FAMILY LIVES OF MARRIED COUPLES IN MIDLIFE

A Dissertation in
Human Development and Family Studies

by

Jeong Eun Lee

© 2012 Jeong Eun Lee

Submitted in Partial Fulfillment
of the Requirements
for the Degree of
Doctor of Philosophy
August 2012
The dissertation of Jeong Eun Lee was reviewed and approved* by the following:

Steve Zarit  
Professor of Human Development and Family Studies  
Dissertation Adviser  
Department head  
Chair of the Committee

Lynn Martire  
Associate Professor of Human Development and Family Studies

Michael Rovine  
Professor of Human Development and Family Studies

Douglas Coasworth  
Professor of Human Development and Family Studies  
Professor-in-Charge, Graduate Program

Jon Nussbaum  
Professor of Communication Arts and Science
* Signatures are on file in the Graduate School.
Abstract

Due to prolonged life expectancy, married couples spend more time together and rely on each other in times of need. Further, the parent-offspring tie is one of the longest-lasting ties middle-aged parents experience across their life span. The nature of relationships with spouses and offspring has resulted in extended periods of support and affective connections between family members in adulthood.

My dissertation consists of three papers that utilize dyadic perspectives from both husbands and wives with regard to their relationship to each other and to their adult offspring in adulthood. Papers one and two used middle-aged couples from the Family Exchange Study, a study of exchanges of support and quality of relationships between parents and adult offspring. Using both spouses’ accounts concerning exchanges of support with offspring and their relationships with offspring, paper one looked at how much parents report imbalance in support for each offspring and then examined whether this imbalance in support contributed to parental feelings of ambivalence towards offspring. The results show that parents felt greater ambivalence when there was a larger imbalance in support for each offspring. In addition, this linkage was moderated by their feelings of stress and rewards in helping offspring. In addition, similar connections were observed between imbalance in support and parental ambivalence towards offspring between husbands and wives.

Paper two examined the linkage between parents and children in their report of relationship quality using both variable and typological approach. Analyses were conducted using the Actor-Partner Interdependence Model (APIM), which takes into account the interdependence of observations between partners. Results show that parents who reported higher satisfaction in parent-child relationships also reported higher marital satisfaction. Conversely, parents who reported lower satisfaction in parent-child relationships reported lower marital satisfaction. This effect did not differ by parental gender. Results from the typological approach revealed somewhat diverse family patterns, families with similar valence and families with dissimilar valence across parent-child and spousal relationships. Different family patterns also had implications for the mental health of couples.

Finally, paper three examines how one spouse’s activity restriction resulting from illness is related to one’s own and his or her spouse’s well-being. Using data from a baseline of the psychosocial intervention study of patients with Osteoarthritis (OA) and their spouses, the paper investigated whether activity restriction (AR) is associated with depressive symptoms of both patients with OA and spouses and also whether marital satisfaction moderates such associations. To account for the interdependent reports of both spouses, APIM was conducted. Results reveal that higher levels of AR predicted higher depressive symptoms for both patients and spouses. Furthermore, marital satisfaction was found to buffer the relationship between levels of AR and depressive symptoms. Significant partner effect found between spouses’ AR and depressive symptoms suggest the interdependent nature of marital context.

In sum, my dissertation aims to extend our knowledge of how middle-aged couples experience their family lives as a spouse and a parent. Together, these studies demonstrated the shared family experiences of middle-aged couples and the implications of involvement in the lives of adult children and spouse on individuals’ well-being. Further, this study underscores the importance of considering both spouses’ perspectives in examining qualities of relationship between marital and parent-adult offspring relationships.
# TABLE OF CONTENTS

- List of Tables ........................................................................................................ v
- List of Figures ....................................................................................................... vii
- Acknowledgements ........................................................................................... viii

## CHAPTER 1. INTRODUCTION ................................................................................. 1
  1.1 Overview ....................................................................................................... 1
  1.2 Overview of Current Studies ........................................................................ 2

## CHAPTER 2. LITERATURE REVIEW .................................................................... 4
  2.1 Theoretical Perspectives .............................................................................. 4
  2.2 Empirical Findings on Family Lives of Married Couples in Middle and Late Life  5
  2.3 References .................................................................................................... 15

## CHAPTER 3. STUDY 1 ......................................................................................... 24
  "Imbalance in Support for Adult Offspring and its Implications on Parental Ambivalence"
  3.1 Significance of Research ............................................................................ 26
  3.2 Background and Literature Review .............................................................. 27
  3.3 Research Hypotheses .................................................................................. 32
  3.4 Methods ....................................................................................................... 33
  3.5 Results .......................................................................................................... 38
  3.6 Discussion ..................................................................................................... 42
  3.7 References .................................................................................................... 53

## CHAPTER 4. STUDY 2 ......................................................................................... 59
  "Family Relationships between Aging Parents and Adult Children"
  4.1 Significance of Research ............................................................................ 61
  4.2 Background and Literature Review .............................................................. 62
  4.3 Research Hypotheses .................................................................................. 66
  4.4 Methods ....................................................................................................... 68
  4.5 Results .......................................................................................................... 73
  4.6 Discussion ..................................................................................................... 76
  4.7 References .................................................................................................... 92

## CHAPTER 5. STUDY 3 ......................................................................................... 98
  "Activity Restriction and Well-Being in Couples with One OA Patient"
  5.1 Significance of Research ............................................................................ 100
  5.2 Background and Literature Review .............................................................. 101
  5.3 Research Hypotheses .................................................................................. 105
  5.4 Methods ....................................................................................................... 106
  5.5 Results .......................................................................................................... 111
  5.6 Discussion ..................................................................................................... 114
  5.7 References .................................................................................................... 128
LIST OF TABLES

Chapter 3. Imbalance in Support for Adult Offspring and its Implications for Parental Ambivalence
Table 1. Background Characteristics of the Participants ........................................... 48
Table 2. Bivariate Correlations between Covariates and Parental Ambivalence ............... 49
Table 3. Correlations between Key Variables of Middle-aged Parents ............................ 50
Table 4. Mixed Models Predicting Couples’ Ambivalence from Imbalance in Support with Adult Offspring .................................................................................................................. 51
Table 5. Mixed Models Predicting Couples’ Ambivalence from Imbalance in Support with Moderators (Stress and Rewards in Helping Offspring) .............................................................. 52

Chapter 4. Family Relationships between Aging Parents and Adult Children
Table 6. Background Characteristics of the Participants .............................................. 82
Table 7. Means, Standard Deviations, and Correlations of Parent Child Relationship Quality and Marital Satisfaction ............................................................................................................. 83
Table 8. Bivariate Correlations between Covariates and Marital Satisfaction of Husbands and Wives .................................................................................................................................................... 84
Table 9. Mixed Model Predicting Marital Satisfaction from Positive Relationship Quality between Parents and Children ......................................................................................................................... 85
Table 10. Mixed Model Predicting Marital Satisfaction from Negative Relationship Quality between Parents and Children ..................................................................................................................... 86
Table 11. BIC Values for Profile Solutions .................................................................................. 87
Table 12. Three-Profile Solution: Wife and Husband Means Standardized to a Mean of 50 ....................................................................................................................................................... 88

Chapter 5. Activity Restriction and Well-Being in Couples with One OA Patient
Table 13. Descriptive Statistics for Patients with OA and their spouses ................................. 119
Table 14. Correlations between Study Variables ................................................................................ 120
Table 15. Mixed Model Predicting Depressive Symptoms from AR ........................................ 121
Table 16. Mixed Model Predicting Depressive Symptoms from AR and Marital Satisfaction 122
LIST OF FIGURES

Chapter 4. Family Relationships between Aging Parents and Adult Children
Figure 1. Actor-Partner Interdependence Model of spouses’ marital relationships and positive quality of relationship between parents-children…………………………………………………………...89
Figure 2. Actor-Partner Interdependence Model of spouses’ marital relationships and negative quality of relationship between parents-children………………………………………………………90
Figure 3. Three profile solution……………………………………………………………………………………91

Chapter 5. Activity Restriction and Well-Being in Couples with One OA Patient
Figure 4. Conceptual model for the associations between activity restriction and depressive symptoms………………………………………………………………………………………………………123
Figure 5. Conceptual model for the associations between activity restriction and depressive symptoms moderated by patients’ and spouses’ marital satisfaction……………………………………124
Figure 6. Patients’ and spouses’ depressive symptoms and interaction between spouses (patients and spouses) and partners’ reported AR. …………………………………………………………………125
Figure 7. Patients’ depressive symptoms and interaction between patients’ marital satisfaction and spouses’ reported activity restriction. ……………………………………………………………126
Figure 8. Spouses’ depressive symptoms and interaction between spouses’ activity restriction and patients’ reported activity restriction. ……………………………………………………………127
Acknowledgement

I would like to express my deepest gratitude to my advisor, Steve H. Zarit, PhD for his time, support and guidance throughout my graduate school career. You offered me innumerable opportunities to advance my thinking, gain valuable research skills, and pursue my interests. I could not have completed this project without his expertise, enthusiasm for research, and commitment to mentorship. In addition, I would like to thank my committee members, Lynn Martire, Michael Rovine, and Jonathan Nussbaum for their time and thoughtful comments regarding this project. Lynn, Mike, and Jon, it has been a pleasure having you serve on my doctoral committee. From my comprehensive exam through this dissertation, your comments were always insightful and helpful. You always put me at ease during committee meetings and made this process much more enjoyable.

I would also like to acknowledge Karen Fingerman for letting me use her data. She always offered me pragmatic advice to improve the paper throughout the process. Kyungmin Kim, you also deserve my thanks for providing personal and professional support throughout the last five years. I truly enjoyed our discussion about our academic interests. Finally, I would also like to extend my gratitude to my husband, Wanyong Shin who has been with me by my side the whole time. This project would not have been possible without his endless support and encouragement.
CHAPTER 1. INTRODUCTION

1.1 Overview

Married couples are a very special social unit in the family. Spouses are close to each other, share many joint experiences, and live in the same environment (Lang, 2001; Meegan & Berg, 2002). Due to prolonged life expectancy, older married couples spend more time together and rely on each other in times of need. In addition, parent-child relationships today are maintained well into adulthood for both generations. This extended relationship has resulted in extended periods of support (including caregiving) and affective connections between family members over the lifespan. This trend has increased researcher interest in the lives of married couples in middle and late life and their relationship with adult children (Grundy & Henretta, 2006; Fingerman, Cheng, Tighe, Birditt, & Zarit, 2011; Zarit & Eggebeen, 2002).

Despite interest in the marital dyad in late life, understanding on this issue has been limited for several reasons. First, although the marital dyad is an interpersonal system where two people must be considered simultaneously, most studies still treat the dyad as an individual phenomenon. That is, research examining the marital dyad is primarily focused on individual factors and the resultant impacts on individual outcomes (Antonucci, Landford, & Akiyama, 2001; Bookwala, 2011). In addition, the bulk of prior research often relied on reports from a single family member to assess family dynamics such as exchanges of support, or family relationships between spouses or parents and children. Collecting perceptions from just one spouse may not portray an accurate picture of a couple’s life and their relationship with children (Figueiras & Weinman, 2003; Maguire, 1999).

Another limitation of prior studies is that scholars have rarely addressed the dynamic nature of interactions between marital and parenting systems in late adulthood. In early parenthood, it
has been documented that the parent-child relationship has significant implications for parental
well-being and the marital relationship (Erel & Burman, 1995; Umberson, Pudrovksa, & Reczek,
2010). Compared to parenthood with young children, however, the interdependence between
family’s subsystems in late adulthood rarely has been examined (Knoester, 2003).

To understand the complexity of the family lives of married couples and their children in late
adulthood, a brief overview of theory and empirical research on this topic is warranted.
Specifically, I review family systems theory, which addresses complex family dynamics between
subsystems in late life. Further, I discuss empirical findings on exchanges of support and parent-
child relationships among married couples in middle and late life. I also describe the implications
of familial exchanges of support, family relationships and spousal support on outcomes for
couples in middle and late life (e.g., well-being and marital satisfaction).

1.2 Overview of Current Studies

This dissertation consists of three papers that address how family life is surrounded and
shaped by married couples’ experiences as family members, parents and spouses. The first two
papers utilize data from 197 marital dyads in the Family Exchange Study (Fingerman, Miller,
Birditt, & Zarit, 2009). The first paper addresses how each spouse is involved in exchanges of
support for his or her grown children and examines the association between an imbalance in
support and parental ambivalence. In the second paper, I examine how the relationship each
parent has with his or her offspring is related to his or her marital relationship. I further explore
family types based on the levels of parent-child and marital relationship quality reported by
spouses. Using the data from married couples in which one spouse has arthritis, the third paper
examines how each spouse’s activity restriction is associated with his or her depressive
symptoms. Further, I examine the partner effect, which is how one spouse’s activity restriction is
associated with the other spouse’s depressive symptoms. I also consider moderators between activity restriction and depressive symptoms such as marital satisfaction and mastery. This research will shed light on the emotional complexities of parent-child ties and also implications on the outcomes of married couples in middle and late life.
CHAPTER 2. LITERATURE REVIEW

2.1 Theoretical Perspectives

2.1.1 Family Systems Theory

Family systems theory describes the active interplay between family members such as spouses and parent-child relationships. According to a family systems framework, families can be understood as complex integrated units that include individuals with various needs and perspectives (Cox & Paley, 1997; Minuchin, 1985). One of the characteristics of family systems theory is that families function by the composition law. That is, the whole is greater than the sum of its parts and has properties that cannot be understood from the combined characteristics of each part (Cox & Paley, 1997). Stated another way, processes at a family level cannot be reduced to an individual family member level. From this perspective, it is important to operationalize and study family level constructs instead of relying on a single family member to make inferences about family functioning.

A second principle of a family systems theory is that families are composed of subsystems (e.g., marital, parent-child, and sibling) and every family subsystem contains a number of small groups usually made up of two to three people (Cox & Paley, 1997; Minuchin, 1985). Each subsystem has its own rules, boundaries, and unique characteristics. Further, these family subgroups are known to be interrelated and to function in an interdependent manner. To understand family systems, therefore, these processes operating in multiple subsystems must be considered. This principle emphasizes the importance of using multiple informants to understand how a family operates.

Another characteristic of family systems theory is that families have the capacity to reorganize in response to external stressors or new circumstances (Minuchin, 1985). This aspect
of systems theory is critical, because it points to a need to consider how the family system responds to challenges, in addition to considering how each individual or subsystem responds. This perspective suggests that there will be challenges to existing patterns of interaction at all levels of the family during both normative transitions (e.g., a child starting a new job) and non-normative transitions (e.g., sickness of a family member). For example, research shows that the need for middle-aged and older couples to adapt to new caregiving roles in the face of illness affects marital interactions between them (Braun, Mikulincer, Rydall, Walsh, & Rodin, 2007; Zeiss, Lewinsohn, Rohde, & Seeley, 1996).

In general, the type of research described above requires measurements reflecting all levels of family systems. For example, researchers must utilize reports from multiple family members in order to capture multiple perspectives within a family. Examining couples’ dyadic perspectives can illuminate important information processes such as parent-child interactions in late adulthood and aged parents’ attempts to maintain or enhance their relationships with adult children within the family.

2.1.2 Other Theories Relevant to Exchanges of Support

In addition to family systems theory, several theoretical perspectives on exchanges of support between parents and children have been proposed and examined thus far. In the subsequent sections, theories (e.g., equity/reciprocity and contingency) that are more specific to exchanges of support between parents and adult children will be briefly reviewed, along with empirical findings.

2.2 Empirical Findings on Family Lives of Married Couples in Middle and Late Life

In this section, a brief description of studies of married couples’ family lives are provided, involving exchanges support and the relationship between the parent-child dyad and marital dyad.
The review is focused on two dimensions of parent-child relationship: practical (i.e., support exchanges) and emotional (i.e., relationship quality) aspects. In addition, prior studies on the interdependence between older couples facing health issues are discussed. In each section, the implications of each dimension of family lives on the well-being and marital satisfaction of couples in middle and late life are described.

2.2.1 Exchanges of Support between Parents and Adult Children

In the gerontological literature, exchanges of support between middle-aged couples and their aging parents have received much attention, as declining health among elderly parents creates increased caregiving needs. Recently, scholars have noticed that middle-aged parents assume increased familial responsibilities as family role expectations expand (Grundy & Henretta, 2006; Ward & Spitze, 1998). In particular, greater attention has been devoted to parental over-involvement with adult children (Cox & Rank, 1992; Fingerman et al., 2009; Zarit & Eggebeen, 2002). The media portray adult children as dependent, as they often turn to parents for various types of support. Some scholars have suggested that parents continue providing support for adult children because they tend to delay careers and maintain student status into later life (Grundy & Henretta, 2006; Fingerman et al., 2011; Ingersoll-Dayton, Neal, & Hammer, 2001).

Parental involvement with grown children takes many forms, including emotional support via telephone conversations or face-to-face interactions, as well as tangible assistance (Fingerman et al., 2009). In terms of patterns of support for adult children, mothers continue to be the main support providers for adult children, while fathers play an assisting role (Hochschild, 1989; Rossi & Rossi, 1990). Aside from providing support, parents also receive support from adult children (Fingerman et al., 2009; Zarit & Eggebeen, 2002) following the same within-family patterns,
with mothers tending to receive more support from their adult children than fathers (Hochschild, 1989; Stevens, Minnette, Mannon, & Kiger, 2007).

Some scholars suggested that parents or adult children exchange support to maintain equity (Walster, Berscheid, & Walster, 1973) or to address the needs of family members (i.e., contingency theory; Deutsch, 1975; Eggebeen & Davey, 1998). From the perspective of equity theory, researchers suggested that individuals attempt to maintain equity in their exchanges of support, as inequitable relationships often create discomfort for both providers and recipients (Walster, Berscheid, & Walster, 1973; Ingersoll-Dayton & Antonucci, 1988). Recently, however, scholars also found support for contingency theory, which posits that exchanges of support are often driven by the needs of adult children (e.g., being a student, problems in career or family life) or of aging parents (Davey & Eggebeen, 1992; Fingerman et al., 2009; Zarit & Eggebeen, 2002). Indeed, studies found that adult children provide more support for middle-aged parents who are sick or disabled (Fingerman et al., 2006; Silverstein & Bengtson, 1994).

Relationship quality between parents and children also appear to contribute to exchanges of support. Studies have found that middle-aged parents and children whose relationships are secure and open exchange greater amounts of support on a daily basis (Merz, Consedine, Schulze, & Schuengel, 2009; Silverstein et al., 1995). In sum, various motives (e.g., reciprocity, needs, and affective bonds) shape exchanges of support between parents and adult children (Lye, 1996; Merz et al., 2009).

Empirical findings are unclear about the implications of exchanges of support between parents and adult children on parental relationships and psychological well-being (Davey & Eggebeen, 1998; Aldous, Klaus, & Klein, 1985; Pillemer, Sechrist, Steinhour, & Suitor, 2007). Prior research tested whether imbalance in support was linked to parental depression, with the
assumption that imbalance would lead to a decrease in mental health outcomes. Indeed, some longitudinal work demonstrated that receiving more from than giving to adult children is associated with depressive symptoms (Davey & Eggebeen, 1998). Other scholars suggested the opposite trend. That is, aging parents report decreased well-being when they perceive a need to support their adult children (Aldous et al., 1985; Fingerman et al., 2009; Pillemer, Sechrist, Steinhour, & Suitor, 2007). These inconsistent findings may be due to various factors such as how support was measured (e.g., actual support vs. potential support) and how reciprocity in support was assessed (e.g., support exchange vs. imbalance in support) between parents and adult children. In addition, most studies used cross-sectional data, which made it difficult to examine the impact of exchanges of support on parental well-being.

Studies have rarely addressed to the implications of exchanges of support on marital relationships in late adulthood. In early parenthood, paternal involvement is considered to be an important aspect of parental support for children, as most wives assume child rearing responsibilities. Studies indicated that paternal involvement in child rearing is often an important contributing factor to the marital relationship during this critical period (Belsky, Rovine, & Fish, 1989; Ruble, Hackel, Fleming, & Stangor, 1988). Scholars consider paternal involvement with children to be a behavior demonstrating that husbands love, nurture and take care of their wives, thereby verifying affection (Pina & Bengtson, 1993). In late adulthood, however, when adult children need less help from their mothers, it is unclear whether one spouse’s involvement is necessarily associated with the other spouse’s marital satisfaction. Yet, it is still plausible that one spouse’s involvement with children would be perceived as sufficient, insufficient or excessive by the other spouse, which may contribute to marital satisfaction.
In sum, findings indicate that parents and adult children remain vitally involved with each other even after children reach adulthood, and these exchanges of support appear to have implications for the well-being of married couples in middle and late life. However, whether exchanges of support with adult children are associated with couples’ marital relationships remains to be examined.

2.2.2 Quality of Relationships between Parents and Adult Children

Another important aspect of family lives is the quality of parent-child relationships. It is well known that the life courses of children and parents are interdependent (Cox & Paley, 1997; Hagestad, 2002; Minuchin, 1985). The importance of this relationship has been emphasized in late adulthood, as commitment and exchanges of support between parents and adult children are increasingly shaped by the quality of relationships between them (Levitt, Guacci, & Weber, 1992; Lye, 1996; Merz et al., 2009).

Previous research has tended to focus on either solidarity (Silverstein & Bengtson, 1997) or conflict (Fingerman et al., 1996) in portraying family relationships between parents and adult children. However, some scholars recognized the importance of understanding complex emotional qualities of parent-child ties and introduced the term ambivalence (Connidis & McMullin, 2002; Luescher & Pillemer, 1998). Ambivalence refers to both positive and negative feelings toward the same person (Fingerman et al., 2006). Since it has been introduced in the gerontology literature, ambivalence has been found to be a valuable conceptual perspective for studying parent-child relationships in later life (Fingerman et al., 2006; Pillemer & Suitor, 2002).

Initial theories and studies on ambivalence have focused on how contradictory expectations and norms (e.g., roles and status) create and generate ambivalence between parents and adult children (Pillemer & Suitor, 2002; Wilson et al., 2002). Recently, it was noted that not only
societal factors, but also psychological factors (e.g., neuroticism, investment in roles) contribute to feelings of ambivalence between parents and adult children (Fingerman et al., 2006). Thus, it seems to be important to consider both psychological and societal factors when examining ambivalence.

The quality of relationships between parents and children may also have important implications for well-being and marital relationships among middle-aged couples. With regard to the effect of relationship quality on well-being, scholars have consistently found that positive associations between relationship quality and well-being are due to emotional experiences in most social interactions (Ryff & Singer, 2005). That is, positive social ties enhance physical and mental health for those involved, whereas stressful relationships have deleterious effects. Indeed, scholars consistently find that positive qualities of relationships are beneficial and negative qualities of relationships are harmful to well-being for both parents and adult children (Ingersoll-Dayton, Morgan, & Antonucci, 1997; Merz et al., 2009; Ward & Spitze, 1998). An ambivalent relationship between parents and children is also important to consider, because coexisting positive and negative feelings has been found to have detrimental effects on parental well-being (Fingerman et al., 2009; Uchino, Holt-Lunstad, Smith, & Bloor, 2004).

Relationship quality between parents and young children has been known to affect parental marital satisfaction. Family systems consist of four different subsystems: husband-wife, mother-child, father-child, and the higher-order family system. These subsystems are reciprocally-related and mutually-influencing; each dyadic subsystem is sensitive to other subsystems, and their combined interactions shape a family process (Minuchin, 1985).

Researchers examined the linkages between marital and parent-child relationships, with a particular focus on how conflict in marriage in early parenthood can disrupt parenting, which
affects the parent-child relationship (Erel & Burman, 1995; Grych & Fincham, 1998). In addition, scholars also found positive associations between marital harmony and good parent-child relationships in early parenthood (Chen & Kaplan, 2001; Erel & Burman, 1995). In late adulthood, however, it is less likely that parental marriage has a similar association with parent-child relationships, because parenting is less obvious at that stage of life. Rather, it is plausible that the parent-child relationship could affect parental marriage in late adulthood. Thus, it remains to be examined whether parent-child relationships are interdependent with parental marital relationships in middle and late years.

2.2.3 Interdependence among Couples Facing Health Problems in Late Life

Compared to earlier life stages, older couples usually do not have children living with them. Due to increases in couple cohesion and time spent among married individuals in advanced age, older couples may require greater levels of spousal support within their marriages than middle-aged couples. Declines in physical and functional health that likely limit access to alternative support systems may also heighten a couple’s sense of interdependence and directly increase the need and desire for spousal support.

In this time of need, a person with physical or cognitive illness is likely to turn to his or her spouse as a primary source of emotional and tangible assistance (Primomo, Yates, & Woods, 1990; Randall & Bodenmann, 2009). However, gender disparity has been found among primary caregivers for ill spouses. When husbands get sick, wives are more likely to be a spouse caregiver, providing both emotional and instrumental support (Thompson & Walker, 1989). On the other hand, when wives get sick, some husbands take over part of the responsibility but also turn to other sources of formal or informal help (e.g., children, relatives, or neighbors) (Allen & Webster, 2001).
Recently, evidence was found that couples in late life cope together with chronic illness (Lyons, Mickelson, Sullivan, & Coyne, 1998; Berg & Upchurch, 2007). When individuals are diagnosed with a serious chronic illness or health condition, significant adjustment begins for both patients and their spouses (Berg & Upchurch, 2007; Umberson & Williams, 2005). Scholars also found that married couples often engage in dyadic coping by perceiving the illness as a dyadic stressor instead of an individual one (Bodenmann, 2005; Curona, 1996). Couples also negotiate the emotional aspects of their shared experience (Coyne & Smith, 1991) or engage in joint problem solving while dealing with illnesses (Berg & Upchurch, 2006).

Changes in the health of a husband or wife have implications for an individual’s well-being as well as that of his or her partner (Berg & Upchurch, 2007; Carstensen, Gottman, & Levenson, 1995; Revenson, Kayser, & Bodenmann, 2005). Researchers have found stress levels of one spouse to be significantly associated with those of the other spouse (Adams, McClendon, & Smyth, 2008; Aneshensel, Pearlin, Mullan, Zarit, & Whitlatch, 1995; Lyons, Zarit, Sayer, & Whitlatch, 2001). Further, it is established that an ill spouse and his or her partner can simultaneously experience a range of psychological problems, such as depressed mood and decreased emotional well-being (e.g., quality of life satisfaction) after the diagnosis of illness (Berg & Upchurch, 2007; Randall & Bodenmann, 2009).

This decrease in well-being may occur because the objective burden associated with the demands of providing emotional and practical assistance for an ill spouse is perceived as unequal for both spouses. Caregiving burdens affect the moods of caregivers, who later feel emotionally drained, resentful, and entrapped with caregiving responsibilities (Manne & Zautra, 1989; Revenson, & Majerovitz, 1990). When ill spouses perceive that they cannot reciprocate spousal
care or do not feel in control of their care situations, they often report a loss of autonomy, as well as further depressed mood (Brock & Lawrence, 2008).

It has been documented that health conditions often interfere with daily activities of ill patients and their family members (Neiboer et al., 1998; Zeiss, Lewinsohn, Rohde, & Seeley, 1996; Williamson, 1992). Especially for caregiving spouses, time spent on valued activities (e.g., social activities and personal health care) is significantly reduced due to caregiving tasks such as taking over the patient’s household and family responsibilities (Berg & Upchurch, 2007; Schulz & Beach, 1999). Given that activities often contribute to an individual's ability to achieve physical and social well-being, activity restriction, either due to illness or caregiving demands, often leads to depression for both patients and their spouses (Neiboer et al., 1998; Williamson, 1992).

Research also documents the negative impact of illness on marital relationships. Equity theory suggests that marital satisfaction is determined not only by one’s own subjective perceptions of equity, but also by a partner’s perceptions in the context of intimate relationships (Acitelli, 1994; Acitelli & Antonucci, 1994). Studies also demonstrated that perceptions of inequity (e.g., non-reciprocal support between spouses) often lead to marital dissatisfaction and even marital outcomes such as divorce or separation (Feeney, Peterson, & Noller, 1994; Sprecher, 2001).

Indeed, marital dyads dealing with chronic illness often report decreased marital satisfaction over the course of long-term care (Randall & Bodenmann, 2009). It appears that when illness persists, the resulting stress plays an increasingly important and harmful role in a marital relationship, which often deteriorates in the long term (Berg & Upchurch, 2007). However, it is often difficult to examine the changes in a marital relationship in the context of long-term
caregiving, because previous relationships often confound the effect of illness on marital satisfaction.

It must be noted that most scholars thus far have taken an individual perspective on coping with health-related stressors (Lazarus & Folkman, 1984; Pearlin et al., 1990) and have examined spousal outcomes from one spouse’s perspective only. Given that the negative impact of stressors is often found to be on the marital dyad and not on the individual, it is important to involve both spouses when examining this issue. In addition, statistical tools capable of properly assessing mutual influence in relationships must be available and implemented.

Taken together, exchanges of support with family members occur when the needs of each family member arise or increase. Such exchanges of support are often associated with the quality of relationships between parents and children or between spouses. These aspects of family lives (e.g., exchanges of support, relationship quality) have important implications for the lives of married couples in mid life, but appear to be complicated and must be understood within the context of the marital dyad. Thus, to understand mutuality and interdependence between family members as well as spouses, obtaining information from both members of a dyad and examining the patterns of interdependence between family members is critical.
References


Chapter 3

Imbalance in Support for Adult Offspring and its Implications for Parental Ambivalence
Abstract

Ambivalence literature has emphasized the adult children’s dependence on parental support as sources of parental feelings of ambivalence. Given parental prolonged involvement in the lives of adult children, it was predicted that whether parental report of their imbalance in support for offspring would have negative implications for their ambivalence towards offspring. Using data from the Family Exchange Study of 197 middle-aged couples, I examined the associations between imbalance in support and parental ambivalence towards adult offspring and also tested whether stress and rewards in helping offspring moderated this association. Overall, giving more than receiving from adult offspring was associated with parental higher feelings of ambivalence towards offspring. Further, stress and rewards in helping offspring moderated this association in the opposite direction. Patterns of findings did not differ by gender. These findings suggest that imbalance in support for offspring might have negative implications for parent-child relationships, but these associations depend on parents’ appraisals with regards to helping offspring.
3.1 Significance of Research

Parents remain involved in their children’s lives even after they become adults (Fingerman, Cheng, Tighe, Birditt, & Zarit, 2011). Indeed, researchers have demonstrated empirical support for the accuracy of this dictum, with studies indicating that more help flows downstream from middle-aged parents to adult children rather than upstream to parents (Fingerman, Pillemer, Silverstein, & Suitor, 2012; Grundy, 2005; Zarit & Eggebeen, 2002). This prolonged involvement in adult children’s lives characterized by parental imbalance in support often creates various sentiments for parents, such as solidarity or tension (Silverstein & Bengtson, 1997). Scholars have recognized this simultaneous experience of positive and negative feelings within parents-child ties and conceptualized it as ambivalence (Connidis & McMullin, 2002; Luescher & Pillemer, 1998). Recent studies, meanwhile, suggest that parental feelings of ambivalence towards children are associated with adult children’s dependence on parents (Fingerman, Chen, Hay, Cichy, & Lefkowitz, 2006; Pillemer & Suitor, 2002; Willson, Shuey, Elder Jr., & Wickrama, 2003).

However, the majority of work in this area has examined older mother’s reports on imbalance in support for grown offspring and their feelings of ambivalence toward their children. Thus, information is lacking about the influence that gender differences may exert on parental perceptions, specifically, whether fathers and mothers report similar levels of imbalance in support for their offspring and whether they experience comparable feelings of ambivalence vis-à-vis imbalances in support. In addition, little is known about factors that strengthen or ameliorate the relationship between imbalance in support and parental feelings of ambivalence toward offspring. It is thus important to examine the predictors of ambivalence and the moderators affecting ambivalence, as the ties between parents and offspring have significant
implications for the mental and physical health of middle-aged couples and their quality of life (Fingerman, Pitzer, Lefkowitz, Birditt, & Mroczek, 2008; Lowenstein, 2007; Silverstein & Bengtson, 1997; Uchino, Holt-Lunstad, Smith, & Bloor, 2004).

This study extends previous research by examining imbalance in support and ambivalence among middle-aged parents and children from the same families. It further evaluates reports of middle-aged married couples on the quality of relationships with their grown offspring and the support they provided to and received from them. Using these couples’ data concerning up to three grown children, we examined the relation between imbalance in support and feelings of parental ambivalence towards their offspring. We also examined psychological factors such as the resultant feelings of stress and rewards in helping offspring as moderators of the association between imbalance in support and ambivalence. Finally, this study considers how these associations differ by parental gender.

3.2 Background and Literature Review

3.2.1 Ambivalence

As parents have competing desires for their children’s independence and closeness, the theory of ambivalence has provided a useful framework for understanding the complex parent-child ties that exist in adulthood (Fingerman et al., 2006; Birditt et al., 2010). Indeed, parents often report both positive and negative relationship qualities towards the same adult children (Fingerman, Hay, & Birditt, 2004; Pillemer & Suitor, 2002), and this conflicted feelings are found to have negative implications for the well-being of parents (Fingerman et al. 2008). Although prior studies have indicated various sociological and psychological factors contributing to parental ambivalence toward children (Connidis & McMullin, 2002; Luescher & Pillemer,
1998; Pillemer & Suitor, 2002; Willson et al., 2003), parents’ extended support for offspring has been noticeably implicated in eliciting parental feelings of ambivalence towards their children.

3.2.2 Imbalance in Support and Ambivalence

The generational stake hypothesis states that parents feel closer to their offspring than offspring feel to their parents across their lifespan (Bengtson & Kuypers, 1971; Giarrusso, Feng, Silverstein, & Bengtson, 2001). These different levels of investment in family ties are reflected in support patterns in adulthood. In other words, middle-aged parents continue to provide more support than they receive from their children, even after the children transition to adulthood (Cohen, 2004; Fingerman et al., 2011). This imbalance in support, although perceived in the past as hindering grown children’s adjustment and independence, has been recognized now as yielding beneficial outcomes for children during the transition to adulthood (Duncan, Duncan, & Hops, 1994; Reifman, Barnes, Dintcheff, Farrell, & Uhteg, 1998). For example, Reifman et al. (1998) found that parental involvement helps prevent heavy drinking among college students, indicating that non-tangible support from parents can play a particularly salient protective role during late adolescence and early adulthood.

Compared to beneficial outcomes for the well-being of adult children, however, researchers know less about how parents’ continued involvement in their children’s lives may affect middle-aged parents’ well-being as well as their relationships with adult offspring. Prior studies have indicated that parents experience ambivalence due to competing desires to launch their children into adulthood and to support children in need. For example, mothers feel greater ambivalence toward children who are not married (Pillemer & Suitor, 2007) or who have little education (Fingerman et al., 2006; Pillemer, & Suitor, 2005; Wilson et al., 2003). Parents who perceive their children as less successful in achieving adult milestones or as having problematic
family relationships (e.g., getting divorce) also report greater levels of ambivalence (Birditt, Fingerman, & Zarit, 2010; Pillemer & Suitor, 2002).

In explaining this association, researchers have speculated that parental feelings of ambivalence towards offspring may originate from the prediction that problematic children have less potential to provide care to parents compared to successful children who are doing well in relationships and careers (Fingerman et al., 2006; Pillemer & Suitor, 2002; Birditt et al., 2010). Even though these studies have indicated that parents feel more ambivalence towards children who are more dependent on parental support, such studies often relied on the status, problems and achievements of adult children as a proxy for parental imbalance in support for offspring, instead of directly examining the actual imbalance in support exchanged with offspring.

Therefore, the current study looks at parental reports on imbalance in support for offspring and ambivalence towards their offspring. We also examine factors contributing to the ambivalence of middle-aged mothers and fathers using reports of actual support provided and received from offspring. Given parental expectations on the independence of grown children in the transition to adulthood, I expect that higher imbalance in support will be positively associated with greater parental ambivalence toward offspring.

3.2.3 Stress and Reward as Moderators between Imbalance in Support and Ambivalence

Although imbalance in support may generate parental ambivalence towards offspring, other psychological factors may also influence the association between the two. That is, even when parents perceive an imbalance in support for offspring, the extent to which it contributes to feelings of ambivalence may depend on their subjective evaluations of the help the former provide. Thus, it is important to consider how parents appraise their support for offspring when explaining the linkage between imbalance in support and feelings of ambivalence.
The importance of subjective appraisals has been recognized in the stress literature. Lazarus and Folkman (1984) have proposed that subjective appraisal determines the responses individuals adopt to cope with stressful situations, and have emphasized that appraisals influence positive or negative outcomes such as well-being and adjustment to the stressful situation. Subjective appraisal refers to evaluative processes that interpret a situational encounter with certain meaning, such as whether the situation is positive in implication (i.e., bearing potential for growth or gain) or stressful and threatening (i.e., bearing potential for harm or loss). A significant amount of research has supported this theoretical stance, by indicating that the way people evaluate the stressors influences the level of psychological stress and further their adjustment more than the objective situation itself (Lazarus, 1993; Randall & Bodenmann, 2008; Smith & Kirby, 2009).

Although this theory has been mainly examined in stressful contexts such as nonnormative parenting situations, such as parenting of children with physical or mental disabilities (Rousey, Best, & Blacher, 1992), studies have also shown that this perspective may also be additionally useful in shedding light on the complex processes of adjustment to normative parenting situations (Levy-Shiff, Dimitrowsky, Shulman, & Har-Even, 1998; Levy-Shiff, 1998). Given that middle-aged parents are still invested in parent-child ties, their appraisals regarding the support they provide for offspring may also influence their feelings of ambivalence towards the latter. Moreover, depending on their appraisals of the support, feelings of ambivalence associated with imbalance in support may be strengthened or attenuated.

Thus, I hypothesize that parental perceptions of stress associated with helping adult children intensify the association between imbalance in support and feelings of ambivalence toward their children. In a similar vein, I expect that feelings of reward experienced by middle-
aged parents when helping offspring will render them less likely to feel the ambivalence normally associated with perceptions of imbalance in support.

3.2.4 Gender Differences in the Association Between Imbalance in Support and Parental Ambivalence

Differences between the parental roles of husbands and wives have been well documented. As *kin-keepers* of the family, mothers are generally found to be more involved in intergenerational exchanges and to maintain better relationships with their adult children than fathers. Socio-cultural centered literature also suggests that maternal relationships with children are more related to their exchanges of support because mothers are expected to have more empathic attitudes toward their offspring than fathers, and are expected to behave more altruistically and empathically than are fathers (Antonucci & Akiyama, 1987). Prior studies have also found that middle-aged mothers continue to have closer ties and provide more support for offspring than fathers, even after children reach adulthood (Rossi & Rossi, 1990; Umberson, 1992).

Given such assumed differences between husbands’ and wives’ parental roles and the extent of involvement in the lives of children, fathers may differ from mothers in their responses to the imbalance in support vis-à-vis for offspring. For example, husbands might feel less ambivalent about their offspring if they perceive fewer imbalances in support than mothers. However, the issue of whether this continued pattern of support for adult children has the same implications for middle-aged husbands and wives has not been explored thoroughly (Deater-Deckard & Scarr, 1996; Hops & Seeley, 1992; Phares & Compas, 1992).

To more fully examine the aforementioned issues, this study assessed mothers’ and fathers’ exchanges of support with adult children and their descriptions of relationships with
them, and the stress and rewards associated with helping them. Assessing both spouses’ reports concerning imbalance in support and ambivalence will allow us to test whether the implication of imbalance in support on their feelings of ambivalence differs by gender. Furthermore, I examine whether the same moderators constitute determinants for the support imbalance/ambivalence relationships as it exists between fathers and mothers.

3.3 Hypothesis

The first aim of the study is to examine the gender difference in terms of imbalance in support for offspring between husbands and wives. Based on prior studies on mother’s main kin keeper roles in families, I predict that wives will report higher levels of imbalance in support than husbands (H1).

The second aim of the study is to examine the association between imbalance in support for offspring and middle-aged couples’ ambivalence towards offspring. In particular, I expect that when middle-aged parents perceive more imbalance in support (e.g., more support provided to than received from children), they will be more likely to report higher ambivalence toward adult children (H2). Further, in accordance with stress process model, I also expect that subjective appraisals such as stress and rewards in these exchanges will moderate the relationship between imbalance in support and ambivalence (H3). Specifically, perceptions of stress in helping offspring will exacerbate the relationship between imbalance in support and ambivalence, whereas perceived rewards in helping offspring will attenuate this relationship.

The third aim of the study is to examine whether the association between imbalance in support for adult offspring and ambivalence varies by gender. As noted above, studies have not compared whether the linkage between imbalance in support and ambivalence differs between
husbands and wives. Given the lack of evidence on this topic, I will explore the association rather than test a hypothesis about the direction of effects (Research Question 1).

3.4 Methods

3.4.1 Participants

Participants were subsamples of a Family Exchange Study (FES; Fingerman et al., 2009) investigating family relationships and exchanges of support among middle-aged participants and their children. The sample selected for this study included married couples aged 40 to 69 years ($M = 52.03$, $SD = 4.73$ years) who resided in the Philadelphia primary metropolitan statistical area (including urban, suburban, rural areas; Pennsylvania State Data Center, 2001). Potential participants were contacted by telephone using a sampling method stratified by age using a list purchased from Genesys Corporation and random digit dialing within regional area codes.

When a potential participant was contacted by phone, an interviewer administered the screening instrument to determine if the household had an eligible target respondent. To be eligible, participants had to (a) be between the ages of 40 and 60, (b) have at least one living parent, and (c) have at least one living child 18 years of age or older. Once an eligible person was identified, the interviewer invited him or her to participate in the study. Target participants completed a telephone interview lasting approximately 1 hour that addressed the support they exchanged and their relationships with their offspring.

Of the 845 eligible targets, 633 (75%) participants agreed to be interviewed. During the interviews, target participants were asked if the research team could contact a spouse if the target was married. Among the 633 target participants, 335 (51%) were married at the time of the interview, and 287 (86%) of them agreed to let interviewers contact their spouses. Among those
287 spouses, 197 (71%) spouses agreed to be the interviewed. Thus, 197 couples (main target and the spouse of the participant) participated in the telephone interview.

Table 1 presents both husbands’ and wives’ demographic characteristics, including (a) age, (b) ethnicity, (c) work status, (d) education, (e) number of children, and (f) self-rated health. A majority of participants \( n = 161, 82\% \) had three or fewer children aged 18 years or older, with an average of 2.85 \( (SD = 1.30) \) (range = 1-11). Interviewers obtained detailed information (e.g., relationship quality, problems and exchanges of support) for a maximum of three grown children aged 18 years and older. Participants with four or more grown children \( n = 36, 18\% \) of couples) were asked to describe their relationships with the children who received the most assistance, the least assistance, and a random child. Because this study focused on examination of parent-child relationships and marital satisfaction from the perspective of middle-aged parents, interviews of adult children were not included.

3.4.2 Measures

**Ambivalence.** Ambivalence is typically measured using a combined assessment of positive and negative perceptions of the relationship. These perceptions of relationship items are taken from the American’s Changing Lives (ACL) survey (Umberson, 1992). These items present advantages for assessing ambivalence, as they are balanced across the positive and negative dimensions. These items also have been used consistently to assess ambivalence in studies of intergenerational relationships between parents and children (Birditt et al., 2010; Fingerman et al., 2006; Willson et al., 2003).

Participants rated the positive and negative qualities of the relationships between themselves and each of their children on a 5-point scale \( (1 = \text{not at all}} to \ 5 = \text{a great deal})\. Positive qualities included two items: “Overall, how much does your child love and care for
you?” and “How much does your child understand you?” Negative qualities included two items: “How much does your child criticize you?” and “How much does your child make demands on you?”

In calculating ambivalence scores, mean scores of positive and negative relationship quality were created. Griffin’s Similarity and Intensity of Components formula was used:

\[
\frac{(\text{positive} + \text{negative})}{2} - |\text{positive} – \text{negative}| + 1.5 \tag{Fingerman et al., 2006; Thompson, Zanna, & Griffin, 1995; Willson et al., 2003}
\]

Adding 1.5 to scores eliminates negative values. According to this formula, higher scores indicate greater ambivalence.Each support score represents ambivalence parents feel towards each respective child.

**Imbalance in support.** To calculate imbalance in support, participants rated how often they provided six types of support to each of their own living parents: (a) emotional, (b) practical assistance, (c) socializing, (d) advice, (e) financial support, and (f) talking about daily events. The first five items were derived from the Social Support Resources (SS-R) index (Vaux, 1988), and the final item was added based on preliminary studies of intergenerational support (Fingerman et al., 2009). Frequency of support for each item was scored on an 8-point scale that ranged from 1 (*less than once a year or not at all*) to 8 (*daily*). As in prior studies (Fingerman et al., 2009; Silverstein, Gans, & Yang, 2006), the six items were summed to create a score for how much support participants gave to each child.

Similarly, participants reported receipt of support from each child in the same six areas. As with support provided, I computed the total amount of support each parent reported receiving from each respective child. Thus, each support score (i.e., total amount of support provided and support received) represents the support a parent provided for and received from each respective child.
To calculate the imbalance in support score, I subtracted the receipt of support score from the provision of support score. The resulting score represented mother’s/father’s imbalance in support with each child. A positive score indicates a parent provides more support to each respective child, while a negative score indicates the child gives more help to his or her parents.

**Moderator.**

**Stress and rewards.** Participants indicated how rewarding and stressful they found helping their adult child to be, using a scale from 1 (*not at all*) to 5 (*a great deal*). These two items were developed and reported by the principal investigator (Fingerman et al., 2010).

**Covariates.**

**Participant characteristics.** Prior studies have indicated that age, having higher education, lower self-rated health and higher neuroticism are parental characteristics associated with parents’ ambivalence towards grown offspring (Fingerman et al., 2006; Twenge, Campbell, & Foster, 2003; Volling & Belsky, 1991). Thus, parents’ age, education (in years), self-rated health and neuroticism were included as covariates. Each participant reported the highest grade or years of college completed. Individuals also reported their physical health from 1 (*excellent*) to 5 (*poor*). This item was reversed so that a higher score indicated better health. Neuroticism included four items from the Midlife in the United States Study (MIDUS; Lachman, & Weaver, 1997). Parents were asked to indicate how well each of four adjectives (i.e., moody, worrying, nervous, and calm) described themselves: 1 (*a lot*), 2 (*some*), 3 (*a little*), or 4 (*not all*). The last item (i.e., calm) was reversed and added to other three items so that higher scores indicate higher neuroticism. The items were then averaged to create a neuroticism score.

**Adult children’s characteristics.** Participants provided their adult children’s demographic information. Among the demographic information, I included children’s age,
gender, education (in years) and problems adult children have experienced in the past 2 years that were known to be associated with parents’ feelings of ambivalence towards children (Birditt et al., 2010; Fingerman et al., 2006; Pillemer & Suitor, 2005; Rossi & Rossi, 1990).

Participants reported whether their children experienced a series of problems such as physical–emotional problems and lifestyle–behavioral problems. The physical-emotional problems included developmental delays or disabilities, health problems, injuries, serious emotional or psychological problems. Lifestyle-behavioral problems included drinking or drug problems, financial problems, trouble with the law, and divorce or other relationship problems. This measure was adapted from the National Survey of Midlife Development in the United States (MIDUS; Greenfield & Marks, 2006). We summed the total number of problems for each child. Each problem score represents the total number of problems each child has experienced in the last 2 years.

**Family characteristics.** Geographic distance between parents and each child has been found to be associated with the parent-child relationship (Suitor, Sechrist, & Pillemer, 2007). Thus, the distance to each child was included as a covariate. When adult children lived with their parents, their residential proximity was coded 0. When there were multiple children in a family, the average value of the distance between parents and children was calculated. To avoid the skew for distance, a log-linear transformed value was used in the analysis. In addition, families with more children tend to have weaker ties due to limits on parental time and energy, leading to less satisfaction and less involvement in subsequent relations with adult children (Ward, 2008). Thus, family size was included as a covariate.

3.4.3 Analysis Plan
To examine Hypothesis 1 on gender difference in terms of imbalance in support, I ran a paired t-test for imbalance in support between husbands and wives. Next, I estimated bivariate associations between potential covariates and ambivalence of husbands and wives. Covariates that are not associated with a dependent variable may generate spurious associations between variables when included in the analyses (Rovine, von Eye, & Wood, 1988). Therefore, I included covariates in the subsequent analyses based on significant associations. To test Hypotheses 2 and 3, I estimated separate multilevel models (one without moderators and one with moderators). Multilevel modeling (MLM) is often used to account for a lack of independence among data. In these analyses, the couple was an upper level unit and each spouse was a lower level unit. Models included two levels: higher level relationship characteristics (e.g., family size) and lower level characteristics (e.g., husbands’ and wives’ ages, health, and neuroticism; and children’s ages, genders, problems, and education levels). Ambivalence was a dependent variable and imbalance in support was an independent variable. In testing Hypothesis 3, stress and rewards associated with helping offspring were entered as moderators in MLM. As mentioned above, covariates included in all analyses were based on the bivariate associations between potential covariates and ambivalence of husbands and wives.

To test Hypothesis 4 on gender differences in the association between imbalance in support and ambivalence, gender interactions were included in the model. The significance of gender interaction indicated whether the effect of the predictor (i.e., imbalance in support) or the moderator (i.e., stress and rewards) on ambivalence varied by gender (i.e., fathers vs. mothers). To better interpret the interaction, all variables except gender and the dependent variable were centered.

**3.5 Results**
The results are presented in three sections. First, I provide husbands’ and wives’ reports of imbalance in support scores and present gender differences for imbalance in support. Second, I report the association between imbalance in support for offspring and parental feelings of ambivalence toward them, and test whether the association differs by parental gender. Finally, I test moderators including rewards and stress in helping offspring, while testing whether moderator effects differ by parental gender.

### 3.5.1 Patterns of Imbalance in Support, Stress and Rewards related to Helping Offspring, and Ambivalence

Table 2 provides the correlations and mean values for imbalance in support, stress and rewards associated with helping offspring, and feelings of ambivalence toward each child. Parents’ feelings of ambivalence scores ranged from 0.05 to 6.00 ($M = 2.53$, $SD = 1.23$). Imbalance in support, which was calculated by subtracting support received from each child from support provided to each child, ranged from -9 to 34. Most parents (97%) reported that they provided more support to than they received from their children, yielding positive values for most imbalance scores.

A paired samples $t$-test was performed to evaluate gender differences associated with imbalance in support. There was a significant difference for imbalance in support [$t (361) = 3.33$, $p < 0.001$], with husbands reporting higher imbalance in support for offspring ($M = 12.45$, $SD = 6.56$) than wives ($M = 11.31$, $SD = 6.18$). Result did not support for Hypothesis 1 which predicted a greater imbalance in support for children reported by wives than by husbands. Examination of scores revealed that husbands and wives reported providing similar levels of support to each child. However, wives received more support from each child than husbands [$t (361) = 5.54$, $p < 0.01$].
3.5.2 Bivariate Correlations.

As shown in Table 3, zero-order correlations between covariates and ambivalence scores were in the expected directions. In terms of parental characteristics, wife’s age, wife’s education (in years), wife’s health, wife’s neuroticism, husband’s age and husband’s education (in years), and husband’s neuroticism were associated with their feelings of ambivalence towards children. In terms of children’s characteristics, age, gender, education (in years) and children’s problems were associated with parental feelings of ambivalence towards children. One of the dyad characteristics, family size, was negatively associated with parental feelings of ambivalence towards children. However, the distance between the parent-child dyad and husband’s health was neither associated with husbands’ nor wives’ feelings of ambivalence towards children. Therefore, the distance between the parent-child dyad and husband’s health were excluded from subsequent analyses.

3.5.3 Associations between Imbalance in Support and Ambivalence

Table 4 includes multilevel models predicting parental feelings of ambivalence toward offspring as a function of imbalance in support including all covariates in the first column (Model 1), followed by a final trimmed model without non-significant covariates (Model 2). Consistent with Hypothesis 1, higher scores for imbalance in support were associated with greater feelings of ambivalence ($\beta = 0.04, p < 0.001$). That is, when parents reported providing more support than they received from each child, their ambivalence scores were higher. In contrast, parents who reported lower imbalance in support reported lower ambivalence toward their offspring.

As can be seen in Model 1 in Table 4, ambivalence did not vary by parental gender, so Gender $\times$ Imbalance in Support was not included in the final trimmed model (Model 2). As
found in Model 1, husbands’ and wives’ reports on imbalance in support for offspring were positively associated with their feelings of ambivalence towards offspring ($\beta = 0.035, p < 0.001$).

In terms of covariates, for both spouses, higher neuroticism was positively associated with feelings of ambivalence toward children ($\beta = 0.24, p < 0.01$). In terms of child characteristics, age ($\beta = -0.04, p < 0.001$), gender ($\beta = -0.22, p < 0.05$), and education (in years) ($\beta = -0.05, p < 0.05$) were significantly associated with parental ambivalence (Table 5). Both husbands and wives reported greater ambivalence toward children who were younger, female and had less education.

### 3.5.4 Moderation of stress and rewards related to helping offspring

Table 5 includes the multilevel models predicting parental feelings of ambivalence toward offspring as a function of imbalance and both moderators (i.e., stress and rewards in helping offspring) with all covariates in the first column (Model 3), followed by a final trimmed model without non-significant covariates and non-significant interaction terms (Model 4).

Consistent with Hypothesis 3, stress and rewards in helping offspring were significant moderators between imbalance in support and feelings of ambivalence – with opposite effects. That is, when both husbands and wives reported higher rewards in helping offspring, they reported lower ambivalence toward offspring ($\beta = -0.15, p < 0.001$). In contrast, husbands and wives who reported higher stress related to helping offspring had greater ambivalence toward their offspring ($\beta = 0.35, p < 0.001$).

I compared the goodness of fit of the models (Model 2 vs. Model 4) using the -2 log-likelihood estimations, both with and without moderators (Singer & Willett, 2003). The goodness of fit comparison involves subtracting the -2 log likelihood estimations of two models and examining the difference on a chi-square distribution with one degree of freedom. A
comparison of the goodness of fit indicators revealed that the model (Model 4) including moderators (i.e., stress and rewards in helping offspring) fit significantly better than the model without moderators (Model 2; $F = 4.24$, $df = 2$, $p < 0.01$).

In addition, I found no evidence of parents’ gender differences for the effects of any of the variables on ambivalence toward children, which is why the magnitudes of the coefficients listed in Model 3 (Table 5) are almost identical for husbands and wives. Thus, I removed gender interaction terms in the next trimmed model (Model 4 in Table 5). Results were in the same direction without gender interaction.

Similar patterns found above in Model 1 and 2 were observed for covariates in Model 3 and 4. Both husbands and wives reported greater ambivalence when they had higher levels of neuroticism ($\beta = 0.15$, $p < 0.05$). They also reported greater ambivalence toward children who were younger ($\beta = -0.05$, $p < 0.001$), female ($\beta = -0.21$, $p < 0.05$), and had less education ($\beta = -0.04$, $p < 0.05$).

3.6 Discussion

The present study examines husbands’ and wives’ accounts of their relationships with their children and their exchanges of support. In doing so, it contributes to the current literature by confirming parental imbalance in support for offspring and demonstrating that husbands involve themselves in the lives of their adult children at levels similar to those of mothers. In addition, this study’s findings expand on previous literature on ambivalence by showing that middle-aged parents report feeling greater levels of ambivalence towards their children when the imbalance in support for offspring is larger. Furthermore, our findings highlight the importance of considering parental appraisals of support for offspring in examining parental ambivalence.
towards the same. Finally, this study reveals that the effect of imbalance in support on parental ambivalence does not vary by parents’ gender, though it does vary by the gender of the children.

This study reveals the patterns of imbalance in support for offspring among middle-aged parents. In particular, it confirms the developmental stake theory that parents are more invested in the parent-child relationship than their offspring (Bengston & Kuyepers, 1971). Except in a few cases (less than 3%), most parents reported that they provided more than they received from each respective child.

Examinations of the patterns of parental accounts on imbalance in support and ambivalence revealed few differences between husbands and wives. Contrary to our expectations, we found that imbalance in support for offspring was greater for husbands than for wives. Past research has already documented how mothers are the main support provider and support recipients for offspring compared to fathers (Hogan & Eggebeen, 1995; Lawton et al., 1994; Rossi & Rossi, 1990; Spitze & Logan, 1989). However, we found that husbands provided a level of support similar to their wives, but received much less than their spouses did from their respective offspring.

In line with the above findings, we also found that fathers are similarly affected by the imbalance in support as mothers. This may be due to the fact that fathers are similarly involved in the lives of adult children, although they receive less support from them. The lack of gender difference for this criterion is not entirely new in the literature. Recent dyadic examinations have also revealed similarities in mothers’ and fathers’ parenting experiences associated with helping adult children (Birditt, Miller, Fingerman, & Lefkowitz, 2009; Proulx & Helm, 2008). Moreover, a number of these studies argue that the influence of gender on parenting roles decreases in importance as children come of age, in line with the increasingly common secular trends of
sharing similar family roles (Coltrane & Adams, 2008; Fingerman et al., 2006).

As expected, we found that imbalance in support for offspring had negative implications for parental ambivalence towards their offspring. This finding is in accordance with social norms dictating that children should attain adult status in a timely fashion and establish independent lives (Pillemer & Suitor, 2002). Previous research has identified a number of potentially dependent conditions and contexts of adult offspring that contribute to parental ambivalence (Birditt et al., 2010; Fingerman et al., 2006). Many scholars working in this vein have speculated that parents’ feelings of ambivalence result from their prediction that children with problems are less likely to support parents who might need help later on (Birditt et al., 2010; Willson et al., 2003). However, our findings indicate that parental ambivalence toward offspring might also depend on parents’ current imbalance in support for adult offspring. It is possible that parents perceiving greater imbalance in support consider their child as having less potential to provide support later on, should parental needs arise. Future studies might elucidate current findings by examining the linkage between parental perceptions of imbalance in support for offspring and their future predictions of children’s support for parents.

Another possible interpretation for the linkage between imbalance in support and parental ambivalence might be parents’ expectations of adult children. A recent qualitative study by Proulx and Helms (2008) found that middle-aged mothers and fathers tend to adopt peer-like roles in their relationships with adult children rather than maintain parental roles. If parents in this study perceived their adult children as family members who could equally (or similarly) reciprocate parental support, they might have considered an imbalance in support for adult offspring as unfair; this, in turn, might lead to greater feelings of ambivalence toward the adult
offspring. Future studies examining the sources of parental feelings of ambivalence may benefit from investigating parental expectations concerning their relationship with adult children.

The current study also reveals the conditions under which imbalance in support exacerbates or mitigates parental feelings of ambivalence toward children. When both spouses perceived their support for their offspring as stressful, their feelings of ambivalence were stronger. This result appears to conform to prior research on parents with young children, which found that psychological distress arising from parenting demands contributes to dysfunctional parent-child relationships (Abidin, 1992, 1995; Deater-Deckard, 1998). Parents may provide various types of support for grown offspring in need of help (Fingerman et al., 2009); however, when providing support is perceived as demanding or stressful, parents’ relationships with their children appear to suffer.

Similarly, parental perceptions of rewards in helping offspring were seen to buffer the effect of imbalance in support on parental feelings of ambivalence toward offspring. Previous studies on early parenthood have shown that positive appraisals, such as evaluating the situation as positive or rewarding exert protective influences, enabling parents to perceive themselves as more effective and to respond more adequately to the needs of children (Javis, & Creasey, 1991; Levy-Shiff, 1998). In line with previous research, feeling rewarded in helping offspring might have enhanced the well-being or self-esteem of parents, thereby contributing to positive perceptions of relationships with offspring. However, this study is cross-sectional, thus limiting the causal attribution. Alternatively, it is plausible that relationships with offspring might have shaped parents’ subjective appraisals of the stress or rewards associated with helping them.

3.6.5 Limitations and Future Directions
This study has several limitations, some of which have been discussed above. First, this study employed a cross-sectional design. Thus, the directions of the links among imbalance in support, stress and rewards associated with helping offspring, and ambivalence are unclear and could be bidirectional. For example, we hypothesized that stress and rewards in helping offspring are moderators between imbalance in support and parental ambivalence. Therefore, future study is needed to examine these linkages over time.

Second, stress and rewards in helping offspring were assessed with a single item each. The use of single-item measures for psychological constructs is typically discouraged, primarily because they are presumed to have low reliability and validity (Wanous, Reichers, & Hudy, 1997). Although some researchers argued that a single item may yield results similar to longer questionnaires (Littman, White, Satia, Bowen, & Kristal, 2006; Scarpello & Campbell, 1983), future studies using multiple items to assess parental appraisals of imbalance in support are needed to confirm the current findings.

Third, the scores of support measures (for both provision and receipt of support) were summed to create imbalance in support scores. However, imbalance in the some areas may be more important than in other areas. For example, imbalance in the resource exhaustive types of support (e.g., emotional and financial support) might elicit more ambivalent feelings toward offspring than imbalance in less-resource intensive support (e.g., socializing). Future studies are needed to examine where the imbalance in support occurs, and how the association between imbalance in support and ambivalence differs by the type of support provided and received. Perhaps such finer distinctions in the types of imbalance in support would shed some light on the current findings.
Finally, the finding that parents reported giving more support than was received from children might be attributed, at least in part, to a self-centered bias. Research has shown that people tend to overestimate their support contributions to others and downplay the support they receive (Kim, Zarit, Eggebeen, Birditt, & Fingerman, 2011; Mandemakers & Dykstra, 2008). However, previous studies have shown that perceptions regarding exchanges of support often have more important implications for the well-being of parents than enacted support (Kiecolt-Glazer & Newton, 2001; Bolger, Kessler, & Zuckerman, 2000; Wethington & Kessler, 1986).

Despite these limitations, this study has afforded us insight regarding parental support for to grown offspring and its implication. Findings indicate that middle-aged husbands and wives continue to give more support to children than they receive in return, as popular theory and norms dictated. Although the strong norms dictating parent-child relationship persist, imbalanced exchanges of support appear to have negative implications for middle-aged parents’ relationships with offspring. Further, parental appraisals of support for offspring appear to play an important role in moderating the effect that imbalance in support has on the parent-child relationship.
Table 1. *Background Characteristics of the Participants*

<table>
<thead>
<tr>
<th></th>
<th>Husbands (N = 197)</th>
<th>Wives (N = 197)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Means and Standard Deviations</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>52.58 (5.14)</td>
<td>50.74 (4.72)</td>
</tr>
<tr>
<td>Years of education</td>
<td>14.76 (1.94)</td>
<td>14.46 (2.22)</td>
</tr>
<tr>
<td>Rating of health a</td>
<td>3.71 (0.94)</td>
<td>3.63 (0.96)</td>
</tr>
<tr>
<td>Number of children</td>
<td></td>
<td>2.59 (1.21)</td>
</tr>
<tr>
<td><strong>Proportions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>0.89</td>
<td>0.89</td>
</tr>
<tr>
<td>Work status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employed full time</td>
<td>0.81</td>
<td>0.61</td>
</tr>
</tbody>
</table>

a 1 = *poor*, 2 = *fair*, 3 = *good*, 4 = *very good*, 5 = *excellent*.

*Note.* Standard deviations in parentheses.
Table 2. Correlations between Key Variables of Middle-aged Parents

<table>
<thead>
<tr>
<th></th>
<th>Mean (SD)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. H Reward</td>
<td>4.22 (0.93)</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. W Reward</td>
<td>4.24 (0.90)</td>
<td>0.226***</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. H Stress</td>
<td>2.08 (1.20)</td>
<td>-0.165**</td>
<td>-0.110*</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. W Stress</td>
<td>2.09 (1.15)</td>
<td>-0.186**</td>
<td>-0.261***</td>
<td>0.317***</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. H Imbalance</td>
<td>12.44 (6.59)</td>
<td>0.056</td>
<td>0.040</td>
<td>0.085</td>
<td>0.207***</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. W Imbalance</td>
<td>11.18 (6.23)</td>
<td>-0.002</td>
<td>-0.015</td>
<td>0.199***</td>
<td>0.329***</td>
<td>0.480**</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. H Ambivalence</td>
<td>2.49 (1.25)</td>
<td>-0.195**</td>
<td>-0.214**</td>
<td>0.428***</td>
<td>0.348***</td>
<td>0.288**</td>
<td>0.261**</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>8. W Ambivalence</td>
<td>2.56 (1.21)</td>
<td>-0.160**</td>
<td>-0.305**</td>
<td>0.290***</td>
<td>0.558***</td>
<td>0.257**</td>
<td>0.347**</td>
<td>0.582**</td>
<td>1.000</td>
</tr>
</tbody>
</table>

*Note. W indicates wife, H indicates husband

* p < 0.05, ** p < 0.01, *** p < 0.001
Table 3. *Bivariate Correlations between Covariates and Parental Ambivalence towards Offspring*

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. W age</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. W education</td>
<td>-0.10</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. W health</td>
<td>0.04</td>
<td>0.18</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. H age</td>
<td>0.86***</td>
<td>0.10</td>
<td>0.02</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. H education</td>
<td>0.14**</td>
<td>0.50</td>
<td>0.06</td>
<td>0.16**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. H health</td>
<td>0.10**</td>
<td>0.10</td>
<td>0.15</td>
<td>0.12**</td>
<td>0.18**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Family Size</td>
<td>0.23**</td>
<td>-0.10</td>
<td>0.09</td>
<td>0.24**</td>
<td>-0.03</td>
<td>0.03</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Distance</td>
<td>0.06</td>
<td>0.25**</td>
<td>-0.01</td>
<td>0.07</td>
<td>0.21**</td>
<td>0.09</td>
<td>0.03</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. C Age</td>
<td>0.49***</td>
<td>-0.27**</td>
<td>-0.06</td>
<td>0.47**</td>
<td>-0.10**</td>
<td>0.01</td>
<td>0.31**</td>
<td>-0.21**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. C Gender</td>
<td>0.01</td>
<td>0.01</td>
<td>-0.02</td>
<td>0.02</td>
<td>-0.03</td>
<td>-0.01</td>
<td>0.03</td>
<td>0.04</td>
<td>0.01</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. C Education</td>
<td>0.14***</td>
<td>0.11**</td>
<td>0.00</td>
<td>0.17</td>
<td>0.12</td>
<td>0.12**</td>
<td>0.03</td>
<td>-0.01</td>
<td>0.17**</td>
<td>-0.09*</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. C Problems</td>
<td>-0.04</td>
<td>-0.01</td>
<td>0.00</td>
<td>-0.04</td>
<td>-0.03</td>
<td>0.02</td>
<td>-0.03</td>
<td>-0.02</td>
<td>0.00</td>
<td>-0.10*</td>
<td>-0.05</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Imbalance</td>
<td>-0.24**</td>
<td>0.06</td>
<td>-0.02</td>
<td>-0.22**</td>
<td>0.05</td>
<td>-0.02</td>
<td>-0.30***</td>
<td>0.03</td>
<td>-0.38**</td>
<td>-0.03</td>
<td>-0.15*</td>
<td>0.08</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>14. Ambivalence</td>
<td>-0.13**</td>
<td>0.14**</td>
<td>-0.08*</td>
<td>-0.15**</td>
<td>0.09*</td>
<td>-0.03</td>
<td>-0.15***</td>
<td>-0.02</td>
<td>-0.32**</td>
<td>-0.09*</td>
<td>-0.17**</td>
<td>0.12**</td>
<td>0.32***</td>
<td>1.00</td>
</tr>
</tbody>
</table>

*Note. W indicates wife, H indicates husband, C indicates child.*

* *p < 0.05, ** p < 0.01, *** p < 0.001*
### Table 4. Mixed Models Predicting Couples’ Ambivalence from Imbalance in Support with Adult Offspring

<table>
<thead>
<tr>
<th>Covariates</th>
<th>Model 1</th>
<th>Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Husband</td>
<td>Wife</td>
</tr>
<tr>
<td></td>
<td>$\beta$ (SE$_B$)</td>
<td>$\beta$ (SE$_B$)</td>
</tr>
<tr>
<td>Participant Characteristics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-0.02 (0.03)</td>
<td>0.02 (0.02)</td>
</tr>
<tr>
<td>Education</td>
<td>0.01 (0.03)</td>
<td>0.06 (0.03)*</td>
</tr>
<tr>
<td>Self-rated health</td>
<td>-0.13 (0.06)*</td>
<td>-0.14 (0.06)*</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>0.24 (0.08)**</td>
<td>0.16 (0.08)*</td>
</tr>
<tr>
<td>Child Characteristics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-0.04 (0.01)**</td>
<td>-0.04 (0.01)**</td>
</tr>
<tr>
<td>Gender</td>
<td>-0.22 (0.09)*</td>
<td>-0.22 (0.08)*</td>
</tr>
<tr>
<td>Education</td>
<td>-0.05 (0.02)*</td>
<td>-0.06 (0.02)**</td>
</tr>
<tr>
<td>Problems</td>
<td>0.50 (0.03)</td>
<td></td>
</tr>
<tr>
<td>Relationship Characteristics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family Size</td>
<td>0.01 (0.06)</td>
<td></td>
</tr>
<tr>
<td>Imbalance</td>
<td>0.04 (0.01)**</td>
<td>0.04 (0.01)**</td>
</tr>
</tbody>
</table>

*Note.* *p < 0.05, **p < 0.01, ***p < 0.001
Table 5. *Mixed Models Predicting Couples’ Ambivalence from Imbalance in Support with Moderators (Stress and Rewards in Helping Offspring)*

<table>
<thead>
<tr>
<th>Covariates</th>
<th>Husband</th>
<th>Wife</th>
<th>Husband</th>
<th>Wife</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Participant Characteristics</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-0.005 (0.02)</td>
<td>0.02 (0.02)</td>
<td>0.02 (0.02)</td>
<td>0.02 (0.02)</td>
</tr>
<tr>
<td>Education</td>
<td>-0.000 (0.03)</td>
<td>0.03 (0.02)</td>
<td>0.03 (0.02)</td>
<td>0.03 (0.02)</td>
</tr>
<tr>
<td>Self-rated health</td>
<td>-0.10 (0.05)</td>
<td>0.10 (0.05)</td>
<td>0.10 (0.05)</td>
<td>0.10 (0.05)</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>0.150 (0.07)*</td>
<td>0.10 (0.05)*</td>
<td>0.15 (0.07)*</td>
<td>0.13 (0.06)*</td>
</tr>
<tr>
<td><strong>Child Characteristics</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-0.040 (0.01)***</td>
<td>-0.05 (0.01)***</td>
<td>-0.05 (0.01)***</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>-0.220 (0.08)**</td>
<td>-0.21 (0.07)*</td>
<td>-0.21 (0.07)*</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>-0.040 (0.02)*</td>
<td>-0.04 (0.02)*</td>
<td>-0.04 (0.02)*</td>
<td></td>
</tr>
<tr>
<td>Problems</td>
<td>-0.002 (0.03)</td>
<td>-0.002 (0.03)</td>
<td>-0.002 (0.03)</td>
<td>-0.002 (0.03)</td>
</tr>
<tr>
<td><strong>Relationship Characteristics</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family Size</td>
<td>0.016 (0.02)***</td>
<td>0.016 (0.02)***</td>
<td>0.016 (0.02)***</td>
<td>0.016 (0.02)***</td>
</tr>
<tr>
<td>Imbalance</td>
<td>0.420 (0.06)***</td>
<td>0.480 (0.09)***</td>
<td>0.480 (0.09)***</td>
<td>0.480 (0.09)***</td>
</tr>
<tr>
<td>Stress</td>
<td>0.200 (0.07)**</td>
<td>-0.210 (0.07)**</td>
<td>-0.210 (0.07)**</td>
<td>-0.210 (0.07)**</td>
</tr>
<tr>
<td>Rewards</td>
<td>-0.15 (0.040)**</td>
<td>-0.15 (0.040)**</td>
<td>-0.15 (0.040)**</td>
<td>-0.15 (0.040)**</td>
</tr>
</tbody>
</table>

*Note.*  *p < 0.05, **p < 0.01, ***p < 0.001*


Chapter 4

Family Relationships between Aging Parents and Adult Children
Abstract

In this study, links between spousal and parent-child relationships among middle-aged couples were examined with variable oriented and family typological approach. Participants included 197 couples ($N=394$) with a husband and a wife aged 40 to 69. Actor Partner Interdependence Models supported the spillover hypothesis. In particular, positive relationships between parents and children were associated with higher marital satisfaction of parents. Conversely, negative parent-child relationships were associated with lower marital satisfaction of parents. In addition, these associations did not differ by parental gender. Family typological analyses identified three family patterns: couples with satisfying marital and parent-child relationships (62% of couples), couples with satisfying spousal relationships with unsatisfying parent-child relationships (20%), and couples with unsatisfying relationships in both parent-child and spousal relationships. Couples experiencing both family relationships negatively reported lower depressive symptoms and lower life satisfaction compared to other two groups of families.
4.1 Significance of Research

Remarkable shifts in life expectancy over the past century have brought many changes in family ties, including longer parent-child and spousal relationships for both generations during the adult years. Enduring family ties are characterized by new expectations and potential sources of support, as well as conflicts among family members (Clarke, Preston, Raksin, & Bengtson, 1999; Fingerman, 1996; Shaw, Krause, Chatters, Connell, & Ingersoll-Dayton, 2004). This trend has led researchers to recognize the need to examine the interrelatedness of parent-child and spousal relationships.

Research on family relationships in adulthood highlights its importance for individual well-being. Studies on marital relationships have consistently found that a satisfying marriage is a source of middle-aged individuals’ well-being and successful aging (Diener, Suh, Lucas, & Smith, 1999; Ko, Berg, Butner, Uchino, & Smith, 2007; Rowe & Kahn, 1997). In addition, studies have found that parent-child relationships have important implications for the well-being of middle-aged parents (Birditt, Fingerman, & Zarit, 2010; Greenfield & Marks, 2006; Fingerman, Pitzer, Lefkowitz, Birditt, & Mroczek, 2008). Despite the emphasis on both parent-child and marital relationships in adulthood, the extent to which parent-child relationships are associated with marital relationships and whether this linkage has implications for individual well-being are unclear.

Using data from the Family Exchange Study (Fingerman, Birditt, & Zarit, 2009), the present study examines the interrelatedness between spousal and parent-child relationships in late adulthood. First, the study examines gender differences in relationship quality between parents and adult children. Second, the study examines the linkage between spousal and parent-child relationships, using reports from mothers and fathers within the same families. Finally,
using a family typological approach, the study identifies subgroups of families based on the quality of relationships between spouses and between parents and their offspring.

4.2 Background and Literature Review

4.2.1 Family Systems as a Framework for Understanding Family Processes

Family systems theory posits that spousal and parent-child relationships are important subsystems, each of which influences the other (Belsky, 1981; Cox & Paley, 1997; Minuchin, 1975). In recent decades, several processes have been proposed to explain how each of these subsystems influence each another (Engfer, 1988; Erel & Burman, 1995; Frauchier & Margolin, 2004).

The spillover hypothesis suggests that affect or behavior transfers directly from one relationship to another within a family system (Easterbrooks & Emde, 1988). The transfer occurs in the same valence, such that negative affect in one subsystem is linked to negative affect in another; for instance, one’s own negative mood or affect carries over and increases negative mood in other relationships (Cowan, Cowan, Heming, & Miller, 1991; Engfer, 1988; Frauchier & Margolin, 2004). Conversely, warm and affectionate relationships between parents and children are associated with higher marital satisfaction (Easterbrooks & Emde, 1988). Indeed, previous research found that families with more marital conflicts or disputes tend to have more negative parent-child relationships, while parents in more affectionate marriages tend to maintain positive relations with their children, and give their children more approval and affection (Easterbrooks & Emde, 1988; Miller, Cowan, Cowan, Hetherington, & Clingempeel, 1993).

An alternate view is the compensatory hypothesis, which proposes that a transfer between subsystems in a family occurs in the opposite valence; that is, when subsystem boundaries are not maintained, parent-offspring coalitions and marital dysfunction ensue (Engfer, 1988;
Minuchin, 1985). According to this hypothesis, positive marital relationship quality is associated with negative parent-child relationship quality, while negative marital relationship quality is associated with positive parent-child relationship quality. Although these family patterns have been noted in the clinical literature, there is little empirical evidence to support the notion of compensatory effects among family subsystems (Erel & Burman, 1995; Nelson, O’Brien, Blankson, Calkins, & Keane, 2009).

A third possibility of a crossover is suggested by interdependence theory (Rusbult & Van Lange, 2003). Rather than a transfer of the affect or behavior of one person across subsystems, a crossover may occur involving the transfer of affect or behavior among people (Westman, 2001). According to this theory, individuals’ moods and quality of relationships (e.g., parent-child relationship) can be a function of their own mood and also of the partner’s mood or behaviors in the relationship (e.g., tension in spousal relationship). This co-regulation of emotion or quality of relationship is also referred to as a partner effect. Several studies have examined partner effects in work and family domains and found that burnout crossover exists between spouses (Butner, Diamond, & Hicks, 2007; Larson & Richards, 1994; Thompson & Bolger, 1999). Also, it has been shown that the mood of one partner is related to the other partner’s perception of family relationships (Kiecolt-Glaser & Newton, 2001; Westman, 2001).

Although these three processes posited above may appear distinct, they may occur simultaneously. That is, the contagion of relationship satisfaction among parents and their children and spouses can be in the form of spillover, crossover, or both. For example, a father who reports higher marital satisfaction may also report positive relationships with his children. At the same time, his positive relationships with his children can have a crossover effect on his wife’s marital satisfaction.
Based on strong empirical support for the positive association between parent-child and spousal relationships, the present study expects a spillover to occur between marital satisfaction and quality of the parent-child relationship, as well as a crossover for the quality of one spouse’s parent-child relationship to be associated with the other spouse’s marital satisfaction.

4.2.2 Gender Differences in the Experiences of Parent and Adult Child Relationships

In early parenthood, mothers play more essential roles than fathers in the parent-child relationship by providing physical caregiving and emotional support for children, which contribute to positive parent-child relationships (Kivett, 1988; Rossi & Rossi, 1990). During this period, fathers have been found to play rather peripheral roles in their children’s lives. Similarly, fathers have been found to display less positive and more negative affect in their interactions with children than with mothers (Belsky, 1979; Belsky, Gilstrap, & Rovine, 1984).

Some scholars suggested that the strong mother-child bond and the nature of parent-child relationships change as offspring become adults and as their needs change (Thornton, Orbuch, & Axinn, 1995). It has been proposed that there are fewer gender differences in the parent-child relationship in late adulthood because of the reduced emphasis on caregiving for children (Thornton et al., 1995). In contrast, other researchers have suggested that with increasing age, gender differences in parent-child relationships remain the same or become stronger. Block (1978) noted that mothers maintain strong relationships with adult children and they continue to provide more emotional support and spend more time with them than fathers. Bronstein (1984) also found that gender differences in parent-child relationships are similar in adulthood, with fathers being more negative, firm, and restrictive and mothers being positive, warm, and affective with children. In sum, the extant research on this topic is inconsistent in terms of gender differences in the parent-child relationship.
In the linkage between spousal and parent-child relationships, however, gender differences have been found consistently in earlier stages of parenthood. Some scholars have speculated that fathering is qualitatively different from mothering in that a father’s relationships with his children are more malleable compared to those of a mother (Belsky, Gilstrap, & Rovine, 1984; Nelson et al., 2009). Fathers have also been found to be susceptible to marital distress (Cabrera et al., 2000). In fact, a study found that when a husband reported negative mood because of conflict or relationship strain with his wife, his negative mood was transferred to negative interactions with his children (Koh, 2005). In contrast, a mother is often viewed as the more skilled parent (Belsky, 1981) because her relationship with offspring is less likely to be associated with her own mood or marital conflict. However, as noted above, it remains to be examined whether parent-child relationships in adulthood are linked to marital relationships in the same way as was found at earlier stages in children’s lives.

4.2.3 Typological View on Family Roles

Family systems theory suggests that different processes take place in different families. However, family studies often rely on variable-centered analysis methods such as regression or factor analysis. Rather than grouping similar items and variables, person-centered analyses provide a way of grouping individuals into categories on the basis of shared characteristics that distinguish members of one group from members of other group. Indeed, recent research on family relationships has moved beyond a variable-specific approach, which assumes a linear relationship among variables, to a pattern-analytic approach that takes into account the combination of parent-child and spousal relationship patterns (Malinen et al., 2010).

The notion of family typology advanced by Minuchin (1975) has been used as a starting point for examining profiles of family types. In his pioneer work, Minuchin (1975) identified
patterns of family functioning based on the quality of relationship between parents and children. This approach has gained attention in the area of intergenerational relationships. Later, Silverstein and Bengtson (1997) identified family types based on solidarity dimensions and found that different types of parent-child solidarity relationships emerged. In addition, Van Gaalen and Dykstra (2006) examined the co-occurrence of positive and negative relationship quality between parents and children and further developed five types of parent-adult child relationships in late adulthood. These studies on intergenerational relationships have indicated that a typological approach can be applied to the study of parent-child relationships to understand unique family patterns.

Existing studies that take a systems or typology approach have certain limitations, which the present study will address. First, prior studies of intergenerational relations have examined only parent-child relationships without considering parental marital satisfaction in identifying family patterns. Some studies considering both parental marriage and parent-child relationship have also focused on early parenthood and marital relationship quality (Malinen et al., 2010; Rogers & White, 1998). Thus, little is known what types of families could be identified when both parent-child and marital relationships are considered in late adulthood. Second, existing research on family types examined adult children’s relationship quality using data from only one parent (i.e., Lang, 2004; van Gaalen & Dykstra, 2006). In order to better identify patterns of family relationships within each family, it is important to include perspectives of both husbands and wives from the same family. Finally, most studies have included only one child in the family rather than multiple children. This makes it unclear whether identified parent-child relations can be applied to the whole family, especially when parents have more than one child.

4.3 Research Hypotheses
The present study seeks to contribute to the intergenerational relationship literature in several ways. Unlike previous research that has tended to exclude fathers and sons, the present study includes reports on the relationships among parents and multiple children from mothers and fathers. In addition, the present study examines links between parent-child relationships and spousal relationships and tries to identify subgroups of families based on relationship patterns between these subsystems.

The study focuses on three sets of questions. The first aim of the study is to examine gender difference in parent-child relationship quality (i.e., both positive and negative quality of relationship). Given the inconsistent findings regarding gender differences in late adulthood, the present study expects to find no or minor gender differences in the quality of relationships between mothers and children and between fathers and children.

The second aim of the study is to examine the interrelatedness between parent-child and marital relationships. Based on previous research and theories, I expect to find support for the spillover hypothesis; that is, each parent’s parent-child relationship quality will be related to his or her own marital satisfaction (actor effect). More specifically, positive parent-child relationships will be related to higher marital satisfaction, whereas negative parent-child relationships will be related to lower marital satisfaction. Given that spouses often share their relationship with children, the present study also anticipates a crossover effect; that is, each partner’s relationship quality with children will be associated with the other spouse’s marital satisfaction (partner effect). Additionally, gender differences in the actor effect will be investigated. In particular, I expect that the actor effect linking fathers’ relationship quality with children to their marital satisfaction will be stronger than the actor effect linking mothers’ relationship quality with children to their marital satisfaction.
The third aim of the study is to identify family types based on spouses’ experiences of their marital and parent-child relationships and to examine the correspondence between the profiles and individual well-being. On the basis of previous studies supporting the spillover hypothesis, the present study expects to identify family types in which both roles are experienced similarly, either positively or negatively. More specifically, a large group of families reporting high quality in both family subsystems is expected to be identified. In addition, given that some studies suggest that these roles can provide contrasting experiences for some individuals, I expect to identify family types in which parents experience high quality in one relationship but low quality in the other. To validate identified family types, the study examines identified profiles in regards to mental health measures such as depression and life satisfaction.

4.4 Method

4.4.1 Participants

The sample included adults who resided in the Philadelphia primary metropolitan statistical area (including urban, suburban and rural areas; Pennsylvania State Data Center, 2001). Potential participants were contacted by telephone using a sampling method stratified by age (aged 40 to 50 and 51 to 60) using a list purchased from Genesys Corporation and random digit dialing within regional area codes.

When a potential participant was contacted by phone, an interviewer administered the screening instrument to determine if the household had an eligible target respondent. To be eligible, participants had to: (a) be between the ages of 40 and 60, (b) have at least one living parent, and (c) have at least one living child 18 years of age or older. Once an eligible person was identified, the interviewer invited him or her to participate in the study. Target participants
completed a telephone interview lasting approximately 1 hour that addressed the support they exchanged and their relationships with their offspring.

Of the 845 eligible targets, 633 (75%) agreed to be interviewed. During the interviews, target participants were asked if the research team could contact a spouse if the target was married. Among the 633 target participants, 335 (51%) were married at the time of the interview, and 287 (86%) of them agreed to let interviewers contact their spouses. Among those 287 spouses, 197 spouses (71%) agreed to be interviewed.

Table 1 presents participants’ demographic characteristics, including (a) age, (b) ethnicity, (c) work status, (d) education, (e) number of children, and (f) self-rated health. The majority of participants \( n=161, 82\% \) had three or fewer children aged 18 years or older, with an average of 2.85 \( (SD = 1.30) \) children aged 18 years or older (range = 1-11). Although some participants had more than four children \( n=36, 18\% \), interviewers obtained detailed information (e.g., relationship quality and exchanges of support) for a maximum of three grown children aged 18 years and older. Participants with four or more grown children were asked to select the child who received most assistance, least assistance, and a random child. Because this study focused on examination of parent-child relationships and marital satisfaction from the perspective of middle-aged parents, interviews of adult children were not included.

4.4.2 Measures

Marital satisfaction. Participants rated the overall quality of relationship with their spouses on a five-point scale from 1 (excellent) to 5 (poor). This single item was adapted from an item used in the American’s Changing Lives (ACL) survey (Umberson, 1989). The item was reverse coded so that higher scores represented greater marital satisfaction. The mean for wives was 4.17 \( (SD = 0.90) \) and for husbands was 4.25 \( (SD = 0.91) \), indicating high marital satisfaction.
**Relationship quality.** Participants rated both positive and negative quality of their relationships with each child. Four items tapping positive and negative qualities of the relationship taken from the ACL survey (Umberson, 1992) were used to assess global positive and negative qualities between parents and each child.

The positive quality scales included two items on a five-point scale (1 = *not at all* to 5 = *a great deal*). Positive qualities of the relationship included two items: “Overall, how much does your child love and care for you?” and “How much does your child understand you?” Because most parents (*n* = 173, 88%) had more than one child, the average value of the positive relationship quality scores between parents and their children was calculated. The mean positive parent-child relationship score for wives was 4.18 (*SD* = 0.59) and for husbands was 4.10 (*SD* = 0.65), indicating generally positive relationships between parents and children. The internal consistency (*α*) of this scale was 0.81 for husbands and 0.72 for wives.

Participants also rated the negative aspects of their relationships with each child. The negative quality scales included two items: “How much does your child criticize you?” and “How much does your child make demands on you?” The response categories were the same as above. The scores were reversed so that higher scores represented more negative relationships. As noted above in positive relationship quality items, the present study averaged the scores for each parent when the parents had more than one child. The mean negative parent-child relationship score for wives was 2.16 (*SD* = 0.71) and for husbands was 2.24 (*SD* = 0.77). The internal consistency (*α*) of this scale was 0.75 for husbands and 0.68 for wives.

**Covariates.** Covariates included parental, child, and parent-child dyad characteristics that previous research suggests may be associated with marital satisfaction.
Participant characteristics. Prior studies have indicated that age, having higher education and having lower self-rated health are parental characteristics associated with family relationships such as marital relationships (Twenge, Campbell, & Foster, 2003; Vollen & Belsky, 1991). Thus, parents’ age, education (in years) and self-rated health were included as covariates. Each participant reported highest grade or years of college completed. Individuals also reported their physical health from 1 (excellent) to 5 (poor). This item was reversed so that a higher score indicated better health.

Adult children’s characteristics. Participants provided background information for adult children’s demographic information. Among the demographic information, I included children’s age and problems adult children have experienced in the past 2 years. Recent studies have indicated that age of adult children and the problems of children were associated with parents’ marital relationships (Greenfield & Marks, 2006; Jenkins & Smith, 2006; Twenge, 2003).

Children’s problems included the sum scores of physical-emotional problems (e.g., developmental delays or disabilities, health problems, injuries, serious emotional or psychological problems) and lifestyle-behavioral problems (e.g., drinking or drug problems, financial problems, trouble with the law, and divorce or other relationship problems). This measure was adapted from the National Survey of Midlife Development in the United States (MIDUS; Greenfield & Marks, 2006). Given that most parents (88%) had more than one child, the average number of problems each children has was calculated.

Parent-child dyad characteristics. Family size, income and residential proximity were included as family characteristic variables. Previous studies have shown that household income and family size are often associated with marital satisfaction (Barnett, & Shibley, 2001; Conger,
Rueter, and Elder, 1999; Ward, 2008). Household income was rated from 1 (< $10,000) to 6 (> $100,000). In addition, residential proximity was used as a covariate, as parents who live closer to children may report lower marital satisfaction due to their involvement in the lives of offspring. Residential proximity was defined as the distance between parents’ and non-coresident children’s residences in miles. When adult children lived with their parents, their residential proximity was coded as 0. When there were multiple children in a family, the average value of the distance between parents and children was calculated. To avoid skew for distance, a log-linear transformed value was used in the analysis.

4.4.3 Analysis Plan

The first aim of the study was to examine gender differences in the quality of relationship between parents and children and spouses. Thus, paired t-tests were conducted to compare relationship quality (i.e., positive and negative) between husbands and wives.

Another aim of the study is to examine whether spousal and parent-child relationships are associated with each other. When using the reports from both spouses in the dyad, their responses are likely to be highly correlated. Dyadic data are non-independent (Kenny, 1996), because both partners are exposed to a common family context. Therefore, the present study used the actor-partner interdependence model (APIM; Kenny & Cook, 1999), which is designed to measure interdependence between members within the dyad. By applying APIM, it is possible to calculate how a person’s independent variable has an effect on his or her own dependent variable (i.e., an actor effect), as well as on his or her partner’s dependent variable (i.e., a partner effect; Campbell & Kashy, 2002). Two separate APIM models (one model for positive and the other for negative relationship quality) were estimated to examine the association between parent-child relationships and marital satisfaction. Further, I estimated models including gender interaction to
examine whether the linkage between parent-child relationship and spousal relationship is stronger for husbands or wives.

To examine the third aim of the study, which was identifying family types based on spousal and parent-child relationship, a latent profile analysis (LPA) was used. LPA enables researchers to identify the discrete latent variable that best groups individuals on the basis of their scores from among two or more discrete variables (McCutcheon, 1987). In addition, LPA can incorporate continuous, ordinal, and categorical indicators; in contrast, LCA can only accommodate categorical indicators. In LPA, class assignment is determined through fit statistics and tests of significance. LPA assigns membership on the basis of probabilities and thus is able to take uncertainty of membership, or error into account (Vermunt & Magdison, 2002). In addition, LPA affords one the opportunity to include outcomes in models to determine how well specified groups predict outcomes.

In the present study, LPA were conducted using Mplus 4.1 (Muthen & Muthen, 2004) to determine the optimal number of classes. After specifying the number of classes, a general linear model (GLM) with Tukey’s post hoc comparisons was used to validate differences found for psychological well-being outcomes among classes.

4.5 Results

4.5.1 Gender Differences in Parent-Child Relationships and Marital Satisfaction

As hypothesized, results of several pairwise t-tests show no significant gender differences for reports of positive or negative parent-child relationships. Means, standard deviations, and correlations of key variables were computed and are presented in Table 2.

4.5.2 Bivariate Association
Zero-order correlations between covariates and spousal marital satisfaction are presented in Table 3. In terms of parental characteristics, participants’ self-rated health was associated with their own marital satisfaction ratings. Results show that characteristics related to children and dyads were not associated with marital satisfaction for either spouse. To avoid spurious associations, I included only significant covariates (self-rated health of husbands and wives) in the subsequent analysis (Rovine, von Eye, & Wood, 1988).

4.5.3 Interrelatedness between Parent-Child Relationships and Marital Satisfaction

When I first estimated an actor effect for positive parent-child relationship quality on marital satisfaction, none of the main or gender interactions were significant (see Model 1 in Table 4). I then estimated a trimmed model without gender interaction. As summarized in Table 4, with regard to positive parent-child relationships, an actor effect was found for both husbands and wives ($\beta = 0.31, p < 0.001$). That is, there was a positive association between positive parent-child relationship and higher marital satisfaction for both husbands and wives (see Figure 1).

For negative parent-child relationship quality, gender interaction was not significant (see Model 3, Table 5). Thus, gender interaction was removed in the subsequent analysis. As seen in Model 4 (see Table 5), both actor and partner effects of negative parent-child relationships were significantly related to marital satisfaction for both husbands and wives. In other words, negative relationships with children negatively predicted an individual’s marital satisfaction ($\beta = -0.13, p < 0.05$), and also predicted his or her spouse’s marital satisfaction ($\beta = -0.12, p < 0.05$). In terms of covariates, self-rated health ($\beta = 0.10, p < 0.05$) was associated with marital satisfaction. Results are illustrated in Figure 2.
In sum, these findings suggest that the association between marital satisfaction and positive parent-child relationships is primarily actor-oriented, regardless of parental gender. In addition, findings regarding negative parent-child relationships support a couple-oriented model, indicating actor and partner effects on marital satisfaction for both husbands and wives, also regardless of parental gender.

Given that mean values of parent-child relationship quality are used in the analysis above, additional post hoc analyses were conducted to assure stability of findings across families with different numbers of children. I estimated the model for families with one child, families with two children, and families with three children. The patterns of findings were similar. The actor effect of positive and negative parent-child relationships was still associated with marital satisfaction for both husbands and wives for families with one, two and three children. In terms of partner effect, however, negative relationships with children were not consistently found among families with one child and families with two children. Although the coefficients were similar, they did not reach to the significant level. These inconsistent results appear to be due to reduced statistical power.

4.5.4 Subgroups of Family Types: Mixture Analysis

Next, I performed a six-variable Latent Profile Analysis (LPA) on spousal ratings of relationships with their children (i.e., positive and negative relationship quality) and marital satisfaction. I used the Bayesian information criterion (BIC) to determine the number of family subgroups because BIC is the most reliable indicator of model fit (Nylund, Asparouhov, & Muthen, 2007). Table 6 displays the BIC values for couple-level LPA; the BIC is lowest for the three-class model. As can be seen in Table 6, a comparison of a two-class model to a three-class model shows that three-class solution is statistically optimal; it is also supported by the LMR test.
with a probability level of 0.07. For the four-class model, BIC values increase and LMR is significant \((p = 0.0001)\).

Thus, I selected the three-class model for further interpretation, as it provided clear group separation and was conceptually interpretable. Class 1 was considered to be the most favorable profile and was classified as high quality in family relationships (see Table 7). This class was the largest, encompassing 62% of the couples \((n = 123\) couples). Marital satisfaction differentiated the remaining two classes. Couples in Class 2 were characterized by high marital satisfaction with low parent-child relationship quality \((20\%, n = 39\) couples). Couples belonging to Class 3 were characterized by low satisfaction with both marital and parent-child relationships \((18\%, n = 35\) couples).

To validate the classifications, I tested whether the identified class membership differed for mental health measures such as depressive symptoms and life satisfaction. Profile membership demonstrated a significant relationship with life satisfaction \((F [2, 194] = 8.00, p < 0.0001; \text{partial } \varepsilon^2 = 0.18)\) and depressive symptoms \((F [2, 194] = 4.87, p < 0.001; \text{partial } \varepsilon^2 = 0.08)\). Scheffé post hoc tests indicated that couples in Classes 1 and 2 reported higher life satisfaction and lower depressive symptoms than couples in Class 3 who reported negative relationships with both spouses and children.

### 4.6 Discussion

This study contributes to the current literature on family systems in several ways. Both variable-oriented and typological approaches were used to examine the interrelatedness of spousal and parent-child relationships. The APIM approach using dyadic data supported the spillover hypothesis, indicating that satisfaction in parent-child relationships is related to higher marital relationship quality. In addition, this spillover effect was equivalent for both husbands
Significant partner effect of negative parent-child relationships on marital satisfaction illustrated the need to acknowledge the mutuality in the marital relationship, in which both partners’ perspectives on the parent-child relationship are important to consider. In addition, typological latent profile analysis revealed three family types, yielding a complicated picture of the linkage between parents-child and marital relationships. Although majority of families (80%) reported both parent-child and marital relationships in the same valence, some families (20%) reported having incongruent experiences in marital and parent-child relationships.

As hypothesized, I did not find any gender differences between husbands and wives in terms of parent-child relationship quality. Although some previous studies have shown that mothers often report more positive relationships and fewer negative relationships with children in early parenthood (Hagestad, 1986; Rogers & White, 1998), previous studies often did not include the reports of husbands from the same families in investigating their relationships with adult children. Indeed, recent studies including both husbands and wives from the same family found that they are quite similar in their accounts of parent-child relationship (Proulx & Helms, 2008).

Consistent with our hypothesis, a spillover effect was observed between parent-child relationships and marital satisfaction. The significant actor effect of parent-child relationship quality (i.e., both positive and negative) on marital satisfaction indicates that similar affect in one relationship can be transferred to another family relationship. This finding is consistent with previous studies that reported that marital conflict is often transferred into parenting problems or negative parent-child relationships and well-functioning marriages (Erel & Burman, 1995; Krishnakumar & Buehler, 2000). It also aligns with studies indicating that marital satisfaction is associated with positive parent-child relationship (Erel & Burman, 1995; Krishnakumar &
Thus far, this positive interrelation of spousal and parent-child relationships has been found across the infant, middle-childhood, and adolescent years (Belsky & Fearson, 2004). Our findings further contribute to current literature by showing that this linkage may continue even after children enter adulthood.

This study also found a significant crossover effect between spouses’ marital satisfaction and negative parent-child relationship, suggesting the interdependent nature of marital context. Given their shared family environment, couples may experience similar problems with children; this, in turn, contributes to marital conflicts or disputes. Alternatively, a spouse may perceive the other spouse as less satisfying or qualifying when the other spouse experience problems with children. In a related vein, Harris and Morgan (1991) suggested that middle-aged parents regard their spouses’ parenting effort as one component of marital satisfaction. Thus, it is possible that middle-aged parents consider their spouses’ relationships with children in evaluating their marital satisfaction.

Given the cross-sectional nature of the data, this interrelatedness between parent-child and marital relationship quality is open to at least two interpretations. As spillover hypothesis suggests, individuals who are either distressed or content with one relationship may experience similar relationships with other family members (Cowan et al., 1991; Frauchier & Margolin, 2004; Goodman & Shippy, 1995).

Another possibility is that similar experiences in different family relationships may reflect individual personalities and a general tendency to see other family members in certain ways. For example, a pessimistic person might view his or her children negatively, and similar views may be applied to his or her spouse. In contrast, optimistic spouses may perceive parent-
child relationships positively and also rate their marital relationships as highly satisfying (McNulty, O’Mara, & Karney, 2008; McNulty, 2010).

Consistent with our hypothesis on family typology, the largest proportion of the families reported high quality in both their spousal and parent-child relationships (Class 1), while the other two groups of families experienced some levels of dissatisfaction in the family relationships. Not surprisingly, families experiencing high satisfaction in both family relationships reported relatively low depressive symptoms and high life satisfaction, while low satisfaction groups of families (Class 3), reported high depressive symptoms and lower life satisfaction. Indeed, previous studies found that negative consequences (e.g., depressive symptoms) are accompanied with difficulties in the marital relationships and poor parent-child relationships (Belsky & Fearon, 2004; Sturge-Apple, Davies, & Cummings, 2010).

Unlike families reporting similar valance across family relationships, families in Class 2 were martially satisfied but experienced relative discontent with their children. In the family systems literature, the compensation hypothesis posits that a dissatisfied spousal relationship is often followed by a satisfying parent-child relationship. However, our study found a reverse pattern, that is, families with satisfying spousal relationships and dissatisfied parent-child relationships. Exploring marriage-parenting typologies among families with young children, Belsky & Fearson (2004) also identified a similar group of families (i.e., good marriage and bad parenting). Combined with previous studies and current findings, it is possible that spouses may form an alliance between them when they experience problems with their children in early parenthood, and keep boundaries between them and their children, which help them stay satisfied in the spousal relationship.
This study has a number of strengths, including the use of a dyadic approach to examine relationships with children and spouses simultaneously. Nevertheless, some limitations of this study must be acknowledged. First, as mentioned, the present data are cross-sectional, thus precluding conclusions regarding causal interpretations. As indicated previously, individuals who experienced negative mood may have reported their relationships with their spouses or family members as negative. In fact, prior studies have indicated that individuals with increased depressive symptoms tend to describe their relationships with family members or with others in negative ways (Hamann & Canli, 2004). Future studies that use middle-aged couples as the unit of analysis and measure relationship quality in both family systems (i.e., parent-child and marital relationship) over time can help determine the direction of the interdependence evidenced in this sample.

Moreover, this study relied on spousal reports about the relationships with their children. According to the developmental stake hypothesis, parents tend to describe their relationships with their children more positively than their children do (Giarrusso, Stallings, & Bengtson, 1995). Therefore, investigating the interrelatedness between parent-child and marital relationship including children’s report would allow us to examine whether the patterns found in this study are stable or based on parents’ biased perceptions.

A selection bias was also possible. During participant recruitment, individuals were informed that the study was about family relationships and exchanges of support between family members. This recruitment strategy may have produced bias, as family members who are willing to participate in study tend to have better relationships with family members than non-participating subjects (Berk, 1983). Cross-validation across more representative samples of middle-aged couples is needed in order to generalize the current findings.
Despite these limitations, the present study provides insight into several aspects of the interrelatedness between parent-child relationships and marital relationships among middle-aged couples. Generally, in line with the spillover hypothesis, happily married people also tend to have positive relationships with their children; however, some couples in this study did have high marital relationships and low quality parent-child relationships. Given the results, future studies examining changes in parent-child and marital relationships of middle-aged couples will provide further insight into the well-being of these couples.
Table 6. Background Characteristics of the Participants

<table>
<thead>
<tr>
<th></th>
<th>Husbands (N = 197)</th>
<th>Wives (N = 197)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Means and Standard Deviations</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>52.58 (5.14)</td>
<td>50.74 (4.72)</td>
</tr>
<tr>
<td>Years of education</td>
<td>14.76 (1.94)</td>
<td>14.46 (2.22)</td>
</tr>
<tr>
<td>Rating of health a</td>
<td>3.71 (0.94)</td>
<td>3.63 (0.96)</td>
</tr>
<tr>
<td>Distance (in miles)</td>
<td>240 (44.5)</td>
<td>260 (56.1)</td>
</tr>
<tr>
<td>Number of children</td>
<td></td>
<td>2.59 (1.21)</td>
</tr>
<tr>
<td><strong>Proportions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>0.89</td>
<td>0.89</td>
</tr>
<tr>
<td>Work status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employed full time</td>
<td>0.81</td>
<td>0.61</td>
</tr>
</tbody>
</table>

a 1 = poor, 2 = fair, 3 = good, 4 = very good, 5 = excellent.

Note. Standard deviations are in parentheses.
Table 7. Means, Standard Deviations, and Correlations of Parent Child Relationship Quality and Marital Satisfaction

<table>
<thead>
<tr>
<th>Key Variables</th>
<th>M (SD)</th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
<th>6.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Husbands’ Positive RQ with Child</td>
<td>4.41 (0.65)</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Wives’ Positive RQ with Child</td>
<td>4.18 (0.59)</td>
<td>0.33**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Husbands’ Negative RQ with Child</td>
<td>2.24 (0.77)</td>
<td>-0.32**</td>
<td>-0.15*</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Wives’ Negative RQ with Child</td>
<td>2.16 (0.71)</td>
<td>-0.21**</td>
<td>-0.33**</td>
<td>0.41**</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Husbands’ Marital Satisfaction</td>
<td>4.25 (0.90)</td>
<td>0.36**</td>
<td>0.18**</td>
<td>-0.19**</td>
<td>0.20**</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>6. Wives’ Marital Satisfaction</td>
<td>4.17 (0.91)</td>
<td>0.04</td>
<td>0.22**</td>
<td>-0.08</td>
<td>-0.15*</td>
<td>0.42***</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Note: RQ indicates relationship quality.

* p < 0.05, ** p < 0.01, *** p < 0.001
Table 8. Bivariate Correlations between Covariates and Marital Satisfaction of Husbands and Wives

<table>
<thead>
<tr>
<th></th>
<th>M (SD)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. W age</td>
<td>51.49 (4.65)</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. W education</td>
<td>14.46 (2.22)</td>
<td>0.087</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. W health</td>
<td>3.63 (0.96)</td>
<td>0.024</td>
<td>0.170</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. H age</td>
<td>52.60 (5.14)</td>
<td>0.873</td>
<td>**</td>
<td>0.069</td>
<td>0.003</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. H education</td>
<td>14.70 (1.94)</td>
<td>0.150</td>
<td>*</td>
<td>0.520</td>
<td>**</td>
<td>0.098</td>
<td>0.139</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. H health</td>
<td>3.71 (0.94)</td>
<td>0.086</td>
<td>0.117</td>
<td>0.190</td>
<td>**</td>
<td>0.130</td>
<td>0.280</td>
<td>**</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Family Size</td>
<td>1.97 (0.97)</td>
<td>0.270</td>
<td>**</td>
<td>-0.075</td>
<td>0.130</td>
<td>0.280</td>
<td>**</td>
<td>-0.025</td>
<td>0.003</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Income</td>
<td>4.90 (1.65)</td>
<td>0.023</td>
<td>0.270</td>
<td>0.060</td>
<td>-0.033</td>
<td>0.210</td>
<td>0.250</td>
<td>**</td>
<td>-0.056</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Distance</td>
<td>0.42 (0.73)</td>
<td>0.083</td>
<td>0.210</td>
<td>0.033</td>
<td>0.093</td>
<td>0.220</td>
<td>0.135</td>
<td>0.135</td>
<td>-0.016</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. C Age</td>
<td>23.12 (4.22)</td>
<td>0.580</td>
<td>**</td>
<td>-0.290</td>
<td>**</td>
<td>-0.059</td>
<td>0.560</td>
<td>**</td>
<td>-0.130</td>
<td>-0.016</td>
<td>0.390</td>
<td>**</td>
<td>-0.090</td>
<td>-0.050</td>
</tr>
<tr>
<td>11. C Problems</td>
<td>0.79 (0.82)</td>
<td>-0.040</td>
<td>0.050</td>
<td>-0.030</td>
<td>-0.070</td>
<td>-0.020</td>
<td>0.060</td>
<td>-0.030</td>
<td>0.080</td>
<td>-0.040</td>
<td>0.010</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Wife MS</td>
<td>4.17 (0.90)</td>
<td>0.000</td>
<td>0.057</td>
<td>0.140</td>
<td>-0.060</td>
<td>0.087</td>
<td>0.065</td>
<td>0.046</td>
<td>0.070</td>
<td>-0.040</td>
<td>0.050</td>
<td>-0.030</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>13. Husband MS</td>
<td>4.25 (0.91)</td>
<td>0.122</td>
<td>0.063</td>
<td>0.080</td>
<td>0.119</td>
<td>0.115</td>
<td>0.280</td>
<td>**</td>
<td>0.140</td>
<td>0.122</td>
<td>0.118</td>
<td>0.090</td>
<td>-0.030</td>
<td>0.420</td>
</tr>
</tbody>
</table>

*Note. W indicates wife, H indicates husband, C indicates child, and MS indicates marital satisfaction.

* p < 0.05, ** p < 0.01, *** p < 0.001.
Table 9. *Mixed Model Predicting Marital Satisfaction from Positive Relationship Quality between Parents and Children*

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Full Model</th>
<th></th>
<th>Final Trimmed Model</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE&lt;sub&gt;B&lt;/sub&gt;</td>
<td>B</td>
<td>SE&lt;sub&gt;B&lt;/sub&gt;</td>
</tr>
<tr>
<td>Intercept</td>
<td>3.98***</td>
<td>0.93</td>
<td>2.65***</td>
<td>0.46</td>
</tr>
<tr>
<td>Gender</td>
<td>-0.78</td>
<td>0.53</td>
<td>0.08</td>
<td>0.06</td>
</tr>
<tr>
<td>Actor Positive RQ</td>
<td>0.12</td>
<td>0.24</td>
<td>0.31***</td>
<td>0.06</td>
</tr>
<tr>
<td>Partner Positive RQ</td>
<td>-0.07</td>
<td>0.23</td>
<td>0.06</td>
<td>0.06</td>
</tr>
<tr>
<td>Actor Positive RQ × Gender</td>
<td>0.12</td>
<td>0.15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partner Positive RQ × Gender</td>
<td>0.09</td>
<td>0.15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Covariates</td>
<td></td>
<td></td>
<td>Self-rated Health</td>
<td>0.10*</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.10*</td>
<td></td>
</tr>
</tbody>
</table>

*Note. Parameter estimates are fixed effects. RQ indicates relationship quality.*  

* p < 0.05, ** p < 0.01, *** p < 0.001
Table 10. Mixed Model Predicting Marital Satisfaction from Negative Relationship Quality between Parents and Children

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Full Model</th>
<th>Final Trimmed Model</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE_B</td>
</tr>
<tr>
<td>Intercept</td>
<td>4.34***</td>
<td>0.47</td>
</tr>
<tr>
<td>Gender</td>
<td>0.38</td>
<td>0.24</td>
</tr>
<tr>
<td>Actor Negative RQ</td>
<td>-0.16</td>
<td>0.21</td>
</tr>
<tr>
<td>Partner Negative RQ</td>
<td>0.12</td>
<td>0.20</td>
</tr>
<tr>
<td>Actor Negative RQ × Gender</td>
<td>0.03</td>
<td>0.13</td>
</tr>
<tr>
<td>Partner Negative RQ × Gender</td>
<td>-0.16</td>
<td>0.13</td>
</tr>
<tr>
<td>Covariates</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-rated Health</td>
<td>0.12**</td>
<td>0.04</td>
</tr>
</tbody>
</table>

Note. Parameter estimates are fixed effects. RQ indicates relationship quality.

* \( p < 0.05 \), ** \( p < 0.01 \), *** \( p < 0.001 \)
Table 11. \textit{BIC Values for Profile Solutions}

<table>
<thead>
<tr>
<th>Profile solution</th>
<th>BIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8680.693</td>
</tr>
<tr>
<td>2</td>
<td>8582.092</td>
</tr>
<tr>
<td>3</td>
<td>8567.039</td>
</tr>
<tr>
<td>4</td>
<td>8571.272</td>
</tr>
<tr>
<td>5</td>
<td>8591.017</td>
</tr>
<tr>
<td>6</td>
<td>8608.580</td>
</tr>
<tr>
<td>7</td>
<td>8620.130</td>
</tr>
</tbody>
</table>

\textit{Note.} BIC=Bayesian information criterion.
Table 12. *Three-Profile Solution: Wife (W) and Husband (H) Means Standardized to a Mean of 50 (SD=10).*

<table>
<thead>
<tr>
<th></th>
<th>Class1 Generally Positive</th>
<th>Class2 Unsatisfied PC Relationship</th>
<th>Class3 Unsatisfied with PC and MS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>W</td>
<td>H</td>
<td>W</td>
</tr>
<tr>
<td>Positive Relationship with Children</td>
<td>52.39 (0.83)</td>
<td>53.67 (0.82)</td>
<td>46.03 (2.30)</td>
</tr>
<tr>
<td>Negative Relationship with Children</td>
<td>47.48 (0.89)</td>
<td>46.87 (1.10)</td>
<td>56.75 (1.70)</td>
</tr>
<tr>
<td>Marital Satisfaction</td>
<td>51.91 (0.87)</td>
<td>53.83 (0.89)</td>
<td>53.10 (1.90)</td>
</tr>
</tbody>
</table>

*Note.* PC indicates parent-child. MS indicates marital satisfaction. For generally positive couples, n = 123 (62%); for martially unsatisfied couples, n = 39 (20%), and for parentally and martially unsatisfied couples, n = 35 (18%).
Figure 1. Actor-Partner Interdependence Model of parents’ marital satisfaction and positive qualities of relationship between parents and children
Figure 2. Actor-Partner Interdependence Model of parents’ marital satisfaction and negative qualities of relationship between parents and children
Figure 3. Three Profile Solution. Y axis indicates T score; W Positive = wives’ positive relationship with children. H Positive = husbands’ positive relationship with children; W Negative = wives’ negative relationship with children; H Negative = husbands’ negative relationship with children.

W Marital = wives’ marital satisfaction; H Marital = husbands’ marital satisfaction.
References


Chapter 5

Activity Restriction and Well-Being in Couples with One Osteoarthritis Patient
Abstract

While dealing with Osteoarthritis (OA), patients with OA and their spouses are likely to experience activity restriction (AR) due to the conditions of patients’ illness. It has been documented that this increased AR would put both patients and their spouse at risk for developing mental disorders such as depression. Actor Partner Interdependence Models were used to examine the association between AR and the depressive symptoms of both patients and their spouses while also testing the moderating role of marital satisfaction. Two hundred thirty older adults with lower-extremity OA and their caregiving spouses participated in the study. Result largely confirmed the hypotheses. As hypothesized, greater AR was associated with higher depressive symptoms for both patients and spouses. Further, spouses’ levels of AR were associated with patients’ depressive symptoms. The moderating role of marital satisfaction in the link between AR and depressive symptoms was also found. These patterns of finding suggested the importance of considering both spouses’ reports and vital role of marital satisfaction in the context of chronic illness.
5.1 Significance or Research

Osteoarthritis (OA) is a musculoskeletal disease characterized by chronic pain and physical disability. OA is known to have a major impact on patient functioning and independence, with both symptoms and disability related to the disease becoming more prevalent with increasing age (Tait, Chibnall, & Krause, 1990). Given its chronic nature and debilitating physical effects, informal care plays a major role in OA patient care (Rejeski & Shumaker, 1994). For many patients with OA, spouses become the main sources of assistance with daily activities as they cope with the illness (Danoff-Burg & Revenson, 2000; Williamson & Schaffer, 2000). A growing literature affirms that patients and spouses face this chronic illness together, as a chronic condition requires both partners to adjust their lifestyles (Berg & Upchurch, 2007; Williamson, 2000).

Prior studies have indicated that symptoms of OA often result in activity restriction (AR) for both patients and their spouses (Benyamini & Lomranz, 2004; Davis, Ettinger, Neuhaus, & Mallon, 1991; Williamson & Schulz, 1992). Further, AR often contributes to decreased emotional well-being and increased psychological distress for those couples (Williamson & Schaffer, 2000; Williamson, 2000). Despite the suggested association between AR and depression, the degree to which a spouse’s AR has an effect on their partner’s emotional well-being has yet to be examined. In addition, scholars have rarely examined dyad level variables (e.g., marital satisfaction) that could moderate the association between AR and depression.

In the current study, I extend prior research in several ways. First, by including both patients and their spouses, I examine the impact of AR on mental health outcomes for both partners. Second, using the Actor Partner Interdependence Model, I examine whether one’s own AR also is associated with a partner’s depressive symptoms. Third, I test effects of dyad (i.e.,
marital satisfaction) on depressive symptoms in both patients with OA and their spouses. Investigating these questions could help identify conditions under which depression develops in couples when one spouse has activity restrictions from a chronic illness such as OA.

5.2 Background and Literature Review

5.2.1 Activity Restriction and Depression

A number of theories have been proposed related to the onset and maintenance of depression in older patients with pain related illness and their spouses (Beck & Alford, 2009; Mausbach et al., 2011). Derived from theoretical perspectives and empirical findings on the association between unpleasant events and depression (Amenson & Lewinsohn, 1978), the Activity Restriction Model of Depressed Affect (Williamson, 2000; Williamson & Schulz, 1995; Williamson & Shaffer, 2000) proposes that the extent to which normal life activities are restricted by life stressors or illness account for the increase in depressive symptoms of patients (Williamson & Shaffer, 2000). This model has been consistently supported in a number of populations with physical disability or illness, including patients with OA (Neiboer et al., 1998; Mausbach et al., 2011; Williamson & Schulz, 1992).

Kahana and his colleagues (Kahana et al., 1997) have developed a cascade model that also describes links between activity restriction and psychological well-being. Unlike Williamson’s model, Kahana et al. (1997) distinguished between physical functioning and social functioning. They use the term personal disability to refer to the difficulty that individuals experience in independently performing self-care and daily activities and the term social disability to define restrictions in social activities. According to this model, the impact of activity restriction is hypothesized to contribute to psychological well-being indirectly via its role in the disability experienced in personal and social domains. Taken together, both models indicate the
significant impact of activity restriction on the mental health of patients in the face of debilitating illness conditions.

Providing care for a spouse with OA or compensating for the work a spouse did prior to illness may change one’s normal routines. These changes may also affect social or normal activities that spouses engaged in previously. Data from several studies support predictions that spouses of patients with OA would report increased AR and decreased feelings of well-being, marked specifically by an increase in depressive symptoms (Mausbach et al., 2011; Nieboer et al., 1998; Walters & Williamson, 1998).

In sum, theoretical and empirical findings suggest a positive association between AR and depressive symptoms for both patients with OA and their spouses. However, most studies have examined patients with OA and their spouses separately, not together. As a result, it remains unclear whether AR affects depressive symptoms in patients and spouses simultaneously or not.

5.2.2 Cross-Partner Effects

There is growing evidence that the health conditions or stressors experienced by a spouse have important implications for his or her partner’s well-being in late adulthood (Berg & Upchuch, 2007; Carstensen, Gottman, & Levenson, 1995; Goodman & Shippy, 2002; Wilson-Genderson, Pruchno, & Cartwright, 2008). In a longitudinal study on couples in which one spouse had end-stage renal disease, Pruchno, Wilson-Genderson, and Cartwright (2009) found that changes in a patient’s self-rated health were negatively associated with their spouse’s depressive symptoms. This cross-partner effect also was observed in reverse; a spouse’s caregiving burden was found to be linked not only to his or her own well-being, but to that of their spouses who had end-stage renal disease (Wilson-Genderson, Pruchno, & Cartwright, 2008).
Similarly, the activity limitations of a spouse with OA may be linked to the well-being of the other spouse. Therefore, I expect the cross-partner effect between AR and depression among couples with OA in the present study.

5.2.3 Marital Satisfaction as a Moderator of AR and Depressive Symptoms

There is general consensus among scholars on the positive impact of social resources such as high marital quality on well-being (Berg & Upchurch, 2007). Studies have consistently shown that individuals with higher marital quality are in better physical and mental health (Berg & Upchurch, 2007; Cohen & Willis, 1985). It should be noted, however, that most scholars tend to identify marital status (rather than marital quality) as a strong contributing factor to well-being in older individuals. Being married has been found to have a significant positive impact on health in the second half of life (Pienta, Hayward, & Jenkins, 2000; Prigerson, Maciejewski, & Rosenheck, 2000).

However, it is simplistic to assume that the presence of a spouse in and of itself can enhance an individual’s well-being. In empirical studies, several scholars found a main effect for quality of marital relationships on mental health among older adults (Bookwala & Jacobs, 2004; Sandberg, Miller, & Harper, 2002). A satisfying marital relationship can be viewed as a significant interpersonal resource that is also important to mature adults’ mental health across the adult life span (Bookwala, 2005). Therefore, the quality of a marital relationship, rather than marital status, is expected to contribute significantly to well-being in older adults.

According to Cohen and Willis (1985), marital satisfaction is considered beneficial for the well-being and mental health of patients with physical illness, as it can buffer or attenuate related effects of stress. Consistent with this view, scholars recently moved beyond the main effects model to investigate the moderating role of marital quality between physical health and
depressed affect among older adults with physical illness (Bookwala, 2005; Bookwala & Franks, 2005; Cohen, 2004).

Findings on the role of marital satisfaction on the well-being of patients and their spouses, however, are inconsistent. For example, Bookwala and Franks (2005) found that negative marital quality exacerbates the negative effects of physical disability on symptoms of depression, but couples’ marital happiness did not buffer the effect of physical disability on depressive symptoms. In contrast, Tower & Kasl (1995) found that higher marital closeness buffered the negative impact of one’s own frailty and financial strain on his or her depressive symptoms. Taken together, the contribution of marital satisfaction to mental health in the face of stressful circumstances in late life appears to be complicated and needs to be examined further.

Given that most couples dealing with OA face the chronic illness together, and that marital quality in late life is important (Carstensen, 1992; Levenson, Carstensen, & Gottman, 1995), I hypothesize that marital satisfaction can help buffer the negative effects of AR on the mental health of patients with OA as well as their spouses. Patients in the context of satisfying marriage may rely on their spouses or have better emotional support from their spouses, which can lower the deleterious effects of AR on their depressive symptoms. Thus, it is expected that patients with OA may benefit from having satisfying marital relationship in the midst of dealing with AR. Similarly, satisfying marital relationships also could benefit the spouses of patients by helping them minimize the stress resulting from their partner’s illness. Thus, AR may contribute to lower the chance of developing depressive symptoms in the context of satisfying marital relationship for both patients and spouses.

5.2.4 Other Factors Associated with Depressive Symptoms of Patients and Spouses
Aside from activity restriction (AR) of patients and spouses, additional demographic, health and social factors have been explored as risk factors for depressive symptoms for both patients and spouses. A growing body of literature suggests that risk factors for depressive symptoms among patients with physical illness or their family members often include personal factors (i.e., age, and education), self-rated health or severity of illness, and the number of stressors both members of the dyad experience (Dickens, McGowan, Clark-Carter, & Creed, 2002; Kraaij, & de Wilde, 2001).

Self-rated health and age (i.e., older) of patients with OA and their spouses are associated with higher depressive symptoms (Blazer, 1989; Yang, 2007; Zarit & Zarit, 2007. In addition, gender (female) is often associated with higher risk for depression (Beck, 1967; Blazer, 1989). Studies on depression have often found that lower education is associated with higher depressive mood (Tweed, Blazer, & Gazlo, 1992; Zarit & Zarit, 2007). In a recent meta-analysis, the number of total negative life events was associated with depression in elderly people (Kraaij, Arensman, & Spinhoven, 2002).

5.3 Research Hypotheses

Building on both theoretical and empirical findings, the overarching aim of this investigation is to examine interdependent experiences of people with OA and their spouses. The first aim of the study is to confirm prior research on the association between AR and depression by examining whether each partner’s AR related to the patient’s OA is related to his or her own depressive symptoms (H1; actor effects). Second, I anticipate a cross-partner effect, with each partner’s AR associated with the other’s depressive symptoms (H2; partner effects). Finally, I examine the role of marital satisfaction as a moderator of the impact of AR on depression (H3). In light of suggestions that couples with higher marital quality are less likely to
be affected by stressors associated with illness, I expect that the partner effect linking AR with depressive symptoms will be weaker for patients or spouses in a high quality marriage than for those in a low quality marriage (H4).

5.4 Methods

5.4.1 Participants

This study used baseline data from older adults with lower-extremity OA and their caregiving spouses who were participating in a psychosocial intervention study. The majority of participants were identified through medical records of rheumatology practices affiliated with the University of Pittsburgh Medical Center. To be eligible for the study, care-recipients had to be 50 years of age or older, married, and diagnosed with OA of the hip, knee, or spine. Additional criteria were that the patient had experienced pain of at least moderate intensity on most days over the past month, had difficulty with at least one instrumental activity of daily living (e.g., household tasks or driving), and had received assistance from his or her spouse with at least one instrumental activity of daily living.

Of the 1,145 couples who were interested in participating, 883 were ineligible. The three most common reasons for ineligibility were that the patient: was unmarried or not living with his or her spouse ($n = 420, 48\%$), had a comorbid diagnosis of fibromyalgia or rheumatoid arthritis ($n = 141, 16\%$), or had upper extremity OA only ($n = 131, 15\%$). Of the 262 eligible couples, 20 dropped out of the study immediately after the baseline assessment, and 18 couples had missing scores in independent and dependent measures. This left 230 participants for whom baseline assessment data were available. Analyses comparing eligible subjects and non-eligible subjects (i.e., whose core data are missing) by using demographic information (e.g., age, education and income), there was no significant differences, suggesting minimal selection bias.
The majority of patients in this study were female ($n = 163; 73\%$). The average age of patients was 68.84 years ($SD = 7.62; \text{range: } 50 - 92$), and the average age of spouses was 69.6 years ($SD = 8.18, \text{range: } 47 - 90$). Most of the sample was White (93\%); the rest of the sample was African American (5\%) or belonged to another ethnic minority group (2\%). Couples had been married for an average of 41 years ($SD = 13.04$), and patients reported having OA for 15.8 years ($SD = 11.4; \text{range: } 1 - 54$).

5.4.2 Measures

**Depressive symptoms.** A short version of the Center for Epidemiologic Studies – Depression scale (Andresen, Malmgren, Carter, & Patrick, 1994) was used to assess depressive symptoms. The CES-D is an internally reliable and valid measure of depressive symptomatology (Radloff, 1977). Shortened versions of the CES-D have been found to be highly correlated with the full scale ($r = .96$) in previous studies (Shrout & Yager, 1989). A score of 10 on this short version of the CES-D is generally believed to indicate being at risk for clinical depression (Andresen et al., 1994).

Participants reported how often they experienced specific symptoms during the past week, on a scale from 0 (rarely or none of the time) to 3 (most of the time). Scores ranged from 0 to 26, with higher scores reflecting more depressive symptoms. The mean CES-D score was 6.65 ($SD = 4.75$) for patients and 5.17 ($SD = 4.72$) for spouses (see Table 1). Cronbach’s alpha was .78 for patients and .82 for spouses.

**Marital satisfaction.** Patients with OA and their spouses were asked to report their levels of marital satisfaction using the Marital Adjustment Test (Locke & Wallace, 1959), which has been shown in numerous studies to discriminate distressed from non-distressed marriages. This 15-item measure includes questions about general level of happiness, level of agreement on
a number of issues, and ways of handling disagreements. On the MAT, higher scores are associated with better marital functioning, with scores below 100 indicating distress in the marriage,(Locke & Wallace, 1959). The mean marital satisfaction score for patients was 118.76 (SD = 26.02) and 119.91 (SD = 24.88) for spouses (range: 17 - 158). The average levels of marital adjustment in the present sample were similar to those reported in other community-based samples (e.g., Crane, Allgood, Larson, & Griffin, 1990). The alpha for the measure was .77 for patients with OA and .79 for spouses.

**Activity restriction.** Patients with OA and their spouses indicated the extent to which eight areas of activity (e.g., socializing, community activities, going out for dinner, traveling, hobbies, recreational activities) were restricted by the patient’s OA on a scale of 1 (not at all) to 4 (very much) using the Activity Restriction Scale (ARS; Williamson & Schulz, 1992). Prior research has shown the ARS to be internally consistent (e.g., Williamson & Shaffer, 2000; Williamson & Schulz, 1992). Scores on the Activity Restriction Scale (ARS) ranged from 8 to 32. The mean scores on the Activity Restriction Scale for patients were 14.27 (SD = 5.32) for patients and 12.17 (SD = 4.58) for spouses (range: 8 – 32; Table 1). The alpha for the measure was satisfactory in the sample: .85 for patients with OA and .81 for spouses.

**Demographic information.** Patients and spouses reported their demographic information. Demographics include age, gender (0=female), and years of education (highest grade in school or years of college completed). Subjects also rated their health on a scale of 1 (poor) to 5 (excellent). The mean scores on self-rated health were 3.04 (SD=.99) for patients, and 3.29 (SD=1.00) for spouses (see Table 1).

**Stressful Life Events.** Patients and their spouses indicated the number of stressful life events they have experienced within last 6 month period. A number of stressful life events were
rated as 1 (happened) and 0 (never happened). For some events, whether the experience was
good or bad were also rated, and when it was rated bad, it was coded as 1. For the purpose of the
study, summed scores were used (ranging from 0 to 9). The mean score for stressful life events
were 1.86 ($SD=1.76$) for patients and 1.70 ($SD=1.68$) for patients (see Table 1).

5.4.3 Analysis plan

In the present study, I estimated both within-person and between-person effects (e.g.,
how an individual’s AR relates to his or her own depressive symptoms and to his or her partner’s
depressive symptoms). Both of these kinds of questions are addressed by the actor-partner
interdependence model (APIM; Kashy & Kenny, 1997), which explicitly examines the potential
mutual influence within dyadic contexts.

Kenny and colleagues (Kashy & Kenny, 2000; Kenny & Acitelli, 1996) have proposed
using APIM when dyads are the unit of analysis. APIM can be used for dyads that have
distinguishable members (e.g., married or dating heterosexual couples) or for dyads that have
non-distinguishable members (e.g., same-sex friends). This model suggests that a person’s
independent variable score affects both his or her own dependent variable score (i.e., actor
effect), and his or her partner’s dependent variable score (i.e., the partner effect). The partner
effect from the APIM directly models the mutual influence that may occur between individuals
involved in a dyadic relationship.

The APIM was also designed to deal with violations of statistical independence
associated with dyadic data. It is known that dyadic data are non-independent because the
responses of two people within a dyad are more likely to be correlated. One of the challenges of
relationship research is to model this non-independence. However, APIM estimates control for
confounding due to partner similarity.
In the APIM model, there are three types of predictor variables: between-dyad variables, within-dyad variables, and mixed variables (Kenny & Acitelli, 1996). A between-dyad variable is one for which scores are the same for both members of a given dyad, but differ from dyad to dyad (e.g., length of marriage). In contrast, a within-dyad variable is one for which the scores for partners within each dyad are different, but the average score is the same for all dyads. In research involving heterosexual couples, gender is an example of a within-dyad variable. A mixed predictor variable is one for which there is variation both within dyads and between dyads. Marital satisfaction is an example of a mixed variable because one spouse reports more marital satisfaction than the other spouse and average marital satisfaction score within a couple differs across different couples. Actor and partner effects can be directly estimated for mixed predictor variables.

In utilizing APIM framework, I used multilevel modeling (SAS PROC MIXED; Littell, Milliken, Stroup, & Wolfinger, 1996), which accounts for the interdependence of individuals within each dyad. Using PROC MIXED allows testing both interactions simultaneously, that is, whether the linkage between AR and depression is moderated by a mixed level variable such as marital satisfaction.

**Analysis**

I examined whether patterns of association between activity restriction and depressive symptoms differed by (a) role (i.e., patients vs. spouse), (b) gender, and (c) marital satisfaction as follows. With regard to social role, patients and spouse fit criteria for distinguishable dyads in APIM (Kenny et al., 2006). Thus, we included interaction terms between social role (1=patient, 0=spouse) and activity restriction to handle distinguishable partners in APIM. Thus, we estimated the models with social role (1=patient, 0=spouse), each person’s self-reported AR;
each partner’s reported AR, and the two interaction terms between those reports on AR and social role (i.e., patients or spouse). We centered AR and other variables on the grand means prior to estimating interactions.

With regard to gender, I considered whether associations between AR and depressive symptoms varied by each party’s gender in preliminary analyses by including 3-way interactions for patient Gender × Role × AR. By including gender, the three-way interactions were not significant. Thus, I included gender and Gender× Role (i.e., gender of patient or spouse) throughout the analysis.

Regarding the testing of moderator effect of marital satisfaction, I estimated models including marital satisfaction in a three-way interaction with Marital Satisfaction × Role × AR, two way interactions (e.g., Marital Satisfaction× Role, Marital Satisfaction × AR) and main effects. I centered marital satisfaction and AR on their grand means prior to calculating interaction terms. In all the models tested above, several covariates were also considered.

5.5 Result

First, I examined associations between covariates and dependent variables. To test hypothesis 1 and 2, a multilevel modeling was conducted using APIM (see Figure 1). To test hypothesis 3 and 4, I conducted the moderator analysis using APIM analysis by adding marital satisfaction as a moderator (see Figure 2).

5.5.1 Bivariate Correlations. As seen in Table 2, zero-order correlations between indicator variables, the moderator variables, covariates, and depressive symptoms were in the expected directions. Specifically, gender, education, self-rated health, and stressful life events were associated with the depressive symptoms of both patients and spouses. These correlation coefficients ranged from 0.17 to 0.45. However, the association between age of participants and
depressive symptoms was not significant. I excluded age of the participants and included only significant covariates in the subsequent analysis.

5.5.2 Main Effect Model Using APIM Analysis. Models involving both patients with OA and spouses are found in Table 3. In the models, a significant main effect for self-report AR indicates that patients and spouses who reported greater AR also experienced higher depressive symptoms than those who reported lower depressive symptoms (i.e., there was an actor effect for AR). The standardized actor effect for patients was 0.20 and for spouses was 0.21 ($p<0.05$, $p<0.05$, respectively). In terms of partner effects, a partner AR \times Role (i.e., patient vs. spouse) was significant ($\beta=0.16$, $p<0.05$). As can be seen in Figure 3, partners’ AR showed a steeper slope for patients’ depressive symptoms compared to those of spouses. This indicates that patients whose spouses reported higher AR also reported higher depressive symptoms.

In terms of covariates, a significant interaction between the numbers of Stressful life events \times Role indicated that the effect of stressful life events on depressive symptoms differs by the role (patients vs. spouses). More specifically, the association between stressful life events and depressive symptoms was stronger for spouses than for patients ($\beta=0.21$, $p<0.01$ for patients, $\beta=0.71$, $p<0.01$ for spouse).

Taken together, in model 1 (Figure 1), hypothesis 1 was supported and hypothesis 2 was partially supported. Consistent with hypothesis 1, depressive symptoms were associated with actor’s AR for both patients and spouses. In addition, spouses’ AR was associated with patients’ depressive symptoms (hypothesis 2), but the partner effect was not found for spouses.

5.5.3 Activity Restriction, Marital Satisfaction and Depressive symptoms. To test hypotheses 3 and 4, I estimated a model including marital satisfaction in a three way interaction, one’s own marital satisfaction \times Role \times AR, the constituent interactions and main effects. After
all main effects and interaction terms were entered into a full model, non-significant covariates and interaction terms were eliminated subsequently. The final model identified two covariates: (1) total numbers of stressful life events, and (2) interaction between total numbers of stressful life events × actor. Several variables did not retain significance in the full model and were excluded in the final model: gender, education, self-rated health, interaction of gender × Role, interaction of self-rated health × Role and interaction of education × Role.

Table 4 presents the full model and trimmed model including both patients with OA and spouse. As expected, the main effect for marital satisfaction was found, indicating that individuals who reported higher marital satisfaction reported less depressive symptoms ($\beta=-0.06$, $p<.001$). In addition, a significant interaction of actor AR × Marital satisfaction was found ($\beta=-0.005$, $p<.05$ in full model, $\beta=-0.003$ $p<.05$, in trimmed model). In other words, consistent with hypothesis 3, both patients and spouses who reported lower marital satisfaction reported higher depressive symptoms. Also, when both patients with OA and spouses reported higher AR, they were more likely to report higher depressive symptoms, but the association was weaker when patients with OA and their spouses reported higher marital satisfaction.

In addition, the three-way interaction for Marital Satisfaction × Role × partner AR was significant. For easier interpretation, I present the three way interaction at the level of the moderator (marital satisfaction) in figure 4 for patients and figure 5 for spouses. Hypothesis 4 was partially supported. As can be seen in Figure 4, for patients, the association between spouses’ AR and patients’ depression was stronger when patients reported lower marital satisfaction. In other words, when patients reported low marital satisfaction, and their spouses reported higher AR, patients’ depressive symptoms were higher. When patients scored high on marital satisfaction, however, patients’ depressive symptoms did not vary much by the level of
their spouses’ AR. For spouses, the association between partner AR (patients’ AR) and depression did not differ by spouses’ level of marital satisfaction (see Figure 5).

In terms of covariates, similar patterns were found as model 1. The interaction of Stressful life events × Role indicates that patients’ stressful life events did not seem to be associated with their depressive symptoms whereas their spouse who reported more stressful life events are likely to report more depressive symptoms.

5.6 Discussion

This study extends prior research on the link between AR and depressive symptoms in several respects. First, I considered the association between the simultaneous experience of AR in both patients with OA and their spouses and depressive symptoms, building on prior research (Williamson, 2001). Second, I contributed to the literature by showing differential associations between partner-reported AR and patients’ depressive mood. Finally, I contributed to the literature by showing that dyadic features of the relationship (i.e., marital satisfaction) moderate association between one’s own AR and depressive symptoms for both patients and spouses.

Activity Restriction and Depressive Symptoms

As expected, greater AR was associated with higher depressive symptoms. The Actor effect of AR on depressive symptoms is consistent with reports from other studies that more AR is associated with higher distress among patients with illness and their family members (Williamson et al. 2001). However, given that this is a cross-sectional study, it is possible that people with depressive mood reported higher AR. Indeed, individuals with depressed mood often report reduced interest in social activities and limit their social lives (Dimidjian, Barrera Jr., Martell, Munoz, Lewinsohn, 2011, Lewinsohn, 1974).
In addition, this study also revealed the partner effect of AR on depressive symptoms. Associations between partner AR (i.e., spouses’ AR) and patients’ depressive symptoms indicate that patients felt greater depressive mood when their spouses reported more activity restriction resulting from patients’ illness. The fact that a partner effect of AR was only found for patients’ depressive symptoms raises the question of patients’ attribution of their spouses’ increased limited activities to patients’ illness. Perhaps, spouses’ affect may not be associated with the patients’ increased AR, which is perceived as normative in the course of illness, whereas patients perceive spouses’ limited activities as uncalled for or unnecessary.

Alternatively, it is possible that spouses who increased AR due to the illness of patients may have not provided enough support for patients and/or exhibit critical attitudes towards the patients with OA which contributed to patients’ depressive symptoms. Indeed, previous studies have indicated that family caregivers’ support for patients tend to erode over time (Bolger, Forster, Vinokur, & NG, 1996) and also some spouses who provide greater care needs for patients exhibit critical and hostile attitudes towards the patients depending on their relationship with patients (Beach, Schulz, Williamson, Miller, Weiner, & Lance, 2006; Williamson et al., 2001).

However, again, this is a snapshot picture. Spouses’ increased AR may be the result of patients’ depressive symptoms. Given that it is unknown as to how partner’s AR is associated with patients’ depressive mood, future studies are needed to elucidate the process of how partner’s AR is related to patients’ depressive mood.

**Activity Restriction and Marital Satisfaction in Relation to Depressive Symptoms**

This study also revealed that the association between AR and depressive symptoms varies by the level of marital satisfaction. Consistent with the literature showing the role of marital
satisfaction as an important buffer (Williamson, Shaffer, & Schulz, 1998), each spouse’s own marital satisfaction played the role of moderating the link between AR and depressive symptoms.

In addition, the pattern with regard to three-way interaction indicates that the effect of partner AR differs by the level of marital satisfaction and also by the role. In this three-way interaction, patients whose marital satisfaction was high and whose spouses reported higher AR reported lower depressive symptoms than patients with lower marital satisfaction. Despite the dearth of research on the relationship between AR, marital satisfaction, and depressive symptoms among couples with OA, I might speculate possible explanation for this finding.

As can be seen in Figure 3, patients’ depressive mood increases as a function of spouses’ AR. In contrast, Figure 4 shows that the difference could be more visible among patients who reported higher marital satisfaction. Regardless of the level of partners’ AR, happily married patients’ depressive symptoms did not vary as a function of spouses’ AR. These patterns of finding suggest that patients’ higher marital satisfaction protected them from feeling more depressed despite their vulnerable situation (spouses’ increased AR). It is also consistent with literature showing the buffering role of marital satisfaction (Williamson et al., 1998; Williamson et al., 2000). Although it is unclear how satisfying marriage protected them from feeling more depressed, previous studies found that happily married couples are more likely to engage in dyadic coping (e.g., reciprocal interaction, open communication about illness and caregiving, engaging in relationship maintenance behaviors) while dealing with physical and mental disorders (Bodenman, 2005; Berg & Upchurch, 2007). Alternatively, for those patients who are dissatisfied with marriage, their spouses increased activity restriction may lead to more marital dispute, which is known to contribute to depressive symptoms.
Also, it is worth to note that the significant partner effect of AR was found on patients’ depressive symptoms. In this study, a significant finding regarding partner effect points out the need to consider not only patients’ AR, but also partners’ AR in examining both spouses’ depressive symptoms. This is consistent with characterization of interdependence in relationship processes (Cook & Kenny, 2005; Rusbult & Ban Lange, 2003), and suggests that spouses’ experiences and patients’ well-being are intertwined. Future studies should consider assessing how partners’ AR was communicated or known to patients and also the way it is associated with patients’ depressive symptoms.

Limitations

Several limitations, caveats, and qualifications of this work should be noted. First, majority of participants were mostly White from the metropolitan area in Northeastern United States. Thus, studies using more diverse samples need to be replicated. Second, due to the cross sectional nature of this study, it is possible that people with poorer psychological well-being experiences greater AR.

Second, as noted above, people who are more depressed tend to withdraw from social activities and limit their physical activities (Beck, & Alford, 2009, Lewinsohn, 1974). Future work should include longitudinal data to document how the association between AR and DEP changes over time. Furthermore, couples’ marital satisfaction could be also clarified by using a longitudinal design and observing its associations with other correlates.

Finally, the study used self-report assessments of depressive symptoms and self-rated health. Although all of the measures have been used previously and have demonstrated evidence of validity and reliability in previous work, future studies could benefit by integrating data collected from using both self-report and biological measures of stress and health.
Conclusion

Despite limitations, this study adds to the literature on the relationship between patients and their spouses dealing with OA by considering associations between both party’s experiences of AR and their depressive symptoms. Furthermore, a key feature of the present study is involving inclusion of partner reports of AR. Even controlling for the partner reported AR, we found that self-reports of AR were associated with their own depressive mood. Finally, the current study draws attention to marital satisfaction that ameliorates and/or intensifies the linkage between AR and depressive symptoms for patients and to a lesser degree for spouses.
Table 13. Descriptive Statistics for Patients with OA and their spouses

<table>
<thead>
<tr>
<th></th>
<th>Patients with OA</th>
<th>Spouses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean (SD)</td>
<td>Range</td>
</tr>
<tr>
<td>Age</td>
<td>68.61 (7.57)</td>
<td>50 – 92</td>
</tr>
<tr>
<td>Education</td>
<td>14.48 (1.65)</td>
<td>10 – 18</td>
</tr>
<tr>
<td>Health</td>
<td>3.04 (.99)</td>
<td>1 – 5</td>
</tr>
<tr>
<td>Life Stress</td>
<td>1.86 (1.762)</td>
<td>0 – 8</td>
</tr>
<tr>
<td>Activity Restriction</td>
<td>14.20 (5.28)</td>
<td>8 – 31</td>
</tr>
<tr>
<td>Marital Satisfaction</td>
<td>118.76 (26.02)</td>
<td>40 – 158</td>
</tr>
<tr>
<td>Depressive Symptoms</td>
<td>6.65 (4.75)</td>
<td>0 – 26</td>
</tr>
<tr>
<td></td>
<td>69.52 (69.52)</td>
<td>47 – 90</td>
</tr>
<tr>
<td></td>
<td>14.45 (2.16)</td>
<td>4 – 18</td>
</tr>
<tr>
<td></td>
<td>3.29 (1.00)</td>
<td>1-5</td>
</tr>
<tr>
<td></td>
<td>1.7 (1.68)</td>
<td>0 – 9</td>
</tr>
<tr>
<td></td>
<td>12.22 (4.58)</td>
<td>8 – 32</td>
</tr>
<tr>
<td></td>
<td>119.91 (24.88)</td>
<td>17 – 156</td>
</tr>
<tr>
<td></td>
<td>5.17 (4.72)</td>
<td>0 – 25</td>
</tr>
</tbody>
</table>
Table 14. Correlations between Study Variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. P AR*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. S AR*</td>
<td>.45*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. P MSb</td>
<td>-.07</td>
<td>-.01</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. S MSb</td>
<td>-.10</td>
<td>-.29</td>
<td>.47**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. P DEPc</td>
<td>.45***</td>
<td>.31***</td>
<td>-.31***</td>
<td>-.16***</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. S DEPc</td>
<td>.128</td>
<td>.32***</td>
<td>-.26***</td>
<td>-.42***</td>
<td>.19***</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. P age</td>
<td>-.01</td>
<td>.89</td>
<td>.06</td>
<td>-.03</td>
<td>-.06</td>
<td>-.05</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. S age</td>
<td>-.04</td>
<td>.01</td>
<td>-.01</td>
<td>-.03</td>
<td>-.1</td>
<td>-.06</td>
<td>.79**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. P education</td>
<td>-.09</td>
<td>-.09</td>
<td>-.00</td>
<td>.04</td>
<td>-.15*</td>
<td>-.17*</td>
<td>.02</td>
<td>.03</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. S education</td>
<td>-.05</td>
<td>-.15</td>
<td>.05</td>
<td>.06</td>
<td>-.07</td>
<td>-.17*</td>
<td>.08</td>
<td>.11</td>
<td>.47***</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. P health</td>
<td>-.48***</td>
<td>-.25***</td>
<td>.08</td>
<td>.17**</td>
<td>-.45**</td>
<td>-.17**</td>
<td>-.04</td>
<td>-.02</td>
<td>.22**</td>
<td>.115</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. S health</td>
<td>-.04</td>
<td>-.19**</td>
<td>.06</td>
<td>.27**</td>
<td>-.13</td>
<td>-.35**</td>
<td>-.01</td>
<td>-.04</td>
<td>.14**</td>
<td>.21**</td>
<td>.13**</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. P life stressor</td>
<td>.17</td>
<td>.02</td>
<td>-.12</td>
<td>-.01</td>
<td>.17**</td>
<td>.14**</td>
<td>-.20**</td>
<td>-.20**</td>
<td>.05</td>
<td>-.02</td>
<td>-.22**</td>
<td>.36**</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>14. S life stressor</td>
<td>-.01</td>
<td>.19**</td>
<td>-.00</td>
<td>-.15*</td>
<td>-.02</td>
<td>.36**</td>
<td>-.17**</td>
<td>-.25**</td>
<td>-.03</td>
<td>-.05</td>
<td>-.01</td>
<td>-.28**</td>
<td>.36**</td>
<td>1</td>
</tr>
</tbody>
</table>

*Note. N=220 dyads.*

a AR indicates activity restriction.
b MS indicates marital satisfaction.
c DEP indicates depressive symptoms.
* p<.05, ** p<.01, *** p<.001
Table 15. Mixed Model Predicting Depressive Symptoms from Activity Restriction

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Full Model</th>
<th></th>
<th>Final Trimmed Model</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE</td>
<td>B</td>
<td>SE</td>
</tr>
<tr>
<td>Intercept for patients</td>
<td>6.08***</td>
<td>0.32</td>
<td>6.15***</td>
<td>0.29</td>
</tr>
<tr>
<td>Intercept for spouses</td>
<td>5.72***</td>
<td>0.33</td>
<td>5.84***</td>
<td>0.30</td>
</tr>
<tr>
<td>Actor AR</td>
<td>0.20*</td>
<td>0.07</td>
<td>0.22***</td>
<td>0.04</td>
</tr>
<tr>
<td>Actor AR × Role</td>
<td>0.01</td>
<td>0.09</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partner AR</td>
<td>0.02</td>
<td>0.06</td>
<td>0.02</td>
<td>0.05</td>
</tr>
<tr>
<td>Partner AR × Role</td>
<td>0.15*</td>
<td>0.06</td>
<td>0.16*</td>
<td>0.06</td>
</tr>
<tr>
<td>Covariates</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>0.42</td>
<td>0.32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>0.15</td>
<td>0.13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-rated Health</td>
<td>-1.2***</td>
<td>0.29</td>
<td>-1.07***</td>
<td>0.29</td>
</tr>
<tr>
<td>Stressful life events</td>
<td>0.71***</td>
<td>0.17</td>
<td>0.73***</td>
<td>0.17</td>
</tr>
<tr>
<td>Gender × Role</td>
<td>0.25</td>
<td>0.46</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education × Role</td>
<td>0.02</td>
<td>0.20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-rated health × Role</td>
<td>-0.32</td>
<td>0.43</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stressful life events × Role</td>
<td>-0.49*</td>
<td>0.23</td>
<td>-0.45*</td>
<td>0.22</td>
</tr>
</tbody>
</table>

Note. Parameter estimates are fixed effects.

*a* indicates interaction, representing the association differs by the role (patients vs. spouse).

*b* indicates interaction, representing the association differs by the role (patients vs. spouse).

* p<.05, ** p<.01, ***<.001.
Table 16. Mixed Model Predicting Depressive Symptoms from AR and Marital Satisfaction

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Full Model</th>
<th>Final Trimmed Model</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE</td>
</tr>
<tr>
<td>Intercept for Patients</td>
<td>6.19***</td>
<td>0.30</td>
</tr>
<tr>
<td>Intercept for Spouses</td>
<td>5.44***</td>
<td>0.32</td>
</tr>
<tr>
<td>Actor AR</td>
<td>0.08</td>
<td>0.07</td>
</tr>
<tr>
<td>Partner AR</td>
<td>0.03</td>
<td>0.05</td>
</tr>
<tr>
<td>MS</td>
<td>-0.06***</td>
<td>0.01</td>
</tr>
<tr>
<td>Actor AR × Role</td>
<td>0.11</td>
<td>0.09</td>
</tr>
<tr>
<td>Partner AR × Role</td>
<td>0.12</td>
<td>0.08</td>
</tr>
<tr>
<td>MS × Role</td>
<td>-0.00</td>
<td>0.01</td>
</tr>
<tr>
<td>Actor AR × MS</td>
<td>-0.005*</td>
<td>0.00</td>
</tr>
<tr>
<td>Partner AR × MS</td>
<td>0.002</td>
<td>0.00</td>
</tr>
<tr>
<td>Actor AR × MS × Role</td>
<td>0.003</td>
<td>.002</td>
</tr>
<tr>
<td>Partner AR × MS × Role</td>
<td>-0.007*</td>
<td>.003</td>
</tr>
</tbody>
</table>

Covariates

<table>
<thead>
<tr>
<th>Covariate</th>
<th>Full Model</th>
<th>Final Trimmed Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>0.38</td>
<td>0.30</td>
</tr>
<tr>
<td>Education</td>
<td>-0.12</td>
<td>0.12</td>
</tr>
<tr>
<td>Self-rated health</td>
<td>-0.81*</td>
<td>0.29</td>
</tr>
<tr>
<td>Stressful life events</td>
<td>0.66***</td>
<td>0.16</td>
</tr>
<tr>
<td>Gender × Role</td>
<td>0.03</td>
<td>0.43</td>
</tr>
<tr>
<td>Education × Role</td>
<td>-0.02</td>
<td>0.20</td>
</tr>
<tr>
<td>Self-rated health × Role</td>
<td>-0.45</td>
<td>0.43</td>
</tr>
<tr>
<td>Stressful life events × Role</td>
<td>-0.53*</td>
<td>0.22</td>
</tr>
</tbody>
</table>

Note. Parameter estimates are fixed effects.

* p<.05, ** p<.01, ***p<.001.
Figure 4. Conceptual model for the associations between activity restriction and depressive symptoms.

Note. AR indicates activity restriction.
Figure 5. Conceptual model for the associations between activity restriction and depressive symptoms moderated by marital satisfaction

Note. AR indicates activity restriction. MS indicates marital satisfaction.
Figure 6. Patients’ and spouses’ depressive symptoms and interaction between spouses (patients and spouses) and partners’ reported AR.

Note. AR indicates activity restriction. MS indicates marital satisfaction.
Figure 7. Patients’ depressive symptoms and interaction between patients’ marital satisfaction and spouses’ reported activity restriction.

Note. AR indicates activity restriction. MS indicates marital satisfaction.
Figure 8. Spouses’ depressive symptoms and interaction between spouses’ activity restriction and patients’ reported activity restriction.

Note. AR indicates activity restriction. MS indicates marital satisfaction.
References


Williamson, G. M., Shaffer, D. R., & The Family Relationships in Late Life Project. (2000). Relationship quality and potentially harmful behaviors by spousal caregivers: How we were then, how we are now. *Psychology and Aging, 16*, 217-226.


VITA
Jeong Eun Lee

EDUCATION
2012  Ph.D. in Human Development and Family Studies, Pennsylvania State University
2005  M.S. in Clinical Psychology, Northwestern University
2002  M.S. in Clinical Psychology, Yonsei University
2000  B.A. in Psychology and in French, Yonsei University, Republic of Korea (double major)

RESEARCH EXPERIENCE
2008-2010  RA for “Family Exchange Study I”
2007-2008  RA for “Adaptive Interventions for At-Risk Caregivers” (R34 MH073559-01)

TEACHING EXPERIENCE
2007-2012  TA for “Internship: Advanced experience” (Carolyn Johnson, Greg Roth, Dawn Taylor)
            TA for “Family Relationship” (Sandra Gerstorf)
            TA for “Ethics and Values in Human Development” (Megan Baril)
2011-2012  Instructor for “Adult Development and Aging” World Campus Class

PUBLICATIONS: