

PAIN & AGING SECTION

Brief Research Report

The Impact of Older Parents' Pain Symptoms on Adult Children

Karl Pillemer, PhD,* Catherine Riffin, PhD,*
J. Jill Sutor, PhD,[†] Siyun Peng, MS,[†] and
M. C. Reid, MD, PhD[‡]

*Department of Human Development, Cornell University, Ithaca, New York; [†]Department of Sociology, Purdue University, West Lafayette, Indiana
[‡]Division of Geriatrics and Palliative Medicine, Weill Cornell Medicine, New York, USA

Correspondence to: Karl Pillemer, PhD, Department of Human Development, MVR Hall, Cornell University, Ithaca, NY, USA. Tel: 607-256-7451; Fax: 607-254-2903; E-mail: kap6@cornell.edu.

Funding sources: K. Pillemer and J. Sutor acknowledge support from NIA RO1 AG18869-01. K. Pillemer, C. Riffin, and C. Reid acknowledge support from NIA P30 AG022845, an Edward R. Roybal Center grant. Catherine Riffin is now at the Yale School of Medicine and is supported by a National Institute on Aging Training Grant (T32AG1934).

Conflicts of interest: The authors have no conflicts of interest to report.

Abstract

Objective. Not only is persistent pain a debilitating health problem for older adults, it also may have negative effects on family relationships. Studies have documented the effects of pain on spouses and on parents of young children. However, research has not extended this line of inquiry to later life, and specifically to the impact of older parents' pain symptoms on adult children. This study addresses the question: Does older mothers' pain affect the quality of relations with offspring?

Subjects and Design. Using data from a survey of 678 adult children of older mothers, this article presents two analyses examining the impact of mothers' self-reported pain on emotional closeness and on tension in the adult child-parent relationship.

Results. Contrary to research conducted on younger families, multilevel models showed no effects on emotional closeness or tension in relationships with adult children when mothers experienced higher levels of persistent pain. This surprising finding suggests that mechanisms may exist that protect adult child caregivers from stressors that result from a relative's chronic pain.

Conclusions. Based on the findings of this article, further exploration of the impact of chronic pain on relations between adult children and their parents is justified. Of interest is exploration of factors that may insulate later-life intergenerational relationships from the effects of pain.

Key Words. Intergenerational Relationships; Adult Children; Pain; Chronic Illness

Introduction

As the leading cause of disability in the United States [1], chronic pain afflicts an estimated 60–75% of adults age 65 years and older [2]. The effects of persistent pain are far-reaching. Pain conditions not only compromise individual functioning, but also exact a toll on interpersonal and family relationships [3,4]. Families with a member in pain report lower levels of cohesion, greater conflict, and heightened emotional discord [3], suggesting that chronic pain conditions contribute to adverse family environments and poor relationship quality [3,5–7].

Despite the extent of chronic pain among older people and the large body of literature demonstrating the negative effects of pain on family relationships, a surprising gap remains on this topic. To date, no studies have considered the impact of older parents' chronic pain on their adult children. Research in this area is urgently needed given the rapid growth of the older population [8] and heightened involvement of adult children in assisting the older generation [9]. Further, evidence from clinical accounts and research on married couples and parents of young children support the link between chronic pain and family discord, revealing that chronic pain conditions contribute to adverse family environments and poor relationship quality [3,4,10–13].

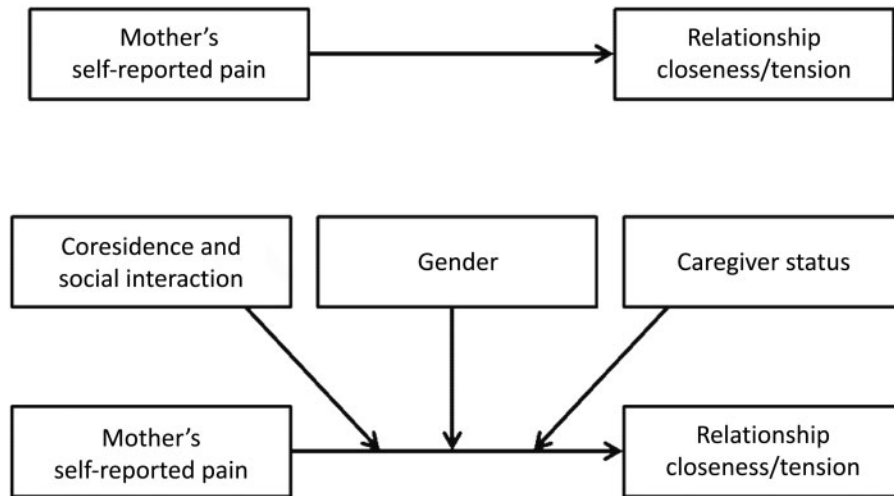


Figure 1 Conceptual model.

Poor family functioning, characterized by high levels of conflict, disorganization, and behavioral control, is common among young families with a child in pain. Findings across numerous studies point to the association between pain-related disability among children and heightened levels of family discord [3,6,7]. Disturbances in family functioning are also common within adolescent samples coping with pain. Compared with healthy controls, families of adolescents in pain experience more conflicted family relationships and poorer functioning overall [14]. Further corroborating these findings, a recent systematic review by Lewandowski and colleagues [3] found that chronic pain among young children and adolescents was associated with poor-quality communication, conflictual family environments, and increased controlling behavior by parents.

A similar set of findings has been documented within spousal dyads. Compared with control groups, chronic pain sufferers and their partners experience lower relationship cohesion and greater family conflict [15], as well as decreases in marital and sexual satisfaction [4,16]. In fact, over half of pain sufferers and spouses report dissatisfaction with their marriage, with approximately one-third reporting severe levels of dissatisfaction [5]. It is not uncommon for couples' relationships to deteriorate as the affected individuals' pain severity and disabilities worsen over time [17,18].

Given the strength of this relationship in other family contexts, in this article we explore whether parental pain in later life has a similarly negative impact on relationships with adult children. No prior research has addressed this issue, and it is unknown whether chronic pain among parents leads to problems in intergenerational relationships. It is possible that such effects may be muted by the specific context of pain in later life. Experiencing "aches and pains" is seen as normative among older people [19–21] and may therefore be more easily accepted by adult offspring. In addition, although

intergenerational ties often remain close after offspring become adults, relationships typically become more independent and involve less frequent contact and help exchange [21]. We will therefore test whether there is a main effect of mothers' pain on intergenerational relationships.

In addition, we hypothesize that three factors may contribute to differences in adult children's relationships with the parent who is experiencing pain (depicted in Figure 1).

Proximity

Theory and empirical research propose that prolonged exposure to a loved one's suffering may lead to strained relationships and distress [22]. It is suggested that suffering can be contagious: when people are unable to separate themselves from a relative's distress, they too will experience emotional and interpersonal distress. Studies further suggest that heightened exposure to a loved one's pain communication may lead to poorer relational outcomes within the dyad. Specifically, more frequent displays of pain behavior (rubbing joints, limping) have been linked with lower marital satisfaction among female spouses [23] and with greater depressive symptoms and anger in male spouses [23]. Similar findings have been documented in longitudinal research, where husbands whose wives engaged in high degrees of pain expression experienced significant increases in distress over a six-month period [11]. On the basis of these findings, we expect that greater contact with an older parent in pain will have a negative impact on adult children's relationships.

Child's Gender

It is well established that men and women experience and interpret interpersonal stressors differently.

According to theoretical models, women's interpersonal tendencies and empathic qualities make them particularly vulnerable to relational distress when witnessing the suffering of a loved one [22]. Research suggests that women are more attuned to others' emotions [24] and better at recognizing nonverbal cues of pain and distress [25]. Relationship interdependence theory further argues that gender socialization encourages women to take on caregiving and nurturing roles [26]. Indeed, empirical evidence has shown that women provide disproportionate support to the older generation [27] and that female caregivers report a greater desire to meet others' needs [28]. In sum, both theory and research suggest that adult daughters may be at heightened risk of negative relational outcomes, given their sensitivity to others' suffering and disproportionate involvement in care provision.

Caregiver Status

Informal caregiving is traditionally defined as providing unpaid assistance to a loved one with a physical or psychological impairment. Family members who take on care responsibilities report significant deteriorations in relationship quality [29], loss of intimacy [30], and poor communication with their loved one [31]. As the care recipient becomes increasingly dependent, the caregiver must adjust to the increasing demands that result from the patient's illness [32]. This imbalance, according to dyadic relationship models, will result in increased tension and strain within the relationship [33]. In particular, research has shown that heightened caregiving demands [34], increased burden [35], and more daily hassles [36] are associated with negative interpersonal relations between caregivers and care recipients. Following from this literature, we expect that adult children who provide assistance to a parent in pain (vs one without pain) will be more likely to experience poor relationship quality.

In summary, based on the existing literature, we hypothesize that chronic pain will be directly negatively related to the quality of parent-adult child relations. We further test the hypothesis that the effects of a parent's chronic pain on relationship quality are moderated by: 1) proximity and frequency of contact; 2) child's gender; and 3) whether the child has provided care to his or her mother during a recent illness or injury.

Methods

The analyses employ data from the Within Family Differences Study (WFDS), a longitudinal project focused on understanding relationships between parents and their adult children and the ways in which these ties affect the well-being of both generations. The overall aims of the WFDS are to understand the quality of intergenerational relationships using data from both parents and children, as well as the effects of these relationships on health and well-being. A particular focus is on the experiences of mothers and their adult children when

Table 1 Demographic information on mothers and adult children

Mothers	N = 285
Age, mean (SD), y	71.0 (3.3)
Black, %	20.4
Number of children, mean, SD	4.5 (2.0)
ADL limitation, %	55.0
Pain, mean (SD)	3.0 (1.3)
Adult children	N = 678
Age, mean (SD), y	49.3 (5.7)
Daughters, %	57.0
Married, %	71.5
Self-reported health, mean (SD)	3.8 (1.1)
Frequency of contact, mean (SD)	5.6 (1.3)
Distance to mother, %	
Coresidence	9.5
Within 1 h	60.8
More than 1 h	29.7
Provide care to mother, %	
Primary care	20.1
Secondary care	32.9
No care	47.0
Closeness with mother, mean (SD)	9.5 (2.2)
Tension with mother, mean (SD)	6.6 (2.3)

mothers face health challenges and the family begins to respond to care needs.

The WFDS began in 2001 with the selection of 566 mothers age 65–75 years with two or more living children. At the end of each interview, the mothers were asked to provide contact information for their children. Approximately 63% of the mothers agreed to provide information, and about 70% of the children agreed to participate. Telephone interviews were completed with at least one child in 300 families, resulting in a sample of 773 adult children. A wave 2 survey was conducted in 2008–10 that resurveyed both mothers and adult children. A measure of chronic pain among the mothers was added in the second survey; therefore, the wave 2 data are used in the analyses presented here. The analytic sample for the analyses includes 698 adult children nested within 293 families from wave 2 [37]. The average number of children interviewed in each family was 2.3 (SD = 1.4).

Demographic characteristics of the sample are presented in Table 1. The mothers' ages ranged between 73 and 85 years ($M = 77.7$, $SD = 3.1$); 21.5% were nonwhite, while 78.5% were white. The number of living children ranged from two to 11 ($M = 4.3$, $SD = 1.9$). The adult children ranged from 28 to 68 years of age ($M = 49.2$, $SD = 5.7$), and 56.7% were daughters. The mean number of children interviewed in each family was 2.3 ($SD = 1.4$).

Independent Variable

Mother's Pain

To assess pain, mothers were asked: "I'd like you to think about the last three months. In the last three months, on how many days did you experience pain, including any aching, burning, or throbbing sensations? Would you say every day (4), most days (3), some days (2), only a few days (1), or no days (0)?" This approach is consistent with other studies that define chronic pain as the presence of constant or frequent (i.e., most days) pain/discomfort lasting at least three months [38,39].

Dependent Variables

In the analyses, we measured relationship closeness and tension from the adult child's perspective, given that we are interested in the impact of mother's pain on the offspring's perspective of relationship quality. The multigenerational design of the study allows us to examine the impact of mothers' pain perception on adult children's assessment of relationship quality. We created positive and negative relationship quality measures using items commonly used in the literature to capture these constructs [21,40–46]. Following prior research using these items, we combined them into the three-item scales used in the analyses [21,45].

Relationship Closeness

Three items comprised the scale for relationship closeness: 1) Use any number from 1 to 7, where 1 is very distant and 7 is very close. What number would you use to describe the relationship between you and your mother nowadays? 2) How often does your mother make you feel loved or cared for—very often (5), fairly often, sometimes, rarely, or never (1)? And 3) Being with your mother makes you feel very happy—strongly agree (4), agree, disagree, strongly disagree (1)? The ranges of the three items were transformed by combining categories with the smallest number of cases such that they each ranged from 1–4. The range of the combined scale was 4–12, with a mean of 9.53 (SD = 2.17; skewness = 0.77). The Cronbach's alpha was 0.74. Higher scores indicate greater closeness.

Relationship Tension

To create a measure of tension, we employed a similar method. Three items were combined: 1) Sometimes no matter how close we may be to someone, the relationship can also at times be tense and strained. Use any number from 1 to 7, where 1 is not at all tense and strained and 7 is very tense and strained. What number would you use to describe how tense and strained the relationship between you and your mother is nowadays? 2) How often would you say the two of you

Impact of Pain on Intergenerational Relationships

typically have disagreements or conflicts—very often (5), fairly often, sometimes, rarely, or never (1)? 3) Does your mother make too many demands on you—very often (5), fairly often, sometimes, rarely, or never (1)? We then transformed the negative items so that they would range from 1 to 4 before combining them. The range of the combined negative scale was 3–12, and the mean was 6.56 (SD = 2.27; skewness = 0.519). The Cronbach's alpha was 0.69. Higher scores indicate greater tension.

Moderating Variables

Frequency of Contact

Frequency of contact was assessed by asking each child how often he or she interacted with his or her mother both in person and on the telephone. Response categories ranged from never to every day. The responses to these two questions were then combined, using the highest response to indicate frequency of contact.

Providing Care to the Mother

Providing care to the mother was measured by asking adult children whether their mothers: 1) currently needed help with activities of daily living (ADLs/IADLs), including light housework, shopping, eating, or personal care; or 2) had experienced a serious illness or injury for which they required assistance within the previous two years. When children reported that their mothers needed assistance, the children were asked whether they had provided help for either of these health conditions. Respondents who reported that they had provided help were then asked whether they had "helped the most." Based on these reports of mothers' care needs and children's provision of care, each child was coded as follows: 0 = mother needed no care; 1 = care needed but child did not provide care; 2 = child provided care but was not the primary caregiver; or 3 = child was the primary caregiver. We then created a set of four dummy variables. Three variables—"care needed, not provided by child," "caregiver, not primary," and "primary caregiver"—were entered into the equations; "care not needed" was the reference category.

Proximity was measured by asking the mother how far each of her children lived from her in travel time, ranging from coresiding to living more than two hours away. We then created a set of three dummy variables that reflected whether the child coresided with his or her mother, lived within an hour's drive, or lived more than an hour away. "Coresided" and "lived more than an hour away" were entered into the equations; "lived within an hour" was the reference category.

Child's Gender

Child's gender was based on mothers' reports at T1 (0 = son; 1 = daughter).

Control Variables

We controlled for both mother-level and child-level characteristics. Race (0 = white, 1 = black) was reported at the mother level. In addition, child-level characteristics include marital status (0 = child not married, 1 = child married), age in years, and self-reported health (1 = poor, 2 = fair, 3 = good, 4 = very good, 5 = excellent).

Analytic Plan

Due to the nested structure of our data (children within families), we employed a multilevel (MLM) framework [47] to examine adult children's responses to mothers' self-reported pain symptoms. This approach is advantageous over other statistical techniques because it not only allows for the nonindependence of observations, but also adjusts for the potential correlated errors in participants' responses. Because the families in this study have two to 13 adult children, the groups are not large enough to obtain reliable estimates when using interaction terms across levels. In cases such as this, random intercept models are recommended [48]. All analyses included children's sociodemographic characteristics (age, gender, race, marital status, self-report health), frequency of contact, proximity, whether they provided for their mother during an illness, and their perception of their mother's functional limitations. The independent variable, mother's pain, was treated as a continuous variable.

Results

Mother-Child Closeness

Table 2 displays the results of the multilevel regression analysis of adult children's report of closeness with mothers. Contrary to our hypotheses, mothers' reports of pain did not predict closeness. In fact, only self-reported health (b = 0.16) and frequency of contact (b = 0.75) were positively associated with adult children's report of closeness with mothers. We tested all the possible interaction effects between mothers' perception of pain and other factors and found that none of them predicted mother-adult child closeness (tables not shown for interaction analyses).

Mother-Child Tension

Table 3 presents the results of the multilevel regression analysis of children's reports of tension with their mothers. Mothers' pain reports did not affect relationship tension. Being nonwhite (b = 0.58), family size (b = -0.14), being married (b = -0.79), self-reported health

Table 2 Mixed model results predicting adult children's report of closeness with mothers (N = 678 within 285 families)

Predictors	Model	
	Estimate	SE
Family-level characteristics		
Race (1 = black)	0.38	0.23
Pain	0.00	0.07
Child-level characteristics		
Age	0.00	0.01
Daughter	-0.25	0.15
Married	0.27	0.17
Self-reported health	0.16*	0.07
Mother's limitations	-0.04	0.17
Frequency of contact	0.76**	0.07
Gave help during illness (vs provided no care)		
Provided some help	-0.26	0.19
Provided primary help	0.07	0.21
Distance lives from mother (vs live within 1 h)		
Coresidence	-0.44	0.28
Live more than 1 h away	0.15	0.17
Model statistics		
BIC	2,822.669	
AIC	2,813.669	

*P < 0.05.

**P < 0.01.

(b = -0.22), having provided some care (b = 0.65), and having provided primary care (b = 1.02) predicted adult children's report of tension with mothers. We then tested for interactions between mothers' perception of pain and other factors and found no effects (table not shown for interaction analyses).

Discussion

This study sheds important new light on the question of the impact of pain on family relationships. The finding that mothers' pain did not affect offspring's assessments of relationship quality are counterintuitive, given the strong and consistent evidence base for the impact of pain on young families. Particularly surprising is the lack of effects on relationship quality even in situations of proximity and frequent contact, or when a child is the primary caregiver. Other factors, however, did predict relationship quality; in particular, providing help to the mother was related to increased relationship tension, whereas greater frequency of contact was related to relationship closeness.

Table 3 Mixed model results predicting adult children's report of tension with mothers (N = 678 within 285 families)

Predictors	Model	
	Estimate	SE
Family-level characteristics		
Race (1 = black)	0.29	0.27
Pain	0.01	0.08
Child-level characteristics		
Age	0.00	0.02
Daughter	0.27	0.17
Married	-0.76**	0.19
Self-reported health	-0.22**	0.08
Mother's limitations	0.16	0.19
Frequency of contact	-0.09	0.08
Gave help during illness (vs provided no care)		
Provided some help	0.49*	0.21
Provided primary help	0.93**	0.23
Distance lives from mother (vs live within 1 h)		
Coresidence	0.70*	0.31
Live more than 1 h away	0.05	0.19
Model statistics		
BIC	2,979.689	
AIC	2,970.686	

* $P < 0.05$.** $P < 0.01$.

Thus, this study suggests that findings regarding pain on relationships in younger families may not translate directly to later-life intergenerational relationships. An important question for future research is what protective factors may exist that buffer adult children from typical effects of pain. It is possible that differences in socioemotional functioning and societal expectations about pain among older persons serve as factors that shield later-life families from the negative effects of pain. Research has shown that, even under trying circumstances, older individuals are able to optimize social experiences by focusing on rewarding interactions and disengaging from problematic relationships [49]. In addition, older adults may be better equipped to minimize their emotional reactions to the pain experience (e.g., catastrophizing). This factor may be important, given that catastrophizing has been implicated as risk factor for diminished relationship quality in younger samples [17,50].

Further, adult children's beliefs about the inevitability of pain in later life may lead older adults and their relatives to view pain as a natural part of the aging process [51,52], rather than as a threat or disruption to their relationships. As popular stereotypes about

older people's focus on their "aches and pains" indicate, an older parent's pain complaints may seem normative and expected. It may also be difficult to identify an effect when multiple other stressors, including functional limitations, cognitive problems, and sensory deficits are often present in the aging parent. For these reasons, one might expect a weaker association between older parents' pain and children's perceptions of relationship quality.

Because this study is the first to address the impact of mother's pain on adult children, the findings should be viewed as suggestive rather than definitive. Several limitations of this study point to a number of directions for future research. First, the study sample consisted predominantly of white, middle class mothers drawn from a single geographic region located in the northeast United States. Studies are needed to assess whether parents' pain differentially affects parent-child relationship quality in other cultures and societies, particularly by comparing collectivist vs individualistic cultures where norms of reciprocity in caregiving may differ [53]. Research should also move beyond the mother-child relationship to assess the impact of fathers' pain on their adult children given potential gender differences in intergenerational relationships between parents and their offspring [54,55]. Another limitation of this study was the reliance on a single-item measure of mother's pain. Although this measure was adequate for illustrative purposes, future studies would benefit from incorporating the NIH PROMIS questionnaires to assess mothers' pain interference and intensity [56].

Although we found no impact associated with the presence of chronic pain on adult child-older parent relationships, it is possible that older individuals may perceive that pain is affecting their family lives. Suggestive evidence comes from a small-scale study of middle-aged adults (mean age = 56 years) with chronic pain. In this study, 35% of patients with pain believed that their pain affected relatives at least moderately [12]. For this reason, we believe it is prudent that clinicians be alert to the possibility that older adults may be concerned about the effects of their chronic pain problem. They may consider using an assessment such as the family impact of pain scale, a 10-item self-report questionnaire designed to assess the effects of patients' chronic pain on family members [57]. Alternatively, simple open-ended questions are practical in clinical settings, such as: "To what extent do you feel your pain has an effect on loved ones or caregivers?" Positive responses to such questions may shed light on needed intervention (such as family counseling).

In conclusion, the findings of the present study show that the impact of an individual's pain condition on family relationships may be more complex than previously considered. The study suggests that there may be factors that insulate older parent-adult child relations from some of the effects of the relative's pain. Additional research, accumulated clinical experience, and in

particular qualitative research with patients and families regarding pain's effects on intergenerational relations are needed to shed additional light on this issue.

References

- 1 Cowan P. Pain in the Workplace. Rocklin, CA: American Chronic Pain Association; 2011.
- 2 Tsang A, Von Korff M, Lee S, et al. Common chronic pain conditions in developed and developing countries: Gender and age differences and comorbidity with depression-anxiety disorders. *J Pain* 2008;9(10):883–91.
- 3 Lewandowski AS, Palermo TM, Stinson J, et al. Systematic review of family functioning in families of children and adolescents with chronic pain. *J Pain* 2010;11(11):1027–38.
- 4 Cano A, Gillis M, Heinz W, et al. Marital functioning, chronic pain, and psychological distress. *Pain* 2004;107(1–2):99–106.
- 5 Kerns RD, Turk DC. Depression and chronic pain: The mediating role of the spouse. *J Marriage Fam* 1984;46(4):845–52.
- 6 Palermo TM, Chambers CT. Parent and family factors in pediatric chronic pain and disability: An integrative approach. *Pain* 2005;119:1–4.
- 7 Palermo TM, Eccleston C. Parents of children and adolescents with chronic pain. *Pain* 2009;146(1–2):15–7.
- 8 U.S. Census Bureau. The older population. 2010. Available at: <http://www.census.gov/prod/cen2010/briefs/c2010br-09.pdf> (accessed March 20, 2015).
- 9 Wolff JL, Kasper JD. Caregiving of frail elders: Updating a national profile. *Gerontologist*. 2006;46(3):344–356.
- 10 Druley JA, Stephens MAP, Martire LM, et al. Emotional congruence in older couples coping with wives' osteoarthritis: Exacerbating effects of pain behavior. *Psychol Aging* 2003;18(3):406–14.
- 11 Stephens MAP, Martire LM, Cremeans-Smith JK, et al. Older women with osteoarthritis and their caregiving husbands: Effects of pain and pain expression on husbands' well-being and support. *Rehabil Psychol* 2006;51(1):3–12.
- 12 Ojeda B, Salazar A, Duenas M, Torres LM, et al. The impact of chronic pain: The perspectives of patients, relatives, and caregivers. *Fam Sys Health* 2014;32(4):399–407.
- 13 Lewandowski W, Morris R, Drauker CB, et al. Chronic pain and the family: Theory-driven treatment approaches. *Issues Mental Health Nurs* 2007;28:1017–44.
- 14 Kashikar -Zuck S, Lynch AM, Slater S, et al. Family factors, emotional functioning, and functional impairment in juvenile fibromyalgia syndrome. *Arthritis Care Res* 2008;59(10):1392–8.
- 15 Romano JM, Turner JA, Jensen MP. The family environment in chronic pain patients: Comparison to controls and relationship to patient functioning. *J Clinical Psychol Med Sett* 1997;4(4):383–95.
- 16 Maruta T, Osborne D, Swanson DW, et al. Chronic pain patients and spouses: Marital and sexual adjustment. *Mayo Clin Proc* 2006;51:307–310.
- 17 Leonard MT, Cano A. Pain affects spouses too: Personal experience with pain and catastrophizing as correlates of spouse distress. *Pain* 2006;126:139–46.
- 18 Leonard MT, Cano A, Johansen AB. Chronic pain in a couples context: A review and integration of theoretical models and empirical evidence. *J Pain* 2006;7(6):377–90.
- 19 Barkin RL, Barkin SJ, Barkin DS. Perception, assessment, treatment, and management of pain in the elderly. *Clinics Geriatric Med* 2005;21(3):465–90.
- 20 Molton IR, Terrill AL. Overview of persistent pain in older adults. *Am Psychol* 2014;69(2):197.
- 21 Suitor JJ, Gilligan M, Pillemer K. Conceptualizing and measuring intergenerational ambivalence in later life. *J Gerontol B Psychol Sci Soc Sci* 2011;66B(6):769–81.
- 22 Monin JK, Schulz R. Interpersonal effects of suffering in older adult caregiving relationships. *Psychol Aging* 2009;24(3):681–95.
- 23 Romano JM, Turner JA, Clancy SL. Sex differences in the relationship of pain patient dysfunction to spouse adjustment. *Pain* 1989;39:289–95.
- 24 Kiecolt-Glaser JK, Newton TL. Marriage and health: His and hers. *Psych Bull* 2001;127(4):372–503.
- 25 Robinson ME, Wise EA. Gender bias in the observation of experimental pain. *Pain* 2003;104(1):259–64.
- 26 Gabriel S, Gardner WL. Are there "his" and "hers" types of interdependence? The implications of gender differences in collective versus relational interdependence for affect, behavior, and cognition. *J Pers Soc Psychol* 1999;77(3):642–55.

Impact of Pain on Intergenerational Relationships

- 27 Suito JJ, Pillemer K, Sechrist J. Within-family differences in mothers' support to adult children. *J Gerontol B Psych Sci Soc Sci* 2006;61B:S10-7.
- 28 Williamson GM, Schulz R. Relationship orientation, quality of prior relationship, and distress among caregivers of Alzheimer's patients. *Psych Aging* 1990;3(4):502-9.
- 29 Lyons KS, Zarit SH, Sayer AG, Whitlatch CJ. Caregiving as a dyadic process: Perspectives from caregiver and receiver. *J Gerontol B Psych Sci Soc Sci* 2002;57(3):P195-204.
- 30 Quinn C, Clare L, Woods B. The impact of the quality of relationship on the experiences and wellbeing of caregivers of people with dementia: A systematic review. *Aging Mental Health* 2009;13(2):143-54.
- 31 de Vugt ME, Stevens F, Aalten P, et al. Behavioural disturbances in dementia patients and quality of the marital relationship. In *J Geriatric Psych* 2003;18:149-54.
- 32 Turk DC, Flor H, Rudy TE. Pain, families I. Etiology, maintenance, and psychosocial impact. *Pain* 1987;30:3-27.
- 33 Hinde RA. *Relationships: A Dialectical Perspective*. Hove, UK: Psychology Press; 1997.
- 34 Svetlik D, Dooley WK, Weiner MF, et al. Declines in satisfaction with physical intimacy predict caregiver perceptions of overall relationship loss: A study of elderly caregiving spousal dyads. *Sexuality Disability* 2005;23:65-79.
- 35 Cantor MH. Strain among caregivers: A study of experience in the United States. *Gerontol* 1983;23:597-604.
- 36 Kinney JM, Stephens MAP. Caregiving hassles scale: Assessing the daily hassles of caring for a family member with dementia. *Gerontol* 1989;29(3):328-32.
- 37 Suito JJ, Sechrist J, Gilligan M, Pillemer K. Intergenerational relations in later-life families. In Settersten R, Angel J, editors. *Handbook of the sociology of aging*. Springer; New York: 2011. pp. 161-178
- 38 Kennedy J, Roll JM, Schrauder T, et al. Prevalence of persistent pain in the U.S. Adult population: New data from the 2010 National Health Interview Survey. *J Pain* 2014;14(10):979-84.
- 39 Verhaak PFM, Kerssens JJ, Dekker J, et al. Prevalence of chronic benign pain disorder among adults: A review of the literature. *Pain* 1998;77(3):231-9.
- 40 Birditt KS, Fingerman KL, Zarit SH. Adult children's problems and successes: Implications for intergenerational ambivalence. *J Gerontol B Psych Sci Soc Sci* 2010;65:145-53.
- 41 Birditt KS, Miller L, Fingerman KL, et al. Tensions in the parent and adult child relationship: Links to solidarity and ambivalence. *Psych Aging* 2009;24(2):287.
- 42 Fingerman KL, Chen P, Hay E, et al. Ambivalent reactions in the parent and offspring relationship. *J Gerontol B Psych Sci Soc Sci* 2006;61:152-60.
- 43 Fingerman KL, Pitzer L, Lefkowitz E, et al. Ambivalent relationship qualities between adults and their parents: Implications for the well-being of both parties. *J Gerontol B Psych Sci Soc Sci* 2008;63:362-371.
- 44 Kiecol JK, Blieszner R, Salva J. Long-term influences of intergenerational ambivalence on midlife parents' psychological well-being. *J Marriage Fam* 2011;73:369-82.
- 45 Gilligan M, Suito J, Feld S, et al. Do positive feelings hurt? Disaggregating positive and negative components of intergenerational ambivalence. *J Marriage Fam* 2015;77:261-76.
- 46 Wilson AE, Shuey KM, Elder GH. Ambivalence in the relationship of adult children to aging parents and in-laws. *J Marriage Fam* 2003;65:1055-72.
- 47 Raudenbush SW, Byrk AS. *Hierarchical Linear Models: Applications and Data Analysis Methods*, 2nd edition. Newbury Park, CA: Sage Publications; 2002.
- 48 Bryk AS, Raudenbush SW. *Hierarchical Linear Models: Applications and Data Analysis Method*. Newbury Park, CA: Sage; 1992.
- 49 Luong G, Charles ST, Fingerman KL. Better with age: Social relationships across adulthood. *J Soc Sci Pers Relat* 2011;28(1):9-23.
- 50 Goubert L, Eccleston C, Vervoort T, et al. Parental catastrophizing about their child's pain. The parent version of the pain catastrophizing scale (PCS-P): A preliminary validation. *Pain* 2006;123:254-63.
- 51 Appelt CJ, Burant CJ, Siminoff LA, Ibrahim SA. Arthritis-specific health beliefs related to aging among older male patients with knee and/or hip osteoarthritis. *J Gerontol A Biol Sci Med Sci* 2007;62(2):184-90.

Pillemer et al.

- 52 Goodwin S, Black SA, Satish S. Aging versus disease: The opinions of older black, Hispanic, and non-Hispanic white Americans about the causes and treatment of common medical conditions. *JAGS* 1999;47(8):1–13.
- 53 Pyke KD, Bengtson VL. Caring more or less: Individualistic and collectivist systems of family eldercare. *J Marriage Fam* 1996;58(2):379–92.
- 54 Buist KL, Dekovic M, Meeus W, van Aken MAG. Developmental patterns in adolescent attachment to mother, father and siblings. *J Youth Adol* 2002;31(3):167–76.
- 55 Pillemer K, Munsch CL, Fuller-Rowell T, et al. Ambivalence toward adult children: Differences between mothers and fathers. *J Marriage Fam* 2012; 74:1101–13.
- 56 Cella D, Riley W, Stone A, et al. The Patient-Reported Outcomes Measurement Information System (PROMIS) developed and tested its first wave of adult self-reported health outcome item banks: 2005–2008. *J Clin Epidemiol* 2010;63:1179–94.
- 57 Newton-John TR. The family impact of pain scale: Preliminary validation. *J Clin Psych Med Settings* 2005;12:349–58.