential adult children, and individuals who have at least one minor child and at least one adult child — whether living in the parental home or separately — exhibit higher levels of distress and lower levels of nearly every dimension of positive psychological well-being than empty-nest parents.

Table 3.21. Two-Level Linear Random-Coefficient Models Predicting Depressive Symptoms and Psychological Well-Being: WLS, 1993-1994

Variable	Depr. Symptoms	Autonomy	Env. Mastery	Personal Growth	Positive Relations	Purpose in Life	Self-acceptance	PWB Scale
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Fixed Part								
Constant	2.999***	30.054***	29.219***	35.601***	31.237***	35.007***	29.598***	32.385***
	(.155)	(.896)	(.850)	(.935)	(.905)	(.965)	(.991)	(.806)
Children's age and living arrangements								
Nonresidential adult children only (reference group)								
No children	.102	.844	-.272	-1.274*	-1.077	-1.334*	-.078	.698
	(.107)	(.617)	(.586)	(.644)	(.625)	(.665)	(.684)	(.555)
Minor children only	.055	-.659	-1.076**	-1.446**	-.489	-1.737***	-.513	-1.197**
	(.078)	(.446)	(.425)	(.466)	(.453)	(.482)	(.496)	(.402)
Adult children only, at least one coresidential	.093**	-.583**	-.716***	-1.254***	-.328	-1.108***	-.876***	-.989***
	(.037)	(.214)	(.203)	(.223)	(.217)	(.231)	(.237)	(.193)
At least one minor child and at least one coresidential adult child	.163*	-.703	-1.238**	-1.300**	-.260	-1.503***	-1.288**	-1.316***
	(.075)	(.432)	(.410)	(.451)	(.438)	(.466)	(.479)	(.389)
At least one minor child and at least one nonresidential adult child	.198***	-.356	-1.117***	-.789*	-.680*	-.953**	-.966**	-.946**
	(.058)	(.332)	(.316)	(.347)	(.337)	(.359)	(.369)	(.299)
Other characteristics of the parental role								
Total number of children	-.018	-.029	.007	-.031	.103	-.018	.102	.016
	(.010)	(.058)	(.055)	(.061)	(.059)	(.063)	(.064)	(.052)
At least one daughter	-.010	-.207	-.228	-.127	-.199	-.081	-.025	-.095
	(.038)	(.217)	(.206)	(.227)	(.220)	(.234)	(.241)	(.196)
Coresidential child attending college	-.079	.336	.212	.914*	-.336	.978*	.527	.671
	(.068)	(.394)	(.374)	(.410)	(.399)	(.425)	(.437)	(.354)
Age of youngest child	.002	.032	.030	-.007	.024	-.003	.033	.014
	(.003)	(.019)	(.018)	(.020)	(.019)	(.020)	(.021)	(.017)
At least one adopted child	-.060	.400	.293	.681*	.163	.356	.063	.359

	(.055)	(.312)	(.296)	(.326)	(.316)	(.336)	(.346)	(.281)
At least one stepchild	-.105*	1.505***	.742**	1.257***	.426	.742*	.618	.809**
	(.052)	(.298)	(.283)	(.311)	(.302)	(.322)	(.331)	(.269)
At least one child with disability	.170	-.390	-1.530**	-.859	-1.238*	-1.121	-1.496*	-1.235*
	(.106)	(.610)	(.579)	(.636)	(.617)	(.657)	(.676)	(.549)
Depressive episode prior to parenthood	.317***	.064	-1.906***	.070	-1.657***	-1.622***	-2.657***	-1.517***
	(.076)	(.432)	(.410)	(.450)	(.437)	(.456)	(.478)	(.389)
Gender	.135***	-1.377***	.067	.848***	1.966***	.122	-.265	.195
	(.027)	(.153)	(.145)	(.160)	(.155)	(.165)	(.169)	(.138)
Age	-.013***	.014	.077***	-.057**	.020	-.014	.052**	.014
	(.003)	(.018)	(.018)	(.019)	(.019)	(.020)	(.020)	(.017)
Genetic similarity & shared env't:								
Shared household	.035	.449	.063	.301	.001	-.271	-.022	-.004
	(.045)	(.266)	(.246)	(.278)	(.263)	(.282)	(.286)	(.237)
Full nontwin (reference)								
MZ twins	-.131	1.611	2.389*	1.165	1.321	2.444*	2.047	2.016*
	(.181)	(1.065)	(.982)	(1.112)	(1.049)	(1.127)	(1.144)	(.946)
DZ twins	.017	-.907	-.770	-1.585*	-.760	-1.385	-1.058	-1.198*
	(.114)	(.694)	(.640)	(.725)	(.684)	(.735)	(.746)	(.617)
Step	.022	.638	1.244	.218	1.204	.797	1.224	.887
	(.137)	(.848)	(.782)	(.886)	(.836)	(.898)	(.912)	(.754)
Adopted	-.113	.958	.821	.285	1.879*	.193	2.195*	.883
	(.186)	(.977)	(.901)	(1.021)	(.963)	(1.034)	(1.050)	(.868)
Half-siblings	.083	.380	-.695	-.412	-.538	-.791	-.733	-.642
	(.075)	(.467)	(.431)	(.488)	(.460)	(.494)	(.502)	(.415)

Random Part

Level-two random effects:

Random intercept variance:

$\Psi_{11(\text{overall})}$	.081	4.266	2.297	4.715	2.778	3.692	3.023	2.863
	(.018)	(.597)	(.530)	(.652)	(.603)	(.688)	(.722)	(.481)
$\Psi_{11(\text{full})}$	.079	4.379	2.232	5.087	3.252	3.727	3.641	2.939
	(.018)	(.610)	(.539)	(.669)	(.641)	(.699)	(.7480)	(.490)
$\Psi_{11(\text{mz})}$	.200	3.876	4.774	.293	2.748	.001	.001	.001
	(.114)	(3.122)	(3.193)	(2.679)	(2.377)	(.020)	(.001)	(.001)
$\Psi_{11(\text{dz})}$	.072	1.944	6.149	6.795	1.944	2.745	.250	5.222
	(.058)	(1.801)	(2.291)	(2.513)	(1.056)	(2.212)	(2.123)	(1.936)
$\Psi_{11(\text{step})}$	.054	.001	1.950	.001	.001	.001	3.747	.001
	(.067)	(.001)	(2.085)	(.001)	(.001)	(.001)	(3.049)	(.070)
$\Psi_{11(\text{adopted})}$	.458	6.448	2.386	.001	6.448	12.639	.001	1.451
	(.152)	(3.290)	(2.511)	(.001)	(2.545)	(4.841)	(.001)	(2.082)
$\Psi_{11(\text{half})}$	.057	7.613	4.591	3.147	4.864	7.834	6.194	4.020
	(.036)	(1.651)	(1.394)	(1.355)	(.906)	(1.922)	(1.914)	(1.182)

Random slope variance:

Ψ_{22} (nonparents)	.085	.425	1.384	.562	3.637	3.367	3.237	.961
	(.107)	(3.459)	(3.269)	(.604)	(1.493)	(4.418)	(4.563)	(.696)
Ψ_{33} (minor children)	.00008	.135	6.862	.003	3.056	.291	.336	.406
	(.002)	(.394)	(4.515)	(.062)	(4.712)	(.673)	(.765)	(.613)
Ψ_{44} (cores. adult children)	.018	4.532	4.252	8.845	3.039	3.746	3.304	5.081
	(.015)	(2.687)	(2.521)	(3.043)	(2.763)	(3.148)	(3.349)	(2.241)
Ψ_{55} (minor & cores. adult)	.354	2.032	7.682	7.502	.0003	1.649	.973	1.926
	(.176)	(2.390)	(.786)	(4.337)	(.025)	(5.774)	(2.175)	(2.358)
Ψ_{66} (minor & nonres. adult)	.032	.406	.008	.303	3.797	.298	3.974	.078
	(.111)	(.500)	(.094)	(.557)	(4.021)	(.682)	(4.805)	(.261)

Level-one variance:								
$\theta_{ij\ overall}$	.876	27.412	26.402	30.131	29.353	32.965	35.918	22.648
	(.023)	(.724)	(.696)	(.795)	(.775)	(.870)	(.948)	(.598)
θ_{full}	.867	27.381	26.016	30.122	30.495	32.795	36.055	22.763
	(.162)	(.223)	(.215)	(.240)	(.241)	(.252)	(.269)	(.196)
θ_{mz}	.878	26.621	31.617	27.524	28.021	22.240	25.956	18.025
	(1.860)	(2.299)	(2.453)	(2.337)	(2.345)	(2.076)	(2.161)	(1.736)
θ_{dz}	.800	26.254	40.359	38.464	35.450	44.941	33.744	31.569
	(.639)	(1.462)	(1.853)	(1.881)	(1.699)	(2.026)	(1.675)	(1.594)
θ_{step}	.776	27.101	30.408	32.668	35.167	30.006	37.235	23.989
	(.662)	(1.727)	(1.845)	(1.966)	(2.062)	(1.876)	(2.185)	(1.600)
$\theta_{adopted}$	1.146	35.133	30.967	28.157	35.195	46.396	26.965	25.133
	(2.114)	(2.484)	(2.211)	(2.063)	(2.415)	(3.016)	(2.101)	(1.948)
θ_{half}	.745	27.222	27.331	26.208	26.739	29.424	36.453	19.955
	(.298)	(1.022)	(.956)	(.988)	(.938)	(1.093)	(1.187)	(.820)
Log likelihood	-7975.2	-18055.1	-17743.6	-18297.8	-18111.3	-18477.4	-18629.3	-17440.9

Note: All models adjust for parents' socioeconomic characteristics, marital status, and physical health.
*p < .05. **p < .01. ***p < .001.

The interpretation of the random part is less straightforward because random parameters are not estimated directly, although individual random intercepts and slopes can be predicted. Instead, the model estimates only variance components of random parameters. The random intercept is a random effect associated with level-2 units (sibling dyads). The interpretation of the intercept variance ψ_{11} depends on covariates since the intercept refers to an individual with $X_{ij} = 0$. The intercept variance is the variability in the vertical positions of sibling dyad-specific regression lines for parents who have only nonresidential adult children (the reference group). The intercept corresponds to the mental health score for parents of nonresidential adult children.

With respect to the random intercept variance, comparison of level-2 (between-family) and level-1 (within-family) variances suggest that there is much more variation in each mental health outcome within than between sibling dyads. The likeness of siblings in the same family is expressed by the intraclass correlations indicating which proportion of variance in each psychological outcome is situated at the family level after adjustment for the structural configurations of the parental role. The within-family, or intraclass, correlation is calculated as the proportion of level-2 variance to the total variance: $\psi_{11} / (\psi_{11} + \theta_{ij})$. The intraclass correlations for specific psychological outcomes in Table 3.21 are as follows: 0.085 for depressive symptoms, 0.135 for autonomy, 0.080 for environmental mastery, 0.135 for personal growth, 0.086 for positive relations with others, 0.101 for purpose in life, 0.078 for self-acceptance, and 0.112 for the composite index of psychological well-being. Thus, roughly 10% of variance in mental health outcomes is situated between families, whereas 90% of variance is within families, suggesting that within-family variation is large relative to the between-family variation.

The model on which estimates in Table 3.21 are based specifies heteroskedasticity of the random intercept variance, i.e. between-family variance. Consistent with the behavior genetic theory it assumes that the intercept variance depends on the degree of siblings' genetic relatedness and, thus, should vary across different types of sibling dyads. For each mental health outcome, I fitted both a model with homoskedastic random intercept variance and a heteroskedastic model, and conducted likelihood-ratio tests to examine whether between-family variance differs significantly by the type of the sibling dyad, i.e. whether heteroskedastic model fits significantly better than the homoskedastic one. Random intercept variance depends on siblings' relatedness for depressive symptoms ($p = .045$), autonomy ($p = .028$), personal growth ($p = .009$), and purpose in life ($p = .027$). In contrast, tests for level-2 heteroskedasticity fail to reach statistical significance at $p < .05$ in the case of environmental mastery ($p = .144$), positive relations with others ($p = .063$), self-acceptance ($p = .072$), and the composite index of psychological well-being ($p = .126$). Yet, all of these values are either significant or close to significance at the .10 level, thus providing suggestive support for heteroskedasticity.

The random slopes are random effects associated with level-2 units (sibling dyads). Because the focal family structure variables in these models are dichotomous, I interpret the results in terms of differences in means rather than slopes. As shown in Table 3.21, differences in means are trivial in magnitude compared to their standard errors for most psychological outcomes and structural configurations of the parental role, indicating little variation around the mean levels in specific sibling dyads. The most variation around the mean tends to be in families that have coresidential adult children. This pattern suggests that parents with coresidential adult children — whether only adult children or in combination with minor children — are more

heterogeneous in terms of the association between parenthood and mental health than parents who have no children, only minor children, or nonresidential adult children.

For the interpretation of the differences in means, the fixed effects should be taken into account (Snijders & Bosker, 1999). For example, for depression, the difference in the mean level is significantly larger among parents that have both minor and coresidential adult children. The difference in the mean value compared to the reference category for family *j* is $\beta_j + \zeta_{1j}$. This is a normally distributed random variable with mean β_j and standard deviation $\sqrt{\Psi_{55}}$. Since about 95% of the probability of a normal distribution is within two standard deviations from the mean, approximately 95% of the families have differences in means between $\beta_j \pm 2\sqrt{\Psi_{55}}$. The values of average difference ± two standard deviations range from –0.432 to 0.758 for parents who have at least one minor child and at least one coresidential adult child. Although the fixed effect is positive ($b = .163$, $p < .05$) indicating that these parents tend to have higher levels of depression than the reference group (empty-nest parents), there is significant variation across families, as indicated by differences in the mean values. For example, in one in 40 sibling dyads, parents who have both minor children and coresidential adult children report depression levels that are exp (–0.432) = .649 symptoms lower than depression of empty-nest parents. On the other end of the distribution, in one in 40 sibling dyads, the sibling who has minor children and coresidential adult children exhibits the level of depression that is exp (0.758) = 2.134 symptoms higher than the other sibling who has only nonresidential adult children. Thus, the high effects of having both minor and coresidential adult children are 1.5 depressive symptoms larger than low effects.

The last component of the two-level random coefficient model is level-1 variance, which is the estimated residual variance for each sibling around the sibling dyad-specific differences in

means. The behavior genetic theory predicts that level-1 variance should differ by the degree of siblings' genetic relatedness. Specifically, residual variance should be smaller for more closely related siblings and larger among more distant relatives. The smallest variance should be observed among MZ twins, whereas the largest variance is expected among step- and adopted siblings.

For each mental health outcome, I fitted both a model with homoskedastic residual variance and a heteroskedastic model, and conducted likelihood-ratio tests to examine whether within-family variance differs significantly by the type of the sibling dyad. Likelihood-ratio tests show little evidence that level-1 variance differs across different types of sibling dyads for depression ($p = .065$), autonomy ($p = .278$), and self-acceptance ($p = .099$). In contrast, level-1 variance differs significantly by siblings' genetic relatedness in models for environmental mastery ($p = .003$), personal growth ($p = .057$), purpose in life ($p = .004$), and the composite index of psychological well-being ($p = .015$).

However, the comparison of residual variance across the types of the sibling dyads suggests that level-1 variance is not consistently smaller among more closely related siblings than among more distant relatives, even in models with psychological outcomes for which there is statistically significant evidence of heteroskedasticity at level 1. There are too few cases in several categories, such as MZ twins and adopted siblings, so variance estimates are unstable and do not provide a definitive test of the behavioral genetic predictions. These will be tested in more detail with similar models in the MIDUS data set in Chapter 4 that contains 998 twin dyads.

3.4. Gender Differences in the Associations between Parenthood and Mental Health

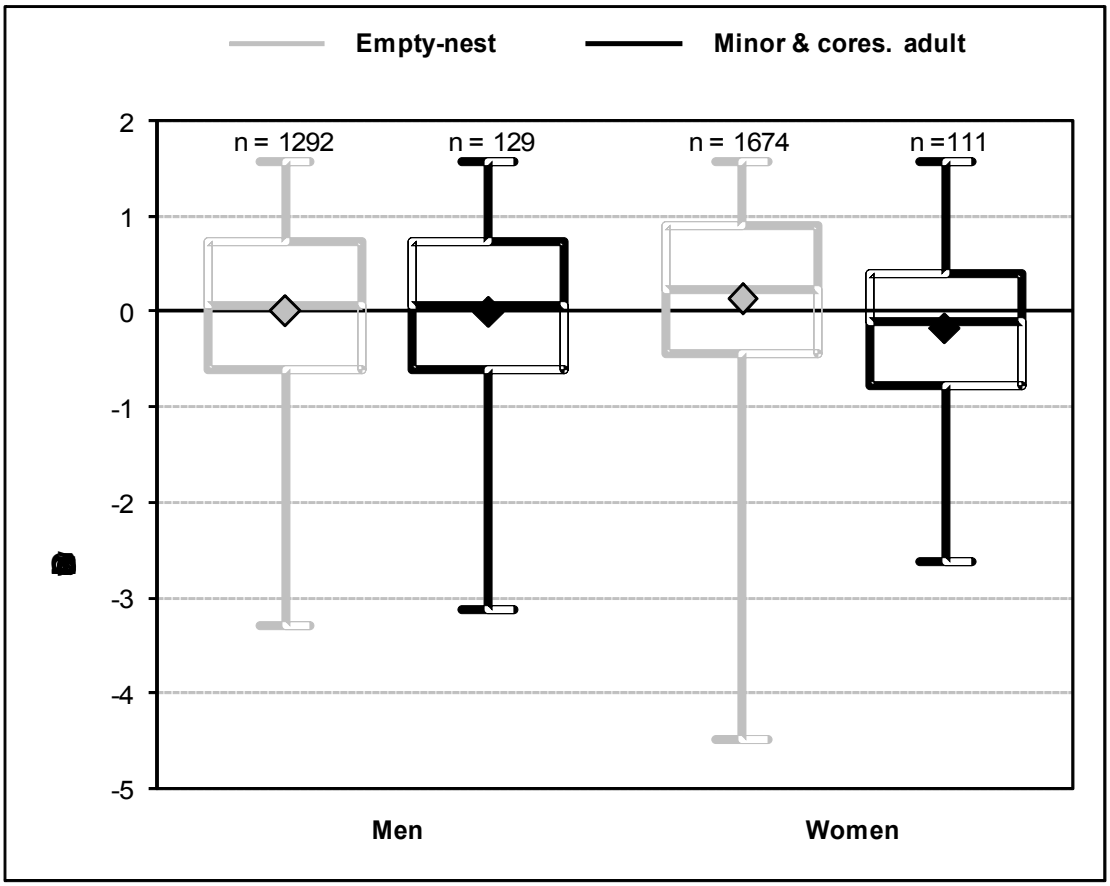
Research question 4: Do psychological implications of children's age and living arrangements differ for mothers and fathers?

Gender differences were explored by testing interaction terms involving parents' gender and the structural characteristics of the parental role. For each mental health outcome, I tested five interaction terms. Given eight outcomes, the total number of interactions tested was 40. Multiple comparison correction was performed by Bonferroni's method assuming five independent comparisons representing five mutually exclusive categories based on parental status, children's age, and living arrangement. Taking into account the number of comparisons, I considered only interaction terms significant at least at the .001 level (.05/40 = .00125).

Men and women in all configurations of children's age and living arrangements are similar with respect to depressive symptoms, autonomy, positive relations with others, and self-acceptance both in the between- and within-family models. Interactions between parental configurations and gender that are significant at the .01 level were observed for environmental mastery, personal growth, purpose in life, and the composite index of psychological well-being. All significant interaction terms involve parents who have both minor children and coresidential adult children. This category comprises 129 men and 111 women, and the overwhelming majority of these parents have been continuously married to their first spouse, so this structural configuration is not a result of remarriage.

Men in this category do not differ from empty-nest fathers, empty-nest mothers exhibit the highest level of well-being, whereas mothers of at least one minor child and at least one coresidential adult child report lower levels of well-being than all other parents. These differences are illustrated in Figure 3.1 for personal growth.

Figure 3.1. Gender Differences in the Association between Parenthood and Personal Growth

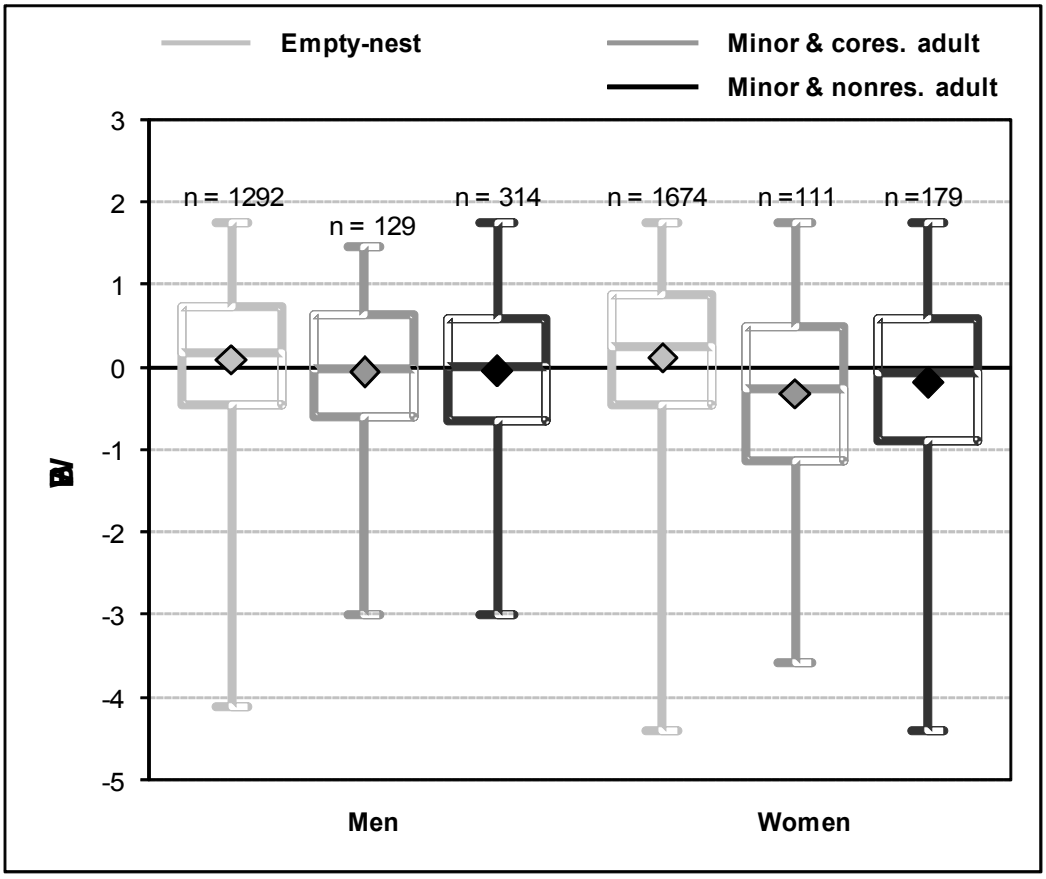


Moreover, in the model with the composite index of psychological well-being as the outcome, there is another interaction term significant at the .001 level that reveals similar patterns for parents who have both minor and adult children — whether living in the parental household or separately. As shown in Figure 3.2, middle-aged women who have both minor and adult children — regardless of adult children's living arrangements — report lower levels of psychological well-being than empty-nest mothers, whereas men in the three parental status categories do not differ significantly in terms of psychological well-being.

The category of parents who have at least one minor child and at least one nonresidential adult child includes 314 men and 179 women. Fifty-eight percent of men and 63% of women in this category were in their first and only marriage at the time of the interview, whereas 33% of

men and 25% of women were in remarriage. This situation when parents have minor children at home and adult children living elsewhere appears to be associated with remarriage to some extent, yet because percentages of men and women in the first marriage and in remarriage do no differ significantly, gender differences in the association between this structural configuration of the parental role and mental health are not explained by marital status.

Figure 3.2. Gender Differences in the Association between Parenthood and the Composite Index of Psychological Well-Being



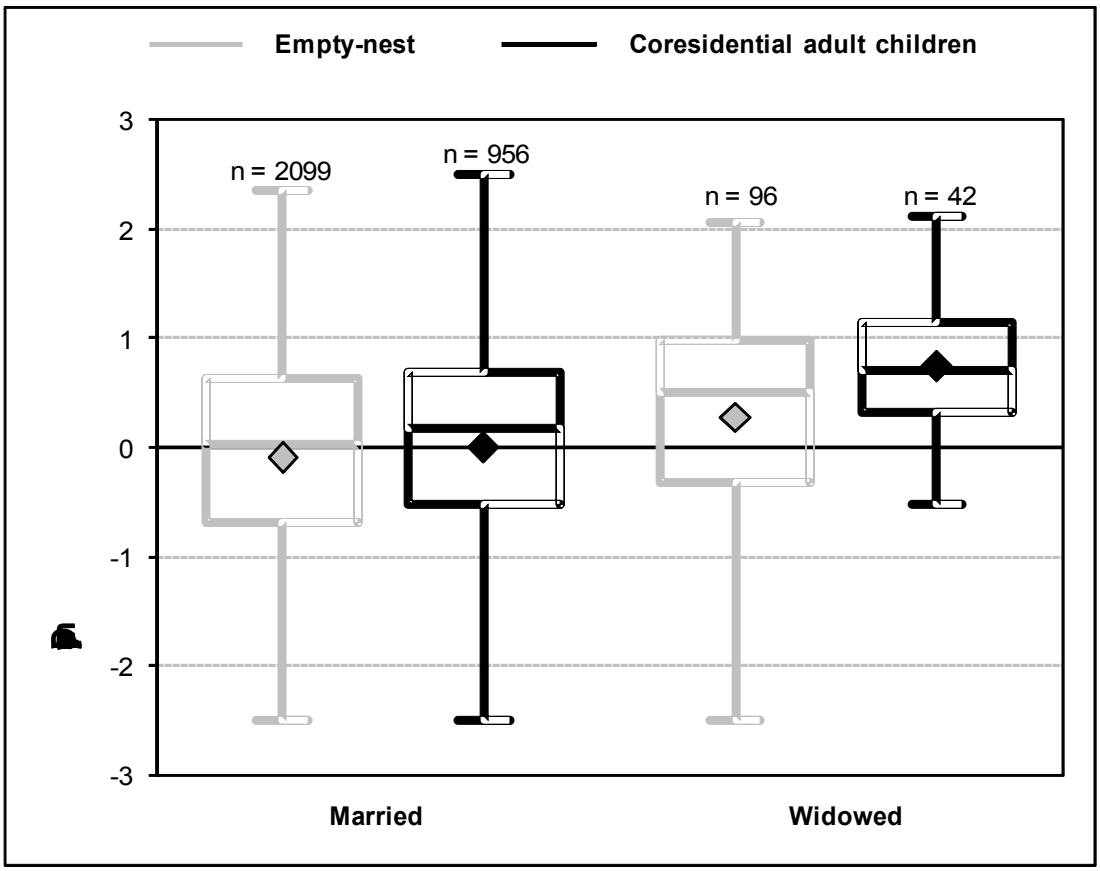
It appears that for women it is particularly detrimental when they have both minor and adult children, especially when adult children live in the parental household. Women bear larger costs than men in terms of psychological well-being in this situation. For personal growth this

gender difference is not explained by any of the observed variables, yet the respective interaction term declines in magnitude and becomes nonsignificant in the within-family fixed-effects model, thus suggesting that this difference does not reflect the effect of parenthood, but rather is a spurious reflection of unobserved genetic and environmental influences shared by siblings within families. For environmental mastery, purpose in life, and psychological well-being gender differences are explained by health. Fathers who have at least one coresidential adult child and at least one minor child are not different from empty-nest fathers in terms of health. In contrast, mothers who have both minor and adult children report worse self-rated health and more chronic illnesses than mothers of nonresidential adult children.

In addition, I examined whether the structural configurations of the parental role interact with marital status and gender in their effects on parents' mental health. Because of the large number of interactions tested (6 parental status categories by 5 marital status categories), I applied Bonferroni's correction for multiple comparisons and considered only interaction terms significant at the .001 level (.05/30 = 0.0017). No interaction terms satisfied this criterion in the models for autonomy, positive relations with others, and purpose in life. Conversely, in models for depressive symptoms, environmental mastery, self-acceptance, and the composite index of psychological well-being there was a significant interaction between being widowed and having only coresidential adult children. There are 42 widowed participants in my sample who live with their adult children, and 40 of them are women.

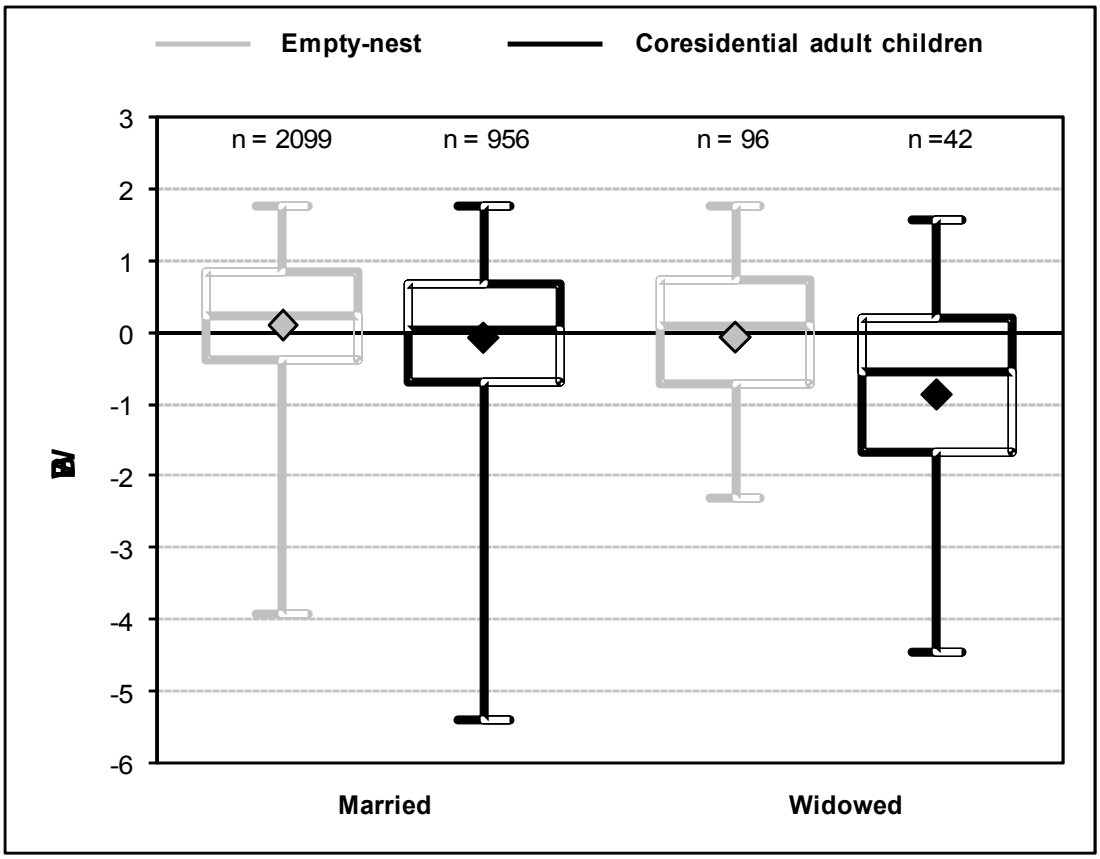
As shown in Figure 3.3, women who are married report similar levels of depressive symptoms regardless of whether their adult children live in the parental household or independently. In contrast, women who are widowed and living with at least one of their adult children exhibit significantly more depressive symptoms than empty-nest widowed mothers.

Figure 3.3. Interactive Effects of Marital and Parental Statuses on Women's Depression



Interactive effects of parental and marital statuses for environmental mastery, self-acceptance, and the composite index of psychological well-being are consistent with each other and illustrated in Figure 3.4. Married women regardless of living arrangements of their adult children and widowed women whose adult children live separately report similar levels of psychological well-being. In contrast, widowed mothers of at least one coresidential adult child report significantly lower levels of psychological well-being than their married and empty-nest widowed peers. These differences — although statistically significant — are quite modest in size.

Figure 3.4. Interactive Effects of Marital and Parental Statuses on Women's Psychological Well-Being



The differences in self-acceptance and the composite index of psychological well-being are not explained by all observed variables in the between-family OLS models, and the interaction terms remain statistically significant in the within-family fixed-effects models that take into account unobserved family influences shared by siblings. In the between-family models for depressive symptoms and environmental mastery, marital status differences between empty-nest mothers and mothers of coresidential adult children remain unexplained by all observed variables, yet the interaction coefficients decline in magnitude substantially and become nonsignificant in the within-family models. This suggests that lower levels of environmental mastery and higher levels of depression among widowed mothers who live with their adult

children do not reflect true effects of marital and parental statuses but are driven by unobserved genetic and early-life environmental family influences that simultaneously elevate women's distress at midlife and increase the likelihood of living with one's adult children. An example of such influences could intergenerational transmission of psychological and physical vulnerability. Adult children who are prone to psychological and physical health problems may be selected out of achieving normative adult statuses and into coresidence with parents.

3.5. Quality of Parent-Adult Child Relationships

In 1993, questions about the quality of relationships were asked about a selected *adult* child of the *graduates* but not their siblings. Therefore, analyses in Table 3.22 focus only on graduates who have at least one child over 18 while excluding (1) siblings of the WLS graduates, and (2) nonparents and parents who have only minor children. In addition, a preliminary analysis showed that frequency of contact with a selected adult child was not significantly related to parents' mental health and neither explained nor moderated the effects of the structural characteristics of the parental role; therefore, frequency of contact is not included in Table 3.22.

Table 3.22 indicates that emotional closeness and similarity of outlook between parents and their selected adult child is associated strongly and negatively with parents' depressive symptoms, and positively with each dimension of psychological well-being. The causal direction is difficult to establish with these contemporaneous measures because current affective state may influence one's retrospective appraisals of parent-child relationships. These associations are similar for mothers and fathers, as revealed by nonsignificant interactions with gender (not shown). Yet, although quality of parent-child relationships, as measured by closeness and similarity with a selected child, is a strong predictor of parents' mental health, a comparison of Models 1 and 2 in Table 3.22 suggests that most effects of the structural configurations of the

parental role remain significant when the quality variables are added to the models. Thus, the structural and qualitative aspects of parenthood are each independent predictors of parents' mental health. Moreover, the moderation analysis showed that the associations between the structural configurations of the parental role and mental health do not depend on the quality of parent-adult child relationships.

Table 3.22. Unstandardized Coefficients from OLS Models with Quality of Parent-Adult Child Relationships: WLS, Graduates, 1993

Variable	Depressive Symptoms		Autonomy		Environmental Mastery		Personal Growth	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Children's Age & Living Arrangements								
Nonresidential adult children only (reference group)								
Adult children only, at least one coresidential	.129*	.111	-.663*	-.575*	-.764*	-.721*	-1.235**	-1.111**
	(.065)	(.065)	(.273)	(.252)	(.358)	(.357)	(.397)	(.396)
At least one minor child and at least one coresidential adult child	.167*	.156*	-.969	-.761	-1.174*	-1.504	-2.077*	-1.785*
	(.078)	(.075)	(.835)	(.834)	(.801)	(.799)	(.889)	(.885)
At least one minor child and at least one nonresidential adult child	.060	.097	-.305	-.480	-.990*	-.963*	-.405	-.161
	(.105)	(.105)	(.596)	(.596)	(.472)	(.471)	(.635)	(.633)
Relationship Quality								
Closeness and similarity		-.212***		1.005***		1.168***		1.408***
		(.054)		(.001)		(.295)		(.327)
Constant	.901	.362	25.963	28.523	42.157	45.133	50.010	53.595
Adjusted R^2	.036	.045	.018	.026	.026	.047	.024	.048

All models adjust for parents gender, age, lifetime history of depression, and other characteristics of the parental role.
*p < .05. **p < .01. ***p < .001.

*Table 3.22 (*continued*)*

Variable	Positive Relations		Purpose in Life		Self-Acceptance		PWB Scale	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Children's Age & Living Arrangements								
Nonresidential adult children only (reference group)								
Adult children only, at least one coresidential	-.538 (.385)	-.328 (.378)	-1.056** (.402)	-.911* (.399)	-.964* (.411)	-.956* (.407)	-.909** (.341)	-.775* (.338)
At least one minor child and at least one coresidential adult child	-1.012 (.863)	-.518 (.845)	-1.809* (.900)	-1.767* (.894)	-1.765* (.920)	-1.371 (.911)	-1.846* (.763)	-1.531* (.756)
At least one minor child and at least one nonresidential adult child	.111 (.616)	.526 (.604)	-1.095* (.543)	-.990 (.539)	-1.125* (.545)	-1.119* (.551)	-1.086* (.545)	-.961 (.540)
Relationship Quality								
Closeness and similarity		2.385*** (.311)		1.650*** (.330)		1.901*** (.336)		1.516*** (.279)
Constant	14.527	20.600	32.060	36.263	36.351	41.192	43.449	47.311
Adjusted R^2	.032	.077	.039	.085	.016	.026	.062	.079

All models adjust for parents gender, age, lifetime history of depression, and other characteristics of the parental role.
*p < .05. **p < .01. ***p < .001.

3.6. Summary of Main Findings

Finding for each mental health outcomes and three types of models are summarized in Table 3.23. This table shows whether childfree individuals, parents who have only minor children, and parents who have both minor and adult children are similar to or different from the empty-nest parents with respect to depressive symptoms and psychological well-being, net of all control variables in the respective full models. OLS models make comparisons across individuals and do not account for the fact that individual participants belong to sibling groups. Although these models use robust standard errors with corrections for non-independence of observations within clusters (i.e. sibling dyads), in this approach correlated residual variances between the two siblings are treated as a nuisance rather than a substantive focus of interest (Snijders & Bosker, 1999).

Fixed-effects models compare siblings within families to take into account unobserved family influences shared by siblings that might confound the association between parenthood and mental health. If differences in mental health among the parental status categories are appreciably reduced in fixed-effects models compared to OLS models, this suggests that OLS estimates are likely to reflect unobserved family heterogeneity rather than true effects of parenthood on mental health. A limitation of the fixed-effects models is that they do not use between-family information and, thus, do not account for unobserved family influences specific to each sibling. In contrast, the estimates for the two-level linear random-coefficients models are obtained using the generalized least squares (GLS) estimator that is a matrix-weighted average of the between- and within-family estimators. Thus, if the model is true, the GLS estimator is more efficient because it uses both within- and between-family information (Rabe-Hesketh & Skrondal, 2005).

Table 3.23. Summary of Findings for the Structural Characteristics of the Parental Role: WLS, 1993 – 1994

Mental Health Outcomes	Compared to Empty-Nest Parents								
	Nonparent			Minor children only			Coresidential adult only		
	OLS	FE	RC	OLS	FE	RC	OLS	FE	RC
Depressive symptoms	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	+	n.s.	+
Autonomy	+	n.s.	n.s.	n.s.	n.s.	n.s.	–	n.s.	–
Environmental mastery	n.s.	n.s.	n.s.	–	n.s.	–	–	n.s.	–
Personal growth	n.s.	n.s.	–	–	–	–	–	–	–
Positive relations	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Purpose in life	n.s.	n.s.	–	–	–	–	–	–	–
Self-acceptance	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	–	n.s.	–
PWB Index	n.s.	n.s.	n.s.	–	–	–	–	–	–

Note: "OLS" means ordinary least squares models; "FE" means fixed-effects models; "RC" means two-level random-coefficient models; "n.s." means no significant association; "+" reflects levels of a given mental health outcome that are higher compared to empty-nest parents; "—" reflects levels of a given mental health outcome that are lower compared to empty-nest parents

Table 3.23 *(cont'd)*

Mental Health Outcomes	**Compared to Empty-Nest Parents**					
	Minor + Coresidential adult			**Minor + Nonresidential adult**		
	OLS	FE	RC	OLS	FE	RC
Depressive symptoms	+	n.s.	+	+	+	+
Autonomy	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Environmental mastery	–	–	–	–	–	–
Personal growth	–	–	–	–	–	–
Positive relations	n.s.	n.s.	n.s.	n.s.	n.s.	–
Purpose in life	–	–	–	–	–	–
Self-acceptance	–	n.s.	–	–	–	–
PWB Index	–	–	–	–	–	–

Note: "OLS" means ordinary least squares models; "FE" means fixed-effects models; "RC" means two-level random-coefficient models; "n.s." means no significant association; "+" reflects levels of a given mental health outcome that are higher compared to empty-nest parents; "—" reflects levels of a given mental health outcome that are lower compared to empty-nest parents.

Results are fairly consistent across different types of models. Nonparents are similar to parents of nonresidential adult children in terms of depressive symptoms and psychological well-being both in the between- and within-family models. Moreover, after adjustment for marital status and health in the between-family models, childfree individuals exhibit even higher levels of environmental mastery, purpose in life, self-acceptance, and the composite index of psychological well-being than empty-nest parents. However, the two-level random coefficients models reveal lower levels of personal growth and purpose in life among nonparents.

Parents who have only minor children at midlife do not differ from their empty-nest counterparts with respect to depressive symptoms, autonomy, positive relations with others, and self-acceptance in the between- and within-family models. However, parents of minor children report lower levels of environmental mastery, personal growth, purpose in life, and the composite indicator of psychological well-being, and these differences largely persist net of all explanatory variables in the between-family models as well as in the within-family models adjusting for unobserved genetic and environmental influences shared by siblings.

Compared to empty-nest parents, individuals who have only coresidential adult children report higher levels of depression and lower levels of autonomy, environmental mastery, and self-acceptance in the between-family OLS models and mixed random coefficients models. Yet, these differences largely disappear in the within-family models, which suggests that certain unobserved early-life influences shared by siblings within families both increase the likelihood of intergenerational coresidence at midlife and reduce parents' mental health. In contrast, lower levels of purpose in life, personal growth, and the composite index of psychological well-being among parents of coresidential adult children persist in the within-family models. When differences in mental health between empty-nest parents and parents who coreside with their

adult children are explained, it is mostly due to parents' adult SES and health. Parents of at least one coresidential adult child tend to have lower SES and worse health than their empty-nest peers, and these factors are in turn associated with lower levels of mental health.

Parents of at least one minor child and at least one coresidential adult child report higher levels of depressive symptoms than empty-nest parents in the between family models. This difference is explained by parents' adult SES and health in the between-family models and by unobserved genetic and early-life environmental influences in the within-family models. Further, parents who have both minor and coresidential adult children exhibit lower levels of environmental mastery, personal growth, and purpose in life in both between- and within family models, and these effects remain unexplained. In contrast, lower levels of self-acceptance among this group of parents compared to the reference group are explained by unobserved family influences in the within-family models. Finally, no differences are revealed with respect to autonomy and positive relations with others. Findings from the mixed random coefficients models are consistent with the between- and within-family models.

Compared to empty-nest parents, parents of at least one minor child and at least one nonresidential adult child exhibit more depressive symptoms and lower levels of environmental mastery, purpose in life, self-acceptance, and the composite index of psychological well-being both in the between- and within-family models, which suggests that these differences are not artifacts of unobserved genetic and early-life environmental influences shared by siblings. In contrast, parents who have minor and nonresidential adult children are similar to the reference group in terms of autonomy, personal growth, and positive relations with others.

Two-level random coefficients models show that there is much more variation in each mental health outcome within than between sibling dyads. Roughly 10% of variance in mental

health outcomes is situated between families, whereas 90% of variance is within families. Further, the models reveal few differences in means within specific sibling dyads. The most variation tends to be in families that have coresidential adult children. This pattern suggests that parents with coresidential adult children — whether only adult children or in combination with minor children — are more heterogeneous in terms of the association between parenthood and mental health than childfree individuals, parents of only minor children, or parents of nonresidential adult children. Finally, between-dyad (level-2) variance and residual within-dyad (level-1) variance do not consistently vary across different types of sibling dyads. This pattern is not consistent with the behavior genetic theory that assumes greater similarity in phenotypes among more closely related individuals.

Men and women in all configurations of children's age and living arrangements are similar with respect to depressive symptoms, autonomy, positive relations with others, and self-acceptance both in the between- and within-family models. All significant interaction terms include parents who have both minor children and coresidential adult children. Men in this category do not differ from empty-nest fathers, whereas empty-nest mothers exhibit the highest level of well-being, and mothers of at least one minor child and at least one coresidential adult child report lower levels of well-being than all other parents. Moreover, middle-aged women who have both minor and adult children — regardless of adult children's living arrangements — report lower levels of psychological well-being than their male and female peers, whereas empty-nest mothers report the highest levels of well-being.

Women who are married report similar levels of depressive symptoms regardless of whether their adult children live in the parental household or independently. In contrast, women who are widowed and living with at least one of their adult children exhibit significantly more

depressive symptoms than empty-nest widowed mothers. Married women regardless of living arrangements of their adult children and widowed women whose adult children live separately report similar levels of psychological well-being. Yet, widowed mothers of at least one coresidential adult child report significantly lower levels of psychological well-being than their married and empty-nest widowed peers.

CHAPTER 4. RELATIONSHIPS WITH CHILDREN AND PARENTS' MENTAL HEALTH: MIDUS I & MIDUS II

This chapter examines psychological implications of the *qualitative* aspects of the parental role and potential differences in these implications for mothers and fathers. The measures of the qualitative aspects of the parental role include the overall quality of relationships with children and perceived satisfaction with parental provision (see Chapter 2 for the detailed description of variables). Analyses in this chapter complement those in Chapter 3 that focused on the *structural* context of parenthood to explore the multidimensionality of the parental experience. Quality of relationships with children and satisfaction with parental provision are used as focal predictor variables in all models, whereas depression and six dimensions of positive psychological well-being are mental health outcomes. The analyses in this chapter are based on a subsample of MIDUS I and MIDUS II data comprising full nontwin siblings, and MZ and DZ twins who participated in both waves of the study.

I use three types of models. First, OLS and logistic models with lagged dependent variables (LDV) estimate the associations between qualitative aspects of the parental role measured at Time 1 and parents' mental health measured at Time 2 while adjusting for baseline levels of mental health. LDV models make between-individual comparisons and produce robust standard errors to account for nonindependence of observations in the sample. Second, fixed-effects pooled time-series models (FE) estimate the effects of changes in the predictor variables between the two MIDUS waves on changes in mental health outcomes while taking into account unobserved heterogeneity due to unmeasured time-invariant characteristics. The FE models are based on the within-individual comparisons, but do not make substantive use of the fact that participants in this sample are related as siblings and twins. Similarly to the LDV models, the

nonindependence of observations across individuals is treated as a nuisance, and robust standard errors are used to take this into account. The third type of models is the three-level random intercept model that simultaneously makes within-individual comparisons between waves as well as compares siblings and twins within families.

The analysis begins with descriptive statistics for the pooled sample of main respondents, siblings, and twins, with men and women being compared within each of the two waves (Table 4.1). Table 4.2 presents summary statistics for main respondents, siblings, and twins separately. Then I provide bivariate associations for the focal study variables in the male subsample (Table 4.3) and female subsample (Table 4.4). The results from multivariate LDV and FE models for relationship quality, perceived satisfaction with parental provision, and work-family balance are shown in Tables 4.5 – 4.18. Further, Tables 4.19 – 4.24 show results from three-level random intercept models. Finally, Figures 4.1 – 4.3 illustrate significant three-way interactive effects between parental status, gender, and the qualitative aspects of the parental role.

The purpose of this empirical chapter is mainly the presentation and description of findings. The meaning and significance of the results reported below is discussed in Chapter 5 that focuses on the interpretation and discussion of findings from the two analytic chapters.

4.1. Summary Statistics for the Study Variables

Table 4.1 Summary Statistics for the Study Variables, by Wave and Gender: Pooled Sample of Main Respondents, Siblings, and Twins, MIDUS I & II, 1995-2005

Variable	MIDUS I		MIDUS II	
	Men (n = 726)	Women (n = 1,005)	Men (n = 726)	Women (n = 1,005)
Psychological outcomes:				
Depression	.097	.117	.059***	.103
Autonomy	16.375 (3.136)	16.316 (3.314)	16.681 (2.910)	16.411 (3.198)
Environmental mastery	16.541 (3.319)	16.313 (3.375)	16.992 (3.161)	16.823 (3.205)
Personal growth	17.670*** (3.063)	18.169 (3.030)	16.817*** (3.155)	17.549 (3.095)
Positive relations with others	15.667*** (3.988)	17.145 (3.840)	16.501*** (3.760)	17.502 (3.647)
Purpose in life	17.043 (3.353)	16.936 (3.433)	16.471 (3.330)	16.434 (3.274)
Self-acceptance	16.813 (3.393)	17.014 (3.353)	16.485 (3.660)	16.526 (3.815)
Psychological well-being scale (PWB)	16.685** (2.269)	16.981 (2.274)	16.691 (2.533)	16.833 (2.509)
Structural characteristics of the parental role:				
Parental status (Parent = 1)	.826	.846	.872	.884
Total number of children	2.296 (1.622)	2.356 (1.601)	2.546 (1.793)	2.582 (1.800)
At least one child ≤ 18	.398	.390	.267	.276
At least one daughter	.647	.691	.694	.728
At least one coresidential child > 18	.154	.170	.163	.196
Age of youngest child	19.523 (10.138)	20.196 (10.855)	24.840 (11.518)	25.863 (12.342)
Age of oldest child	25.132 (10.915)	25.974 (12.075)	30.719 (11.903)	31.866 (13.411)
At least one adopted child	.051	.039	.065*	.039
At least one stepchild	.101	.083	.119	.109
At least one child with disability	.037	.049	.052***	.095
At least one child with emotional problems	.132***	.202	.165***	.241
Qualitative aspects of the parental role:				
Overall relationship quality	7.900*** (1.668)	8.437 (1.470)	7.926*** (1.605)	8.405 (1.447)
Perceived satisfaction with parental provision	3.415 (.491)	3.428 (.485)	3.438 (.497)	3.429 (.498)

Parents' sociodemographic characteristics:				
Age	47.958 (11.694)	47.140 (12.080)	56.654 (11.643)	55.833 (12.025)
White	.950	.957		
Black	.017	.018		
Other race	.033	.025		
Genetic similarity:				
Full nontwin siblings (reference)	.534	.506		
MZ twins	.189	.192		
DZ twins	.277	.302		
Early-life characteristics:				
Intact family	.862	.831		
Father's education	4.971 (2.964)	4.887 (2.753)		
Mother's education	5.111 (2.494)	4.922 (2.407)		
Mother worked for pay	.630	.631		
Family was on welfare	.033**	.063		
Importance of religion	3.203* (.850)	3.294 (.809)		
Number of siblings	4.550 (3.621)	4.751 (3.529)		
Paternal affection	2.755 (.731)	2.688 (.781)		
Maternal affection	3.222*** (.570)	3.050 (.713)		
Paternal discipline	3.009*** (.667)	2.864 (.776)		
Maternal discipline	2.873 (.601)	2.863 (.654)		
Physical health at 16	4.497* (.740)	4.413 (.819)		
Mental health at 16	4.263*** (.893)	4.102 (1.019)		
Marital Status				
Married in the first marriage (reference)	.650*	.600	.628**	.550
Married in remarriage	.148	.140	.174	.153
Divorced/Separated	.091*	.120	.101	.122
Widowed	.007***	.047	.026***	.103
Never married	.103	.093	.070	.069
Socioeconomic Characteristics				
Less than high school	.044**	.078	.048	.059
High school	.249*	.298	.234*	.281
Some college	.260	.298	.258*	.314
College degree	.238**	.181	.228*	.185

Post-college	.208***	.143	.231***	.163
Household income	67,530*** (49,925)	58,339 (46,493)	82,846* (51,961)	76,426 (53,358)
Currently employed	.698***	.621	.565**	.502
Average hours worked per week	31.724*** (22.844)	23.885 (21.777)	31.457*** (22.557)	21.351 (20.047)
Parents' Current Health:				
Global self-rated health	7.643 (1.389)	7.721 (1.483)	3.608 (1.033)	3.628 (.976)
Number of diagnosed chronic illnesses	1.866*** (2.029)	2.377 (2.339)	2.068*** (2.440)	2.507 (2.312)

Note: Means/proportions with standard deviations in parentheses (where applicable). Asterisks denote significant gender differences: $^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

Longitudinal analyses in this chapter are based on the same persons who participated in both waves. This restriction necessarily imposes sample biases, such as a greater likelihood of retaining higher-SES individuals in the follow-up. Yet, only such a panel design provides an opportunity to examine true within-person effects of changes in relationship quality on changes in mental health over time.

As shown in Table 4.1, 10% of men and 12% of women had depression at Time 1, whereas 6% of men and 10% ($p < .001$) of women reported depression at Time 2. Depression is measured as having experienced serious depressive symptoms in the twelve months prior to the interview. Participants who reported four or more symptoms were assigned the value of 1 on this dichotomous indicator as being at risk for clinical depression. Women demonstrate higher levels of personal growth, positive relations with others, and the composite indicator of psychological well-being (PWB), whereas men and women are similar in terms of autonomy, environmental mastery, purpose in life, and self-acceptance. These patterns are consistent with the distribution of mental health by gender in the WLS reported in Chapter 3.

Roughly 85% of participants in this sample are parents, and this percentage is similar for men and women in both waves. With respect to the structural context of parenthood, the average

number of children in the study sample is 2.3 for men and women at Time 1 and 2.5 at Time 2. Roughly 40% of men and women had at least one minor child in MIDUS I, yet only about one fourth of participants reported having children under 18 in Wave II. Seventy percent of men and women had at least one daughter. With respect to intergenerational coresidence, more women than men reported at least one coresidential adult child (19 and older) in both waves: 17% versus 15% at Time 1 and 19% versus 16% at Time 2, although these differences fail to reach statistical significance.

The average age of the youngest child was about 20 years for both men and women at Time 1 and 25 years at Time 2. The average age of the oldest child in this sample was 25 years in Wave 1, and 30.7 years for fathers and 31.9 years for mothers in Wave 2 (the gender difference is in the expected direction, although not significant). Five percent of men and 4% of women had at least one adopted child at Time 1, whereas 6.5% of men versus 4% of women ($p < .05$) had an adopted child at Time 2. Ten percent of men versus 8% of women reported having at least one stepchild in Wave 1, and 12% of men versus 11% of women had a stepchild in Wave 2. These patterns are consistent with the WLS and other studies showing that men are more likely than women to have both step- and adopted children. Similarly, consistent with the WLS, there is a pronounced difference in men's and women's reports of their children's chronic problems. In both MIDUS waves, more women than men reported having a child with disability: 3.7% of men versus 4.9% of women in Wave 1 and 5.2% of men versus 9.5% of women ($p < .001$) in Wave 2. This difference is even more dramatic for reporting children's emotional problems: 13.2% of men versus 20.2% of women ($p < .001$) at Time 1, and 16.5% of men versus 24% of women ($p < .001$) at Time 2. The discrepancy in reporting children's health problems between mothers and fathers may be explained by social and psychological factors. Because of the traditional division

of labor in the family, women have spent more time caring for and interacting with their children and, thus, are better than men aware of their children's chronic conditions. Further, mothers may be more attuned than fathers to children's problems and feel more strongly affected by their children's difficulties because of social psychological factors, such as differential orientation and expectations men and women bring to parenthood. Moreover, women tend to be more strongly affected psychologically by stressful events happening to members of their social networks. It is also possible that fathers are more likely than mothers to distance themselves from children who have problems and less likely to acknowledge their children's problems, even being well aware of them.

Compared to fathers, mothers report higher levels of the overall quality of relationships with children in both waves ($p < .001$). Conversely, mothers and fathers are similar in terms of self-reported perceived satisfaction with parental provision.

With respect to parents' sociodemographic characteristics, both fathers and mothers were 47-48 years old on average at Time 1 and 56-57 years old at Time 2. Roughly 95% of participants are White, about 2% are Black, and the rest identified themselves as belonging to other racial groups. Fifty-three percent of men and 50.6% of women are full nontwin siblings, about 19% of men and women are MZ twins, and 28% of men and 30% of women are DZ twins.

As for early-life characteristics, 86% of men and 83% of women grew up in intact families, and 63% had mothers who worked for pay at least at some point when their children were growing up. Slightly over 3% of men and 6.3% of women ($p < .01$) reported that there was at least one period in their childhood when their family was on welfare. Women report greater importance of religion in their families of origin than men ($p < .05$). Retrospective measures of relationships with parents in the family of origin indicate that men report higher levels of

maternal affection and paternal discipline than women. Compared to women, men report better physical ($p < .05$) and, particularly, mental health ($p < .001$) at age 16.

In this sample, 65% of men versus 60% of women ($p < .05$) were married to their first spouse at Time 1, while these proportions declined to 63% and 55%, respectively ($p < .01$). Roughly 14% of respondents were married to their second or higher-order spouse at Time 1, whereas in Wave 2, 17.4% of men and 15.3% of women were in remarriage. About 10% of men and 12% of women were divorced or separated in both waves. Consistent with well-documented patterns, there are dramatic gender differences in widowhood that increase with age: women were much more likely than men to be widowed, especially at Time 2, and this gap reflects men's higher mortality and greater likelihood of remarriage upon marital disruption. Finally, approximately 10% of men and 9% of women in Wave 1 and roughly 7% of men and women in Wave 2 have never been married. The lack of gender differences in the proportions of the never married is consistent with the WLS findings (Chapter 3)

With respect to socioeconomic characteristics, women were significantly more likely than men to report not having graduated from high school at Time 1 ($p < .01$), but not at Time 2. Similarly, slightly more women than men ($p < .05$) did not continue their education after high school graduation. In contrast, men were more likely than women to obtain college degrees and postgraduate education. Seventy percent of men and 62% of women were employed at Time 1, whereas only 56.5% of men and 50% of women worked for pay at Time 2. Men who were employed worked on average 31 hours per week in both waves, whereas employed women reported working on average 24 hours per week in Wave 1 and 21 hours in Wave 2. As expected, men had higher levels of household income than women. Finally, Table 4.1 indicates that both men and women reported similar levels of self-rated health in both waves, although women had

on average more chronic illnesses than men. It is noteworthy than self-rated health was appreciably worse at Time 2 compared to Time 1 for both men and women, although the number of diagnosed chronic conditions did not increase as dramatically between the waves.

Table 4.2 presents summary statistics for main respondents, siblings, and twins separately. Twins are similar to main respondents and their siblings in terms of depression and psychological well-being as well as the qualitative aspects of the parental role. Similarly to the graduates and siblings in the WLS, one of the major differences between the twins and the other MIDUS samples is that twins are on average 3-4 years younger than main respondents and their siblings. Other differences between the subsamples arise mostly from the difference in age. At both waves twins are more likely to have at least one child under 18, and twins' youngest and oldest children are on average two years younger than children of main respondents and siblings. Also, main respondents are less likely than siblings and twins (11% versus 18% and 20%, respectively, $p < .001$) to have a coresidential adult child at home at Wave 2. Children of main respondents are somewhat older, and whereas it is relatively common for children in their early 20s to live with parents, the rates of coresidence decline noticeably for older children in their late 20s and 30s (White, 1994). Another important difference is that main respondents have higher levels of education than siblings and, especially, twins. Main respondents were less likely than siblings and twins to stop their education at a high school diploma and more likely to pursue post-graduate degrees.

Table 4.2 Summary Statistics for the Study Variables for Main Respondents, Siblings, and Twins, by Wave: MIDUS I & II, 1995-2005

Variable	Wave I			Wave II		
	Main	Siblings	Twins	Main	Siblings	Twins
Psychological outcomes:						
Depression	.13	.09	.12	.08	.09	.08
Autonomy	16.32 (3.13)	16.59 (3.13)	16.17 (3.34)	16.79 (2.92)	16.60 (3.09)	16.36 (3.13)
Environmental mastery	16.52 (3.29)	16.31 (3.45)	16.31 (3.43)	17.15 (3.03)	16.88 (3.23)	16.79 (3.21)
Personal growth	18.09 (3.12)	17.74 (3.18)	18.06 (2.93)	17.12 (3.16)	17.21 (3.19)	17.31 (3.10)
Positive relations with others	16.25 (4.12)	16.63 (3.87)	16.56 (3.97)	16.63* (4.07)	17.21 (3.61)	17.18 (3.65)
Purpose in life	17.13 (3.15)	16.91 (3.42)	16.97 (3.48)	16.65 (3.28)	16.36 (3.32)	16.43 (3.28)
Self-acceptance	16.98 (3.28)	16.78 (3.52)	17.01 (3.30)	16.32 (3.91)	16.50 (3.73)	16.58 (3.70)
Psychological well-being scale	16.88 (2.23)	16.83 (2.31)	16.87 (2.27)	16.82 (2.54)	16.74 (2.57)	16.78 (2.48)
Structural characteristics of parental role:						
Parental status (Parent = 1)	.82	.85	.83	.86	.89	.88
Total number of children	2.27 (1.61)	2.48 (1.66)	2.25 (1.57)	2.44* (1.61)	2.75 (1.85)	2.48 (1.81)
At least one child ≤ 18	.31***	.37	.43	.22*	.27	.29
At least one daughter	.64	.69	.67	.68	.73.	.71
At least one coresidential child > 18	.16	.15	.16	.11***	.18	.20
Age of youngest child	21.78*** (10.65)	20.69 (10.95)	18.65 (10.09)	27.61*** (12.25)	25.92 (12.32)	24.24 (11.55)
Age of oldest child	27.46*** (11.62)	26.77 (12.02)	24.11 (11.12)	27.46*** 11.62	26.76 (12.02)	24.11 (11.12)

Table 4.2 *(cont'd)*

At least one adopted child	.05	.03	s.05	.06	.04	.05
At least one stepchild	.08	.09	.08	.10	.13	.11
At least one child with disability	.04	.04	.04	.07	.08	.08
At least one child with emotional problems	.20	.20	.17	.24	.19	.21
Qualitative aspects of parental role:						
Overall relationship quality	8.16 (1.79)	8.10 (1.52)	8.33 (1.51)	8.08 (1.56)	8.14 (1.52)	8.20 (1.52)
Perceived satisfaction with parental provision	3.40 (.52)	3.41 (.49)	3.44 (.47)	3.42 (.52)	3.45 (.48)	3.42 (.50)
Parents' sociodemographic characteristics:						
Age	49.00*** (12.15)	49.22 (12.05)	45.70 (11.49)	58.06*** (12.11)`	57.31 (12.05)	54.67 (11.46)
White	.95	.96	.97	.94	.96	.95
Black	.02	.01	.02	.02	.01	.02
Other race	.03	.03	.01	.04	.05	.03
Early-life characteristics:						
Intact family	.84	.84	.84			
Father's education	4.99 (3.03)	4.77 (2.77)	4.91 (2.81)			
Mother's education	5.11 (2.57)	4.93 (2.39)	5.00 (2.43)			
Mother worked for pay	.61*	.60	.66			
Family was on welfare	.03*	.04	.06			
Importance of religion	3.25 (.81)	3.31 (.82)	3.22 (.84)			
Number of siblings	4.02* (2.95)	4.71 (3.94)	4.90 (3.49)			
Paternal affection	2.68 (.81)	2.72 (.76)	2.73 (.74)			
Maternal affection	3.05* (.67)	3.07 (.67)	3.19 (.65)			

Table 4.2 *(cont'd)*

Paternal discipline	2.86 (.76)	2.87 (.72)	2.98 (.73)			
Maternal discipline	2.80* (.63)	2.80 (.65)	2.94 (.61)			
Physical health at 16	4.45 (.81)	4.43 (.80)	4.45 (.77)			
Mental health at 16	4.10 (1.04)	4.17 (.98)	4.19 (.94)			
Marital Status:						
Married in the first marriage	.57	.64	.62	.54	.59	.59
Married in remarriage	.12	.15	.14	.16	.16	.16
Divorced/Separated	.15*	.10	.10	.14	.11	.10
Widowed	.04	.03	.03	.08	.07	.06
Never married	.11	.08	.11	.07	.06	.08
Socioeconomic Characteristics:						
Less than high school	.03**	.05	.08	.03**	.04	.07
High school	.24*	.26	.30	.21*	.26	.28
Some college	.27	.30	.27	.29	.29	.29
College degree	.23	.19	.20	.22	.21	.19
Post-college	.23*	.19	.13	.25**	.20	.17
Household income	63,557 (54,430)	64,832 (49,141)	59,860 (44,769)	81,437 (59,010)	78,907 (51,448)	78,348 (51,252)
Currently employed	.65**	.60	.70	.49	.52	.55
Average hours worked per week	26.28* (21.48)	25.38 (23.96)	28.74 (21.57)	23.61 (22.32)	26.29 (22.42)	25.89 (21.34)
Parents' Current Health:						
Global self-rated health	7.63*** (1.39)	7.51 (1.53)	7.82 (1.40)	7.65 (.97)	7.67 (.97)	7.57 (1.52)
Number of diagnosed chronic illnesses	2.30 (2.33)	2.23 (2.18)	2.07 (2.21)	2.37 (2.27)	2.45 (2.50)	2.21 (2.32)

Note: Means/proportions with standard deviations in parentheses (where applicable). Asterisks denote significant differences among subsamples of main respondents, siblings, and twins: $^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

4.2. Bivariate Correlations

Tables 4.3 and 4.4 show that the dichotomous measure of depression is negatively correlated with each indicator of positive psychological well-being among both men and women. Specific dimensions of Ryff's scales of psychological well-being are moderately correlated with each other; the correlations are lower than in the WLS because of the small number of items used in MIDUS. For both mothers and fathers, the overall quality of relationships with children and perceived satisfaction with parental provision scales are associated negatively with depression and positively with each dimension of psychological well-being.

Table 4.3. Bivariate Correlations among the Focal Study Variables: Men (n = 726)

Variable	1.	2.	3.	4.	5.	6.	7.	8.
1. Depression								
2. Autonomy	-.091****							
3. Environmental mastery	-.233****	.337****						
4. Personal growth	-.082***	.291****	.427****					
5. Positive relations with others	-.141****	.236****	.420****	.412****				
6. Purpose in life	-.097****	.146****	.287****	.423****	.331****			
7. Self-acceptance	-.198****	.261****	.567****	.457****	.511****	.356****		
8. PWB index	-.214****	.443****	.742****	.735****	.659****	.653****	.785****	
9. Overall relationship quality	-.058*	.093****	.249****	.225****	.298****	.181****	.258****	.319****
10. Perceived satisfaction with parental provision	-.074***	.110****	.271****	.239****	.312****	.252****	.388****	.396****

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

Table 4.4. Bivariate Correlations among the Focal Study Variables: Women (n = 1,005)

Variable	1.	2.	3.	4.	5.	6.	7.	8.
1. Depression								
2. Autonomy	-.098****							
3. Environmental mastery	-.221****	.372****						
4. Personal growth	-.104****	.311****	.396****					
5. Positive relations with others	-.148****	.295****	.385****	.417****				
6. Purpose in life	-.094****	.170****	.205****	.389****	.323****			
7. Self-acceptance	-.217****	.348****	.507****	.482****	.513****	.288****		
8. PWB index	-.218****	.509****	.702****	.736****	.654****	.612****	.786****	
9. Overall relationship quality	-.071***	.098****	.154****	.132****	.191****	.119****	.168****	.202****
10. Perceived satisfaction with parental provision	-.104****	.162****	.291****	.257****	.328****	.216****	.381****	.395****

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

4.3. Multivariate Regression Analyses

Tables 4.5 – 4.8 show results from multivariate LDV and FE regression models for the overall quality of relationships with children and perceived satisfaction with parental provision. All LDV models adjust for parents' sociodemographic characteristics, structural configurations of the parental role, marital status, socioeconomic status, parents' physical health, early-life characteristics, and baseline mental health. The FE models contain the same variables with the exception of time-invariant covariates, such as gender, race, and early-life characteristics of the family of origin. In a preliminary analysis, I entered each block of control variables separately to examine their relative explanatory power. Yet, the changes in the effects of the focal predictor variables were trivial after adjustment for control variables, and none of these controls explained or suppressed the associations between the qualitative aspects of the parental role and parents' mental health.

Table 4.5. Unstandardized Coefficients and Robust Standard Errors from OLS and Logit Models of the Association between the Overall Quality of Relationships with Children and Parents' Mental Health: MIDUS I & II, 1995-2005

Variable	Mental health outcomes at T2							
	Depression	Autonomy	Env. Mastery	Personal Growth	Positive Relations	Purpose in Life	Self-acceptance	PWB Scale
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Predictors at T1:								
Parental status (Parent = 1)	-.319 (.477)	.111 (.332)	.615 (.394)	.219 (.314)	.039 (.369)	-.336 (.373)	.383 (.386)	.192 (.255)
Parental status × Quality of relationships with children	-.008 (.098)	.064 (.257)	.103* (.052)	.125** (.049)	.167** (.065)	.059 (.057)	.133* (.063)	.146* (.042)
Constant	1.530	7.350	7.159	5.540	3.648	8.298	2.754	4.141
Adjusted R^2	—	.268	.298	.307	.383	.272	.402	.457
Log pseudolikelihood	-290.967	—	—	—	—	—	—	—

Note: All models adjust for parents' sociodemographic characteristics, structural configurations of the parental role, marital status, socioeconomic status, parents' physical health, early-life characteristics, and baseline mental health.
*p < .05. **p < .01. ***p < .001.

Table 4.6. Unstandardized Coefficients and Robust Standard Errors from Fixed-Effects Models of the Association between the Overall Quality of Relationships with Children and Parents' Mental Health: MIDUS I & II, 1995 – 2005

Variable	Depression	Autonomy	Env. Mastery	Personal Growth	Positive Relations	Purpose in Life	Self-acceptance	PWB Scale
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Parental status (Parent = 1)	-.216	.211	.468	.293	.398	-.108	-.324	.094
	(1.224)	(.519)	(.552)	(.551)	(.608)	(.617)	(.529)	(.363)
Parental status × Quality of relationships with children	-.064	.130*	.272***	.143**	.179**	.005	.145**	.158***
	(.119)	(.054)	(.055)	(.051)	(.063)	(.060)	(.054)	(.035)
Log pseudolikelihood	-127.978	—	—	—	—	—	—	—
Constant	—	14.375	10.624	21.343	15.026	17.327	19.327	15.951
σ_u	—	2.722	3.010	2.759	3.388	2.866	3.046	2.108
σ_e	—	2.274	2.355	2.146	2.454	2.434	2.316	1.445
ρ	—	.588	.620	.623	.655	.581	.633	.680

Note: All models adjust for parents' sociodemographic characteristics, structural configurations of the parental role, marital status, socioeconomic status, parents' physical health, early-life characteristics, and baseline mental health.
*p < .05. **p < .01. ***p < .001.

Table 4.5 shows the effects of parental status and the quality of relationships with children at Time 1 on parents' psychological outcomes at Time 2 with adjustment for baseline mental health. Table 4.6 presents findings from fixed-effects pooled time-series models regressing change in parents' mental health on change in the quality of parent-child relationships. Because the questions about parent-child relationships are relevant only for parents, the relationship quality scale is not entered independently, but as a part of the interaction term with parental status. Thus, the models test whether the association between parental status and mental health depends on the quality of relationships with children. In the presence of the interaction term, the main effect of parental status compares mental health of childfree individuals to mental health of parents with average relationship quality (because the relationship quality scale was centered at the mean).

As indicated in Model 1 of Tables 4.5 and 4.6, parental status and the overall quality of relationships with children are not related to parents' depression in either the LDV or FE models. Model 1 in Tables 4.5 and 4.6 is based on the dichotomous indicator of clinical depression created by the MIDUS team. In a sensitivity analysis, I also estimated these models with the count of depressive symptoms as an outcome, and the results were identical to the models with the binary measure of depression: neither parental status nor the qualitative aspects of the parental role were related to parents' depression.

Model 2 in Table 4.5 indicates that in the LDV models parental status and the overall quality of relationships with children are not related to parents' autonomy. Yet, fixed-effects Model 2 in Table 4.6 reveals a significant interactive effect of parental status and relationship quality on autonomy. The trivial main effect of parental status suggests that parents with average quality of parent-child relationships are not significantly different from their childfree peers in

terms of autonomy. The significant interaction term indicates that parents with low relationship quality (e.g., 25th percentile) report somewhat lower autonomy than nonparents, although this difference is not statistically significant, whereas parents with high levels of relationship quality (e.g., 75th percentile) report significantly higher levels of autonomy than childfree individuals and parents who reported lower quality of relationships with children.

The LDV and FE models produce different results because of different model specifications. Whereas the LDV model estimates the effect of relationship quality at Time 1 on change in autonomy between the two waves, the FE model estimates the association between change in predictor variables and change in autonomy. Moreover, unlike the LDV model, the FE model takes into account unmeasured time-invariant characteristics of parents that may suppress the effect of relationship quality in LDV models that do not account for unobserved heterogeneity. An example of such unobserved stable parents' attributes could be strong familial orientation that is likely to be associated positively with the quality of family relationships and negatively with individual autonomy. In this case, the positive effect of relationship quality on autonomy is suppressed in between-individual LDV models and becomes evident only in within-individual FE models that adjust for confounding unmeasured variables. Religiosity and, in particular, beliefs in divine control, is another characteristic that may be associated with higher quality of family relationships and lower levels of personal autonomy (Schieman, Pudrovska, & Milkie, 2005).

As shown in Model 3 of Table 4.5, parents with average parent-child relationship quality report higher levels of environmental mastery than their childfree peers, although this difference is significant only at the .10 level. Parents who reported high quality of relationships with children exhibit significantly higher environmental mastery than both nonparents and parents

with lower relationship quality. This difference becomes even more pronounced in fixed-effects Model 3 of Table 4.6 in which the coefficients for the parental status × relationship quality interaction terms increased by over 150%. Parents with high levels of relationship quality (75th percentile) report 0.9 higher environmental mastery than childfree individuals. Given that the standard deviation for environmental mastery is 3.2, this effect approximately equals one third of a standard deviation and, thus, is relatively large in magnitude.

Models 4, 5, 7, and 8 of Tables 4.5 and 4.6 indicate that the quality of relationship with children is associated in a similar way with four psychological outcomes: personal growth, positive relations with others, self-acceptance, and the composite index of psychological well-being. In both LDV and FE models, parents who report average levels of relationship quality are similar to their childfree peers in terms of these outcomes, whereas parents with high quality of relationships with children exhibit significantly higher levels of psychological well-being than both nonparents and parents with lower relationship quality. These associations evident in the LDV models persist net of all observed control variables and even grow in magnitude in the FE models when unmeasured time-invariant characteristics of parents are taken into account.

Finally, Model 6 in Tables 4.5 and 4.6 shows that, similarly to depression, purpose in life is not related to parental status and the quality of relationships with children. Although Model 6 includes all control variables, the associations between relationship quality and parents' purpose in life was not significant even in a baseline model without controls (not shown).

Table 4.7. Unstandardized Coefficients and Robust Standard Errors from OLS and Logit Models of the Association between Perceived Satisfaction with Parental Provision and Parents' Mental Health: MIDUS I & II, 1995-2005

Variable	Mental health outcomes at T2							
	Depression	Autonomy	Env. Mastery	Personal Growth	Positive Relations	Purpose in Life	Self-acceptance	PWB Scale
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Predictors at T1:								
Parental status (Parent = 1)	-.324	.120	.645	.122	.081	-.224	.374	.156
	(.477)	(.333)	(.416)	(.349)	(.370)	(.352)	(.386)	(.257)
Parental status × Perceived satisfaction with parental provision	-.001	.153	.742***	.492**	.465**	.374*	.482*	.301*
	(.250)	(.173)	(.200)	(.167)	(.181)	(.179)	(.214)	(.132)
Constant	.227	7.383	7.260	5.955	3.561	9.291	3.078	4.566
Adjusted R^2	—	.267	.316	.309	.381	.257	.402	.459
Log pseudolikelihood	-290.972	—	—	—	—	—	—	—

Note: All models adjust for parents' sociodemographic characteristics, structural configurations of the parental role, marital status, socioeconomic status, parents' physical health, early-life characteristics, and baseline mental health.
*p < .05. **p < .01. ***p < .001.

Table 4.8. Unstandardized Coefficients and Robust Standard Errors from Fixed-Effects Models of the Association between Perceived Satisfaction with Parental Provision and Parents' Mental Health: MIDUS I & II, 1995-2005

Variable	Depression	Autonomy	Env. Mastery	Personal Growth	Positive Relations	Purpose in Life	Self-acceptance	PWB Scale
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Parental status (Parent = 1)	-.099	.209	.441	.285	.396	-.102	-.317	.086
	(1.187)	(.526)	(.564)	(.553)	(.611)	(.617)	(.522)	(.364)
Parental status × Perceived satisfaction with parental provision	.401	.680***	.662***	.537**	.942***	.213	1.043***	.645***
	(.390)	(.174)	(.187)	(.180)	(.195)	(.199)	(.202)	(.114)
Log pseudolikelihood	-127.619	—	—	—	—	—	—	—
Constant	—	14.714	10.628	21.421	15.233	17.408	19.607	16.058
σ_u	—	2.714	3.001	2.742	3.333	2.846	2.947	2.059
σ_e	—	2.268	2.364	2.144	2.444	2.433	2.298	1.440
ρ	—	.588	.617	.620	.650	.577	.622	.671

Note: All models adjust for parents' sociodemographic characteristics, structural configurations of the parental role, marital status, socioeconomic status, parents' physical health, early-life characteristics, and baseline mental health.
*p < .05. **p < .01. ***p < .001.

Model 1 in Tables 4.7 – 4.8 shows that perceived satisfaction with parental provision is not associated with a dichotomous indicator of clinical depression, and additional analysis reveals no association between perceived satisfaction with parental provision and the count of depressive symptoms (a variable similar to the measure of depressive symptoms in the WLS used in Chapter 3). Further, as indicated in Model 2 of Tables 4.7 and 4.8, parental status and perceived satisfaction with parental provision are not related to autonomy in the LDV analysis, whereas their interactive effects become significant in the FE model: parents with high levels of perceived satisfaction with parental provision have higher levels of autonomy than their childfree peers and parents who rate their perceived satisfaction with parental provision as average or low. The difference in autonomy between parents who report high levels of perceived satisfaction with parental provision (75^{th} percentile) and nonparents is 0.9, and the standard deviation for autonomy is 3.2. This difference is about one third of the standard deviation; thus, the effect size is not only statistically significant but also of nontrivial magnitude. As in the models for the quality of relationships with children, unmeasured time-invariant characteristics of parents may suppress the effect of perceived satisfaction with parental provision on parents' mental health in LDV models that do not account for unobserved heterogeneity. An example of such unobserved stable attributes could be strong familial orientation or religious beliefs.

Model 3 in Table 4.7 indicates that in the LDV analysis, parents with average levels of perceived satisfaction with parental provision (measured as satisfaction with everything parents had been able to do for their children) report higher environmental mastery than nonparents, although this difference fails to reach statistical significance at the .05 level. Parents with high levels of perceived satisfaction with parental provision exhibit higher environmental mastery than parents with lower self-reported perceived satisfaction with parental provision and

nonparents. The coefficient for the parental status × perceived satisfaction with parental provision interaction term declines by roughly 30% in fixed-effects Model 3 of Table 4.8, yet it remains large in magnitude. This pattern suggests that although unobserved time-invariant parents' characteristics that affect both perceived satisfaction with parental provision and environmental mastery (e.g., underlying personality traits, such as conscientiousness) may confound the association to some extent, it remains robust with respect to unobserved heterogeneity. Parents with high levels of perceived satisfaction with parental provision (75th percentile) report 0.98 higher environmental mastery than childfree individuals. Given that the standard deviation for environmental mastery is 3.2, this effect approximately equals one third standard deviations and, thus, is relatively large in magnitude.

Consistent with findings for relationship quality, Models 4, 5, 7, and 8 of Tables 4.7 and 4.8 show that perceived satisfaction with parental provision is related similarly to four psychological outcomes: personal growth, positive relations with others, self-acceptance, and the composite index of psychological well-being. In both LDV and FE models, parents who report mean levels of perceived satisfaction with parental provision do not differ significantly from childfree individuals in terms of these outcomes. In contrast, persons with high levels of perceived satisfaction with parental provision have significantly higher scores on each of the four indicators of psychological well-being than both nonparents and parents with lower perceived satisfaction with parental provision. These associations evident in the LDV models remain significant and even grow in magnitude in the FE models when unmeasured time-invariant characteristics of parents are taken into account.

Finally, as indicated in Model 6 of Table 4.7, perceived satisfaction with parental provision is positively associated with purpose in life in the LDV analysis (b = .374, p < .05).

Yet, in the FE model, the coefficient for the parental status × perceived satisfaction with parental provision interaction term declines by 43% and becomes nonsignificant (Model 6 of Table 4.8). Thus, when unobserved stable characteristics of parents are taken into account, childfree individuals and parents regardless of the level of perceived satisfaction with parental provision report similar levels of purpose in life. It appears that certain unmeasured factors not directly included in the models both increase perceived satisfaction with parental provision and enhance parents' purpose in life. Such factors may be strong familial orientation, religious beliefs and church participation, and relationships with kin and ties in the community.

4.4. Three-Level Random Intercept Models

Tables 4.9 – 4.12 show results from three-level random intercept models of the associations between the qualitative aspects of the parental role and parents' mental health. The first level of these models consists of measurement occasions (MIDUS I and MIDUS II) that are nested within individuals — the level-2 units. In turn, individuals are nested within sibling groups that comprise level-3 units. Each model in these tables corresponds to a specific psychological outcome. All models include parents' sociodemographic characteristics, structural configurations of the parental role, marital status, socioeconomic status, parents' physical health, early-life characteristics, baseline mental health, and siblings' genetic similarity. Thus, the focus of the models is on the variation in the psychological effects of the qualitative aspects of parenthood within and between individuals as well as within and between sibling groups. I also refer to siblings groups as "families", i.e. in the context of this analysis "family" does not denote parents and their children, but parents who are related to each other as siblings.

Table 4.9 presents findings for the quality of relationships with children. Fixed regression coefficients representing average slopes across sibling groups indicate that consistent with LDV

and FE models, parents with average quality of intergenerational relationships do not differ from childfree individuals in terms of depression and psychological well-being. In contrast, parents with high levels of relationship quality report lower depression and higher psychological well-being than their counterparts with lower relationship quality and childfree individuals.

Table 4.9. Three-Level Random-Intercept Models of the Associations between Mental Health and the Overall Quality of Relationships with Children: MIDUS I & II, 1995-2005

Variable	Depression	Autonomy	Env. Mastery	Personal Growth	Positive Relations	Purpose in Life	Self-acceptance	PWB Scale
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Fixed Part								
Constant	2.999***	12.364***	11.980***	14.620***	9.815***	13.668***	10.473***	12.234***
	(.155)	(.843)	(.817)	(.794)	(.935)	(.851)	(.877)	(.593)
Parental status (Parent = 1)	-.347	.138	.309	.050	.500	.087	-.086	.162
	(.427)	(.294)	(.391)	(.276)	(.325)	(.305)	(.308)	(.201)
Parental status × Quality of relationships with children	-.103*	.175***	.358***	.265***	.368***	.187***	.279***	.263***
	(.053)	(.038)	(.038)	(.036)	(.042)	(.040)	(.039)	(.025)
Random Part								
Level-three random intercept variance:								
$\Psi_{3(overall)}$	1.003	1.257	.720	.926	.469	.843	.837	.633
	(.334)	(.229)	(.203)	(.217)	(.301)	(.238)	(.241)	(.117)
$\Psi_{3(full)}$	.883	.889	.436	.875	.280	.681	.691	.421
	(.378)	(.258)	(.224)	(.262)	(.289)	(.259)	(.287)	(.132)
$\Psi_{3(mz)}$	0.183	2.542	2.023	1.984	0.484	1.131	2.091	1.382
	(.048)	(.462)	(.560)	(.362)	(.352)	(.317)	(.509)	(.255)
$\Psi_{3(dz)}$	.037	.971	.623	0.396	1.006	0.902	0.402	0.608
	(.020)	(.225)	(.213)	(.151)	(.518)	(.249)	(.191)	(.127)
Level-two random intercept variance Ψ_2	1.128	3.016	2.729	2.890	5.689	3.062	3.947	1.758
	(.495)	(.272)	(.283)	(.294)	(.550)	(.324)	(.320)	(.136)
Level-one variance:								
$\theta_{ij\ overall}$	——	5.139	5.625	4.645	5.898	5.960	5.401	2.125
		(.175)	(.193)	(.161)	(.203)	(.205)	(.185)	(.073)
Log likelihood	-921.802	-8570.003	-8584.282	-8382.441	-8946.183	-8711.252	-8702.389	-7210.509

Note: All models adjust for parents' sociodemographic characteristics, structural configurations of the parental role, marital status, socioeconomic status, parents' physical health, early-life characteristics, and baseline mental health. *p < .05. **p < .01. ***p < .001.

The interpretation of the random part is less straightforward because random parameters are not estimated directly, although individual random intercepts can be predicted from the models. Instead, the model estimates only variance components of random parameters. The three-level model has two random intercepts: the random effect associated with level-3 units (sibling groups), and the random effect associated with level-2 units (individuals, i.e. siblings). The interpretation of the intercept variances ψ_3 and ψ_2 depends on covariates since the intercept refers to an individual with $X_{ij} = 0$. The intercept variance is the variability in the vertical positions of regression lines specific to families (i.e. sibling groups) for parents who have the average quality of relationships with children (because the relationship quality scale was centered at the mean). The intercept corresponds to the mental health score for parents with the mean levels of relationship quality.

In the three-level models, several types of intraclass correlations can be calculated. First, the likeness of siblings in the same family is expressed by the intraclass correlations indicating which proportion of variance in each psychological outcome is situated at the family level after adjustment for the qualitative aspects of the parental role and all control variables in Models 1 – 8 of Table 4.9. This intraclass correlation is calculated as the proportion of level-3 variance to the total variance: $\psi_3 / (\psi_3 + \psi_2 + \theta_{ij})$. The second intraclass correlation coefficient reflects the proportion of the total variance situated at the individual level: $\psi_2 / (\psi_3 + \psi_2 + \theta_{ij})$. Finally, the third intraclass correlation coefficients denotes residual variance unexplained at the family and individual levels: $\theta_{ij} / (\psi_3 + \psi_2 + \theta_{ij})$.

Table 4.10. Intraclass Correlation Coefficients for Models with Relationship Quality

	Autonomy	Env. Mastery	Personal Growth	Positive Relations	Purpose in Life	Self-Acceptance	PWB Scale
Total Variance	9.41	9.07	8.46	12.06	9.87	10.19	4.52
Proportions:							
Between-Family	0.13	0.08	0.11	0.04	0.09	0.08	0.14
Between-Individual	0.32	0.30	0.34	0.47	0.31	0.39	0.39
Residual	0.55	0.62	0.55	0.49	0.60	0.53	0.47

Note: All models include parental status, quality of relationships with children, parents' sociodemographic characteristics, structural configurations of the parental role, marital status, socioeconomic status, parents' physical health, early-life characteristics, and baseline mental health.

Different intraclass correlations for models with the quality of parent-child relationships are shown in Table 4.10. Correlations for depression were not calculated because residual variance for this binary outcome is not estimated in the multilevel logistic models by the *gllamm* program. Comparison of level-3 (between-family), level-2 (between-individual), and level-1 (residual) variances suggests that very little variation in each mental health outcome is explained at the family (i.e. sibling-group level). This proportion is the smallest for positive relations with others (4%) and the largest for autonomy and the composite index of psychological well-being (13% and 14%, respectively). Overall, roughly 10% of variance in psychological well-being is situated between families. The proportion of variance explained at the individual sibling level is about three times larger and varies from 31% for purpose in life to 39% for self-acceptance and the PWB index to 47% for positive relations with others. Finally, the largest proportion of variance remains unexplained. Within-individual residual variance comprises at least half of the total variance: from roughly 50% for positive relations with others and the PWB index to 60% for environmental mastery and purpose in life. Thus, the within-family and within-individual

variations are large relative to the between-family variation in psychological well-being, and the residual within-individual variance comprises the largest proportion.

The model on which estimates in Table 4.9 are based specifies heteroskedasticity of the random intercept variance at level 3, i.e. between-family variance. Consistent with the behavior genetic theory it assumes that the intercept variance depends on the degree of siblings' genetic relatedness and, thus, should vary across different types of sibling groups. Specifically, variance should be smaller for more closely related siblings and larger among more distant relatives. The smallest variance should be observed among MZ twins, whereas the largest variance is expected among full nontwin siblings.

For each mental health outcome, I fitted both a model with homoskedastic random intercept variance and a heteroskedastic model, and conducted likelihood-ratio tests to examine whether between-family variance differs significantly by the type of the sibling group, i.e. whether heteroskedastic model fits significantly better than the homoskedastic one. Random intercept variance depends on siblings' relatedness for environmental mastery ($\chi^2 = 13.64$, $p = .009$), personal growth ($\chi^2 = 11.00$, $p = .027$), purpose in life ($\chi^2 = 9.98$, $p = .041$), and the composite index of psychological well-being ($\chi^2 = 15.19$, $p = .004$). In contrast, there is less evidence of level-3 heteroskedasticity for depression ($\chi^2 = 4.68$, $p = .096$), autonomy ($\chi^2 = 7.57$, $p = .109$), positive relations with others ($\chi^2 = 5.31$, $p = .257$), and self-acceptance ($\chi^2 = 8.92$, $p = .063$). Yet, it should be noted that χ^2 for depression, autonomy, and self-acceptance is significant at the .10 level, which may indicate suggestive evidence for heteroskedasticity.

However, the comparison of variance across the types of the sibling groups suggests that level-3 variance is not consistently smaller among more closely related siblings than among more distant relatives, even in models with psychological outcomes for which there is

statistically significant evidence of heteroskedasticity at level 3. Specifically, for autonomy, environmental mastery, personal growth, purpose in life, self-acceptance, and the composite index of psychological well-being, the variance is the largest among MZ twins compared to full nontwin siblings and DZ twins. Moreover, for autonomy, environmental mastery, positive relations with others, purpose in life, and the PWB index the smallest variance is among full nontwin siblings. These patterns are contrary to behavior genetics expectations. Only in the case of depression is the variance among MZ twins smaller than variance among full nontwin siblings, yet the DZ twin variance is even smaller than the MZ twin variance. Thus, while there is some evidence of heteroskedasticity of level-3 variance in models for the relationship quality, this heteroskedasticity is *not* consistent with behavior genetics predictions.

Table 4.11. Three-Level Random-Intercept Models of the Associations between Mental Health and Perceived Satisfaction with Parental Provision: MIDUS I & II, 1995-2005

Variable	Depression	Autonomy	Env. Mastery	Personal Growth	Positive Relations	Purpose in Life	Self-acceptance	PWB Scale
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Fixed Part								
Constant	1.664	12.631***	12.472***	14.943***	10.330***	13.975***	11.301***	12.678***
	(1.124)	(.845)	(.810)	(.792)	(.945)	(.849)	(.847)	(.582)
Parental status (Parent = 1)	-.300	.102	.225	-.009	.416	.040	-.167	.110
	(.427)	(.293)	(.289)	(.275)	(.327)	(.303)	(.301)	(.198)
Parental status × Perceived satisfaction with parental provision	-.085	.786***	1.394***	1.027***	1.470***	.826***	1.702***	1.173***
	(.175)	(.123)	(.124)	(.117)	(.137)	(.129)	(.126)	(.082)
Random Part								
Level-three random intercept variance:								
$\Psi_{3(overall)}$	.993	1.237	.713	.915	.639	.771	.537	.574
	(.335)	(.224)	(.196)	(.215)	(.273)	(.238)	(.238)	(.110)
$\Psi_{3(full)}$	.882	.949	.473	.839	.472	.603	.532	.396
	(.381)	(.252)	(.220)	(.258)	(.280)	(.261)	(.265)	(.125)
$\Psi_{3(mz)}$	2.027	2.513	1.954	2.011	0.747	1.080	1.513	1.285
	(.532)	(.432)	(.504)	(.373)	(.342)	(.321)	(.434)	(.240)
$\Psi_{3(dz)}$	0.379	1.036	0.552	0.458	1.058	0.807	0.147	0.525
	(.223)	(.222)	(.189)	(.154)	(.368)	(.244)	(.158)	(.114)
Level-two random intercept variance Ψ_2	1.160	3.025	2.524	2.817	5.350	3.080	3.949	1.648
	(.498)	(.270)	(.274)	(.289)	(.438)	(.327)	(.359)	(.131)
Level-one variance:								
$\theta_{ij\ overall}$	——	5.117	5.708	4.643	5.897	5.942	5.243	2.117
		(.173)	(.196)	(.161)	(.201)	(.205)	(.181)	(.073)
Log likelihood	-923.462	-8558.171	-8565.798	-8370.989	-8927.379	-8701.724	-8633.838	-7165.044

Note: All models adjust for parents' sociodemographic characteristics, structural configurations of the parental role, marital status, socioeconomic status, parents' physical health, early-life characteristics, and baseline mental health. *p < .05. **p < .01. ***p < .001.

Table 4.11 presents findings for perceived satisfaction with parental provision. Fixed regression coefficients representing average slopes across sibling groups indicate that parents with average levels of perceived satisfaction with parental provision do not differ from childfree individuals in terms of depression and psychological well-being. Further, parents with high levels of perceived satisfaction with parental provision report higher psychological well-being than childfree individuals and parents with lower perceived satisfaction with parental provision. In contrast, perceived satisfaction with parental provision is not related to depression. These findings from the three-level analysis are consistent with both LDV and FE models for perceived satisfaction with parental provision.

The random part of the model is represented by variances of two random intercepts: the random effect associated with level-3 units (sibling groups), and the random effect associated with level-2 units (individuals).

Table 4.12. Intraclass Correlation Coefficients for Models with Perceived Satisfaction with Parental Provision

	Autonomy	Env. Mastery	Personal Growth	Positive Relations	Purpose in Life	Self-Acceptance	PWB
Total Variance	9.38	8.95	8.38	11.89	9.79	9.73	4.34
Proportions:							
Between-Family	0.13	0.08	0.11	0.05	0.08	0.06	0.13
Between-Individual	0.32	0.28	0.34	0.45	0.31	0.41	0.38
Residual	0.55	0.64	0.55	0.50	0.61	0.54	0.49

Note: All models include parental status, perceived satisfaction with parental provision, parents' sociodemographic characteristics, structural configurations of the parental role, marital status, socioeconomic status, parents' physical health, early-life characteristics, and baseline mental health.

Intraclass correlations for models with perceived satisfaction with parental provision are shown in Table 4.12. Comparison of level-3 (between-family), level-2 (between-individual), and level-1 (residual) variances suggests that, similarly to models for relationship quality, very little variation in each mental health outcome is situated at the family level. This proportion is the smallest for positive relations with others (5%) and self-acceptance (6%) and the largest for autonomy, personal growth, and the composite index of psychological well-being. On average, belonging to the same family explains 10% of variance in parents' psychological well-being. The proportion of variance explained at the individual sibling level varies from 28% for environmental mastery to roughly 40% for self-acceptance and PWB to 45% for positive relations with others. Finally, the largest proportion of variance remains unexplained. Within-individual residual variance comprises at least half of the total variance: from 50% for positive relations with others and the PWB index to 64% for environmental mastery. Thus, the within-family and within-individual variations are large relative to the between-family variation in psychological well-being.

Consistent with the behavior genetic theory, the model specifies heteroskedasticity of the random intercept variance at level 3. For each mental health outcome, I fitted both a model with homoskedastic random intercept variance and a heteroskedastic model, and conducted likelihood-ratio tests to examine whether between-family variance differs significantly by the type of the sibling group. Random intercept variance depends on siblings' relatedness for autonomy ($\chi^2 = 9.81$, $p = .044$), environmental mastery ($\chi^2 = 13.22$, $p = .009$), personal growth ($\chi^2 = 11.09$, $p = .027$), purpose in life ($\chi^2 = 9.66$, $p = .047$), and the composite index of psychological well-being ($\chi^2 = 14.64$, $p = .006$). In contrast, there is less evidence of level-3 heteroskedasticity for depression ($\chi^2 = 4.85$, $p = .089$), positive relations with others ($\chi^2 = 3.31$, p

= .507), and self-acceptance ($\chi^2 = 7.22$, p = .125), although χ^2 for depression and self-acceptance is either significant or close to significance at the .10 level, which suggests potential heteroskedasticity.

The comparison of variance across the types of the sibling groups suggests that level-3 variance is consistently the largest among MZ twins compared to full nontwin siblings and DZ twin for each mental health outcome with the exception of positive relations with others. This pattern is opposite to the behavior genetics predictions. Moreover, for autonomy, environmental mastery, positive relations with others, purpose in life, and the PWB index the smallest variance is among full nontwin siblings, which is also contrary to behavior genetics expectations. Thus, while there is evidence of heteroskedastic level-3 variance in models for perceived satisfaction with parental provision — just like in models for relationship quality, this heteroskedasticity is *not* consistent with behavior genetics predictions.

In sum, findings from the fixed part of the three-level random intercept models are overall consistent with associations observed in the LDV and FE analysis. Perceived satisfaction with parental provision and relationship quality are positively related to parents' psychological well-being and negatively — albeit less consistently — to depression. There is evidence for heteroskedasticity of the between-family variance that depends on siblings' genetic relatedness. Yet, the nature of this heteroskedasticity is not consistent with behavior genetics predictions.

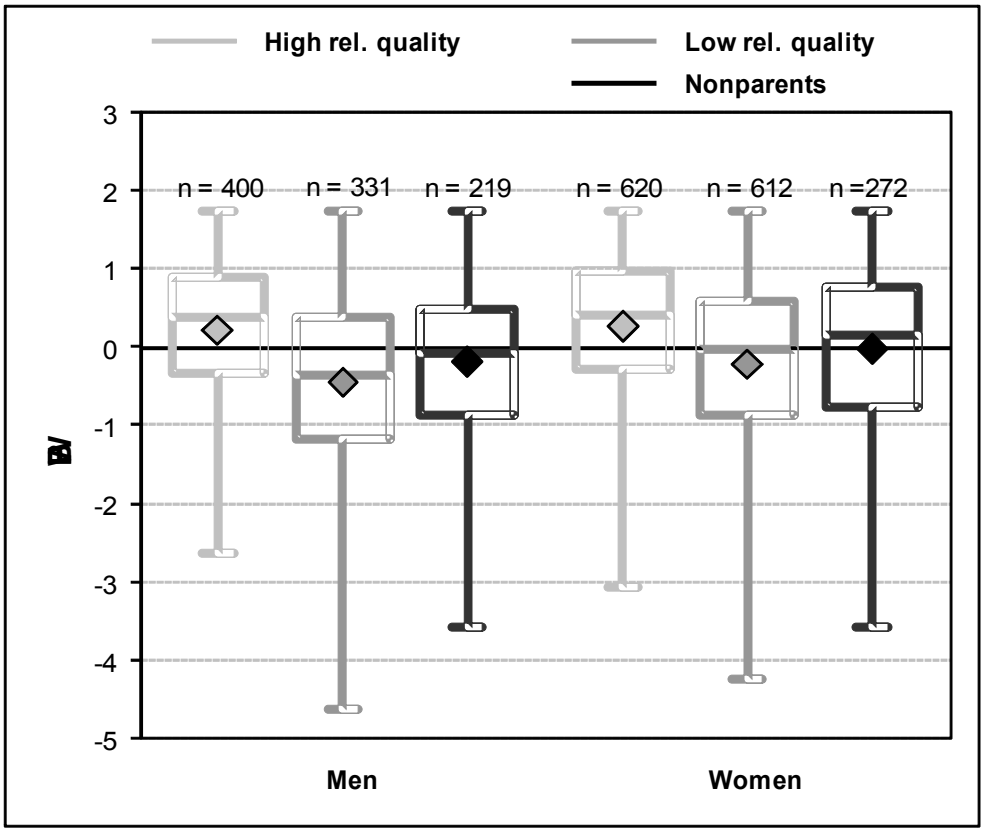
4.5. Gender Differences in the Associations between Parenthood and Mental Health

To examine potential differences between mothers and fathers, I tested interactive effects of parenthood and gender on mental health. The total number of interaction terms tested was 16, i.e. two scales reflecting qualitative aspects of the parental role by eight mental health outcomes. Using Bonferroni's method and taking into account the number of comparisons, I considered

only interaction terms that were significant at least at the .01 level (.05/16 = .003125). After Bonferroni's correction for multiple comparisons, six interaction terms were significant. Figures 4.1 – 4.3 illustrate significant interactive effects.

As shown in Figure 4.1, among both men and women, nonparents and parents with low relationship quality report lower levels of PWB, although women report higher levels of PWB than men regardless of parental status and the quality of relationships with children. Mothers and fathers with high levels of relationship quality report higher levels of PWB than other groups. Yet, fathers suffer more than mothers in terms of psychological well-being from having low-quality intergenerational relationships. The difference in PWB between men with high relationship quality and lower relationship quality is larger than the difference between the respective categories of mothers (0.67 versus 0.31). Standard deviation for PWB is 2.4; hence, the difference of 0.67 – 0.31 = 0.36 comprises roughly one sixth standard deviations, which is a moderate — albeit nontrivial — effect size.

Figure 4.1. Gender Differences in the Association between Relationship Quality and the Composite Index of Psychological Well-Being



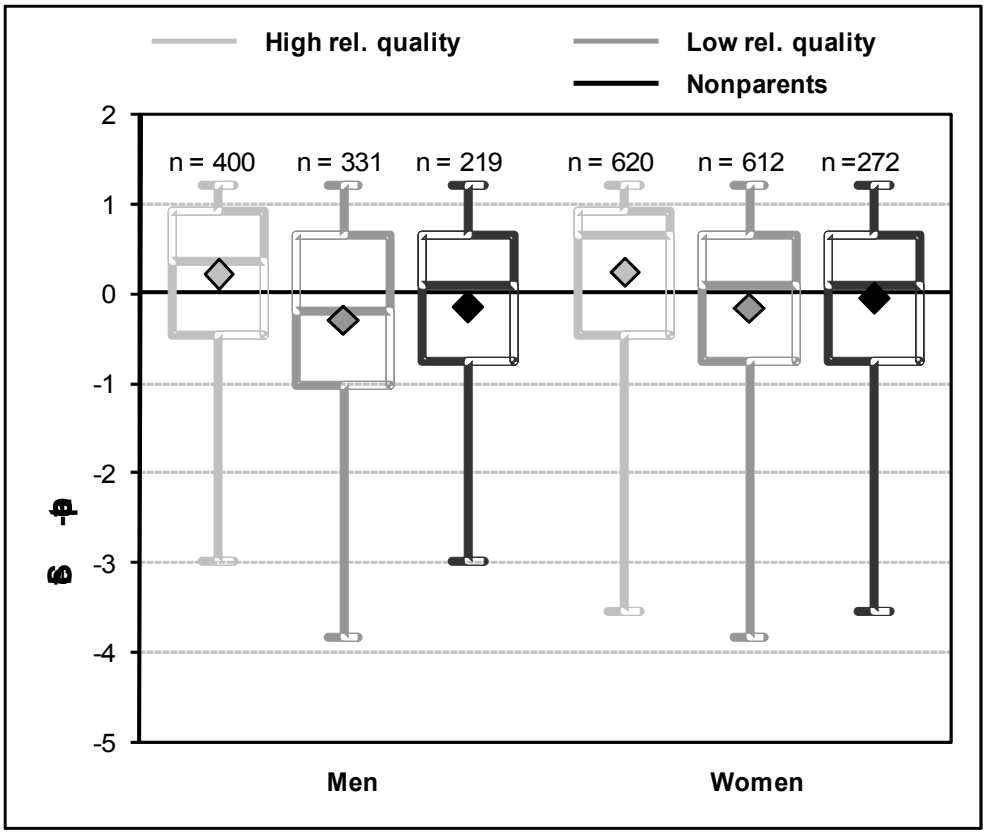
Note: The figure is based on the full model adjusting for all control variables. "High relationship quality" for mothers is represented by the value corresponding to the 75th percentile for women. "High relationship quality" for fathers is represented by the value corresponding to the 75th percentile for men. "Low relationship quality" for mothers corresponds to the 25th percentile for women. "Low relationship quality" for fathers corresponds to the 25th percentile for men.

Although Figure 4.1 illustrates interactive effects of gender, parental status, and relationship quality only on the PWB index, nearly identical patterns were observed for personal growth and positive relations with others. The three-way interactions for these three mental health outcomes were similar in size and the level of statistical significance in both FE and random intercept models. In sum, whereas high levels of relationship quality are associated with higher levels of personal growth, positive relations, and the composite scale of psychological

well-being among both men and women, fathers appear to bear greater psychological costs than mothers from low-quality relationships with children.

Further, Figure 4.2 shows that both mothers and fathers with low relationship quality report lower levels of self-acceptance than nonparents. In contrast, mothers and fathers with high levels of relationship quality exhibit higher levels of self-acceptance than childfree individuals and parents who report low relationship quality. Yet, fathers bear greater psychological costs than mothers in terms of self-acceptance from having low-quality relationships with children. The difference in self-acceptance between fathers with high relationship quality and low relationship quality is larger than the difference between the respective groups of mothers (0.78 versus 0.21). The difference of 0.78 – 0.21 = 0.57 comprises nearly one sixth standard deviations in self-acceptance (*SD* = 3.4), which is a moderate effect size.

Figure 4.2. Gender Differences in the Association between Relationship Quality and Self-Acceptance

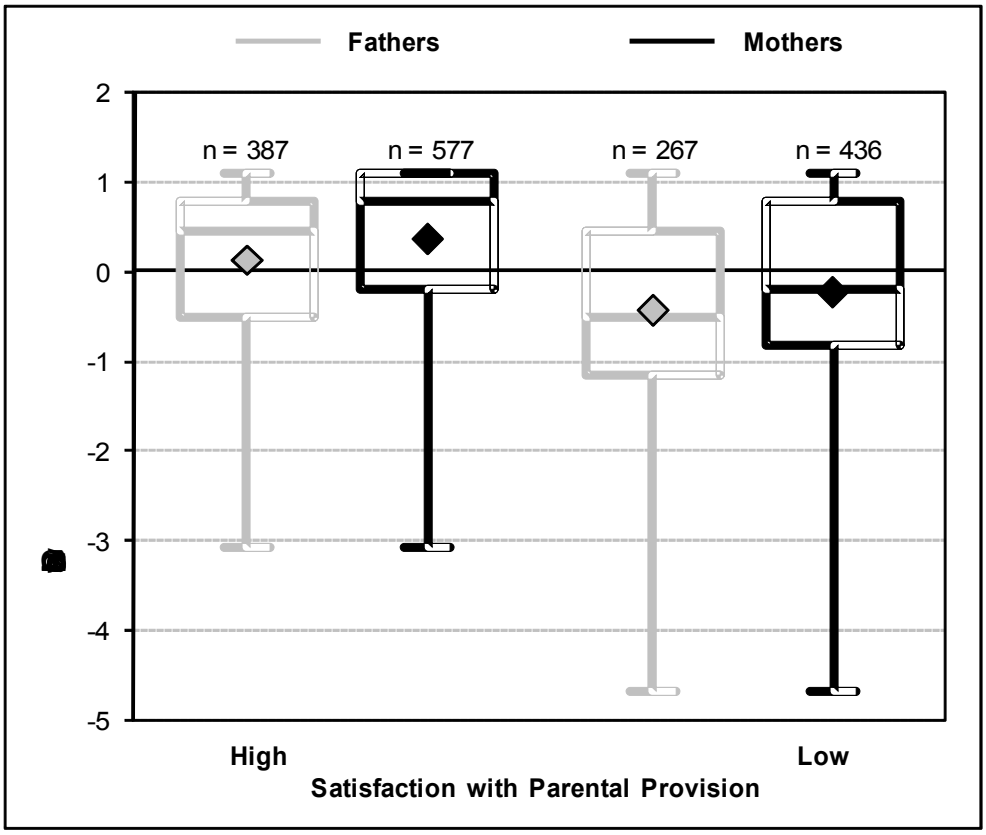


Note: The figure is based on the full model adjusting for all control variables. "High relationship quality" for mothers is represented by the value corresponding to the 75th percentile for women. "High relationship quality" for fathers is represented by the value corresponding to the 75th percentile for men. "Low relationship quality" for mothers corresponds to the 25th percentile for women. "Low relationship quality" for fathers corresponds to the 25th percentile for men.

A three-way interaction terms nearly identical to the one shown in Figure 4.2 for self-acceptance was revealed in models for purpose in life. Low-quality relationships with children appear to compromise fathers' self-acceptance and purpose in life more than mothers'. The three way-interaction terms for self-acceptance and purpose in life were significant and similar in magnitude in both FE and random intercept models.

Finally, as shown in Figure 4.3, mothers report similar levels of personal growth regardless of their perceived satisfaction with parental provision. Yet, fathers with high levels of perceived satisfaction with parental provision (75th percentile) exhibit higher personal growth than mothers and childfree individuals. Thus, whereas perceived satisfaction with parental provision does not appear to enhance personal growth among women, men are particularly likely to benefit from perceived satisfaction with parental provision over the life course in terms of personal growth in midlife.

Figure 4.3. Gender Differences in the Association between Perceived Satisfaction with Parental Provision and Personal Growth



Note: The figure is based on the full model adjusting for all control variables. "High perceived satisfaction with parental provision" for mothers is represented by the value corresponding to the 75th percentile for women. "High perceived satisfaction with parental provision" for fathers is represented by the value corresponding to the 75th percentile for men. "Low perceived satisfaction with parental provision" for mothers is represented by the value corresponding to the 25th percentile for women. "Low perceived satisfaction with parental provision" for fathers is represented by the value corresponding to the 25th percentile for men.

Taken together, the significant three-way interactions among parental status, parents' gender, and mental health suggest that when there are gender difference in the associations between qualitative aspects of parenthood and parents' well-being, men tend to bear greater psychological costs than women from low quality of relationships with children and low levels of perceived satisfaction with parental provision.

4.6. Summary of Main Findings

Bivariate associations show that compared to fathers, mothers report higher quality of relationships with children in both MIDUS waves, yet mothers and fathers are similar in terms of self-reported perceived satisfaction with parental provision.

Table 4.13. Summary of Findings for the Qualitative Aspects of the Parental Role: MIDUS I & II

Variables	**Relationship Quality**			**Perceived Satisfaction with Parental Provision**		
	LDV	FE	RI	LDV	FE	RI
Depression	n.s.	n.s.	–	n.s.	n.s.	n.s.
Autonomy	n.s.	+	+	n.s.	+	+
Environmental mastery	+	–	+	+	+	+
Personal growth	+	+	+	+	+	+
Positive relations	+	+	+	+	+	+
Purpose in life	n.s.	n.s.	+	+	n.s.	+
Self-acceptance	+	+	+	+	+	+
PWB Index	+	+	+	+	+	+

Note: "LDV" means ordinary least squares models with lagged dependent variables; "FE" means fixed-effects models; "RI" means three-level random-intercept models; "n.s." means no significant association; "+" reflects a positive association; "—" reflects a negative association.

Results from multivariate analyses are summarized in Table 4.13, which shows that the observed associations are largely consistent across different types of models. Parental status, the quality of relationships with children, and perceived satisfaction with parental provision are not related to depression in either the LDV or FE models. Purpose in life is associated with perceived satisfaction with parental provision in LDV but not FE models, which suggests that this association reflects unobserved stable characteristics of parents that both increase parents'

investment in children and enhance purpose in life. Such factors may be strong familial orientation, religious beliefs and church participation, and relationships with kin and ties in the community.

Only in fixed-effects models, parents with either high quality of relationships with children or high levels of perceived satisfaction with parental provision report significantly higher levels of autonomy than childfree individuals and parents with lower relationship quality and perceived satisfaction with parental provision. In this case, the positive effects of relationship quality and perceived satisfaction with parental provision on autonomy are suppressed in between-individual LDV models and become evident only in within-individual FE models that adjust for confounding unmeasured variables. An example of such unobserved stable parents' attributes could be strong familial orientation or religious beliefs, in particular, beliefs in divine control, that are likely to be associated positively with the quality of family relationships and negatively with individual autonomy.

In both LDV and FE models, parents who report average levels of relationship quality or perceived satisfaction with parental provision are similar to their childfree peers in terms of environmental mastery, personal growth, positive relations with others, self-acceptance, and the composite index of psychological well-being, whereas parents with high quality of relationships with children or perceived satisfaction with parental provision exhibit significantly higher levels of these four psychological outcomes than nonparents and parents with lower relationship quality or perceived satisfaction with parental provision.

In three-level random intercept models, parents with high levels of relationship quality report lower depression and higher psychological well-being than their counterparts with lower relationship quality and childfree individuals. Perceived satisfaction with parental provision is

associated with parents' mental health in a similar way, with the only exception that perceived satisfaction with parental provision is unrelated to depression.

Overall, roughly 10% of variance in psychological well-being is situated between families (i.e. sibling groups). The proportion of variance explained at the individual sibling level is about three to four times larger. Finally, the largest proportion of variance remains unexplained. Within-individual residual variance comprises at least half of the total variance: from roughly 50% for positive relations with others and the PWB index to 60% for environmental mastery and purpose in life. Thus, the within-family and within-individual variations are large relative to the between-family variation in psychological well-being, and the residual within-individual variance comprises the largest proportion. There is some evidence of heteroskedasticity of random intercept variance by siblings' genetic relatedness, yet this heteroskedasticity is not consistent with behavior genetics theory.

Among both men and women, nonparents and parents with low relationship quality report lower levels of personal growth, positive relations with other, self-acceptance, and the composite index of psychological well-being. Mothers and fathers with high levels of relationship quality report higher levels of these positive psychological outcomes than other groups. Yet, fathers bear greater psychological costs than mothers from having low-quality intergenerational relationships. Finally, whereas perceived satisfaction with parental provision does not appear to enhance personal growth among women, fathers with high levels of perceived satisfaction with parental provision exhibit higher personal growth than mothers and childfree individuals. Thus, men are particularly likely to benefit from perceived satisfaction with parental provision over the life course in terms of personal growth in midlife.

CHAPTER 5. DISCUSSION

5.1. Main Findings and Implications for Research

The major theme of this dissertation is the diversity of midlife parenting — variation in the parental experience and mental health based on the structural configurations of the parental role and the qualitative aspects of parenthood. The emphasis is on exploring heterogeneity of the parenting experience to uncover conditions under which midlife parenthood is stressful or gratifying for women and men (Ryff & Seltzer, 1996).

5.1.1. Addressing the Key Themes of Life Course Sociology

This study addresses key themes of life course sociology, including the interplay of aging and cohort influences, linked lives, and the long-term implications of the timing of transitions. The relative importance of *developmental changes and cohort experiences* is revealed by the comparison of parents and childfree individuals. In young adulthood, participants in this study experienced a unique set of cohort- and period-specific conditions, in particular, nearly universal marriage and parenthood, early age at first birth, large families, and gender-typed differentiation of work and family tasks. Members of these cohorts came of age at a time when involuntary childlessness was considered a misfortune and voluntary childlessness was virtually nonexistent. Yet, the effects of early-life socialization and social constraints experienced in young adulthood do not remain inflexible over the life course and are modified by within-individual maturational developmental changes and social transformations at the macro-level. Specifically, my findings reveal that individuals who remained childless at midlife — both men and women — exhibit remarkably high levels of psychological well-being, especially compared to their peers who became parents and, thus, assumed a socially valued role and fulfilled societal expectations. Similarly, men who largely focused on their paid employment and the provider role in young

adulthood do not differ from women at midlife in terms of psychological implications of relationships with children. Fathers are even more psychologically vulnerable than mothers to poor relationship quality and benefit as much as mothers from high-quality satisfying relationships.

Linked lives is another important concept of the life course perspective. Research examining interlocking trajectories across multiple domains and across individuals has demonstrated that negative life events experienced by one person can affect his or her family members as well (George, 1999). The notion of linked lives posits that the lives of family members are lived interdependently, and socio-historical influences are "expressed through this network of shared relationships" (Elder, 1998, p. 4). My study indicates that parents who have coresidential adult children — regardless of children's age or the presence of other minor children in the home — report lower levels of psychological well-being than empty-nest parents whose adult children were successfully launched. This finding suggests that the lives of parents and children are inextricably linked, and the circumstances of children affect parents' well-being. Living arrangements of adult children and their psychological implications for parents underscore the interplay of the life course pathways of the older and younger generations (Aquilino & Supple, 1991; Greenfield & Marks, 2006).

This study provides further evidence that *the timing and context of role transitions* have long-term implications for mental health. Middle-aged parents of minor children report higher levels of distress and lower levels of psychological well-being than their peers who have only nonresidential adult children. The effects of major adult roles, including parenthood, vary with the normative expectedness of experiences (Menaghan, 1989). The enactment of most family and work roles is guided by socially recognized normative expectations. All culturally competent

individuals tend to have a general notion of when and in what order the most important role transitions (including the transition to parenthood) are expected to occur. In most cultures there exist relatively clear definitions of what constitutes "on-time" and "off-time" behaviors, i.e. culturally shared expectations regarding the appropriate timing and ordering of life-course events and role transitions (Neugarten, Moore, & Lowe, 1965), although these expectations are not stable across time and across cohorts (Rindfuss, 1991). Individuals who have only minor children at midlife made the transition to parenthood later than their generational peers. Theories of adult development posit that life transitions are less stressful if they occur at the age most typical and normative for a specific transition. Conversely, "off-time" or non-normative transitions trigger an extra amount of stress in addition to that inherent in the nature of the transition.

5.1.2. In Search of Solutions for the "Parenthood Paradox"

The relationship between parenthood and mental health is characterized by a remarkable complexity reflected in what might be called the "parenthood paradox." On the one hand, men and women describe parenthood as one of the most important, meaningful, and rewarding areas in their lives (Lachman, 2004). Parenthood is widely viewed as a joyful experience that facilitates personal growth, fulfillment, and purpose in life (Arendell, 2000). Most people want and plan to become parents (Quesnel-Vallee & Morgan, 2003). Parenthood is a major social role, culturally desirable and normatively expected, and occupying normative social roles is typically associated with psychological advantages (Menaghan, 1989). The parental role serves a function — social reproduction — that is of great value to society (McLanaham & Adams, 1987). Therefore, parenthood should lead to higher levels of psychological well-being. On the other hand, studies consistently show that parents tend to report higher levels of distress and lower

levels of psychological well-being than their childfree peers (Evenson & Simon, 2005; McLanahan & Adams, 1987; Ross & Van Willigen, 1996). How can one explain the fact that parenthood, a highly valued social role, is related to worse mental health? This study proposes four potential solutions for the "parenthood paradox."

First, structural configurations of the parental role within the context of a specific life-course stage create remarkable heterogeneity of psychological profiles among parents. My findings suggest that certain configurations of the parental role may give rise to the structural context that is particularly conducive to parental strains and distress. Conversely, other configurations, in particular, being a parent of successfully launched adult children and having no minor children at home, are associated with high levels of psychological well-being. An important implication for research is that it is necessary to consider the structural context of the parental role in its entirety and explore a complex interplay among specific configurations. Moreover, a specific life-course stage within which this structural context is embedded should be taken into account. My study considers configurations of children's age and living arrangements that are particularly characteristic of midlife and shaped by developmental experiences of middle-aged adults and social-structural influences over the life course.

A second potential solution for the "parenthood paradox" may lie in the fact that psychological implications of parenthood are conditional on the qualitative aspects of the parental role. My findings indicate that parenthood is beneficial to parents' mental health if the perceived quality of relationships with children and satisfaction with parental provision are high, and detrimental to well-being if the quality of the parental role is low.

Third, the psychological implications of parenthood vary across mental health outcomes. Some dimensions of mental health are particularly responsive to the strains of parenthood,

whereas other dimensions remain virtually unaffected by parental experiences. An important implication for research on the psychological consequences of family roles and other social roles is that a wide range of mental health outcomes should be considered because an examination of only one outcome can present a misleading picture of the effects of specific roles.

A fourth explanation for the "parenthood paradox" is that not all associations between parental status and mental health observed in previous studies represent the effects of parenthood. This study based on comparisons of siblings within families reveals the importance of unobserved family influences experienced by parents early in life. Some associations observed at midlife reflect confounding effects of early-life characteristics that affect configurations of the parental role *and* mental health. The purported psychological costs or benefits of parenthood observed in individual-level models that contribute to the complex picture of parenthood as a mixed blessing may, to some extent, reflect unobserved family heterogeneity rather than actual psychological implications of parental statuses.

5.1.3. Similarity between Men and Women at Midlife

An important and somewhat surprising finding of this study is similarity in psychological reactions to parenthood and childlessness between men and women at midlife. My research on potential gender differences was guided by two hypotheses: the gendered role and the parental role perspectives. According to the gendered role perspective, because family and motherhood are more important to women than men, women should be more psychological responsive than men to the joys and vicissitudes of parenthood, even if men and women occupy similar configurations of the parental role. Conversely, the parental role perspective posits that men and women who occupy similar configurations of the parental role should exhibit similar

psychological outcomes. The findings of this study — with few exceptions discussed in subsequent sections — are remarkably consistent with the parental role perspective.

Contrary to some studies that showed that childlessness was more detrimental to women (Koropeckyj-Cox, 2002; Menaghan, 1989) and consistent with other studies that found no gender differences (Zhang & Hayward, 2001), my results indicate that even in "traditional" older cohorts, childless women — just like their male peers — are not psychologically disadvantaged by childlessness. They exhibit the levels of mental health that are similar to those of empty-nest parents and higher than well-being of all other parental status groups. Among parents, men and women are also similar with respect to psychological implications of specific parental characteristics. Similar structural contexts of the parental role or similar levels of parent-child relationship quality have similar psychological consequences for mothers and fathers, even with respect to psychological outcomes that are clearly gendered, such as depressive symptoms, autonomy, or positive relations with others. For example, although women consistently report more depressive symptoms and higher levels of positive relatedness than men, mothers and fathers who experience similar quality of relationships with children at baseline show comparable levels of depressive symptoms and positive relations ten years later.

Cohorts of men and women who were middle-aged in the mid-1990s experienced traditional gender role socialization in childhood and adolescence. Mothers and fathers performed gendered-typed family roles in young adulthood (Carr, 2004; 2005). Yet, my study suggests that developmental experiences over the life course and period influences (such as social transformations of the 1970s) can override early-life socialization to some extent and make men and women more similar in psychological responses to their parental experience (or lack thereof). My findings underscore the powerful role of within-cohort changes (Alwin, 1996).

An important implication for research is that psychological effects of family roles should be examined taking into account the interplay of aging and developmental processes, on the one hand, and cohort and period influences, on the other hand.

5.1.4. Limitations and Directions for Future Research

A limitation of this study is insufficient ability to distinguish between aging and cohort influences. What I presume to be developmental and maturational processes at midlife may also reflect distinctive experiences of specific birth cohorts. Although I control for age, I have not tested whether the effects of the structural and qualitative aspects of the parental role differ by birth year. All the WLS participants and even their siblings are similar in age. Yet, it is possible to explore cohort differences with the MIDUS data (e.g., Carr, 2002), and I plan to pursue this direction in future research.

Although the meaning, experiences, and psychological implications of parenthood differ by race (Nievar & Luster, 2006), the samples I use are based largely on White respondents. Future studies of parenthood and psychological well-being should rely on data that allow detailed racial comparisons. Further, most families in this study have been in heterosexual marriage; therefore, my findings may not reflect experiences of cohabiting heterosexual couples with children and same-sex couples.

A distinction between positive and negative aspects of intergenerational relationships should receive more attention. For example, Koropeckyj-Cox (2002) found that having more children ensures at least one excellent relationship but also increases the odds of having a problematic one. Davey and Eggebeen (1998) argue that older parents who receive more help from adult children than they give to these adult children experience dependence as a source of distress. Blieszner, Usita, and Mancini (1996) urge researchers to move beyond the focus on

"nurturant and affectionate" dimensions of parent-child relationships, and to take into account both beneficial and undesirable aspects of intergenerational ties, such as intergenerational conflict, parental disappointment at children's failures, and burdensome demands for assistance. Because positive and negative aspects of intergenerational relationships tend to have distinctive effects on psychological well-being and distress (Newsom, Nishishiba, Morgan, & Rook, 2003; Newsom, Rook, Nishishiba, Sorkin, & Mahan, 2005), they are likely to have significant effects on psychological well-being net of each other. In future research, I plan to explore the complex interplay of positive and negative aspects of parent-child relationships.

In the remaining sections of this chapter, I discuss in more detail the main findings summarized above. I also provide a more detailed interpretation of consistent patterns and few exceptions to them as well as speculate about the implications of these findings for future cohorts of middle-aged parents and childfree individuals.

5. 2. Beyond Parental Status: Heterogeneity of Family Experiences at Midlife

Consistent with previous research (Koropeckyj-Cox, 1998; Umberson, 1996), my study points to the necessity of moving away from conceptualizing parenthood as a dichotomous status that one either occupies or does not and to the focus on actual experiences of parenthood and their implications for well-being (Ryff & Seltzer, 1996). As revealed both by the WLS and MIDUS findings, parental status *per se* is not related to depressive symptoms and psychological well-being; main differences in mental health arise from specific structural and qualitative characteristics of the parental role. In the WLS, nonparents are similar to parents of nonresidential adult children in terms of depressive symptoms and psychological well-being both in the between- and within-family models. Moreover, after adjustment for marital status and health in the between-family models, childfree individuals exhibit even higher levels of

environmental mastery, purpose in life, self-acceptance, and the composite index of psychological well-being than empty-nest parents. Parental status is not related to mental health in MIDUS either; rather, its mental health implications are moderated by the qualitative aspects of parenthood.

Americans have strong beliefs about the positive effects of childbearing and childrearing. Without children, women, especially, are believed to feel empty, lonely, and unfulfilled (Goldsteen & Ross, 1989). Yet, some studies defy stereotypical expectations for the effects of family roles on mental health in midlife and later life. Even among women who experienced strong pro-natalist pressures in young adulthood, childlessness is not associated with psychological disadvantage in midlife (Koropeckyj-Cox, Pienta, & Brown, 2007). Childlessness has only weak effects on psychological well-being of older adults, and marital status was shown to be more important than parental status (Koropeckyj-Cox, 1998). Among the very old, childlessness was associated with depressive symptoms and loneliness *only* among men who were unmarried (Zhang & Hayward, 2001). Using the Dutch twin sample, Kohler, Behrman, & Skytthe (2005) found that the effects of having had children on parents' subjective well-being were relatively small — if they existed at all — for men and women at ages 50-70. The number of children ever born did not have a large or significant effect, nor was there a strong positive effect of having had at least one child.

In my analysis, nonparents are not compared to parents who have minor and/or adult children at home and, thus, are particularly prone to parental strain and distress. I compare childfree individuals with empty-nest parents — a group with the highest levels of psychological well-being, and nonparents are similar to this reference group in terms of good mental health. In addition, nonparents are compared to parents with different levels of parental satisfaction and

quality of relationships with children. For most psychological outcomes, nonparents fare better than parents with low levels of relationship quality or low satisfaction with parental provision. My findings and previous research underscore that heterogeneity among parents is more important than differences between parents and childfree individuals. Wheaton (1990) showed that the effects of transitions on mental health depended on the "history" of one's experience in a role affected by the transition. A mere occupancy of a role maybe less important than life course influences shaping the role trajectory. Therefore, research on the psychological implications of the parental role should focus on the specific contexts within which midlife parenthood is experienced as detrimental or beneficial to well-being.

A potential caveat in the interpretation of the effects of childlessness is whether childless status is voluntary or involuntary. It is possible that childlessness threatens mental health only if it is involuntary. Because the birth control pill became available in 1960/61, the WLS cohort may be the first cohort who had a means to exercise the choice to remain childless. Most WLS participants started their childbearing after the advent of the pill, which may suggest a voluntary nature of childlessness and, thus, high levels of psychological well-being among childfree individuals in this study. I could not test this hypothesis with my data, although if the involuntary childless do exhibit lower levels of well-being than the childless by choice, adjustment for the reasons for childlessness would have *increased* psychological well-being of the childless in my models, not decreased it.

My findings on the psychological effects of childlessness are not specific to the WLS and MIDUS cohorts. Using the 1993 Asset and Health Dynamics Among the Oldest Old data for people born between 1900 and 1923, and a subsample of NSFH respondents who were born between 1904 and 1938, Zhang and Hayward (2001) and Koropeckyj-Cox (1998; 2002) find few

detrimental psychological implications of childlessness. Koropeckyj-Cox (1998) argues that cultural beliefs linking childlessness with diminished well-being in later life are not supported empirically at the population level because childfree men and women are not at a disadvantage in terms of loneliness or depressive symptoms. Zhang & Hayward (2001) find that the effects of childlessness on loneliness and depressive symptoms remain minimal at very advanced ages.

Which factors may explain psychological resilience of the childless? Childfree individuals who have chosen to remain childless may perceive their successful avoidance of parenthood as the ability to exercise control over the direction of their lives (Veevers, 1980). Middle-aged and older adults who were confronted with involuntary childlessness may have found satisfying alternative roles and relationships (Koropeckyj-Cox, 2002). Childless persons may adjust to their status by cultivating relationships that provide important sources of social integration and support. Although older childfree individuals may be less integrated than parents in family support networks, they are equally likely to be integrated in close friendship networks (McMullin & Marshall, 1996). Moreover, some childless persons engage in the process of anticipatory socialization by developing ties with relatives and friends that may prepare them for future exigencies and substitute for the resources provided by adult children to (Dykstra, 1990; Johnson & Catalano, 1981; Koropeckyj-Cox, 2002). In addition, parents do not always benefit from relationships with adult children. Some aspects of parent-adult child relationships may be problematic, and stressful intergenerational ties can be detrimental to parental well-being (Connidis & McMullin, 1993; Umberson et al., 1996).

5. 3. Diversity of the Structural Context of Parenthood at Midlife

The emphasis on parental status groups as monolithic categories "has ignored the diversity within these groups and its relation to subjective well-being" (Koropeckyj-Cox, 2002,

p. 957). The demands and rewards of parenthood vary over the life course. Young adult parents of minor children report more distress than their childfree peers and older parents whose adult children live separately (Koropeckyj-Cox, 1998; Ross & Van Willigen, 1996). What has not received much attention, though, is the psychological implications of having *both* minor and adult children. Therefore, midlife is a particularly fruitful area for family researchers because it is a life course stage when several phases in the family life course are particularly likely to overlap. Many parents simultaneously have minor children at home and adult children who live independently, whereas some parents coreside with their adult children, and some have only minor children.

Descriptive statistics in the WLS reveal the remarkable diversity of parental experience at midlife in a cohort that assumed adult roles in the 1950s and early 1960s, had relatively stable marriages, and has been typically considered as adhering to traditional family norms. Even in this presumably traditional cohort, only half of the participants were empty-nest parents at midlife, whereas the other half of the participants comprised childfree individuals, parents of minor children, parents of coresidential adult children, and parents who already launched at least one child but still had other children in the home.

Previous research has not adequately explored the multiple configurations of the *structural* context of the parental role. Umberson and Williams (1999) observe that researchers typically do not attempt to consider in one study biological and nonbiological children, age and the number of children, and living arrangements of children. Because most studies restrict their focus to a single structural characteristic, "research tends to remove elements of family status from the social context that actually shapes how these elements affect mental health" (Umberson & Williams, 1999, p. 228).

Structural configurations of the parental role capture diversity that is particularly characteristic of midlife parenthood. Research has extensively focused on intergenerational coresidence, the presence of minor children at home, or relationships with nonresidential adult children. However, these factors were typically considered separately, without a special attention to comprehensive examination of the complexity of various combinations of children' age and living arrangements experienced by parents at midlife. One's position in the social structure, i.e. the roles one occupies and structural configurations of these roles, shape the nature of parent-child relationships and parental well-being (Umberson, 1996). The balance of positive and negative effects associated with parenthood depends on the structural context of parenthood, including residential status of the child, age of youngest child, marital status of the parent, etc. (Umberson & Gove, 1989). It is particularly important to consider psychological implications of the diversity of parental configurations because there is so much potential for both psychological rewards and costs of parenthood at midlife.

5. 3. 1. Psychological Advantage of Empty-Nest Parents

Findings from the WLS underscore heterogeneity *among* parents based on structural characteristics of the parental role. Whereas childfree individuals are similar to empty-nest parents in terms of mental health, middle-aged parents who have only nonresidential adult children report lower levels of depressive symptoms and higher levels of psychological well-being compared to all other configurations of the parental role. Parenthood is a highly demanding and deeply rewarding experience that permeates multiple domains of mothers' and fathers' lives. Not surprisingly, research shows that parenthood entails a broad range of psychological rewards and costs (Nomaguchi & Milkie, 2003; Umberson & Gove, 1989; Umberson & Williams, 1999). When the strains of parenthood attenuate, for example, when

children become self-sufficient adults, the psychological costs of parenthood decline and the psychological rewards increase (Lachman, 2004; Ryff & Seltzer, 1996).

The psychological advantage of empty-nest parents could also reflect the fact that they have achieved an important developmental task — raising their children to be independent and successfully launching children from their home. Achievements and adjustment of adult children constitute an important criterion with which midlife parents evaluate themselves and their accomplishments in life. Parental well-being is associated with the life circumstances of non-residential adult children. Parents who watch children transform into well-adjusted and accomplished adults experience midlife as a time of fulfillment and pride (Ryff, Schmutte, & Lee, 1996). Conversely, adult children's problems tend to compromise parents' mental health (Greenfield & Marks, 2006).

In contrast to empty-nest parents, having at least one child at home is associated with higher levels of distress and lower levels of psychological well-being among middle-aged parents. This pattern was observed for both mothers and fathers and across multiple contexts of parenthood: whether the coresidential child is very young, adolescent or adult, biological or nonbiological, whether there are several children in the household, whether parents have at least one child at home and other children living separately.

5. 3. 2. Parenting Minor Children at Midlife

Parents of minor children report lower levels of environmental mastery, personal growth, purpose in life, and the composite indicator of psychological well-being. These differences largely persist net of all explanatory variables in between-family models as well as in within-family models that adjust for unobserved genetic and environmental influences shared by siblings. This pattern certainly reflects the mere strain of having a young child in the house,

consistent with research on young adult parents (e.g., Evenson & Simon, 2005; Nomaguchi & Milkie, 2003). Parents of minor children are exposed to daily strains and face constraints on employment and social activities (Gove & Geerken, 1977; Ross & Van Willigen, 1996; Sanchez & Thomson, 1997; Simon, 1992; Umberson, 1989).

Moreover, compared to their young adult peers, middle-aged parents who have only minor children may feel other pressures in addition to the time- and labor-intensive demands of caring for young children. Middle-aged parents of minor children gave birth "off-time" or later than their generational peers. "Off-time" transitions have been linked to negative behavioral, psychological, and health outcomes (Menaghan, 1989; Pearlin & Skaff, 1996). Off-time transitions may be more crisis-like because individuals who experience them are less prepared and, consequently, more distressed than if the same transition had taken place at the expected time. Furthermore, off-time transitions are less likely to be shared by peers in one's social networks, which may result in the inadequate provision of social support during the difficult transition period (Cooney, Pedersen, Indelicato, & Palkovitz, 1993). Role transitions, such as becoming a mother or a father, that are "off-time" may trigger stressful consequences for parents who are too young or too old according to conventional standards because such parents might be seen by themselves and others as socially deviant, and because "opportunities and services are likely to be organized around society's normative timetable and may be less accessible to those who deviate in timing or sequence" (Vicary & Corneal, 2001, p. 82). Moreover, physical and psychological robustness of "off-time" parents may not be up to the strains of parenthood. Other age-specific demands on parents may also conflict with the responsibilities of the parental role.

5. 3. 3. Coresidence with Adult Children

Parents who have at least one adult child in their household (and no minor or nonresidential adult children) report lower levels of purpose in life, personal growth, and the composite index of psychological well-being both in the between- and within-family models. In addition, parents in this category exhibit a greater likelihood of depressive symptoms and lower autonomy, environmental mastery, and self-acceptance in the between-family models.

Movements into and out of the home by adult children reflect a critical aspect in the lifelong development of the parent-child relationship: change in children's autonomy and dependency vis-à-vis parents over the life course of the relationship. The changing nature of young adult children's dependency and autonomy should have major implications for parent-child relations and for parental experiences (Aquilino, 1996; Ward & Spitze, 1992).

Midlife parents evaluate themselves based on their children's accomplishments. The transition to adulthood is a time when parents see their children in adult roles with adult responsibilities and thus have insights into each child's strengths and weaknesses. Parents whose grown children struggle with life's challenges may experience regrets about what they did or did not do as parents (Ryff, Schmutte, & Lee, 1996). Moreover, in judging their children, parents tend to apply standards similar to those they used for themselves. Because children of the WLS participants were more likely to delay their transition to independence than older generations, parents who left the nest early when they were young adults may perceive their children's coresidence as a nonnormative transition.

Coresidence is most often a response to children's rather than parents' needs, especially at midlife (Aquilino, 1990; Ward et al., 1992). Coresidence with adult children may be particularly stressful for parents in the context of children's failure to establish normative adult

roles (Aquilino & Supple, 1991). For parents, coresidence with children who have failed to maintain adult statuses may indicate the lack of success in the parental role as well as a failure on the part of the child in the adult role. Moreover, the lifestyle that parents expect at mid- and late life may be delayed or disrupted because of intergenerational living arrangements (Pillemer & Suitor, 2002; Ward & Spitze, 1996). Parents who live with an adult child report high levels of parental strain (Clemens & Axelson, 1985; Umberson, 1992), especially when children have problems or fail to maintain socially expected adult statuses (Greenfield & Marks, 2006; White, 1994). Parental satisfaction with coresidence is adversely affected by children's problems, such as unemployment, divorce, financial dependence, and mental or physical illness (Aquilino & Supple, 1991; Pillemer & Suitor, 1991; White, 1994). These findings underscore that an analysis of parental well-being necessarily reflects the life course stage of *both* parents and children.

In terms of relationships, coresidential adult children may be a mixed blessing. Parents who share a residence with a child over age 18 report more social support from children, but at the same time more strained relationships with their adult children and more dissatisfaction with the parental role (Umberson, 1992). Coresidence is a structural configuration that is conducive to strains in intergenerational relationships and parental dissatisfaction. In turn, these negative aspects of parent-child relationships are more strongly associated with distress than positive, supportive dimensions of relationships (Umberson, 1992).

My findings suggest that another reason for psychological disadvantage of parents with coresidential adult children is the selection of lower-SES individuals into coresidence. When differences in mental health between empty-nest parents and parents who coreside with their adult children are explained, it is mostly due to parents' SES and health. Parents of at least one coresidential adult child tend to have lower SES and worse health than their empty-nest peers,

and these factors are in turn associated with lower levels of mental health. Parents' declining health and resulting need for care is not a common reason for coresidence — much less common than children's economic needs (Aquilino, 1990; Crimmins & Ingegneri, 1990; Ward, Logan, & Spitze, 1992). Thus, parents' health is most likely related to coresidence via its link to SES: coresidence is more common in lower-SES families (Crimmins & Ingegneri, 1990; Grundy, 2000), and low SES in turn is associated with worse health, especially among middle-aged and young-old adults (Beckett, 2000; Gorman & Sivaganesan, 2007; Lynch, 2003).

5. 3. 4. The Quintessential Midlife Situation: Having Both Minor and Adult Children

Being a middle-aged parent of minor *and* adult children simultaneously — regardless of children's living arrangements — appears to have particularly adverse consequences for mental health. This pattern persists after adjustment for parents' marital status and marital history, the number of children, and the age difference between the oldest and youngest children. Parents who have both minor and coresidential adult children exhibit lower levels of environmental mastery, personal growth, and purpose in life in both between- and within family models, and these effects remain unexplained. Compared to empty-nest parents, parents of at least one minor child and at least one nonresidential adult child exhibit more depressive symptoms and lower levels of environmental mastery, purpose in life, self-acceptance, and the composite index of psychological well-being both in the between- and within-family models, which suggests that these differences are not artifacts of unobserved genetic and early-life environmental influences shared by siblings. In contrast, parents who have minor and nonresidential adult children are similar to empty-nest parents in terms of autonomy, personal growth, and positive relations with others.

There has not been much research on parents who have *both* minor and adult children. Having nonresidential adult children and at least one minor child still at home is the quintessential situation for what is typically thought of as midlife parents: an almost empty nest. Although this is not the most common family arrangement for middle-aged parents, midlife is the life course stage when this situation is overwhelmingly more likely than at other stages. Umberson (1992) shows that parents who have adult children living away from home and at least one minor child report higher levels of strain with their nonresidential adult children and do not visit with their older children as often as parents who have a completely empty nest because younger children impose constraints on parental time. In addition, obligations and demands of caring for young children may negatively affect relationships with older, nonresidential children. Parents who have minor children at home and adult children living elsewhere may have limited time to maintain relationships with adult children (Umberson, 1996). Parents who still have young children in the home report higher levels of strain with their nonresidential adult children (Umberson, 1992; 1996). However, it is not clear form this research whether psychological implications of having truly independent adult children living outside the parental home are different from having children in residence at a college or university who still depend on parents for financial support.

Furthermore, about 40% of families in my study who have both minor and adult children have been formed by remarriage — when one or both partners have children from previous unions and common children in a new union (Stewart, 2002). Although remarriage is becoming increasingly common, it is still an incomplete institution lacking clear social norms and expectations (Booth & Edwards, 1992; Cherlin, 1978). Stepfamilies may be characterized by higher levels of tension and strain in relationships (Coleman, Ganong, & Fine, 2000; Stewart,

2005). Therefore, remarriages may be stressful for both children and adults (Coleman et al., 2000; Henry & Lovelace, 1995). I discuss the effects of remarriage in more detail below in the section on gender differences.

5. 3. 5. Heterogeneity with Respect to the Qualitative Aspects of the Parental Role

Another fundamental source of diversity among middle-aged and older parents lies in the *nature and quality* of parent-adult child relationships that are strongly related to parental psychological well-being (Connidis & McMullin, 1993; Koropeckyj-Cox, 2002). Ryff & Seltzer (1996) argue that the general deficit of knowledge about the middle years of the parental experience occurs during a most interesting parenting stage: when parents begin to establish adult-to-adult relationships with their growing children. My findings are consistent with previous research indicating that psychological benefits of parenthood are conditional on satisfying relationships with adult children (Koropeckyj-Cox, 2002). Poorer parent-child relationships are linked to worse psychological outcomes among both mothers and fathers, whereas high-quality intergenerational ties are conducive to parental psychological well-being (Connidis & McMullin, 1993; Koropeckyj-Cox, 2002; Pillemer & Suitor, 1991; Silverstein & Bengtson, 1991).

My findings consistently indicate that parenthood is beneficial only under conditions of positive relationships with children and positive perceptions of one's performance as a parent. Overall, parents with average or low relationship quality or low satisfaction with parental provision have similar or worse mental health than nonparents. It is parents with high levels of relationship quality that benefit from parenthood. This pattern is consistent with results from models of the structural characteristics of the parental role suggesting that nonparents are not different from the most psychologically advantaged group of parents: empty-nest parents, and nonparents fare better than parents of minor and coresidential adult children. Thus, being a

parent does not guarantee psychological well-being. This holds even later in life when children do not require time- and labor-intensive parental care and are far beyond the preschool ages that have received the most attention as a time of particular parenting stress. It is specific characteristics — structural and qualitative — of parental roles that matter the most for mental health of middle-aged and older adults.

In my study, pooled time-series fixed-effects models based on the two waves of the MIDUS data show that positive changes in relationships with children between midlife and young-old age are related to positive changes in parents' psychological well-being. This finding is consistent with arguments of Rossi and Rossi (1990) who suggested that intimacy between parents and adult children increases over adult years and hypothesized that such increments in intimacy might have positive consequences for parents' well-being.

Why are high-quality relationships with children related positively to parents' mental health? First, a positive sense of self and life satisfaction are rooted in continued performance of valued roles to which the individual is committed (McCall & Simmons, 1978; Silverberg, 1996). Family roles and responsibilities are shaped by normative expectations. Because normatively children represent realms of inescapable responsibility, parents who were not actively involved in their children's lives may develop a sense of unfulfilled expectations and lost opportunities. The failure to exercise parental responsibility as a violation of parental role prescriptions might have negative consequences for parental self-evaluation at midlife (Ryff, Schmutte, & Lee, 1996). Thus, satisfying relationships with children may be a sign of a good performance in the parental role (Silverberg, 1996). In contrast, unsatisfactory and problematic parent-child relationships may indicate failure in the parental role and lead to negative self-reevaluation at midlife, life dissatisfaction, and midlife identity concerns.

Second, from a stress process perspective (Pearlin, 1999), problematic relationships with children are a chronic stressor, and chronic stress is associated adversely with mental health and the self-concept (Thoits, 1999). Parents may perceive their children's disagreements as a general stressor within the context of family life (Pearlin & Lieberman, 1979) and as a cause to feel lower life satisfaction and lower competence in the parental role (Silverberg, 1996). Research shows that older parents tend to view relationships with minor children in more positive terms than do younger parents, regardless of age of the minor child. This may occur because older parents have more financial and personal resources, and these may reduce the burden and strains of parenting and facilitate positive relationships with young children (Goetting, 1986; Umberson, 1996).

5. 4. Similarities and Differences between Multiple Aspects of Mental Health

Several studies that used multiple mental health outcomes indicate that parenthood may entail *both* psychological costs and benefits (e.g., Nomaguchi & Milkie, 2003; Umberson & Gove, 1989). Demands from children may be conducive to psychological distress but at the same time contribute to a parent's sense of being needed and having purpose in life (Umberson & Gove, 1989). Ross and Huber (1985) found that children had contradictory effects on mothers' well-being, increasing it through some mechanisms and decreasing it through others. Specifically, in their study, children increased economic hardship thereby elevating depressive symptoms, but they also directly decreased depressive symptoms, possibly because children indicate successful fulfillment of role obligations for women. When compared with childfree individuals, parents with children in the home have low levels of affective well-being and satisfaction, and high levels of life-meaning; parents with adult children living away from home

have high levels of affective well-being, satisfaction, and life-meaning (Umberson & Gove, 1989).

These studies suggest that a wide range of measures of parents' well-being should be considered because different psychological outcomes may provide different pictures of the psychological implications of parenthood. Using depressive symptoms and multiple dimensions of positive well-being, I found this to be true for the structural configurations of the parental role but not its qualitative aspects. Qualitative aspects of the parental role show consistent associations with parents' mental health across multiple outcomes: with very few exceptions, for every dimension of psychological well-being, higher levels of relationship quality and satisfaction with parental provision are related to better mental health. In contrast, structural characteristics of parenthood at midlife are differentially related to specific mental health outcomes. The presence of minor children and coresidential adult children in different combinations appear particularly detrimental to parents' environmental mastery, personal growth, purpose in life, and self-acceptance. Parents in these structural configurations tend to report lower levels of these four outcomes than parents of nonresidential adult children.

Interestingly, environmental mastery, personal growth, purpose in life, and self-acceptance are exactly the four dimensions of Ryff's scales identified by Springer and Hauser (2006) and Abbott et al. (2006) as virtually indistinguishable. Consistent with these studies of the structure of psychological well-being, my findings show that these four dimensions are related similarly to parenthood at midlife. Thus, combining them in a composite indicator of psychological well-being appears justifiable. In contrast, autonomy and positive relations with others are only weakly related to the stressful structural configurations of parenthood. These patterns are also consistent with the results of factor analysis of Ryff's scales revealing that

autonomy and positive relations were distinct from other dimensions (Abbott et al., 2006; Magee, 2005; Springer & Hauser, 2006).

What is it about parenting minor children and coresidential adult children that adversely affects environmental mastery, personal growth, purpose in life, and self-acceptance, but not autonomy and positive relations with others? Ryff, Schmutte, and Lee (1996) argue that children's adjustment and achievement predicts parents' basic regard for themselves and their past lives (self-acceptance), their sense of meaning and directedness in life (purpose in life), and their sense of being able to manage the world around them (environmental mastery). They also included other aspects of well-being in their analysis, such as autonomy, personal growth, positive relations with others, and depressive symptoms to examine the pervasiveness of links between children's lives and parents' mental health.

Demands from children may be overwhelming and undermine parents' sense of manageability of the world and predictability of their immediate environment and, thus, lead to decreased environmental mastery. The presence of minor children at midlife is associated with lower self-acceptance because parents may view themselves as being "out of step" with their cohort peers most of whom started childbearing early. In addition, having coresidential adult children may indicate a nonnormative life course trajectory, especially if parents evaluate their children's homeleaving based on their own early-life transitions that unfolded under dramatically different demographic conditions. In turn, perceptions of not being successful in launching their children and not complying with normative expectations may lead to lower levels of self-acceptance among parents.

Previous research suggests that parenthood is positively associated with life meaning (Umberson & Gove, 1989; Umberson, 1996). The demands of the parental role may be

conducive not only to psychological distress but also to a parent's sense of being needed and having purpose in life (Umberson & Gove, 1989). The concept of life-meaning is similar to the dimensions of purpose in life and personal growth of Ryff's scales. However, my findings indicate that both purpose in life and personal growth are lower among parents who have at least one minor and/or coresidential adult child at home compared to childfree individuals and empty-nest parents. It is interesting that several methodological studies provided consistent evidence that purpose in life and personal growth reflect a single underlying construct (Abbott et al., 2006; Pudrovska, Hauser, & Springer, 2006; Springer & Hauser, 2006). Substantively, having children at home can undermine parents' purpose in life and personal growth because parents may have less time and energy to pursue interests and intellectual, spiritual, and social activities that promote their development and are aimed at realizing their potential. Moreover, the global sense of meaning and directedness in life may be outweighed by daily stressors of caring for children.

Conversely, autonomy and positive relations with others are not associated with the structural configurations of the parental role in my analysis. When autonomy is defined as the sense of self-efficacy (Bandura, 1997), mastery (Pearlin, 1999), or internal locus of control (Rotter, 1966), studies show that parenthood, especially parenting young children, is associated with reduced autonomy and "the overwhelming feeling that one' sense of independence is severely compromised by factors outside one's control" (Stamp & Banski, 1992, pp. 285-286). Yet, autonomy as a dimension of Ryff's scales of psychological well-being reflects a different psychological trait. According to Ryff (1989, p. 1071), autonomy refers to "an internal locus of evaluation whereby one does not look to others for approval, but evaluates oneself by personal standards," the ability to resist social pressures to think and act in certain ways. Because parents are responsible for their children's well-being and healthy development, they have to make

important decisions on a daily basis with the realization that their actions may have long-term repercussions for children's adjustment. Thus, parental responsibilities may make adults less subject to social pressures and more concerned with children's well-being than with social conventions.

Moreover, parenthood is associated with maturity, and parents have to be assertive with their children by establishing and upholding rules in the family. Autonomy defined as a tendency to assert one's opinions in the face of opposition is an important aspect of maturity (Magee, 2005). In addition, there can be a developmental explanation for the similarity in autonomy across different groups of parents and childfree individuals. Midlife is viewed as a life-course stage when autonomy is at its peak (Babladelis, 1999; Magee, 2005; McAdams, 1985). Therefore, autonomy may be high for most adults at midlife regardless of parental status and the structural context of parenthood. Even in later life, parents value autonomy vis-à-vis adult children. Older parents emphasize autonomy and independence from adult children and underscore the reciprocal nature of their exchange relationships with children (Spitze & Gallant, 2004).

Likewise, some evidence suggests that parenthood — regardless of specific configurations of the parental role — may be widely beneficial for promoting positive relations with others. Parents report higher levels of social integration and social resources than their childless counterparts (Eggebeen & Knoester, 2001; Nomaguchi & Milkie, 2003). Schoen and colleagues (1997) argue that parenthood can strengthen one's position in social networks. Whereas the economic value of children has disappeared in Western societies, their value as a social resource has persisted. Having children is an important way in which people create social capital for themselves. For example, parents and in-laws of adults may be more likely to provide

emotional, instrumental, and financial support to their children when those children are parents; or adult siblings may stay in closer contact after parenthood motivated by a desire for their children to know one another well; or parents may be more likely than nonparents to seek out relationships with neighbors.

Coleman (1988) suggests that children can create social capital by establishing new relationships that parents can use as social resources to achieve their interests. These interests are not necessarily instrumental because social integration with family and friends provides a basis for the exchanges of social and emotional support (Schoen et al., 1997). A desire to cultivate positive relationships may be an important motivation for parenthood. Parents, especially mothers, are likely to view children as a social investment (Blake & Del Pinal, 1981). Schoen et al. (1997) show that persons who value social relationships created by children are more likely to intend to have (another) child.

Thus, my findings suggest that the emphasis on only *one* psychological outcome can lead to a misleading portrait of parenthood. A distinction should be made not only between positive and negative psychological functioning, but also among different dimensions of positive psychological well-being. Certain structural configurations of the parental role may be detrimental for some dimensions of positive well-being and beneficial for others.

5. 5. Unobserved Heterogeneity in the Association between Parenthood and Mental Health

A comparison of between-family models and fixed-effects sibling models in the WLS suggests that unobserved genetic and early-life environmental influences shared by siblings within families may confound observed associations between certain configurations of the parental role and parents' mental health at midlife. Specifically, compared to empty-nest parents, individuals who have only coresidential adult children report higher levels of depressive

symptoms and lower levels of autonomy, environmental mastery, and self-acceptance in the between-family models. Yet, these differences largely disappear in the within-family models, which suggests that certain unobserved early-life influences shared by siblings within families both increase the likelihood of intergenerational coresidence at midlife and reduce parents' mental health. Similarly, parents of at least one minor child and at least one coresidential adult child report higher levels of depressive symptoms and lower levels of self-acceptance than empty-nest parents in the between family models. These differences are explained by unobserved genetic and early-life environmental influences in the within-family models. Potential unobserved family influences that can affect both mental health and configurations of the parental role at midlife are discussed in the next section.

5. 5. 1. Early-Life Environmental Influences

In the between-family models I included prospectively measured sociodemographic characteristics of family background that can confound the relationships between parenthood and mental health in midlife, such as parents' education, family income, family structure, religious affiliation, etc. The effects of children's age and living arrangements persist net of these observed early-life variables and are reduced appreciably only in the fixed-effects models. Therefore, sociodemographic family background factors are unlikely to confound the associations between midlife parenthood and mental health.

Which early-life environmental influences in the family of origin omitted from the models in my study can potentially affect *both* reproductive behaviors (i.e. parenthood) and mental health over the life course? Research in evolutionary psychology underscores the importance of early-life stressors and hardships. According to Belsky, Steinberg, & Draper (1991), two divergent developmental pathways promote reproductive success in the contexts in

which they emerge. The first strategy (Type I) develops in children when contextual stressors foster insensitive, harsh, and rejecting behavior in their parents, which tends to induce in a child insecure attachment, mistrustful internal working model, and opportunistic interpersonal orientation. Insecure attachment, in turn, may lead to early maturation and puberty associated with earlier sexual activity, short-term pair bonds, and more offspring yet limited parental investment.

In contrast, the second strategy (Type II) develops in children when spousal harmony between their parents, adequate financial resources in the family of origin, and other favorable environmental characteristics promote sensitive and supportive parenting, which in turn is related to children's secure attachment, trusting internal working model, and reciprocally-rewarding interpersonal orientation. This psychological profile is associated with later maturation/puberty, later sexual activity, long-term pair bonds, fewer offspring, and greater parental investment (Belsky, Steinberg, & Draper, 1991).

Early-life stress is a strong candidate for potential confounding mechanisms because it is related not only to reproductive strategies but also to mental and physical health in adulthood (Hayward & Gorman, 2004). For example, experiences of economic deprivation early in life are associated with physical and mental health problems in late life even among higher-SES and resilient older adults (Pudrovska, Schieman, Pearlin, & Nguyen, 2005). Parental death in childhood is associated with depressive symptoms in adulthood, especially among women (McLeod, 1991). Thus, unobserved early-life stressors and hardships and their pervasive ramifications can confound the association between parenthood and mental health at midlife by influencing *both* psychological well-being and reproductive behaviors that result in specific structural configurations of the parental role.

Developmental psychologists have extensively studied the long-term implications of parenting behaviors and parent-child interactions for children's subsequent development. One way that relationships with parents may affect children's reproductive behaviors in adulthood is by shaping adult attachment styles — the way individuals relate to others and perceive their intimate relationships, their levels of trust in a relationship, the extent to which they can enter into and sustain healthy relationships (Bowlby, 1980). Consistent, sensitive, responsive, and nurturing parenting behaviors maximize secure attachment, in part, because they increase oxytocin levels and reduce cortisol levels (Carter, 1998; Insel, 2000). In turn, parent-child attachment has the long-term implications for adult romantic attachments and other forms of adult relationships (Hazan & Shaver, 1987). One's attachment style is associated with union formation and, ultimately, reproduction (Kohler, Behrman, & Skytthe, 2005; Quesnel-Vallee & Morgan, 2003).

Relationships with parents early in life are relevant for this discussion because they influence not only offspring's parenting behaviors in adulthood but also offspring's mental health over the life course (Hetherington, Henderson, Reiss, & 1999; Rubin, Hymel, Mills, & Rose-Krasnor, 1991). Parental negativity has very strong connections with offspring's maladjustment, depressive symptoms, and other internalizing disorders (Hetherington, Henderson, & Reiss, 1999; Jacob & Johnson, 2001). Parental depressive symptoms predict offspring's depressive symptoms (Jacob & Johnson, 2001). Harsh and inconsistent discipline is associated with later antisocial behavior (Loeber & Dishion, 1983; Neiderhiser, Reiss, Hetherington, & Plomin, 1999), whereas insecure parent-child relationships, including parental rejection and forcefulness, are linked to later internalizing problems (Rubin, Hymel, Mills, & Rose-Krasnor, 1991). However, Neiderhiser, Reiss, Hetherington, & Plomin (1999) argue that

associations between parental conflict-negativity and adolescent antisocial behavior and depressive symptoms can be explained primarily by genetic factors.

More depressed children are found in families characterized by high levels of conflict, especially marital conflict (Kaslow, Brown, & Mee, 1994; Lewinsohn, Rohde, & Seeley, 1994). Characteristics of parent-child relationships associated with depressive symptoms include low levels of behavioral and emotional involvement, high levels of conflict and hostility, and a parenting style that is more autocratic, dominant, and controlling (Kaslow et al., 1994; Lewinsohn et al., 1994). Children of depressed mothers are at increased risk for both depressive symptoms and suicidal behavior and other psychiatric diagnoses (Kaslow et al., 1994). Abuse within the family is also associated with depressive symptoms and suicide (Malinosky-Rummell & Hansen, 1993). Evidence suggests that the connection between a childhood history of family violence and recurrent depressive symptoms in adulthood is mediated by chronic interpersonal problems in the adult's life (Kessler & Magee, 1994).

Most studies discussed above assume that all children in a family are treated similarly by parents. Yet, this assumption is not always true because siblings are often treated differently in families (Deater-Deckard, 2004). Moreover, children who are born at different stages of the parents' life course may be subject to different contextual stressors.

5. 5. 2. Specific Genetic Influences

Fixed-effects models comparing siblings within families can potentially take into account not only unobserved shared environment but also unobserved genetic influences, given that full nontwin siblings and fraternal twins share 50% of genes, and identical twins share all genetic make-up. It is impossible to separate clearly environmental influences in the family of origin from genetically transmitted traits, predispositions, and disorders (Maccoby, 2000; Plomin,

1994). Environments that parents create for their children may be influenced by parents' genetic predispositions. For example, depressive symptoms may be transmitted via genetic routes as well as via the stressful environment that depressed parents create for their children (Plomin, DeFries, McClearn, & McGuffin, 2000).

Recent advances in molecular genetics have made it possible to identify genes associated with complex behavioral outcomes. With respect to this study, if certain genes were shown to be associated *both* with the configurations of the parental role and parents' mental health, these genetic influences can potentially confound the relationship between parenthood and mental health observed at midlife. For example, members of a specific family may have a genetic predisposition to shyness or neuroticism, and these personality traits are related both to delayed family formation and higher levels of distress (Caspi, Bem, & Elder, 1989). Recent research suggests that two polymorphisms may be implicated in the relationship between parenthood and psychological well-being: a functional polymorphism in the promoter region of the serotonin transporter gene (5-HTTLPR) and the dopamine D4 receptor exon III repeat (DRD4).

5-HTTLPR is a functional polymorphism in the 5' regulatory promoter region of the 5-HTT gene. This polymorphism involves two common alleles that regulate transcription of the gene: the allele containing 14 copies of an imperfect 22 bp repeat that reduces transcription efficiency of the 5-HTT gene (s-allele), and the 16 repeat allele (l-allele) (Roy, Hu, Janal, & Goldman, 2007). The 5-HTTLPR s-allele and s-containing genotype have been associated with anxiety-related personality traits, affective disorders, and suicide (Bondy et al., 2000; Collier et al., 1996; Lesch et al., 1996; Willeit et al., 2003), although the evidence is mixed (Middeldorp et al., 2007; Willis-Owen et al., 2005). Moreover, research documented gene × environment interactions by showing that the presence of the 5-HTTLPR s-allele(s) was associated with an

elevated risk of depressive symptoms following multiple adverse events (Caspi et al., 2003; Eley et al., 2004; Grabe et al., 2005; Wilhelm et al., 2006).

In addition to psychological well-being, 5-HTTLPR can be related to reproductive behaviors. Research among rhesus macaques shows that males who are homozygous for the diallelic rh5-HTTLPR polymorphism are more successful reproductively (as measured by the number of offspring) during early and late adulthood than their heterozygous counterparts who reproduce mainly at an intermediate age (Krawczak et al., 2005). Suggestive findings were obtained in human studies as well. Hamer (2002) reports a statistically significant association between 5-HTTLPR and frequency of sexual activity among middle-aged men. Specifically, men with at least one copy of the short allele had sex more frequently than men without it. In addition, the 5-HTTLPR variant was shown to be associated with the number of sex partners, although this association was moderated by religious attendance (Halpern, Kaestle, Guo, & Hallfors, 2006).

Another polymorphism that was shown to be related both to psychological variables and reproductive behaviors is DRD4 in the dopamine receptor D4 gene. DRD4 is a 48 base-pair VNTR in the third exon, which can consist of 2 to 11 repeats (Halpern et al., 2006). Many studies have examined the relationship between the 7-repeat DRD4 polymorphism and novelty seeking in humans, although findings have been mixed. When an association is found, individuals with one or two long (7 repeat) alleles report significantly higher levels of novelty seeking than individuals with short alleles (Benjamin et al., 2000; Benjamin et al., 1996; Ebstein et al., 1997). In addition, the short allele (2-4 repeats) of the DRD4 polymorphism was shown to be associated with elevated neuroticism (Tochigi et al., 2006). With respect to reproductive behaviors, DRD4 may be related to age at first sexual intercourse and the number of sexual

partners (Guo & Tong, 2006; Hamer, 2002; Miller et al., 1999). Guo and Tong (2006) found an association between the relatively rare DRD4 3-repeat allele and sexual transition, with any-3R genotype being related to early first intercourse. Moreover, Hamer (2002) reported an association between the DRD4 7-repeat polymorphism and the number of sexual partners among middle-aged men.

When genetic data become available in the WLS, I plan to explore the role of 5-HTTLPR, DRD4, and other polymorphisms in the link between parenthood and mental health. I will estimate multiple regression models with dummy variables reflecting specific genotypes. For example, I will divide respondents into three 5-HTTLPR genotype categories: (a) two short alleles, (b) one short and one long alleles, and (c) two long alleles. Similarly, I will categorize respondents according to the DRD4 genotypes: (a) two short (2, 3, or 4 repeat) alleles, (b) one short and one long (5-11 repeat) alleles, and (c) two long alleles.

These models will test whether the effects of parental characteristics on psychological well-being decline significantly when dummy variables indicating genotypes are included in the models. If the effects of parental status variables decrease in magnitude, this will suggest that these effects are partly driven by genetic influences. In other words, a certain genotype may act as a selective pressure by influencing both individuals' mental health and the likelihood of occupying a specific family status. If the relationship between parenthood and mental health is stronger among people who have a specific allele than among people who do not have this allele, then it will suggest that this genetic variant is partly responsible for the association between parenthood and mental health observed in later life.

In addition, recent research has emphasized the importance of examining gene × environment interactions. To analyze whether the effects of family statuses on psychological

well-being differ significantly depending on genetic predispositions, I will create interaction terms between each of the family variables and each genotype. After testing two-way interactions, I will test whether genotype differences (if any) in the psychological impact of family roles and transitions are similar for men and women by including three-way interaction terms: parenthood × genotype × gender.

5. 5. 3. Unobserved Individual-Level Influences

Analysis of longitudinal MIDUS data reveals unobserved heterogeneity at the individual-level: stable characteristics of parents that remain unmeasured in the models but may confound the association between the qualitative aspects of the parental role and mental health. Specifically, purpose in life is related to perceived satisfaction with parental provision in between-individual but not within-individual fixed-effects models, which suggests that this association reflects unobserved stable characteristics of parents that both increase parental provision and enhance purpose in life. Such factors can be strong familial orientation, religious beliefs and church participation, and relationships with kin and ties in the community. Only in fixed-effects models, parents with either high quality of relationships with children or high levels of perceived satisfaction with parental provision report significantly higher levels of autonomy than childfree individuals and parents with lower relationship quality and low parental satisfaction. In this case, the positive effects of relationship quality and perceived satisfaction with parental provision on autonomy are suppressed in between-individual models and become evident only in within-individual fixed-effects models that adjust for confounding unmeasured variables. An example of such unobserved stable parents' attributes could be strong familial orientation or religious beliefs, in particular, beliefs in divine control, that are likely to be

associated positively with the quality of family relationships and negatively with individual autonomy (Schieman, Pudrovska, & Milkie, 2005).

5. 6. Gender Differences and Similarities in the Psychological Implications of Parenthood

Consistent with the parental role perspective, childlessness, structural configurations of the parental role, and qualitative aspects of parenthood have similar psychological implications for men and women. Only few gender differences were revealed in my analysis. Among WLS graduates and siblings, men who have both minor children and coresidential adult children do not differ from empty-nest fathers, whereas empty-nest mothers exhibit the highest level of psychological well-being, and mothers of at least one minor child and at least one coresidential adult child report lower levels of well-being than all other parents. Moreover, middle-aged women who have both minor and adult children — regardless of adult children's living arrangements — report lower levels of psychological well-being than their male and female peers, whereas empty-nest mothers report the highest levels of well-being.

The finding that mothers have lower psychological well-being when children are still in the house and then experience a mental health boost at the empty-nest stage contradicts the stereotypical image of mothers in families with the traditional gender division of labor who become depressed when children finally leave home. Yet, having minor and coresidential adult children may contribute to mothers' parental strain and, thus, elevate their distress and reduce psychological well-being. Moreover, empty-nest mothers may perceive that they have fulfilled their childrearing responsibilities. By contrast, fathers may feel that they were not fully involved when children were young and that they had lost their chance to have an impact once the empty-nest phase began.

Existing research has identified potential mechanisms through which adult children at home may affect mothers' well-being more adversely than fathers'. First, the presence of an adult child in the household may entail more housework for mothers compared to having an empty nest (Goldscheider & Goldscheider, 1994). For example, when asked how she would feel about an adult child's return home to live, a mother said: "I wouldn't like it. I'm tired of waiting on people" (Aldous, 1987, p. 232). The fact that empty-nest fathers are not significantly different from fathers with children at home may point to the relatively low level of intensive parenting engaged in by the men in this cohort. Because of this, the presence of children at home may not matter for men's mental health.

Second, from a life course perspective, coresidential adult children violate normative expectations with regard to the timing of nest-leaving (Settersten, 1998). Adult children who coreside with parents are less likely to be married and employed, and have lower levels of education than children living independently (Goldscheider & Goldscheider, 1999; Mitchell, Wister, & Gee, 2002). Compared to fathers, mothers may be more attuned to their children's problems and be more concerned about children's non-normative statuses (Aldous, 1987). Mothers attach greater importance to having well-adjusted children than do fathers, and mothers also tend to feel a greater sense of responsibility for their children's adjustment (Ryff, Schmutte, & Lee, 1996).

Third, parents whose mature children have failed to maintain normative statuses may feel less competent in their parental role, and older parents' feelings of parental competence are positively related to their well-being (Mancini & Blieszner, 1989). For many women of the WLS cohort, raising successful children to adulthood has been one of the greatest accomplishments a woman could aspire to (Carr, 2004). Therefore, mothers may be more adversely affected by

potential indicators of their lack of parental success than fathers who had more opportunities for achievement outside the family.

I also found significant three-way interactions between parental characteristics, gender, and marital status. Women who are married report similar levels of depressive symptoms regardless of whether their adult children live in the parental household or independently. In contrast, women who are widowed and living with at least one of their adult children exhibit significantly more depressive symptoms than empty-nest widowed mothers. Married women regardless of living arrangements of their adult children and widowed women whose adult children live separately report similar levels of psychological well-being. Yet, widowed mothers of at least one coresidential adult child report significantly lower levels of psychological well-being than their married and empty-nest widowed peers.

At first glance these findings seem counterintuitive because it appears that widowed women who live with their adult children should feel less lonely and receive more emotional support. Yet, research consistently shows that when midlife parents and adult children live together it is overwhelmingly for the needs of children rather than parents, and children who live in the parental household rarely move in with the sole purpose of providing help to their parents, especially at midlife when parents are relatively young (Aquilino, 1990; Ward et al., 1992). Although some adult children are caring for their parents, the dependence of parents on children is unlikely to be a causal factor in the decision of parents and children to share a household at any stage of the life course (Aquilino, 1990). In the majority of cases, children live in parents' households rather than vice versa.

Married parents have more material and emotional resources to provide support to adult children in their household, especially when adult children have problems. In contrast, widowed

mothers do not have a partner to share the stressors and demands of having adult children in the household. For most middle-aged widowed mothers in the WLS, their coresidential adult child is a son. This is consistent with findings from the 1990 U.S. Census that young-old women without a spouse are more likely to live with sons than daughters. As the parents' age increases and so increases the need for assistance, older adults are more likely to live with a daughter than a son (Schmertmann, Boyd, Serow, & White, 2000). Having sons at home typically means more housework for widowed mothers because sons are less likely than daughters to help with household chores (White, 1994). Goldscheider & Waite (1991) show that grown sons make only 10-20% as much contribution as their sisters to household labor; thus, sons tend to be subsidized by their parents both financially and in terms of services.

Bivariate associations show that compared to fathers, mothers report higher quality of relationships with children in both MIDUS waves, yet mothers and fathers are similar in terms of perceived satisfaction with parental provision. Among both men and women, nonparents and parents with low relationship quality report lower levels of personal growth, positive relations with other, self-acceptance, and the composite index of psychological well-being. Mothers and fathers with high levels of relationship quality report higher levels of these positive psychological outcomes than other groups. Yet, fathers bear greater psychological costs than mothers from having low-quality intergenerational relationships. Finally, whereas perceived satisfaction with parental provision does not appear to enhance personal growth among women, fathers with high levels of perceived satisfaction with parental provision exhibit higher personal growth than mothers and childfree individuals. Thus, men are particularly likely to benefit from parental provision over the life course in terms of personal growth in mid- and later life.

The finding that fathers suffer more than mothers from low levels of relationship quality and satisfaction with parental provision underscores the importance of generativity for men's well-being. Erikson's (1950) model of life-span development holds that each stage presents a challenge or crisis that needs to be resolved successfully. The middle-age stage of *generativity versus stagnation*, which is particularly relevant to fathers, involves moving beyond a narrow focus on the self to guiding the next generation and the accomplishments of one's children (Lachman 2004). Whereas women are closely involved with their children at every life-course stage, middle-aged fathers are typically more involved in childrearing than their younger counterparts (Cooney et al., 1993). Midlife appears to be a time when fathers' salience increases, at least, among White middle-class men. Nydegger and Mitteness (1996) reported that many fathers felt that their influence strengthened as children matured, perhaps, because fathers' salience as a resource for their children peaked at this time. Young children, especially daughters, reported being closer to their mothers than fathers; yet, by the time these children were adults, a significant shift had been made toward equal closeness with both parents (Nydegger & Mitteness, 1996).

Moreover, this finding is contrary to the gendered role perspective. The *gendered role perspective* suggests that regardless of the life-course stage, women are more responsive than men to psychological costs and rewards of parenthood because women were socialized to be particularly attuned to family roles. Several researchers suggest that mothers may be at a greater risk than fathers for mental health problems when they experience persistent strains in their ongoing relationships with children because as women they are more likely to base their identity and self-conception in relationship terms (Gilligan, 1982; Scott & Alwin, 1989; Silverberg, 1996). From this perspective, women should derive more psychological rewards from high-

quality relationships with children and be more adversely than men affected by negative aspects of relationships with children. However, contrary to these predictions, I find that fathers' well-being is more adversely affected than mothers' by the low quality of relationships with children.

Moreover, even though men and women in my study performed very different family roles in young adulthood (Carr, 2004; 2005), they derive similar psychological benefits and costs from the structural configurations of the parental role at midlife. This lack of gender difference is consistent with the parental role perspective, and can be attributed to intracohort change. Two classes of intracohort factors affect individuals: age-related developmental factors and historical or period influences (Alwin, 1996).

The major developmental influences involve generativity (Erikson, 1950) and the gender role convergence at midlife when men become more generative and women become more focused on self-realization and personal accomplishments. Jung (1933) and Neugarten and Gutmann (1968) have described a gender role "crossover" at midlife, whereby men begin to identify with their nurturant qualities and women begin to identify with their agentic or assertive qualities. Thus, for midlife men self-evaluations in the interpersonal domain may be particularly salient (Ryff, Schmutte, & Lee, 1996). As for the period influences, the socialization messages of the 1950s and early 1960s supporting clear demarcation of gender roles in the family might have changed because of social transformations of the 1970s and 1980s that resulted in greater gender equality both in the family and in the labor force.

5. 7. Between- and Within-Family Variation in Mental Health

Two-level random-coefficients models of the structural characteristics of parenthood in the WLS show that there is much more variation in each mental health outcome *within* than between sibling dyads. Roughly 10% of variance in mental health outcomes is situated between

families, whereas 90% of variance is within families. Similar findings are obtained for the qualitative aspects of parenthood in the MIDUS data suggesting that 10% of variance in psychological well-being is situated between families (i.e. sibling groups). The proportion of variance explained at the individual sibling level is about three to four times larger. Finally, the largest proportion of variance remains unexplained. Within-individual residual variance comprises at least half of the total variance: from roughly 50% for positive relations with others and the composite index of psychological well-being to 60% for environmental mastery and purpose in life. Thus, the within-family and within-individual variations are large relative to the between-family variation in psychological well-being, and the residual within-individual variance comprises the largest proportion.

These patterns are consistent with behavior genetic findings that the proportion of variance in psychological outcomes unexplained by genetic influences is mostly due to environmental factors that are not shared by siblings, whereas the contribution of shared environment tends to be small (Plomin, 1994; Plomin, DeFries, McClearn, & McGuffin, 2000). This suggests that social environmental powerfully shapes well-being over an individual's life course.

Current research on well-being has been guided by two general perspectives: the *hedonic* approach that defines well-being in terms of pleasure and happiness; and the *eudaimonic* approach, which focuses on self-realization, personal expressiveness, and the degree to which people are able to actualize their abilities (Ryan & Deci, 2001; Waterman, 1993). Ryff's model of psychological well-being used in this study is based on the eudaimonic perspective and the view of well-being as "the striving for perfection that represents the realization of one's true potential" (Ryff, 1995, p. 100).

Hedonic and eudaimonic well-being may be characterized by different extents of heritability. Hedonic well-being was shown to be highly heritable (Bouchard, 2004; Plomin et al., 2000). For instance, the set-point theory of well-being promotes a view of "hedonic treadmill" (Brickman & Campbell, 1971). Research suggests that one's hedonic set-point may have a clear biological basis, and happiness — being primarily determined by genetic factors — is highly stable over the life course (Costa et al., 1987; Csikszentmihalyi & Hunter, 2003).

In contrast, indicators of well-being that are more cognitive and evaluative in nature have lower heritability. Twin and adoption studies indicated that heritability estimates for cognitive ability and vocational interests were lower than for personality and mental health (Bouchard, 2004). In a similar vein, as findings from the WLS and MIDUS sibling and twin data suggest, genes may be less important than one's own idiosyncratic experiences and social environment for dimensions of eudaimonic well-being involving an appraisal of one's relationships and environment, finding meaning in life's efforts and challenges, and developing one's potential by growing and expanding as a person.

In addition, the random-coefficient models in the WLS reveal little variation in the associations between parenthood and mental health in specific sibling dyads. The most variation tends to be in families that have coresidential adult children. This pattern suggests that parents with coresidential adult children — whether only adult children or in combination with minor children — are more heterogeneous in terms of the association between parenthood and mental health than parents who have no children, only minor children, or nonresidential adult children.

In the models of the structural configurations of the parental role, between-dyad (level-2) variance and residual within-dyad (level-1) variance do not consistently vary across different types of sibling dyads. This pattern is not consistent with the behavior genetic theory that

assumes greater similarity in phenotypes among more closely related individuals. In models of the qualitative aspects of parenthood, although there is some evidence of heteroskedasticity of random intercept variance by siblings' genetic relatedness, this heteroskedasticity is not consistent with behavior genetics theory. One potential explanation for this inconsistency may be the lower heritability of eudaimonic well-being, which has a large cognitive and evaluative component relative to that of highly heritable hedonic well-being or mental illness (see above). Indeed, the fact that identical twins are not consistently more similar with respect to psychological well-being than full nontwin siblings and fraternal twins may suggest the lack of underlying genetic influences. However, a methodological explanation is also possible because, unlike in the WLS, the number of individuals varies systematically between sibling and twin groups in MIDUS. The families of full nontwin siblings are of different size: from two to seven siblings in a family, whereas twin groups are almost exclusively dyads. I plan to explore the potential implications of varying family group sizes in subsequent research.

5. 8. Implications for Future Cohorts of Middle-Aged Parents

Compared to participants in my sample who were born in the late 1930s and early 1940s, subsequent cohorts of middle-aged adults are characterized by increasing diversity of family structure and the context of parenthood. Demographic trends of recent decades have altered structural configurations of family roles and family relationships (Casper & Bianchi, 2002). Growing rates of divorce and higher-order marriages have led to a greater likelihood of having minor children at midlife and at the same time older children from previous unions. It is more common for children to delay their transition to adulthood and to stay in the parental home longer. Delayed marriage and later age at first birth have increased the likelihood of having

minor children at midlife. In addition, growing reliance on reproductive technology and adoption may increase the number of older parents with young children in future cohorts.

Because of these demographic trends, middle-aged parents now are more likely to have minor or adult children at home, and my study shows that this structural context is associated with lower levels of psychological well-being for parents. Does it mean that the prognosis for future generations of middle-aged parents is pessimistic? Not necessarily. Middle adulthood was traditionally viewed as a time of waning family roles (Peck, 1968). Yet, demographic trends toward increased childlessness and delayed childbearing have led to a greater diversity of middle-aged men and women with respect to parental status and the experience of parenthood (Marks, 1996b). My findings are consistent with other studies revealing the increasing complexity of the parental experience at midlife. Relatively few midlife parents fit into the socially normative or "ideal" empty-nest stage (Aquilino, 1996). Changes in contemporary American life challenged the notion of the normative family in midlife. What was considered nonnormative in the recent past is becoming ever more common and accepted by society (Ryff & Seltzer, 1996). Because of this increasing family diversity at midlife, middle-aged parents will have more peers who share their experiences, have more social support from their networks, and experience greater acceptance of the fact that childrearing responsibilities do not diminish at midlife. As the social and normative context of parenthood changes (Gergen, 1991), complex nontraditional family arrangements may become less stressful.

However, to understand implications of increasing diversity of the parental experience, it is necessary to study how middle-age parents of current and previous cohorts perceive their parental stress and resources to cope with it. For example, do younger cohorts of middle-aged parents who have both minor and adult children perceive more social support from their family

and friends, and more institutional support and acceptance than previous cohorts of middle-aged parents?

Compared to participants in this study, subsequent cohorts are more gender egalitarian both in the family and in the workplace. For current generations of middle-aged mothers and fathers the question of balancing work-family demands is more acute because men are expected to be more involved fathers and women are expected to participate in paid employment (Casper & Bianchi, 2002). Balancing work and childcare responsibilities and other competing demands, such as caring for aging parents, may be stressful for both men and women. Therefore, gender differences need to be examined paying particular attention to other aspects of parents' lives, such as work-family demands, relationships with intimate partners, and responsibilities to their own aging parents. Future research should use family-level data to explore how mothers and fathers experience parenthood within a larger family context.

In sum, my findings have important implications for family sociology and life course studies by showing a remarkable complexity of parental experiences and psychological implications of parenthood and childlessness among cohorts that have been typically viewed as adhering to "traditional" gender and family norms. The complexity documented in this study is likely to increase for future generations of middle-aged parents and childfree individuals. To fully understand psychological implications of parenthood and childlessness, one should consider mental health of middle-aged men and women in the context of developmental processes and cohort experiences, with a particular focus on the complex interplay of structural configurations of the parental role, qualitative aspects of parenthood, other family and work roles, and a larger social context.

REFERENCES:

Abbott, R., Ploubidis, G., Huppert, F., Kuh, D., Wadsworth, M., & Croudace, T. (2006). Psychometric evaluation and predictive validity of Ryff's psychological well-being items in a UK birth cohort sample of women. *Health and Quality of Life Outcomes, 4,* 1-16.

Aldous, J. (1987). New views on the family life of the elderly and the near-elderly. *Journal of Marriage and the Family, 49,* 227-234.

Aldous J., & Klein, D. M. (1991). Sentiment and services: models of intergenerational relationships in mid-life. *Journal of Marriage and the Family, 55,* 595-608.

Aldous, J., Klaus, E., & Klein, D. M. (1985). The understanding heart: Aging parents and their favorite children. *Child Development, 56,* 303-316.

Alexander, B. B., Rubinstein, R .L., Goodman, M., &Luborsky, M. (1992). A path not taken: A cultural analysis of regrets and childlessness in the lives of older women. *The Gerontologist, 32,* 618-626.

Allen, K., Blieszner, R., & Roberto, K. (2000). Families in the middle and later years: A review and critique of research in the 1990s. *Journal of Marriage and the Family, 62,* 911-926.

Alwin, D. F. 1996. Parental socialization in historical perspective. In C. D. Ryff & M. M. Seltzer (Eds.), *The parental experience in midlife* (pp. 105-167). Chicago, IL: University of Chicago Press.

Antonucci, T. C. (1990). Social supports and social relationships. In R. H. Binstock & L. K. George (Eds.), *Handbook of Aging and the Social Sciences* (pp. 205-226). New York: Academic.

Aquilino, W. S. (1990). The likelihood of parent-adult child coresidence: Effects of family structure and parental characteristics. *Journal of Marriage and the Family, 52,* 405-419.

Aquillino, W. S. (1991). Family structure and home leaving: A further specification of the relationship. *Journal of Marriage and the Family, 53,* 999-1010.

Aquilino, W. S. (1996). The returning adult child and parental experience at midlife. In C. D. Ryff & M. M. Seltzer (Eds.), *The parental experience in midlife* (pp. 423-458). Chicago, IL: University of Chicago Press.

Aquilino, W. S., & Supple, K. R. (1991). Parent-child relations and parents' satisfaction with living arrangements when adult children live at home. *Journal of Marriage and the Family, 53,* 13-27.

Arendell, T. (2000). Conceiving and investigating motherhood: The decade's scholarship. *Journal of Marriage and the Family, 62,* 1192-1207.

Avis, N. E. (1999). Women's health at midlife. In S. L. Willis & J. D. Reid (Eds.), *Life in the middle: Psychological and social development in middle age* (pp. 105-146). San Diego, CA: Academic Press.

Babladelis, G. (1999). Autonomy in the middle years. In M. B. Nadien & F. L. Denmark (Eds.), *Females and autonomy: A Life-span perspective* (pp. 101-129). Neeham Heights, MA: Allyn & Bacon.

Bandura, A. (1997). *Self-efficacy: The exercise of control.* New York: Freeman.

Barber, J. S. (2001). The intergenerational transmission of age at first birth among married and unmarried men and women. *Social Science Research, 30,* 219-247.

Barnett, R. C., & Marshall, N. L. (1992). Worker and mother roles, spillover effects, and psychological distress. *Women and Health, 18,* 9-40.

Barnett, R. C., Brennan, R. T., Raudenbush, S. W., & Marshall, N. L. (1994). Gender and the relationships between marital-role quality and psychological distress: A study of women and men in dual-earner couples. *Psychology of Women Quarterly, 18,* 105-127.

Baumrind, D. (1993). The average expectable environment is not good enough: A response to Scarr. *Child Development, 64,* 1299-1317.

Beckett, M. (2000). Converging health inequalities in later life: An artifact of mortality selection? *Journal of Health and Social Behavior, 41,* 106-119.

Beckman, L. J., & Houser, B. B. (1982). The consequences of childlessness on the social-psychological well-being of older women. *Journal of Gerontology, 37,* 243-250.

Belsky, J., Steinberg, L., & Draper, P. (1991). Childhood experience, interpersonal development, and reproductive strategy: An evolutionary theory of socialization. *Child Development, 62,* 647–670.

Bengtson V. L., & Allen, K. R. (1993). The life course perspective applied to families over time. In P. Boss, W. Doherty, R. LaRossa, W. Schumm, & S. Steinmetz (Eds.), *Sourcebook of family theories and methods: A contextual approach* (pp. 469-499). New York: Plenum.

Bengtson V., Rosenthal, C., & Burton. L. (1990). Families and aging: Diversity and heterogeneity. In R. H. Binstock & L. K. George (Eds.), *Handbook of Aging and the Social Sciences* (pp. 263-287). New York: Academic.

Benjamin, J., Li, L., Patterson, C., Greenberg, B. D., Murphy, D. L., & Hamer, D. H. (1996). Population and familial association between the D4 dopamine receptor gene and measures of novelty seeking. *Nature Genetics, 12,* 81-84.

Benjamin, J., Osher, Y., Kotler, M., Gritsenko, I., Nemanov, L., Belmaker, R. H., & Ebstein, R. P. (2000). Association between Tridimensional Personality Questionnaire (TPQ) traits and Three functional polymorphisms: Dopamine receptor D4 (DRD4), serotonin transporter promoter region (5-HTTLPR) and catechol O-methyltransferase (COMT). *Molecular Psychiatry, 5,* 96-100.

Bernard, J. (1972). *The future of marriage.* New York: Bantam Books.

Blake, J., & del Pinal, J. H. (1981). The childlessness option: Recent American views of nonparenthood. In G. E. Hendershot & P. J. Placek (Eds.), *Predicting fertility: Demographic studies of birth expectations* (pp. 235-261). Lexington, Mass: Lexington.

Blieszner, R., Usita, P., & Mancini, J.A. (1996). Diversity and dynamics in late-life mother-daughter relationships. *Journal of Women and Aging, 8,* 5-24.

Blieszner, R., Mancini, J. A., & Marek, L. (1996). Looking back and looking ahead: Life-course unfolding of parenthood. In C.D. Ryff & M. Seltzer (Eds.), *The parental experience in midlife* (pp. 607-637). Chicago: University of Chicago Press.

Bondy, B., Erfurth, A., de Jonge, S., Kruger, M., & Meyer, H. (2000). Possible association of the short allele of the serotonin transporter promoter gene polymorphism (5-HTTLPR) with violent suicide. *Molecular Psychiatry, 5,* 193-195.

Booth, A., & Amato, P. (1991). Divorce and psychological stress. *Journal of Health and Social Behavior, 32,* 396-407.

Booth, A., & Edwards, J. (1992). Starting over: Why remarriages are more unstable. *Journal of Family Issues, 13,* 179-194.

Bouchard, T. J. (2004). Genetic influence on human psychological traits: A survey. *Current Directions in Psychological Science, 13,* 148–151.

Bowlby, J. (1980). *Attachment and loss. Vol. III: Loss.* New York: Basic Books, Inc.

Brickman, P., & Campbell, D. T. (1971). Hedonic relativism and planning the good society. In M. H. Appley (Ed.), *Adaptation-level theory* (pp. 287-301). New York: Academic Press.

Carr, D. S. (2002). The psychological consequences of work-family tradeoffs for three cohorts of women and men. *Social Psychology Quarterly, 65,* 103-124.

Carr, D. S. (2004). "My daughter has a career — I just raised babies": Women's intergenerational social comparisons. *Social Psychology Quarterly, 67,* 132-54.

Carr, D. S. (2005). The psychological consequences of midlife men's social comparisons with their young adult sons. *Journal of Marriage and Family, 67,* 240-250.

Carstensen, L. L. (1992). Social and emotional patterns in adulthood: Support for socioemotional selectivity theory. *Psychology and Aging, 7,* 331-338.

Carstensen, L. L., Isaacowitz, D. M., & Charles, S. T. (1999). Taking time seriously: A theory of socioemotional selectivity. *American Psychologist, 54*, 165-181.

Carter, C. S. (1998). Neuroendocrine perspectives on social attachment and love. *Psychoneuroendocrinology, 23,* 779–818.

Casper, L. M., & Bianchi, S. M. (2002). *Continuity and change in the American family.* Thousand Oaks, CA: Sage.

Caspi, A., Bem, D. J., & Elder, G. H., Jr (1989). Continuities and consequences of interactional styles across the life course. *Journal of Personality, 57,* 375-406.

Caspi, A., Sugden, K., Moffitt, T. E., Taylor, A., Craig, I. W., Harrington, H., McClay, J., Mill, J., Martin, J., Braithwaite, A., & Poulton, R. (2003). Influence of life stress on depression: Moderation by a polymorphism in the 5-HTT gene. *Science, 301,* 386-389.

Cherlin, A. J. (1978). Remarriage as an incomplete institution. *American Journal of Sociology, 84,* 634-650.

Cherlin, A. C., Kiernan, K. E., & Chase-Lansdale, P. L. (1995). Parental divorce in childhood and demographic outcomes in young adulthood. *Demography, 32,* 299-318.

Choi, N. G. (2002). Self-defined retirement status and engagement in paid work among older working-age women: Comparison between childless women and mothers. *Sociological Inquiry, 72,* 43-71.

Clemens, A. W., & Axelson, L. (1985). The not-so-empty nest: The return of the fledgling adult. *Family Relations, 34,* 259-264.

Coleman, J. S. (1988). Social capital in the creation of human capital. *American Journal of Sociology, 94,* 95-120.

Coleman, M., Ganong, L., & Fine, M. (2000). Reinvestigating remarriage: Another decade of progress. *Journal of Marriage and the Family, 62,* 1288-1307.

Collier, D. A., Stöber, G., Li, T., Heils, A., Catalano, M., Di Bella, D., Arranz, M. J., Murray, R. M., Vallada, H. P., Bengel, D., Müller, C. R., Roberts, G. W., Smeraldi, E., Kirov, G., Sham, P., & Lesch, K. P. (1996). A novel functional polymorphism within the promoter of the serotonin transporter gene: Possible role in susceptibility to affective disorders. *Molecular Psychiatry, 1,* 453-460.

Coltrane, S. (1990). Birth timing and the division of labor in dual-earner families: Exploratory findings and suggestions for future research. *Journal of Family Issues, 11,* 157-181.

Conley, D., & Bennett, N. (2001). Birth weight and income: Interactions across generations. *Journal of Health and Social Behavior, 42*, 450-465.

Connidis, I. A., & McMullin, J. A. (1993). To have or have not: Parent status and the subjective well-being of older men and women. *The Gerontologist, 33,* 630-636.

Cooney, T. M. (1994). Young adults' relations with parents: The influence of recent parental divorce. *Journal of Marriage and the Family, 56,* 45-56.

Cooney, T. M., Pedersen, F. A., Indelicato, S., & Palkovitz, R. (1993). Timing of fatherhood: Is "on-time" optimal? *Journal of Marriage and the Family, 55,* 205-215.

Coontz, S. (1992). *The way we never were: American families and the nostalgia trap.* New York: Basic Books.

Coontz, S. (2005). *Marriage, a history: From obedience to intimacy, or how love conquered marriage.* London, UK: Viking.

Costa, P. T., Zonderman, A. B., McCrae, R. R., Cornoni-Huntley, J., Locke, B. Z., & Barbano, H. E. (1987). Longitudinal analyses of psychological well-being in a national sample: Stability of mean levels. *Journal of Gerontology, 42,* 50-55.

Crimmins, E. M., & Ingegneri, D. G. (1990). Interaction and living arrangements of older parents and their children. *Research on Aging, 12,* 3-35.

Csikszentmihalyi, M., & Hunter, J. 2003. Happiness in everyday life: The uses of experience sampling. *Journal of Happiness Studies, 4,* 185-199.

Cudmore, L. (2005). Becoming parents in the context of loss. *Sexual and Relationship Therapy, 20, 2*99-308.

daVanzo, J., & Goldscheider, F. K. (1990). Coming home again: Returns to the parental home of young adults. *Population Studies, 44,* 241-255.

Davey, A., & Eggebeen, D. J. (1998). Patterns of intergenerational exchange and mental health. *Journals of Gerontology, 53B,* P86-P95.

Deater-Deckard, K. (2004). *Parenting stress.* New Haven, CT: Yale University Press.

Deater-Deckard, K., Pickering, K., Dunn, J. F., & Golding, J. (1998). Family structure and depressive symptoms in men preceding and following the birth of a child. *American Journal of Psychiatry, 155,* 818-823.

Dunn, J., Plomin, R., & Daniels, D. (1986). Consistency and change in mothers' behavior toward young siblings. *Child Development, 57,* 348-356.

Dykstra, P. A. (1990). *Next of non-kin: The importance of primary relationships for older adults' well-being.* Amsterdam/Lisse: Swets/Zeitlinger.

Ebstein, R. P., Nemanov, L., Klotz, I., Gritsenko, I., & Belmaker, R. H. (1997). Additional evidence for an association between the dopamine D4 receptor (DRD4) exon III repeat polymorphism and the human personality trait of novelty seeking. *Molecular Psychiatry, 2,* 472-477.

Eggebeen, D. J., & Knoester, C. (2001). Does fatherhood matter for men? *Journal of Marriage and Family, 63,* 381-393.

Elder, Glen H., Jr. (1998). The life course as developmental theory. *Child Development, 69,* 1-12.

Elo, I. T., & Preston, S. H. (1992). Effects of early-life conditions on adult mortality: A review. *Population Index, 58,* 186-212.

Eley, T. C., Sugden, K., Corsico, A., Gregory, A. M., Sham, P., McGuffin, P., Plomin, R., & Craig, I. W. (2004). Gene-environment interaction analysis of serotonin system markers with adolescent depression. *Molecular Psychiatry, 9,* 908-915.

Erikson, E. (1950). *Childhood and society.* New York: W. W. Norton.

Evenson, R. J., & Simon, R. W. (2005). Clarifying the relationship between parenthood and depression. *Journal of Health and Social Behavior, 46,* 341–358.

Fingerman, K. L. (1996). Sources of tension in the aging mother and adult daughter relationship. *Psychology and Aging, 11,* 591-606.

Fingerman, K. L. (1998). Tight lips: Aging mothers' and their adult daughters' responses to interpersonal tensions in their relationship. *Personal Relationships, 5,* 121-138.

Fingerman, K. L. (2001). *Aging mothers and their adult daughters: A study in mixed emotions.* New York: Springer Publishers.

Frederickson, B. L., & Carstensen, L. L. (1990). Choosing social partners: How old age and anticipated endings make people more selective. *Psychology and Aging, 5,* 335-347.

Freese, J. (2006). The analysis of variance and the social complexities of genetic causation. *International Journal of Epidemiology, 35,* 534-536.

Freese, J., & Powell, B. (2003). Tilting at twindmills: Rethinking sociological responses to behavioral genetics. *Journal of Health and Social Behavior, 44,* 130-135.

Freese, J., Li, J.-C. A., & Wade, L. (2003). The potential relevance of biology to social inquiry. *Annual Review of Sociology, 29,* 233-256.

Fung, H. H., Carstensen, L. L., & Lutz, M. A. (1999). Influence of time on social preferences: Implications for life-span development. *Psychology and Aging, 14,* 595-604.

George, L. K. (1999). Life-course perspective on mental health. In C. S. Aneshensel & J. C. Phelan (Eds.), *Handbook of the Sociology of Mental Health (pp. 566-583).* New York: Kluwer Academic/Plenum Publishers.

Gergen, K. J. (1991). *The saturated self: Dilemmas of identity in contemporary life.* New York: Basic Books.

Geronimus, A. T., & Korenman, S. (1992). The socioeconomic consequences of teen childbearing reconsidered. *Quarterly Journal of Economics, 107,* 1187-1214.

Gilligan, C. (1982). *In a different voice: Psychological theory and women's development.* Cambridge, MA: Harvard University Press.

Glenn N. D., & McLanahan, S. (1981). The effects of offspring on the psychological well-being of older adults. *Journal of Marriage and the Family, 43,* 409-421.

Goetting, A. (1986). Parental satisfaction: A review of research. *Journal of Family Issues, 7,* 83-109.

Goldberger, A. S. (1979). Heritability. *Economica, 46,* 327-347.

Goldscheider, F. K., & Goldscheider, C. (1993). *Leaving home before marriage: Ethnicity, familism, and generational relationships.* Madison, WI: University of Wisconsin Press.

Goldscheider, F. K., & Goldscheider, C. (1994). Family structure, leaving home, and investments in young adulthood. *Cahiers Quebecois de Demographie, 23,* 75-100.

Goldscheider, F. K., & Goldscheider, C. (1999). *The changing transition to adulthood: Leaving and returning home.* Thousand Oaks, CA: Sage.

Goldscheider, F. K., Goldscheider, C., St. Clair, P., & Hodges, J. (1999). Changes in returning home in the United States, 1925-1985. *Social Forces, 78,* 695-720.

Goldscheider, F. K., & Waite, L. J. (1991). *New families, no families? The transformation of the American home.* Berkeley, CA: University of California Press.

Goldsteen, K., & Ross, C. E. (1989). The perceived burden of children. *Journal of Family Issues, 10,* 504-526.

Gorman, B. K., & Sivaganesan, A. (2007). The role of social support and integration for understanding socioeconomic disparities in self-rated health and hypertension. *Social Science and Medicine, 65,* 958-975.

Gove, W. R., & Geerken, M. R. (1977). The effect of children and employment on the mental health of married men and women. *Social Forces, 56,* 66-76.

Grabe, H. J., Lange, M., Wolff, B., Völzke, H., Lucht, M., Freyberger, H. J., John, U., & Cascorbi, I. (2005). Mental and physical distress is modulated by a polymorphism in the 5-HT transporter gene interacting with social stressors and chronic disease burden. *Molecular Psychiatry, 10,* 220-224.

Greenfield, E. A. & Marks N. F. (2006). Linked lives: Adult children's problems and their parents' psychological and relational well-being. *Journal of Marriage and Family, 68,* 442-454.

Grundy, E. (2000). Co-residence of mid-life children with their elderly parents in England and Wales: Changes between 1981 and 1991. *Population Studies, 54,* 193-206.

Guo, G., & Tong, Y. (2006). Age at first sexual intercourse, genes, and social context: Evidence from twins and the dopamine D4 receptor gene. *Demography, 43,* 747-769.

Guang, G., & Wang, J. (2002). The mixed or multilevel model for behavior genetic analysis. *Behavior Genetics, 32,* 37-49.

Guang, G., & Zhao, H. (2000). Multilevel models for binary data. *Annual Review of Sociology, 26,* 441-462.

Halpern, C. T., Kaestle, C. E., Guo, G., & Hallfors, D. D. (2007). Gene-environment contributions to young adult sexual partnering. *Archives of Sexual Behavior, 36,* 543-554.

Hamer, D. (2002). Genetics of sexual behavior. In J. Benjamin, R. P. Ebstein, & R. H. Belmaker (Eds.), *Molecular genetics and the human personality* (pp. 257–272). Washington, DC: American Psychiatric Publishing.

Hauser, R. M. (1988). A note on two models of sibling resemblance. *American Journal of Sociology, 93,* 1401-1423.

Hauser, R. M., & Mossel, P.A. (1987). Some structural equation models of sibling resemblance in educational attainment and occupational status. In P. Cuttance & R. Ecob (Eds.), *Structural modeling by example: Applications in education and the social and behavioral sciences* (pp. 108-37, 298-307). Cambridge University Press.

Hauser, R. M., Sheridan, J. T., & Warren, J. R. (1999). Socioeconomic achievements of siblings in the life course: New findings from the Wisconsin Longitudinal Study. *Research on Aging, 21,* 338–378.

Hayward, M. D., & Gorman, B. K. (2004). The long arm of childhood: The influence of early life social conditions on men's mortality. *Demography, 41,* 87-107.

Hazan, C., & Shaver, P. R. (1987). Romantic love conceptualized as an attachment process. *Journal of Personality and Social Psychology, 52,* 511-524.

Heath, D. T. (1994). The impact of delayed fatherhood on the father-child relationship. *Journal of Genetic Psychology, 155,* 511-530.

Henry, C. S., & Lovelace, S. G. (1995). Family resources and adolescent family life satisfaction in remarried family house-holds. *Journal of Family Issues, 16,* 765–786.

Hetherington, E. M., Henderson, S. H., & Reiss, D. (1999). Adolescent siblings in stepfamilies: Family functioning and adolescent adjustment. *Monographs of the Society for Research in Child Development, 64,* 1-209.

Hogan, D. P., Eggebeen, D. J., & Clogg, C. C. (1993). The structure of intergenerational exchanges in American families. *American Journal of Sociology, 98,* 1428-1458.

Horwitz, A. V., Videon, T., Schmitz, M., & Davis, D. (2003). Rethinking twins and environments: Possible social sources for presumed genetic influences in twin research. *Journal of Health and Social Behavior, 44,* 111-129.

Houseknecht, S. K. (1977). Reference group support for voluntary childlessness: Evidence for conformity. *Journal of Marriage and the Family, 39,* 285-292.

Insel, T. R. (2000). Toward a neurobiology of attachment. *Review of General Psychology, 4,* 176-185.

Ireland, M. S. (1993). *Reconceiving women: Separating motherhood from female identity.* New York: Guilford Press.

Jacob, T., & Johnson, S. L. (2001). Sequential interactions in the parent-child communications of depressed fathers and depressed mothers. *Journal of Family Psychology, 15,* 38-52.

Jencks, C., Smith, M., Acland, H., Bane, M. J., Cohen, D., et al. (1972). *Inequality: A reassessment of the effects of family and schooling in America.* New York: Basic Books.

Johnson, D. R. (1995). Alternative methods for the quantitative analysis of panel data in family research: Pooled time-series models. *Journal of Marriage and the Family, 57,* 1065-1077.

Johnson, C., & Catalano, D. (1981). Childless elderly and their supports. *The Gerontologist, 21,* 610-618.

Jong Gierveld, J. de, & Dykstra, P. (2002). The long-term rewards of parenting: Older adults' marital history and the likelihood of receiving support from adult children. *Ageing International, 27,* 49-69.

Jung, C. G. (1933). *Modern man in search of a soul.* New York: Harcourt, Brace & World.

Kahn, J. R., & Anderson, K. (1992). Intergenerational patterns of teenage fertility. *Demography, 29,* 39-57.

Kaslow, N. J., Brown, R. T., & Mee, L. L. (1994). Cognitive and behavioral correlates of childhood depression: A developmental perspective. In W. M. Reynolds & H. F. Johnston (Eds.), *Handbook of depression in children and adolescents* (pp. 97-121). New York: Plenum Press.

Kessler, R. C., & Magee, W. J. (1994). Childhood family violence and adult recurrent depression. *Journal of Health and Social Behavior, 35,* 13–27.

Kikendall, K. (1994). Self-discrepancy as an important factor in addressing women's emotional reactions to infertility. *Professional Psychology: Research and Practice, 25,* 214-220.

Kivett, V. R., & Learner, R. M. (1980). Perspectives on the childless rural elderly: A comparative analysis. *The Gerontologist, 20,* 708-716.

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,* 407-445.

Koropeckyj-Cox, T. (1998). Loneliness and depression in middle and old age: Are the childless more vulnerable? *Journal of Gerontology: Social Sciences, 53B,* S302-S312.

Koropeckyj-Cox, T. (2002). Beyond parental status: Psychological well-being in middle and older age. *Journal of Marriage and Family, 64*, 957-971.

Koropeckyj-Cox, T., Pienta, A. M., & Brown, T. H. (2007). Women of the 1950s and the "normative" life course: The implications of childlessness, fertility timing, and marital status for psychosocial well-being in late midlife. *International Journal of Aging and Human Development, 64,* 299-330.

Krawczak, M., Trefilov, A., Berard, J., Bercovitch, F., et al. (2005). Male reproductive timing in Rhesus macaques is influenced by the 5HTTLPR promoter polymorphism of the serotonin transporter gene. *Biology of Reproduction, 72,* 1109-1113.

Lachman, M. E. (2004). Development in midlife. *Annual Review of Psychology, 55,* 305-331.

Lang, S. S. (1991). *Women without children: The reasons, the rewards, the regrets.* New York: Pharos Books.

Lang, F. R., & Carstensen, L. L. (1994). Close emotional relationships in late life: Further support for proactive aging in the social domain. *Psychology and Aging, 9,* 315–324.

Lansford, J. E., Sherman, A. M., & Antonucci, T. C. (1998). Satisfaction with social networks: An examination of socioemotional selectivity theory of cohorts. *Psychology and Aging, 13,* 544-552.

Lesch, K. P., Bengel, D., Heils, A., Sabol, S. Z., Greenberg, B. D., & Petri, S. (1996). Association of anxiety-related traits with a polymorphism in the serotonin transporter gene regulatory region. *Science, 274,* 1527-1531.

Lewinsohn, P. M., Rohde, P., & Seeley, J. R. (1994). Psychosocial risk factors for future adolescent suicide attempt. *Journal of Counseling and Clinical Psychology, 62,* 297-305.

Loeber, R., & Dishion, T. J. (1983). Early predictors of male delinquency: A review. *Psychological Bulletin, 94,* 68-99.

Lynch, S. M. (2003). Cohort and life-course patterns in the relationship between education and health: A hierarchical approach. *Demography, 40,* 309-331.

Lye, D. N. (1996). Adult child-parent relationships. *Annual Review of Sociology, 22,* 79–102.

Maccoby, E. E. (2000). Parenting and its effects on children: On reading and misreading behavior genetics. *Annual Review of Psychology, 51,* 1–27.

Magee, W. (2006). Effects of family background on social autonomy at midlife. *Social Science Research, 35,* 851-870.

Malinosky-Rummell, R., & Hansen, D. J. (1993). Long-term consequences of childhood physical abuse. *Psychological Bulletin, 114,* 68-79.

Mancini, J. A., & Blieszner, R. (1989). Aging parents and adult children: Research themes in intergenerational relations. *Journal of Marriage and the Family, 51,* 275-290.

Manning, W., & Smock, P. (2000). Swapping families? Serial parenting and economic support for Children. *Journal of Marriage and the Family, 62,* 111-122.

Marks, N. F. (1996a). Flying solo at midlife: Gender, marital status, and psychological well-being. *Journal of Marriage and the Family, 58,* 917-932.

Marks, N. F. (1996b). Social demographic diversity among American midlife parents. In C. D. Ryff & M. M. Seltzer (Eds.), *The parental experience in midlife* (pp. 29-75). Chicago, IL: University of Chicago Press.

Marsiglio, W., Day, R., & Lamb, M. (2000). Exploring fatherhood diversity: Implications for conceptualizing father involvement. *Marriage and Family Review, 29,* 269-293.

Mastekaasa, A. (1994). The subjective well-being of the previously married: The importance of unmarried cohabitation and time since widowhood and divorce. *Social Forces, 73,* 665-692.

May, E. T. (1995). *Barren in the Promised Land: Childless Americans and the pursuit of happiness.* New York: Basic Books.

McAdams, D. P. (1985). *Power, intimacy, and the life story: Personological inquiries into identity.* Homewood, IL: The Dorsey Press.

McCall, G., & Simmons, J. (1978). *Identities and interaction* (2nd ed). New York: Free Press.

McLanahan, S. & Adams, J. (1987). Parenthood and psychological well-being. *Annual Review of Sociology, 5,* 237-257.

McLanahan, S. & Adams, J. (1989). The effects of children on adults' psychological well-being: 1957-1976. *Social Forces, 68,* 124-146.

McLanahan, S., & Sandefur, G. (1994). *Growing up with a single parent: What hurts, what helps.* Cambridge, MA: Harvard University Press.

McLeod, J. D. (1991). Childhood parental loss and adult depression. *Journal of Health and Social Behavior, 32,* 205-220.

McMullin, J. A., & Marshall, V. W. (1996). Family, friends, stress and well-being: Does childlessness make a difference? *Canadian Journal on Aging, 15,* 355-373.

Menaghan, E. G. (1989). Psychological well-being among parents and nonparents: The importance of normative expectedness. *Journal of Family Issues, 10,* 547-565.

Miall, C. (1986). The stigma of involuntary childlessness. *Social Problems, 33,* 268-282.

Middeldorp, C. M., de Geus, E. J., Beem, A. L., Lakenberg, N., Hottenga, J. J., Slagboom, P. E., & Boomsma, D. I. (2007). Family-based association analyses between the serotonin transporter gene polymorphism (5-HTTLPR) and neuroticism, anxiety and depression. *Behavior Genetics, 37,* 294-301.

Miech, R. A., & Chilcoat, H. (2004). Family socioeconomic status and illegal drug use by age 17: An examination across two generations. *Social Science and Medicine, 60,* 725-735.

Miller, W. B., Pasta, D. J., MacMurray, J., Chiu, C., Wu, H., & Comings, D. E. (1999). Dopamine receptor genes are associated with age at first sexual intercourse. *Journal of Biosocial Science, 31,* 43-54.

Mirowsky, J., & Ross, C. E. (1995). Sex differences in distress: Real or artifact? *American Sociological Review, 60,* 449-468.

Mitchell, B. A., Wister, A. V., & Gee, E. M. (2002). "There's no place like home": An analysis of young adults' mature coresidency in Canada. *International Journal of Aging and Human Development, 54,* 57-84.

Modell, J., Furstenberg, F. F., Jr., & Hershberg, T. (1976). Social change and transitions to adulthood in historical perspective. *Journal of Family History, 1,* 7-32.

Neiderhiser, J. M., Reiss, D., Hetherington, E. M., & Plomin, R. (1999). Relationships between parenting and adolescent adjustment over time: Genetic and environmental contributions. *Developmental Psychology, 35,* 680-692.

Neugarten, B. L. (1968). *Middle age and aging.* Chicago: University of Chicago Press.

Neugarten, B. L., Moore, J. W., & Lowe, J. C. (1965). Age norms, age constraints and adult socialization. *American Journal of Sociology, 70,* 710-717.

Neugarten, B. L., & Gutmann, D. L. (1968). Age-sex roles and personality in middle age: A thematic apperception study. In B. L. Neugarten (Ed.), *Middle age and aging* (pp. 58-71). Chicago: University of Chicago Press.

Newsom, J. T., Rook, K. S., Nishishiba, M., Sorkin, D. H., & Mahan, T. L. (2005). Understanding the relative importance of positive and negative social exchanges: Examining specific domains and subjective appraisals: *Journal of Gerontology: Psychological Sciences, 60,* P304-P312.

Newsom, J. T., Nishishiba, M., Morgan, D. L., & Rook, K. S. (2003). The relative importance of three domains of positive and negative social exchanges: A longitudinal model with comparable measures. *Psychology and Aging, 18,* 746–754.

Nielsen, L. (1999). Stepmothers: Why so much stress? A review of the research. *Journal of Divorce and Remarriage, 30,* 115-148.

Nievar, M. A., & Luster, T. (2006). Developmental processes in African American families: An application of McLoyd's theoretical model. *Journal of Marriage and Family, 68,* 320-331.

Nomaguchi, K. M., & Milkie, M. A. (2003). Costs and rewards of children: The effects of becoming a parent on adults' lives. *Journal of Marriage and Family, 65,* 356-374.

Nydegger, C. N., & Mitteness, L. S. (1996). Midlife: The prime of fathers. In C. D. Ryff & M. M. Seltzer (Eds.), *The parental experiences in midlife* (pp. 533-559). Chicago: University of Chicago Press.

O'Connor, T. G., Caspi, A., DeFries, J. C., & Plomin, R. (2000). Are associations between parental divorce and children's adjustment genetically mediated? An adoption study. *Developmental Psychology, 36,* 429-437.

Pearce, L. D. (2002). The influence of early life course religious exposure on young adults' dispositions toward childbearing. *Journal for the Scientific Study of Religion, 41,* 325-340.

Pearlin, L. I. (1999). The stress process revisited: Reflections on concepts and their interrelationships. In C. S. Aneshensel & J. C. Phelan (Eds.), *Handbook of the sociology of mental health (pp. 395-416).* New York: Kluwer Academic/Plenum Publishers.

Pearlin, L. I., & Lieberman, M. A. (1979). Social sources of emotional distress. In R. G. Simmons (Ed.), *Research in community and mental health: An annual compilation of research* (pp. 217-248). Greenwich, CT: JAI.

Pearlin, L. I., & Skaff, M. M. (1996). Stress and life course: A paradigmatic alliance. *The Gerontologist, 36,* 239-247.

Peck, R. (1968). Psychological developments in the second half of life. In B. L. Neugarten (Ed.). *Middle age and aging* (pp. 88-92). Chicago: University of Chicago Press.

Pillemer, K., & Suitor, J. J. (1991). "Will I ever escape my child's problems?" Effects of adult children's problems on elderly parents. *Journal of Marriage and the Family, 53,* 585–595.

Pillemer, K., & Suitor, J. J. (1998). Baby Boom families: Relations with aging parents. *Generations, 12,* 65-69.

Pillemer, K., & Suitor, J. J. (2002). Explaining mothers' ambivalence toward their adult children. *Journal of Marriage and Family, 64,* 602-613.

Plomin, R. (1994). *Genetics and experience: The interplay between nature and nurture.* Thousand Oaks, CA: Sage.

Plomin, R., DeFries, J. C., McClearn, G. E., & McGuffin, P. (2000). *Behavioral genetics* (4th ed). New York: Worth.

Powers, D. A. (2001). Unobserved family effects on the risk of a first premarital birth. *Social Science Research, 30,* 1-24.

Pudrovska, T. (2008). Psychological implications of motherhood and fatherhood in midlife: Evidence from sibling models. *Journal of Marriage and Family, 70,* 168-181.

Pudrovska, T., Schieman, S., Pearlin, L. I., & Nguyen, K. (2005). The sense of mastery as a mediator and moderator in the association between economic hardship and health in late life. *Journal of Aging and Health, 17,* 634-660.

Pudrovska, T., Hauser, R. M., & Springer, K. W. (2005). *Does psychological well-being change with age?* Paper presented at the 58th Annual Meeting of the Gerontological Society of America, Orlando, FL, November 2005.

Quesnel-Vallée, A., & Morgan, S. P. (2003). Missing the target? Correspondence of fertility intentions and behavior in the U.S. *Population Research and Policy Review, 22*, 497-525.

Rabe-Hesketh, S., & Skrondal, A. (2005). *Multilevel and longitudinal modeling using Stata.* College Station, TX: Stata Press.

Rabe-Hesketh, S., Skrondal, A., & Pickles, A. (2002). Reliable estimation of generalised linear mixed models using adaptive quadrature. *The Stata Journal, 2,* 1-21.

Rindfuss, R. R. (1991). The young adult years: Diversity, structural change, and fertility. *Demography, 28,* 493-512.

Rindfuss, R. R., Morgan, S. P., & Swicegood, G. (1988). *First births in America: Changes in the timing of parenthood.* Berkeley, CA: University of California Press.

Ross, C. E., & Huber, J. (1985). Hardship and depression. *Journal of Health and Social Behavior, 26,* 312-327.

Ross, C. E., & Mirowsky, J. (1995). Does employment affect health? *Journal of Health and Social Behavior, 36,* 230-243.

Ross, C. E., Mirowsky, J., & Goldsteen, K. (1990). The impact of the family on health: The decade in review. *Journal of Marriage and the Family, 52,* 1059-1078.

Ross, C. E., & Van Willigen, M. (1996). Gender, parenthood, and anger. *Journal of Marriage and the Family, 58,* 572-584.

Rossi, A., & Rossi, P. (1990). *Of human bonding: Parent-child relations across the life course.* New York: Aldine.

Rotter, J. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological monographs: General and applied, 80,* 1-28.

Roy, A., Hu, X. Z., Janal, M. N., & Goldman, D. (2007). Interaction between childhood trauma and serotonin transporter gene variation in suicide. *Neuropsychopharmacology, 32,* 2046-2052.

Rubin, K. H., Hymel, S., Mills, R. S. L. & Rose-Krasnor, L. (1991). Conceptualizing different pathways to and from social isolation in childhood. In D. Cicchetti & S. Toth (Eds.), *The Rochester symposium on developmental psychopathology, Vol. 2: Internalizing and externalizing expressions of dysfunction* (pp. 91-122). New York: Cambridge University Press.

Rutter, M., Pickles, A., Murray, R., & Eaves, L. (2001). Testing hypotheses on specific environmental causal effects on behavior. *Psychological Bulletin, 127,* 291–324.

Ryan, R. M., & Deci, E. L. (2001). On happiness and human potential: A review of research on hedonic and eudaimonic well-being. *Annual Review of Psychology, 52,* 141-166.

Ryff, C. D. (1985). Adult personality development and the motivation for personal growth. In D. Kleiber & M. Maehr (Eds.), *Advances in motivation and achievement, Vol. 4: Motivation and adulthood* (pp. 55-92). Greenwich, CT: JAI Press.

Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology, 57,* 1069-1081.

Ryff, C. D., & Seltzer, M. M. (1996). The uncharted years of midlife parenting. In C. D. Ryff & M. M. Seltzer (Eds.), *The parental experience in midlife* (pp. 3-25). Chicago, IL: University of Chicago Press.

Ryff, C. D., Schmutte, P. S., & Lee, Y. H. (1996). How children turn out: Implications for parental self-evaluation. In C. D. Ryff & M. M. Seltzer (Eds.), *The parental experience in midlife* (pp. 383-422). Chicago, IL: University of Chicago Press.

Sanchez, L., & Thomson, E. (1997). Becoming mothers and fathers: Parenthood, gender, and the division of labor. *Gender & Society, 11,* 747-772.

Schieman, S., Pudrovska, T., & Milkie, M. A. (2005). The sense of divine control and the self-concept: A study of race differences in late life. *Research on Aging, 27,* 1-32.

Schmertmann, C. P., Boyd, M., Serow, W., & White, D. (2000). Elder-child coresidence in the United States: Evidence from the 1990 Census. *Research on Aging, 22,* 23-42.

Schoen, R., Kim, Y. J., Nathanson, C. A., Fields, J., & Astone, N. M. (1997). Why do Americans want children? *Population and Development Review, 23,* 333-358.

Scott, J., & Alwin, D. F. (1989). Gender differences in parental strain: Parental role or gender role? *Journal of Family Issues, 10,* 482-503.

Settersten, R. A. (1998). A time to leave home and a time never to return? Age constraints around the living arrangements of young adults. *Social Forces, 76,* 1373-1400.

Sewell, W. H., & Hauser, R. M. (1975). *Education, occupation, and earnings: Achievement in the early career.* New York: Academic Press.

Silverberg, S. B. (1996). Parents' well-being and their children's transition to adolescence. In C. D. Ryff & M. M. Seltzer (Eds.), *The parental experience in midlife* (pp. 215-254). Chicago, IL: University of Chicago Press.

Silverstein, M., & Bengtson, V. L. (1991). Do close parent-child relations reduce the mortality risk of older parents? A test of the direct and buffering effects of intergenerational affection. *The Journal of Health and Social Behavior, 32,* 382-395.

Silverstein, M., & Bengtson, V. L. (1997). Intergenerational solidarity and the structure of adult child-parent relationships in American families. *American Journal of Sociology, 103,* 429–460.

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.

Snijders, T. A. B., & Bosker, R. J. (1999). *Multilevel analysis: An introduction to basic and advanced multilevel modeling.* SAGE Publications: London.

Soldo, B. J., Wolf, D. A., & Agree, E. M. (1990). Family, household, and care arrangements of frail older women. *Journal of Gerontology: Social Sciences, 45,* S238-S249.

Spitze, G., & Logan, J. R. (1989). Gender differences in family support: Is there a payoff? *The Gerontologist, 29,* 108–113.

Spitze, G., & Logan, J. R. (1990). Sons, daughters and intergenerational social support. *Journal of Marriage and the Family, 52,* 420-430.

Spitze, G., & Gallant, M. P. (2004). The bitter with the sweet: Older adults' strategies of handling ambivalence in relations with their adult children. *Research on Aging, 26,* 387-412.

Springer, K. W., & Hauser, R. M. (2006). An assessment of the construct validity of Ryff's scales of psychological well-being: Method, mode, and measurement effects. *Social Science Research, 35,* 1080-1102.

Stamp, G. H., & Banski, M. A. (1992). The communicative management of constrained autonomy during the transition to parenthood. *Western Journal of Communication, 56,* 281-300.

Stewart, S. D. (2002). The effect of stepchildren on childbearing intentions and births. *Demography, 39,* 181-197.

Stewart, S. D. (2005). Boundary ambiguity in stepfamilies. *Journal of Family Issues, 26,* 1002-1029.

Stryker, S., & Burke, P. J. (2000). The past, present, and future of an identity theory. *Social Psychology Quarterly, 63,* 284-297.

Suitor, J. J., & Pillemer, K. (2006). Choosing daughters: Exploring why mothers favor adult daughters over sons. *Sociological Perspectives, 49,* 139-160.

Suitor, J. J., & Pillemer, K. (2007). Mothers' favoritism in later life: The role of children's birth order. *Research on Aging, 29,* 32-55.

Taylor, S. E., Repetti, R. L., & Seeman, T. (1997). Health psychology: What is an unhealthy environment and how does it get under the skin? *Annual Review of Psychology, 48,* 411-447.

Thoits, P. A. (1999). Self, identity, stress, and mental health. In C. S. Aneshensel & J. C. Phelan (Eds.), *Handbook of the sociology of mental health* (pp. 345-368). New York: Kluwer Academic/Plenum Publishers.

Thornton, A. (1989). Changing attitudes toward family issues in the United States. *Journal of Marriage and the Family, 51,* 873-93.

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 the Family, 63,* 1009-1037.

Tochigi, M., Hibino, H., Otowa, T., Kato, C., et al. (2006). Association between dopamine D4 receptor (DRD4) exon III polymorphism and neuroticism in the Japanese population. *Neuroscience Letters, 398,* 333-336.

Udry, J. R., Morris, N. M., & Kovenock, J. (1995). Androgen effects on women's gendered behavior. *Journal of Biosocial Science, 27,* 359-368.

Umberson, D. (1992). Relationships between adult children and their parents: Psychological consequences for both generations. *Journal of Marriage and the Family, 54,* 664-674.

Umberson, D. (1996). Demographic position and stressful midlife events: Effects on the quality of parent-child relationships. In C. D. Ryff & M. M. Seltzer (Eds.), *The parental experience in midlife* (pp. 493-531). Chicago, IL: University of Chicago Press.

Umberson, D., & Gove, W. (1989). Parenthood and psychological well-being: Theory, measurement, and stage in the life course. *Journal of Family Issues, 10,* 440-462.

Umberson, D., Chen, M. D., House, J. S., Hopkins, K., & Slaten, E. (1996). The effect of social relationships on psychological well-being: Are men and women really so different? *American Sociological Review, 61,* 837-857.

Umberson, D., & Williams, K. (1999). Family status and mental health. In C. S. Aneshensel & J. C. Phelan (Eds.), *Handbook of the sociology of mental health* (pp. 225-254). New York: Kluwer Academic/Plenum Publishers.

Umberson, D., Williams, K., Powers, D., Chen, M., & Campbell, A. (2005). As good as it gets? A life course perspective on marital quality. *Social Forces, 84,* 493-511.

Veevers, J. E. (1980). *Childless by choice*. Toronto: Butterworth.

Vicary, J. R., & Corneal, D. A. (2001). A comparison of young women's psychosocial status based on age of their first childbirth. *Community Health, 24,* 73-84.

Vinick, B., & Lanspery, S. (2000). Cinderella's sequel: Stepmothers' long-term relationships with adult stepchildren. *Journal of Comparative Family Studies, 31,* 377-384.

Voydanoff, P., & Donnelly, B. W. (1999). Multiple roles and psychological distress: The intersection of the paid worker, spouse, and parent roles with the role of the adult child. *Journal of Marriage and the Family, 61,* 725-738.

Wade, T. J., & Pevalin, D. J. (2004). Marital transitions and mental health. *Journal of Health and Social Behavior, 45,* 155-170.

Waite, L. J. (1995). Does marriage matter? *Demography, 32,* 483-507.

Ward, R. A., & Spitze, G. (1992). Consequences of parent-adult child coresidence. *Journal of Family Issues, 13,* 553-572.

Ward, R. A., & Spitze, G. (1996). Gender differences in parent-child coresidence experiences. *Journal of Marriage and the Family, 58,* 718-725.

Ward, R., Logan, J., & Spitze, G. (1992). The influence of parent and child needs on coresidence in middle and later life. *Journal of Marriage and the Family, 54,* 209-221.

Wheaton, B. (1990). Life transitions, role histories, and mental health. *American Sociological Review, 55,* 209-223.

Whelpton, P. K., Campbell, A. A., & Patterson, J. E. (1966). *Fertility and family planning in the United States.* Princeton, NJ: Princeton University Press.

White, L. (1994). Coresidence and leaving home: Young adults and their parents. *Annual Review of Sociology, 20,* 81–102.

White, L., & Booth, A. (1985). The transition to parenthood and marital quality. *Journal of Family Issues, 6,* 435-450.

Wilhelm, K., Mitchell, P. B., Niven, H., Finch, A., Wedgwood, L., Scimone, A., Blair, I. P., Parker, G., & Schofield, P. R. (2006). Life events, first depression onset and the serotonin transporter gene. *British Journal of Psychiatry, 188*, 210-215.

Wilkie, J. R., Ferree, M. M., & Ratcliff, K. S. (1998). Gender and fairness: Marital satisfaction among two-earner couples. *Journal of Marriage and the Family. 60,* 577-594.

Willeit, M., Praschak-Rieder, N., Neumeister, A., Zill, P., Leisch, F., Stastny, J., Hilger, E., Thierry, N., Konstantinidis, A., Winkler, D., Fuchs, K., Sieghart, W., Aschauer, H., Ackenheil, M., Bondy, B., & Kasper, S. (2003). A polymorphism (5-HTTLPR) in the serotonin transporter promoter gene is associated with DSM-IV depression subtypes in seasonal affective disorder. *Molecular Psychiatry, 8,* 942-946.

Willis-Owen, S. A., Turri, M. G., Munafo, M. R., Surtees, P. G., Wainwright, N. W., Brixey, R. D., & Flint, J. (2005). The serotonin transporter length polymorphism, neuroticism, and depression: A comprehensive assessment of association. *Biological Psychiatry, 58,* 451-456.

Williams, K., & Umberson, D. (2004). Marital status, marital transitions, and health: A gendered life course perspective. *Journal of Health and Social Behavior, 45,* 81-98.

Zhang, Z., & Hayward, M. (2001). Childlessness and the psychological well-being of older persons. *The Journal of Gerontology: Social Sciences, 56B,* S311-S320.