Title
Close Social Ties and Health in Later Life: Strengths and Vulnerabilities

Journal
American Psychologist, 72(6)

ISSN
0003-066X

Authors
Rook, Karen S
Charles, Susan T

Publication Date
2017-09-01

DOI
10.1037/amp0000104

Peer reviewed

HHS Public Access

Author manuscript

Am Psychol. Author manuscript; available in PMC 2018 September 01.

Published in final edited form as:

Am Psychol. 2017 September ; 72(6): 567–577. doi:10.1037/amp0000104.

Close Social Ties and Health in Later Life: Strengths and Vulnerabilities

Karen S. Rook and **Susan T. Charles**

Department of Psychology and Social Behavior, University of California, Irvine, CA

Abstract

The world is aging at an unprecedented rate, with older adults representing the fastest growing segment of the population in most economically developed and developing countries. This demographic shift leaves much uncharted territory for researchers who study social relationships and health. Social relationships exert powerful influences on physical health in later adulthood, a critical consideration given age-related increases in the prevalence of chronic health conditions and physical disability. A large body of research indicates that older adults report greater satisfaction with their social networks than do younger adults, and that they often take measures to minimize their exposure to negative social encounters. These emotionally satisfying and generally positive social ties afford some health protection against a backdrop of mounting physical limitations and play an important role when juxtaposed with the potentially health-damaging frictions that sometimes emerge in older adults' social relationships. Although most older adults report that they are satisfied with their social ties, some older adults experience frequent conflicts or ambivalent exchanges with members of their social networks, and these experiences detract from their health. Additionally, many older adults will experience the loss of one or more close relationships during the course of their lives, with ramifications for their health and, often, for the reorganization of their social lives over time. Understanding how both the strengths and vulnerabilities of close social relationships affect health and well-being in later life is an important goal, particularly in view of the accelerating rate of population aging worldwide.

Keywords

aging; health; social conflict; social support; social relationships

Having close social ties is not always considered to be an important health behavior. Yet carefully controlled epidemiological studies reveal that the effects of close social relationships on health have an order of magnitude comparable to or greater than that of such well-established risk factors as smoking, alcohol consumption, obesity, and physical inactivity (e.g., Holt-Lunstad, Smith, & Layton, 2010). Throughout adulthood, including later life, being socially integrated and having access to social support are related to better physical health, including reduced risks for infectious illness, cardiovascular disease, overall

Correspondence concerning this article should be addressed to Karen S. Rook, Department of Psychology and Social Behavior, University of California, Irvine, CA 92697-7085. ksrook@uci.edu.

Editor's note. This article is one in a collection of articles published in a special issue of American Psychologist titled "Chronic Health and Close Family Relationships" (Xxxxxx 2017). Timothy W. Smith served as action editor with Anne E. Kazak as advisory editor.

cognitive and physical decline, and both cancer-specific and overall mortality (e.g., Cohen & Janicki-Deverts, 2009; Crittenden et al., 2014; Uchino, 2009). Conversely, being socially isolated and feeling lonely are related to worse physical and cognitive functioning (Shankar, Hamer, McMunn & Steptoe, 2013) and earlier mortality (Steptoe, Shankar, Demakakos, & Wardle, 2013).

Close social ties in later life are often comprised of people who have known each other for decades. Across adulthood, people accumulate a group of close social ties that form the heart of their social networks – often including a spouse, children, other family members, and close friends (Antonucci, Ajrouch, & Birditt, 2014). This relatively stable convoy of social ties buoys health and well-being, but these social ties are also influenced by age-related shifts in social motivations and health-related needs. Although most older adults report high levels of satisfaction with their close social ties and often engage in strategies to limit exposure to conflicts, persistent conflicts with close social network members can occur nonetheless, and they are related to worse health outcomes. In addition, the loss of close social relationships poses a formidable challenge to emotional and physical well-being. Importantly, theory and research reveal that both age-related strengths and vulnerabilities are present within older adults' social relationships, and exploring these dualities is the key goal of the current article.

Examining both the strengths and vulnerabilities of social relationships in later life is important in view of the accelerating pace of population aging and the health challenges that often arise with age – challenges that can be mitigated or exacerbated, to some extent, by older adults' social relationships. For the first time in human history, a person born today in many regions of the world can expect to live to old age (World Health Organization [WHO], 2011). As a result, the proportion of the population living to reach old age is growing. For example, by 2030 over 20% of the population of the United States will be aged 60 or over, and the corresponding estimates are even higher in a number of other developed countries (United Nations, 2015). Of these older adults, an estimated 82% have at least one chronic health condition, and nearly half (43%) have three or more chronic conditions (Wolff, Starfield, & Anderson, 2002). Rates of chronic disease and functional impairment also rise markedly among individuals over the age of 80 (Hung, Ross, Boockvar, & Siu, 2011). These statistics underscore the importance of striving toward a balanced understanding of how social relationships influence, and are influenced by, health and well-being in later adulthood.

This article seeks to contribute to such a balanced understanding by providing an overview of two different streams of research that have seldom been considered together: one that emphasizes age group comparisons and finds evidence of distinct strengths in older adults' social relationships relative to younger age groups; and another that emphasizes variability among older adults and identifies vulnerabilities in the social relationships of some older adults that may compromise their health and well-being. Both traditions of research provide legitimate, and largely complementary, perspectives on close relationships in later life. The article begins by discussing theory and research suggesting that older adults often proactively manage their social ties to prioritize engagement with emotionally close social ties, thereby contributing to generally high levels of relationship satisfaction, low rates of

conflict, and access to health-sustaining support and companionship. Proactive regulation of social ties is not always possible in later life, however, and some older adults are not able to avoid distressing social interactions or relationship losses that compromise, rather than sustain, health and well-being (Charles & Luong, 2013; Rook, 2015). The article accordingly discusses research on areas of potential vulnerability in older adults' social relationships, focusing on aversive or ambivalent social ties that expose some older adults to recurring conflicts and misunderstandings and the loss of close relationships that becomes increasingly common with age. The concluding section looks to the future, in view of changing sociodemographic and health status characteristics of the elderly population, and raises questions about the health-related support needs and resources of future cohorts of older adults that psychologists are well poised to address.

Areas of Strength in Older Adults' Social Relationships

Older adults frequently report greater satisfaction with their social networks than do younger adults (see review by Luong, Charles, & Fingerman, 2010). One reason for this difference is posited to lie in how older adults structure their social networks (Cartsensen, 2006). Both cross-sectional and longitudinal studies find that social networks tend to shrink in size across adulthood, with the most pronounced decreases occurring in advanced old age (e.g., van Groenou, Hoogendijk, & van Tilburg, 2013). Importantly, however, evidence suggests that older adults retain relationships with their closest, most rewarding social ties but winnow casual acquaintances and other peripheral social ties (Wrzus, Hanel, Wagner, & Neyer, 2013). For example, one longitudinal study that followed people ages 18 to 94 over 10 years (English & Carstensen, 2014) asked participants about the number of people in their social network and their positive and negative emotional experiences with each network member. Results indicated that participants' social networks declined starting in midlife, with the decline largely accounted for by the loss of peripheral, as opposed to close, social ties. Moreover, older participants reported that their network members elicited more positive and fewer negative emotions compared to younger participants (English & Carstensen, 2014).

Fewer, but Emotionally Close, Social Relationships

These age-related changes are predicted by socioemotional selectivity theory, which posits that as people grow older and perceive their time left in life to be growing shorter, they shift their priorities toward emotional goals. As a result, with increasing age, people prefer to interact with close social network members who afford opportunities for emotionally meaningful interaction and a sense of belonging (Charles & Carstensen, 2010). In contrast, interacting with casual acquaintances or knowledgeable, but less emotionally close, individuals has less value in later life, a finding observed among older African and European Americans, Germans, and among mainland and Hong Kong Chinese (see review by Carstensen, Isaacowitz, & Charles, 1999; Fung, Lai, & Ng, 2001; Lang & Carstensen, 2002).

Interacting with close ties provides emotional and health-related benefits for older adults. Such interactions evoke more positive and less negative memories, compared to interactions with acquaintances (e.g., Charles & Piazza, 2007). Moreover, social roles that involve

emotional closeness (e.g., being a spouse, family member, or friend) are more strongly related to important aspects of older adults' health, such as pulmonary functioning, than are social roles that involve more peripheral — and typically less close — social roles (e.g., being a club member or a volunteer; Crittenden et al., 2014).

Effective Relationship Regulation Strategies

Older adults also appear to engage in relationship regulation strategies to maintain well-being to a greater extent than do younger adults. They report investing more time in maintaining relationships and are less concerned with maintaining strict reciprocity in their social relationships, compared with younger adults (Lang, Wagner, Wrzus, & Neyer, 2013). They also experience fewer conflicts with their close social partners and appraise these conflicts less negatively than do younger adults (e.g., Luong et al., 2010). For example, a daily diary study of reactions to interpersonal tensions revealed that older adults rated the tensions as less stressful than did younger and middle-aged adults, a finding that was not attributable to age differences in overall exposure to interpersonal tensions or the type of social partner with whom the tensions occurred (Birditt, Fingerman, & Almeida, 2005). Another study found that, compared to married middle-aged adults, older married adults often report higher levels of marital happiness and rate their partner's behaviors less negatively during marital conflict discussions (Smith et al., 2009). Notably, these more favorable ratings appear to reflect appraisal processes that allow older adults to view the partner's behavior during conflict discussions more benevolently, because objective raters do not find age differences in spouses' actual behaviors during marital conflict discussions (Story et al., 2007).

Older adults' reports of how they respond to negative exchanges with others also suggest that they are more likely than young and middle-aged adults' to seek to diffuse the exchanges. For example older adults often report that they did nothing, opted to let the situation pass, or sought to direct their attention elsewhere in response to an interpersonal problem (Blanchard-Fields, Mienaltowski, & Seay, 2007; Sorkin & Rook, 2006). Older adults do not use such passive techniques with all tense interactions; when asked how they would resolve instrumental dilemmas, such as consumer-related disputes, older adults report greater use of active problem-solving strategies than do younger adults (Blanchard-Fields, 2007). Only when problems are interpersonal in nature and high in emotional salience do older adults report more passive emotion regulation strategies than do their younger counterparts (Blanchard-Fields, 2007). Older adults perceive this behavior not as a method of last resort but, rather, as an approach that is consistent with the goals of preserving good will in the relationship and reducing their own emotional distress (Sorkin & Rook, 2006).

Avoiding or quickly diffusing potential conflicts may also benefit older adults to a greater extent than younger adults. In one daily diary study, people ages 25 to 74 reported each day whether they had experienced two different social stressors: an argument with someone, or a situation where they could have argued but decided to let the situation pass (Charles, Piazza, Luong, & Almeida, 2009). Although emotional reactivity to conflicts that actually occurred did not vary by age, emotional reactivity to potential conflicts that were successfully avoided

was lower among the older participants, suggesting that they derived a greater emotional benefit from avoiding potential conflicts.

Health-Related Benefits of Proactive Regulation of Relationships

Older adults' strategies for engaging selectively with their most rewarding social ties and avoiding or dampening potential conflicts with others may help to explain not only why relationship satisfaction increases with age for many adults (Luong et al., 2010) but also why perceptions of social support become more favorable with age (Schnittker, 2007). The quality of social relationships is related to a range of physiological processes and health outcomes, such as immunological and cardiovascular functioning, chronic illness onset and progression, and mortality (e.g., Kiecolt-Glaser, McGuire, Robles, & Glaser, 2002; Uchino, 2006). Multiple pathways may underlie these associations, including the ability of emotionally close relationships to enhance emotional well-being, promote sound health behaviors, and provide social support in times of need (e.g., see reviews by Krause & Hayward, 2015; Rook, 2015). Preserving a stable set of close relationships through adulthood and into old age may be particularly important in allowing people to perceive that they can count on others for social support. Stable perceptions of support, in turn, have been found to be more reliably protective of health, and especially for the development and progression of chronic disease, than has the actual receipt of support (see review by Uchino, 2009). Positive social networks enhance physical health, but another advantage of having smaller networks comprised of selected social partners is that fewer negative situations are likely to arise. This benefit cannot be overstated, given the detrimental effects of negative social ties on physical health (Brooks & Dunkel-Schetter, 2011; Rook, 2015).

Areas of Vulnerability in Older Adults' Social Relationships

Despite age-related increases in satisfaction with social networks, limits exist on the availability of close social ties in later life. Being able to cultivate, maintain, and engage selectively with a stable set of emotionally close social ties is entwined with experiences early in life that shape attachment styles, coping skills, and broader social competencies (Uchino, 2009). Some people undoubtedly reach later adulthood without a stable core of close relationships that can be preserved or prioritized through selective winnowing. Other people may have longstanding social network members who cannot be avoided and who are a source of aversive of ambivalent interactions. Still others will experience the loss or disruption of close relationships in later life for reasons beyond their control. These negative experiences with close social ties have implications for health and well-being. The theoretical model of strength and vulnerability integration (SAVI; Charles, 2010) posits that when older adults are unable to avoid or mitigate situations that kindle high and sustained levels of distress, they are likely to experience arousal that will challenge their aging systems and compromise their physical and emotional health. Consistent with this idea, a large study of adults ages 40 to 77 found that negative social interactions decreased with age. The strength of the association between these negative interactions and physical health, however, increased over the adult life course (Hakulinen et al., 2016). Sources of vulnerability in later life social relationships, therefore, warrant attention alongside the considerable strengths discussed thus far.

Conflicts and Misunderstandings

Older adults typically experience negative interactions with their social network members less often than positive interactions, but negative interactions have potent effects on health and well-being when they occur. Frequent negative exchanges with close social network members are robustly related to worse health across multiple health domains, including worse self-rated health, increased risk of heart disease, greater functional impairment and disability, worse recovery following surgery, worse cognitive functioning, and increased risk of mortality (see reviews by Brooks & Dunkel Schetter, 2011; Rook, 2015).

These findings have emerged in studies that have adjusted for a broad range of factors that might influence health, including demographic characteristics, comorbid conditions, mental health (e.g., anxiety, depressive symptoms), health behaviors (e.g., smoking, physical activity), biological risk factors (e.g., body mass, blood pressure), personality characteristics (e.g., neuroticism, extraversion), and, in longitudinal studies, initial health status. Importantly, these findings emerge in studies that have examined positive and negative social exchanges simultaneously. In many such studies, the health-damaging effects of negative exchanges have been found to outweigh the health-enhancing effects of positive exchanges (Rook, 2015), although exceptions to this pattern have been noted. For example, low warmth, but not high hostility, observed during marital interactions has been found to be related to women's coronary artery disease (Smith et al., 2011). Moreover, close social ties (spouses or romantic partners, adult children, other family members, and close friends) account for the majority of interpersonal conflicts reported by older adults (e.g., Sorkin & Rook, 2004). Thus, the adverse health effects of conflicts with others cannot be attributed to aversive interactions with peripheral social ties.

Persistent conflicts are most detrimental—Although relationship conflicts tend to occur relatively infrequently and to be time-limited in later life, some older adults experience persistent or recurring conflicts that may function as a source of chronic stress. In one study, researchers asked a nationally representative sample of older adults about the frequency of negative interactions (e.g., experiences of criticism, disapproval, demands) with friends, spouse, children, and other relatives at two time points six years apart (Krause & Rook, 2003). The results indicated that the frequency of negative social exchanges was relatively stable over the 6-year period.

The cumulative physiological effects of chronic negative interactions may damage physical health by disrupting cardiovascular, endocrine, and immune functioning (Brooks & Dunkel Schetter, 2011; Uchino, 2006). Data from another national sample of adults ages 65 to 91 revealed that those who experienced persistently high levels of negative social interactions (e.g., support let-downs, rejection by others) over a 2-year period reported poorer self-rated health, more health conditions, and greater functional impairment (Newsom, Mahan, Rook, & Krause, 2008). Another study that spanned a 10-year period also found that chronic negative interactions were particularly detrimental to health (Friedman, Karlamangla, Almeida, & Seeman, 2012). At two time points 10 years apart, participants in the Midlife in the United States (MIDUS) study were asked how much strain (e.g., demands, criticism) they experienced in their relationships with their friends, spouse, and family members.

Participants who reported consistently high levels of strain in their social relationships (i.e., those in the highest quartile for the sample at both time points) exhibited a flatter diurnal cortisol profile, which is associated with poor health outcomes. Persistent social conflict has been linked in other research to higher rates of mortality (e.g., Kroenke et al., 2012; though see Antonucci, Birditt, & Webster, 2010). Given that later life is a time of increased risks for physiological dysregulation and health problems (Wolff et al., 2002), the health effects of relationship conflicts may be especially pronounced among older adults, although research specifically addressing this point is sparse.

Ambivalent social ties are also detrimental—Social ties do not need to be exclusively negative to detract from health. Ambivalent social ties (those characterized by both positive and negative patterns of interaction) often exist among older adults' family relationships (e.g., Fingerman, Hay, & Birditt, 2004) and are also linked to poor physical (Uchino et al., 2013) and psychological health (e.g., Rook, Luong, Sorkin, Newsom, & Krause, 2012). Remarkably, one study of individuals ages 48 to 77 found that the number of ambivalent social ties, but not the number of aversive social ties, in participants' social networks was related to shorter telomere length, an indicator of accelerated aging (Uchino et al., 2012). This research suggests that it is not only "bad" social network relationships per se, but also those that are a source of mixed positive and negative experiences, that may damage health.

The health-damaging effects of ambivalent and aversive social ties are not unique to older adults (see review by Brooks & Dunkel-Schetter, 2011). These effects have been studied extensively by gerontologists, however, as they are considered to have significance during a life stage when health risks and physiological susceptibility to stress intensify.

Likelihood of experiencing persistent conflicts—In view of such findings, a key question is what influences older adults' likelihood of experiencing recurring conflicts and disappointments in their close relationships. Research exploring this question has begun to identify several different categories of potential contributing factors. Severe or persistent stressful life events (such as serious financial difficulties or chronic health problems) may contribute to strained relationships by overwhelming the support-providing capacities of family and friends (Krause & Shaw, 2002). Receiving substantial and sustained instrumental support from family members can kindle relationship tensions (Kim et al., 2016), feelings of low self-efficacy, and loss of autonomy in recipients when disabling chronic conditions limit their ability to carry out activities of daily living (Martire, Stephens, & Schulz, 2011; Newsom, 1999). Intergenerational or cultural differences in expectations for companionship and support may also kindle resentments and misunderstandings (Pillemer et al., 2007; Treas & Mazumdar, 2002). Being unable to avoid contact with kin ties or others who are sources of ambivalent interactions can embroil people in relationship tensions and disagreements (e.g., Fingerman et al., 2004).

Sensory impairments, such as hearing loss, contribute to communication difficulties that can strain social interaction and increase the risk of social withdrawal and loneliness (Yorkston, Bourgeois, & Baylor, 2010). Certain personality traits, such as neuroticism, increase reactivity to conflict, an effect that appears to become stronger with age (Mroczek &

Almeida, 2004). Similarly, older adults with more limited cognitive resources have been found to react with more hurt feelings to experiences of social rejection (Cheng & Gruhn, 2014). Dementias, such as Alzheimer's disease, are associated with loss of inhibitory control, which can lead to poorer social behavior and ensuing relationship problems (von Hippel, 2007).

Gender, race, and ethnicity have begun to receive attention as factors that might influence exposure or reactivity negative social exchanges in later life, but existing evidence is sparse and inconsistent, making it difficult to draw conclusions (Krause & Hayward, 2015). The most consistent findings to date concern gender, with evidence suggesting that older women tend to experience more negative exchanges and to react more strongly to them than older men, although the gender difference in reactivity diminishes in advanced old age (Shaw, Krause, Liang, & Bennett, 2007).

Finally, childhood adversity increases the risk of neglect by caregivers and exposure to interpersonal conflicts and unstable social relationships, sowing the seeds of mistrust in others and relationship difficulties in adulthood that, in turn, threaten health (Miller, Chen, & Parker, 2011). A challenging, but worthwhile, goal for future research will be to develop conceptual frameworks and empirical strategies for integrating the diverse influences of life circumstances (early and current), sociocultural factors, and individual differences on the quality of social ties in later life.

The Loss of Close Relationships

Although many older adults appear to manage their social relationships effectively to maximize positive experiences and avoid negative experiences, they can do little to avoid the loss of close relationships. By their mid-70s, nearly 60% of women and 22% of men are likely to be widowed (He, Sengupta, Velkoff, & DeBarros, 2005). The loss of a spouse can affect other relationships, moreover, as contacts with in-laws and couples with whom the widowed person previously socialized often wane over time (Lamme, Dykstra, & Broese van Groenou, 1996). Marital disruption due to divorce has also become more common among people aged 50 and older in recent years, doubling from 1990 to 2010 (Brown & Lin, 2012). Losing friends is a common experience as well, with 59% of men and 42% of women over age 85 in one study reporting that a close friend had died in the past year (Johnson & Troll, 1994). These losses may be exacerbated by socioeconomic disadvantage, which is associated with greater social network instability and loss of close network members in later life (Cornwell, 2015). Serious illness and life stress can also limit a close social partner's ability to continue providing support and companionship, and residential relocation may diminish opportunities for ongoing contact.

Health effects of the loss of a spouse—Studies of spousal bereavement provide the most extensive evidence of the health effects of losing a close relationship in later life. Compared with matched controls, widowed individuals experience more physical symptoms, more acute cardiac events, higher rates of disability and illness, more hospitalizations, and an increased risk of mortality (Moon, Kondo, Glymour, & Subramanian, 2011; Stroebe, Schut, & Stroebe, 2007). These health differences are most pronounced within the first six

months of the spouse's death and tend to decline thereafter, although some studies find the increased risk of mortality to persist even 10 years after the spouse's death (e.g., Ytterstad & Brenn, 2015).

The adverse health effects of spousal bereavement may be due, in part, to hypothalamic—pituitary—adrenal axis dysregulation, as suggested by evidence that bereaved individuals exhibit flatter diurnal cortisol slopes than do non-bereaved individuals (Holland et al., 2014; Ong, Fuller-Rowell, Bonanno, & Almeida, 2011). Deficits in positive emotions experienced by the bereaved individuals accounted for this group difference, even after adjusting for negative emotions and other potential confounds (Ong et al., 2011). For widowed individuals, the loss of the day-to-day companionship provided by the spouse may play an insufficiently appreciated role in the health-damaging shortfall of positive emotions. **S**hared activities and mutually enjoyable interaction are key contexts in which people experience positive affect during the course of their daily lives, contributing to resilience and helping people transcend their current concerns and problems (Rook, August, & Sorkin, 2011).

Reorganizing social lives over time: social network substitution and compensation—Coping with spousal bereavement requires people both to deal with the emotional pain triggered by the loss and to reorganize their lives, including their social lives (Stroebe & Schut, 2010). For many adults, the spouse is the most important source of support and companionship, and the loss of the spouse may prompt bereaved individuals to turn to others for social needs once met by the spouse (Lamme et al., 1996). This process usually unfolds gradually over time, with successes and failures experienced along the way, and with considerable variation in the emotional-and physical-health benefits associated with deriving support and companionship from alternative relationships. For example, compared to married older adults, widowed older adults have more contact with their adult children and derive more support from them (Guiaux, van Tilburg, & Broese van Groenou, 2007; Ha, 2008), but it is less clear how well such interaction enhances the morale of the widowed individuals. The emotional support provided by an adult child may be less intimate, less readily accessible, or less sensitive than the emotional support formerly provided by the spouse (Rook, 2009). Relationships with family members can also be characterized by ambivalence (Fingerman et al., 2004), and the support and companionship provided to older adults by family members can sometimes be seen as based on feelings of obligation, which may dilute their psychological benefits (e.g., Rook & Ituarte, 1999).

Some researchers accordingly have advocated a distinction between social network substitution, referring to the extent to which bereaved individuals derive support and companionship from alternative sources, and social network compensation, referring to the extent to which these alternative sources of support and companionship boost emotional and physical health (e.g., Zettel & Rook, 2004). This distinction has sometimes been blurred in the literature, with substitute social ties simply assumed to compensate for the lost ties. A short-term longitudinal study that examined this distinction found that older widowed women formed substitute social ties, but these substitute ties were not associated with gains in emotional health (Zettel & Rook, 2004). New relationships may require considerable time to solidify before benefits for emotional and physical health materialize. Inherent limits may also exist on the extent to which compensation can be achieved following the loss of a key

close relationship—with its irreplaceable history and unique mix of tangible and symbolic rewards — that may have existed for decades.

The course of social network substitution and compensation following the loss of a key relationship—Although the course of emotional adjustment to the loss of important close relationships has been studied fairly extensively (e.g., Bonanno, Wortman, & Nesse, 2004), less is known about bereaved individuals' efforts to reorganize their social lives to meet their socioemotional needs. Research is needed that differentiates social network substitution and compensation as related, but conceptually distinct, facets of the adjustment process, with potentially distinct implications for health. Connections also need to be explored between bereaved individuals' pre-loss social ties and their post-loss efforts to develop new ties or rekindle dormant social ties. For example, an existing confidant relationship might fulfill needs for intimacy and emotional support in ways that render efforts to obtain emotional support elsewhere unnecessary (Bookwala, Marshall, & Manning, 2014). The repercussions of efforts to forge new ties that fail rather than succeed also warrant investigation, as do shifts in social goals and aspirations that may unfold following the loss of a close relationship (Dykstra, 1995). Processes of social network substitution are unlikely to be directed toward a static set of socioemotional needs; rather, these needs may evolve in concert with perceived opportunities to develop substitute social ties, sometimes prompting changes in personal identities and relationship goals for the future (Harvey & Miller, 1998).

Substitution may not always be a conscious process (Zettel & Rook, 2004). Some bereaved individuals, after an initial period of emotional adjustment, take planful, conscious steps to reach out to others with whom they hope to establish or deepen close relationships; other bereaved individuals experience social yearnings that lead them to gravitate more or less unconsciously to people who seem approachable, such as a widower whose loneliness might lead him to linger in his encounters with neighbors. Understanding how such efforts unfold over time and whether they reduce the risk of rejection or have other benefits (or costs) for bereaved individuals' health and well-being warrants investigation.

It is also important to recognize that efforts to forge new social ties in later life are subject to potentially helpful or hindering influences of existing social network members. For example, family members and friends may provide introductions or otherwise seek to link divorced and bereaved individuals to others, but they may also express opposition to such efforts to form new ties, as evidenced by the resentment adult children sometimes express toward parents who date within the first six months of becoming bereaved (Carr & Boerner, 2013). Health and life circumstances also influence the prospects for forging new social ties. Members of socially disadvantaged groups experience more impediments to cultivating new social ties because they experience more losses of close network members as well as more disruptive transitions in later life, such as health downturns, that compound the challenges of forming new social ties (Cornwell, 2015).

Although this discussion has emphasized the processes of social network substitution and compensation following the death of a spouse, investigation of these processes could be extended to other kinds of relationship losses and disruptions, such as those attributable to

divorce, residential relocation, or a close network member's cognitively disabling condition such as Alzheimer's disease. More needs to be learned about factors that facilitate or thwart older adults' efforts to reorganize their social lives successfully following the loss or disruption of different kinds of close social ties.

Close Relationships and Health in Later Life: Current Issues and Future Prospects

Current theory and research reflect two broadly different perspectives on older adults' close relationships. One perspective, grounded in the examination of age-group differences, emphasizes the distinct strengths of older adults' social relationships that emerge from selective engagement with rewarding social network members and relationship regulation strategies aimed at avoiding conflicts or minimizing their impact. These strengths provide the basis for many older adults to experience high levels of satisfaction with their social relationships and to derive health-enhancing social support and companionship. The second perspective, grounded in studies of the elderly population, emphasizes areas of health-compromising vulnerability in the social relationships of some older adults that stem from conflicts and misunderstandings that recur over time and from the loss or disruption of important close relationships. These two perspectives provide different, yet complementary, insights into the health-related implications of older adults' close relationships, one serving to highlight the satisfying and health-protective social networks that older adults proactively shape over the course of their lives and the other serving to call attention to potential limitations of some older adults' close relationships that may jeopardize health and well-being and that point to possible targets for intervention. Further efforts to integrate these two broadly different perspectives would have great value in helping to forge a balanced understanding of both general trends and sources of variability in the associations between social relationships and health and well-being later life.

Efforts to understand how close social partners may affect physical health in later life gain a sense of urgency from the increasing rate of population aging worldwide (WHO, 2011). These efforts should be fueled, moreover, by recognition of changing sociodemographic characteristics of the older population and questions about the extent to which current research findings will apply to future, more diverse cohorts of older adults. In the United States, the older population is becoming more ethnically diverse, with the percentage of whites projected to decrease from 80% in 2012 to 61% in 2050 (Ortman, Velkoff, & Hogan, 2014). Age differences in how people appraise and respond to interactions with their close social partners might reflect processes unique to current cohorts or, conversely, might reflect robust developmental shifts that will continue to emerge in future cohorts. Longitudinal studies rarely examine interpersonal behavior over a period of many years, and it is unclear whether older adults' desire to avoid confrontation observed in studies conducted to date will continue to be evident in future cohorts. Studies will need to discern whether older age remains associated with more positive and fewer negative social interactions and, if so, whether this pattern reflects use of the relationship regulation strategies identified in current cohorts.

Future cohorts of older adults will also be better educated than prior generations, and greater education is related to better health behaviors, such as lower rates of tobacco use and higher rates of physical activity (Lantz et al., 1998). Yet, despite these trends in educational attainment, the hope that advances in medicine and health awareness would lead to a compression of morbidity, in which the burden of chronic illness is compressed into a briefer period before death, has not been realized (Crimmins & Beltrán-Sánchez, 2011). Although mortality rates have decreased in recent years, rates of major diseases (such as cancer, diabetes, and heart disease) have remained the same or have increased, and a greater (rather than smaller) proportion of people report functional health impairments. Some of this uptick stems from rising rates of obesity. Among adults in the United States, for example, an estimated 33% of non-Hispanic whites, 48% of non-Hispanic blacks, 42% of Hispanics, and 11% of Asians meet criteria for obesity (Ogden, Carroll, Kit, & Flegal, 2014). Forecasting the health of future cohorts of older adults is complicated, therefore, by conflicting trends in risk factors. What does seem certain, however, is that family members and other social ties will affect, and be affected by, the health needs of older adults on a societal scale that has not been seen previously.

Intersecting the demographic trends of burgeoning population aging and shifting health risks is another demographic trend that will very likely affect the health-related social support available to future cohorts of older adults in many economically developed nations: declining rates of marriage and child-bearing (Lin & Brown, 2012). Future cohorts of older adults are likely to have fewer family members, and as a result, may have fewer people to turn to for help with health-related issues. Spouses and adult children typically represent the first line of defense when needs for ongoing support and care arise in later life (Silverstein & Giarrusso, 2010). Siblings can play a support-providing role as well, but they generally do so to a lesser extent than spouses and adult children (White, 2001). Changing patterns of family formation will likely result in fewer traditional sources of informal support and care, such as spouses, adult children, siblings, and extended kin ties (Ivanova & Dykstra, 2015). Moreover, although rising rates of remarriage in later life have increased the presence of stepchildren in older adults' social networks, filial obligations to provide support tend to be felt less strongly toward stepparents than biological parents (Ganong, Coleman, & Rothrauff, 2009).

Emerging evidence suggests that nonkin ties are becoming more important as sources of support in older adults' lives (Schnettler & Wöhler, 2015; Suanet, van Tilburg, & van Groenou, 2013). Long-term committed relationships, regardless of their kin or legal marital status, have the potential to provide sustained support and care in later life (e.g., Blieszner, 2009; Thomeer, Mudrazija, & Angel, 2016; van Wagenen, Driskell, & Bradford, 2013). As the predominant family structures and norms continue to evolve in the United States and elsewhere, and as nonkin ties and new family forms gain importance as potential sources of support, research will be needed to gain a better understanding of their care-providing capacity and effectiveness in later life, particularly when physical limitations and health problems escalate.

Another striking demographic trend is that more older adults than ever are living to very advanced ages, with the number of centenarians projected to increase 10-fold worldwide by

2050 (WHO, 2011). Many of their support providers — kin and nonkin — will themselves be elderly. Investigating the capacity of the informal support system to provide sustained support and care to very old, and often physically compromised, adults is emerging as a research priority with considerable public policy significance (Boerner, Jopp, Park, & Rott, 2015).

How well close kin ties can meet the needs of old (and very old) family members for sustained instrumental support, emotional support, and companionship, is uncertain. Similarly, how well nonkin ties (such as close friends and neighbors) can meet these needs among older adults who lack a primary partner or close family relationships is also uncertain. These questions loom over efforts to forecast the health and well-being of future cohorts of older adults (Ryan, Smith, Antonucci, & Jackson, 2012). Psychologists have a great deal to contribute to the framing and investigation of questions about the current role of close relationships in older adults' health and well-being and the exploration of changes that may be on the horizon for future cohorts, in view of demographic trends already on our doorstep.

Acknowledgments

This work was supported by grant R01AG042431 from the National Institute on Aging and R01DK101623 from the National Institute of Diabetes and Digestive and Kidney Diseases.

Biographies

Karen S. Rook

Susan Charles

References

Antonucci TC, Ajrouch KJ, Birditt KS. The convoy model: Explaining social relations from a multidisciplinary perspective. The Gerontologist. 2014; 54:82–92. DOI: 10.1093/geront/gnt118 [PubMed: 24142914]

Antonucci TC, Birditt KS, Webster NJ. Social relations and mortality: A more nuanced approach. Journal of Health Psychology. 2010; 15:649–659. DOI: 10.1177/1359105310368189 [PubMed: 20603288]

Birditt KS, Fingerman K, Almeida D. Age differences in exposure and reactions to interpersonal tensions: A daily diary study. Psychology and Aging. 2005; 20:330–340. DOI: 10.1093/geronb/60.3.P121 [PubMed: 16029096]

Blanchard-Fields F. Everyday problem solving and emotion an adult developmental perspective. Current Directions in Psychological Science. 2007; 16:26–31. DOI: 10.1111/j.1467-8721.2007.00469.x

Blanchard-Fields F, Mienaltowski A, Seay RB. Age differences in everyday problem-solving effectiveness: Older adults select more effective strategies for interpersonal problems. The Journals of Gerontology Series B: Psychological Sciences and Social Sciences. 2007; 62:P61–P64. DOI: 10.1093/geronb/62.1.p61

Blieszner, R. Who are the aging families?. In: Qualls, S., Zarit, SH., editors. Aging families and caregiving. Hoboken, NJ: Wiley; 2009. p. 1-18.

Boerner K, Jopp DS, Park MS, Rott C. Who do centenarians rely on for support? Findings from the Second Heidelberg Centenarian Study. Journal of Aging & Social Policy. 2016; 28:165–186. DOI: 10.1080/08959420.2016.1160708 [PubMed: 26959657]

Bonanno GA, Wortman CB, Nesse RM. Prospective patterns of resilience and maladjustment during widowhood. Psychology and Aging. 2004; 19:260–271. DOI: 10.1037/0882-7974.19.2.260 [PubMed: 15222819]

Bookwala J, Marshall KI, Manning SW. Who needs a friend? Marital status transitions and physical health outcomes in later life. Health Psychology. 2014; 33:505–515. DOI: 10.1037/hea0000049 [PubMed: 24884904]

Broese van Groenou MI, Hoogendijk EO, van Tilburg TG. Continued and new personal relationships in later life: Differential effects of health. Journal of Aging and Health. 2013; 25:274–295. DOI: 10.1177/0898264312468033 [PubMed: 23248350]

Brooks KP, Dunkel Schetter C. Social negativity and health: Conceptual and measurement issues. Social and Personality Psychology Compass. 2011; 5:904–918. DOI: 10.1111/j.1751-9004.2011.00395.x

Brown SL, Lin IF. The gray divorce revolution: Rising divorce among middle-aged and older adults, 1990–2010. The Journals of Gerontology Series B: Psychological Sciences and Social Sciences. 2012; 67:731–741. DOI: 10.1093/geronb/gbs089

Carr D, Boerner K. Dating after late-life spousal loss: Does it compromise relationships with adult children? Journal of Aging Studies. 2013; 27:487–498. DOI: 10.1016/j.jaging.2012.12.009 [PubMed: 24300068]

Carstensen LL. The influence of a sense of time on human development. Science. 2006; 312(5782): 1913–1915. DOI: 10.1126/science.1127488 [PubMed: 16809530]

Carstensen LL, Isaacowitz DM, Charles ST. Taking time seriously: A theory of socioemotional selectivity. American psychologist. 1999; 54(3):165–181. DOI: 10.1037/0003-066X.54.3.165 [PubMed: 10199217]

Charles ST. Strength and vulnerability integration: A model of emotional well-being across adulthood. Psychological Bulletin. 2010; 36:1068–1091. DOI: 10.1037/a0021232

Charles ST, Carstensen LL. Social and emotional aging. Annual Review of Psychology. 2010; 61:383–409. DOI: 10.1146/annurev.psych.093008.100448

Charles ST, Luong G. Emotional experience across adulthood: The theoretical model of strength and vulnerability integration. Current Directions in Psychological Science. 2013; 22:443–448. DOI: 10.1177/0963721413497013

Charles ST, Piazza JR. Memories of social interactions: Age differences in emotional intensity. Psychology and Aging. 2007; 22:300–309. DOI: 10.1037/0882-7974.22.2.300 [PubMed: 17563185]

Charles ST, Piazza JR, Luong G, Almeida DM. Now you see it, now you don't: Age differences in affective reactivity to social tensions. Psychology and Aging. 2009; 24(3):645–653. DOI: 10.1037/a0016673 [PubMed: 19739920]

Cheng Y, Gruhn D. Age differences in reactions to social rejection: The role of cognitive resources and appraisals. Journals of Gerontology: Psychological Sciences and Social Sciences. 2015; 70:830–839. DOI: 10.1093/geronb/gbu054 [PubMed: 24870029]

Cohen S, Janicki-Deverts D. Can we improve our physical health by altering our social networks? Perspectives on Psychological Science. 2009; 4:375–378. DOI: 10.1111/j.1745-6924.2009.01141.x [PubMed: 20161087]

Cornwell B. Social disadvantage and network turnover. The Journals of Gerontology Series B: Psychological Sciences and Social Sciences. 2015; 70:132–142. DOI: 10.1093/geronbgbu078

Crimmins EM, Beltrán-Sánchez H. Mortality and morbidity trends: Is there compression of morbidity? The Journals of Gerontology Series B: Psychological Sciences and Social Sciences. 2011; 66:75–86. DOI: 10.1093/geronb/gbq088

Crittenden CN, Pressman SD, Cohen S, Janicki-Deverts D, Smith BW, Seeman TE. Social integration and pulmonary function in the elderly. Health Psychology. 2014; 33:535–543. DOI: 10.1037/hea0000029 [PubMed: 24884907]

Dykstra PA. Loneliness among the never and formerly married: The importance of supportive friendships and a desire for independence. The Journals of Gerontology Series B: Psychological Sciences and Social Sciences. 1995; 50:S321–S329. DOI: 10.1093/geronb/50B.5.S321

English T, Carstensen LL. Selective narrowing of social networks across adulthood is associated with improved emotional experience in daily life. International Journal of Behavioral Development. 2014; 38:195–202. DOI: 10.1177/0165025413515404 [PubMed: 24910483]

Fingerman KL, Hay EL, Birditt KS. The best of ties, the worst of ties: Close, problematic, and ambivalent social relationships. Journal of Marriage and Family. 2004; 66:792–808. DOI: 10.1111/j.0022-2445.2004.00053.x

Friedman EM, Karlamangla AS, Almeida DM, Seeman TE. Social strain and cortisol regulation in midlife in the US. Social Science & Medicine. 2012; 74:607–615. DOI: 10.1016/j.socscimed.2011.11.003 [PubMed: 22209675]

Fung HH, Lai P, Ng R. Age differences in social preferences among Taiwanese and Mainland Chinese: the role of perceived time. Psychology and Aging. 2001; 16:351–356. [PubMed: 11405322]

Ganong LH, Coleman M, Rothrauff T. Patterns of assistance between adult children and their older parents: Resources, responsibilities, and remarriage. Journal of Social and Personal Relationships. 2009; 26:161–178. DOI: 10.1177/0265407509106706

Guiaux M, van Tilburg T, Broese van Groenou MI. Changes in contact and support exchange in personal networks after widowhood. Personal Relationships. 2007; 14:457–473. DOI: 10.1111/j.1475-6811.2007.00165.x

Ha JH. Changes in support from confidants, children, and friends following widowhood. Journal of Marriage and Family. 2008; 70:306–318. DOI: 10.1111/j.1741-3737.2008.00483.x

Hakulinen C, Pulkki-Råback L, Jokela M, Ferrie JE, Aalto AM, Virtanen M, Elovainio M. Structural and functional aspects of social support as predictors of mental and physical health trajectories: Whitehall II cohort study. Journal of Epidemiology and Community Health. 2016; 70:710–715. DOI: 10.1136/jech-2015-206165 [PubMed: 26767407]

Harvey JH, Miller ED. Toward a psychology of loss. Psychological Science. 1998; 9:429–434. DOI: 10.1111/1467-9280.00081

He, W., Sengupta, M., Velkoff, VA., DeBarros, KA. Current Population Reports. Washington, DC: U.S. Government Printing Office; 2005. 65+ in the United States: 2005; p. 23-209.

Holland JM, Rozalski V, Thompson KL, Tiongson RJ, Schatzberg AF, O'Hara R, Gallagher-Thompson D. The unique impact of late-life bereavement and prolonged grief on diurnal cortisol. The Journals of Gerontology Series B: Psychological Sciences and Social Sciences. 2014; 69:4–11. DOI: 10.1093/geronb/gbt051

Holt-Lunstad J, Smith TB, Layton JB. Social relationships and mortality risk: A meta-analytic review. PLoS Medicine. 2010; 7(7):e1000316.doi: 10.1371/journal.pmed.1000316 [PubMed: 20668659]

Hung WW, Ross JS, Boockvar KS, Siu AL. Recent trends in chronic disease, impairment and disability among older adults in the United States. BMC Geriatrics. 2011; 11:47.doi: 10.1186/1471-2318-11-47 [PubMed: 21851629]

Ivanova K, Dykstra P. Aging without children. Public Policy Aging Report. 2015; 25:98–101. DOI: 10.1093/ppar/prv014

Johnson CL, Troll LE. Constraints and facilitators to friendships in late late life. The Gerontologist. 1994; 34:79–87. DOI: 10.1093/geront/34.1.79 [PubMed: 8150313]

Kiecolt-Glaser JK, McGuire L, Robles TF, Glaser R. Emotions, morbidity, and mortality: New perspectives from psychoneuroimmunology. Annual Review of Psychology. 2002; 53(1):83–107. DOI: 10.1146/annurev.psych.53.100901.135217

Kim K, Bangerter LR, Liu Y, Polenick CA, Zarit SH, Fingerman KL. Middle-aged offspring's support to aging parents with emerging disability. The Gerontologist. 2016; E-print ahead of publication. doi: 10.1093/geront/gnv686

Krause, N., Hayward, RD. Social perspectives: Support, social relations, and well-being. In: Lichtenberg, PA., Mast, BT., editors. Handbook of clinical geropsychology: Vol. 1: History and status of the field and persepctives on aging. Washington, DC: American Psychological Association; 2015. p. 258-299.

Krause N, Rook KS. Negative interaction in late life: Issues in the stability and generalizability of conflict across relationships. The Journals of Gerontology Series B: Psychological Sciences and Social Sciences. 2003; 58:P88–P99. DOI: 10.1093/geronb/58.2.P88

Krause N, Shaw BA. Negative interaction and changes in functional disability during late life. Journal of Social and Personal Relationships. 2002; 19:339–359. DOI: 10.1177/0265407502193003

Kroenke CH, Michael Y, Tindle H, Gage E, Chlebowski R, Garcia L, Caan BJ. Social networks, social support and burden in relationships, and mortality after breast cancer diagnosis. Breast Cancer Research and Treatment. 2012; 133:375–385. DOI: 10.1007/s10549-012-1962-3 [PubMed: 22331479]

Lamme S, Dykstra PA, Broese van Groenou MI. Rebuilding the network: New relationships in widowhood. Personal Relationships. 1996; 3:337–349. DOI: 10.1111/j.1475-6811.1996.tb00120.x

Lang FR, Carstensen LL. Time counts: Future time perspective, goals, and social relationships. Psychology and Aging. 2002; 17:125–139. [PubMed: 11931281]

Lang FR, Wagner J, Wrzus C, Neyer FJ. Personal effort in social relationships across adulthood. Psychology and Aging. 2013; 28:529–539. DOI: 10.1037/a0032221 [PubMed: 23586359]

Lantz PM, House JS, Lepkowski JM, Williams DR, Mero RP, Chen J. Socioeconomic factors, health behaviors, and mortality: Results from a nationally representative prospective study of US adults. JAMA. 1998; 279(21):1703–1708. [PubMed: 9624022]

Lin IF, Brown SL. Unmarried boomers confront old age: A national portrait. The Gerontologist. 2012; 52:153–165. DOI: 10.1093/geront/gnr141 [PubMed: 22298744]

Luong G, Charles ST, Fingerman KL. Better with age: Social relationships across adulthood. Journal of Social and Personal Relationships. 2010; 28:9–23. DOI: 10.1177/0265407510391362

Martire LM, Stephens MAP, Schulz R. Independence centrality as a moderator of the effects of spousal support on patient well-being and physical functioning. Health Psychology. 2011; 30:651–655. DOI: 10.1037/a0023006 [PubMed: 21534676]

Miller GE, Chen E, Parker KJ. Psychological stress in childhood and susceptibility to the chronic diseases of aging: Moving toward a model of behavioral and biological mechanisms. Psychological Bulletin. 2011; 137:959–997. DOI: 10.1037/a0024768 [PubMed: 21787044]

Moon JR, Kondo N, Glymour MM, Subramanian S. Widowhood and mortality: A meta-analysis. PLoS ONE. 2011; 6:e23465.doi: 10.1371/journal.pone.0023465 [PubMed: 21858130]

Mroczek DK, Almeida DM. The effect of daily stress, personality, and age on daily negative affect. Journal of Personality. 2004; 72:355–378. DOI: 10.1111/j.0022-3506.2004.00265.x [PubMed: 15016068]

Newsom JT. Another side to caregiving: Negative reactions to being helped. Current Directions in Psychological Science. 1999; 8:183–187. DOI: 10.1111/1467-8721.00043

Newsom JT, Mahan TL, Rook KS, Krause N. Stable negative social exchanges and health. Health Psychology. 2008; 27:78–86. DOI: 10.1037/0278-6133.27.1.78 [PubMed: 18230017]

Ogden CL, Carroll MD, Kit BK, Flegal KM. Prevalence of childhood and adult obesity in the United States, 2011–2012. JAMA. 2014; 311:806–814. DOI: 10.1001/jama.2014.732 [PubMed: 24570244]

Ong AD, Fuller-Rowell TE, Bonanno GA, Almeida DM. Spousal loss predicts alterations in diurnal cortisol activity through prospective changes in positive emotion. Health Psychology. 2011; 30:220.doi: 10.1037/a0022262 [PubMed: 21401256]

Ortman, JM., Velkoff, VA., Hogan, H. Current Population Reports, P25-1140. Washington, DC: U.S. Census Bureau; 2014. An aging nation: The older population in the United States.

Pillemer K, Suitor JJ, Mock SE, Sabir M, Pardo TB, Sechrist J. Capturing the complexity of intergenerational relations: Exploring ambivalence within later-life families. Journal of Social Issues. 2007; 63:775–791. DOI: 10.1111/j.1540-4560.2007.00536.x

Rook KS. Gaps in social support resources in later life: An adaptational challenge in need of further research. Journal of Social and Personal Relationships. 2009; 26:103–112. DOI: 10.1177/0265407509105525 [PubMed: 25360058]

Rook KS. Social networks in later life: Weighing positive and negative effects on health and well-being. Current Directions in Psychological Science. 2015; 24:45–51. DOI: 10.1177/0963721414551364 [PubMed: 26366047]

Rook, KS., August, KJ., Sorkin, DH. Social network functions and health. In: Contrada, R., Baum, A., editors. Handbook of stress science: Biology, psychology, and health. New York: Springer; 2011. p. 123-135.

Rook KS, Ituarte PH. Social control, social support, and companionship in older adults' family relationships and friendships. Personal Relationships. 1999; 6:199–211. DOI: 10.1111/j.1475-6811.1999.tb00187.x

Rook KS, Luong G, Sorkin DH, Newsom JT, Krause N. Ambivalent versus problematic social ties: Implications for psychological health, functional health, and interpersonal coping. Psychology and Aging. 2012; 27:912–923. DOI: 10.1037/a0029246 [PubMed: 22775360]

Ryan LH, Smith J, Antonucci TC, Jackson JS. Cohort differences in the availability of informal caregivers: Are the Boomers at risk? The Gerontologist. 2012; 52:177–188. DOI: 10.1093/geront/gnr142 [PubMed: 22298747]

Schnettler S, Wöhler T. No children in later life, but more and better friends? Substitution mechanisms in the personal and support networks of parents and the childless in Germany. Ageing and Society. 2015; 36:1339–1363. DOI: 10.1017/S0144686X15000197

Schnittker J. Look (closely) at all the lonely people: Age and the social psychology of social support. Journal of Aging and Health. 2007; 19:659–682. DOI: 10.1177/0898264307301178 [PubMed: 17682080]

Shankar A, Hamer M, McMunn A, Steptoe A. Social isolation and loneliness: relationships with cognitive function during 4 years of follow-up in the English Longitudinal Study of Ageing. Psychosomatic Medicine. 2013; 75:161–170. DOI: 10.1097/PSY.0b013e31827f09cd [PubMed: 23362501]

Shaw BA, Krause N, Liang J, Bennett J. Tracking changes in social relations throughout late life. The Journals of Gerontology Series B: Psychological Sciences and Social Sciences. 2007; 62(2):S90–S99. DOI: 10.1093/geronb/62.2.s90

Silverstein M, Giarrusso R. Aging and family life: A decade review. Journal of Marriage and Family. 2010; 72:1039–1058. DOI: 10.1111/j.1741-3737.2010.00749.x [PubMed: 22930600]

Smith TW, Berg CA, Florsheim P, Uchino BN, Pearce G, Hawkins M, Olsen-Cerny C. Conflict and collaboration in middle-aged and older couples: I. Age differences in agency and communion during marital interaction. Psychology and Aging. 2009; 24:259–273. DOI: 10.1037/a0015609 [PubMed: 19485646]

Smith TW, Uchino BN, Florsheim P, Berg CA, Butner J, Hawkins M, Hopkins PN. Affiliation and control during marital disagreement, history of divorce, and asymptomatic coronary artery calcification in older couples. Psychosomatic Medicine. 2011; 73(4):350–357. DOI: 10.1097/PSY.0b013e31821188ca [PubMed: 21364198]

Sorkin DH, Rook KS. Interpersonal control strivings and vulnerability to negative social exchanges in later life. Psychology and Aging. 2004; 19:555–564. DOI: 10.1037/0882-7974.19.4.555 [PubMed: 15584782]

Sorkin DH, Rook KS. Dealing with negative social exchanges in later life: Coping responses, goals, and effectiveness. Psychology and Aging. 2006; 21:715–724. DOI: 10.1037/0882-7974.21.4.715 [PubMed: 17201492]

Steptoe A, Shankar A, Demakakos P, Wardle J. Social isolation, loneliness, and all-cause mortality in older men and women. Proceedings of the National Academy of Sciences. 2013; 110:5797–5801. DOI: 10.1073/pnas.1219686110

Story TN, Berg CA, Smith TW, Beveridge R, Henry NJ, Pearce G. Age, marital satisfaction, and optimism as predictors of positive sentiment override in middle-aged and older married couples. Psychology and Aging. 2007; 22:719–727. DOI: 10.1037/0882-7974.22.4.719 [PubMed: 18179292]

Stroebe M, Schut H. The dual process model of coping with bereavement: A decade on. OMEGA-Journal of Death and Dying. 2010; 61:273–289. DOI: 10.2190/OM.61.4.b

Stroebe M, Schut H, Stroebe W. Health outcomes of bereavement. The Lancet. 2007; 370(9603):1960–1973. DOI: 10.1016/S0140-6736(07)61816-9

Suanet B, van Tilburg TG, van Groenou MIB. Nonkin in older adults' personal networks: More important among later cohorts? The Journals of Gerontology Series B: Psychological Sciences and Social Sciences. 2013; 68:633–643. DOI: 10.1093/geronb/gbt043

Thomeer MB, Mudrazija S, Angel JL. Relationship status and long-term care facility use in later life. The Journals of Gerontology Series B: Psychological Sciences and Social Sciences. 2016; 71:711–723. DOI: 10.1093/geronb/gbv106

Treas J, Mazumdar S. Older people in America's immigrant families: Dilemmas of dependence, integration, and isolation. Journal of Aging Studies. 2002; 16:243–258. DOI: 10.1016/S0890-4065(02)00048-8

Uchino BN. Social support and health: A review of physiological processes potentially underlying links to disease outcomes. Journal of Behavioral Medicine. 2006; 29:377–387. DOI: 10.1007/s10865-006-9056-5 [PubMed: 16758315]

Uchino BN. Understanding the links between social support and physical health: A life-span perspective with emphasis on the separability of perceived and received support. Perspectives on Psychological Science. 2009; 4:236–255. DOI: 10.1111/j.1745-6924.2009.01122.x [PubMed: 26158961]

Uchino BN, Bosch JA, Smith TW, Carlisle M, Birmingham W, Bowen KS, O'Hartaigh B. Relationships and cardiovascular risk: Perceived spousal ambivalence in specific relationship contexts and its links to inflammation. Health Psychology. 2013; 32:1067–1075. DOI: 10.1037/a0033515 [PubMed: 23914811]

Uchino BN, Cawthon RM, Smith TW, Light KC, McKenzie J, Carlisle M, Bowen K. Social relationships and health: Is feeling positive, negative, or both (ambivalent) about your social ties related to telomeres? Health Psychology. 2012; 31:789–796. DOI: 10.1037/a0026836 [PubMed: 22229928]

United Nations. World Population Aging (ST/ESA/SER.A/390). United Nations, Department of Economic and Social Affairs. Population Division; 2015.

van Wagenen A, Driskell J, Bradford J. "I'm still raring to go:" Successful aging among lesbian, gay, bisexual, and transgender older adults. Journal of Aging Studies. 2013; 27:1–4. DOI: 10.1016/j.jaging.2012.09.001 [PubMed: 23273552]

von Hippel W. Aging, executive functioning, and social control. Current Directions in Psychological Science. 2007; 16:240–244. DOI: 10.1111/j.1467-8721.2007.00512.x

White L. Sibling relationships over the life course: A panel analysis. Journal of Marriage and Family. 2001; 63:555–568. DOI: 10.1111/j.1741-3737.2001.00555.x

Wolff JL, Starfield B, Anderson G. Prevalence, expenditures, and complications of multiple chronic conditions in the elderly. Archives of Internal Medicine. 2002; 162:2269–2276. DOI: 10.1001/archinte.162.20.2269 [PubMed: 12418941]

World Health Organization. Global health and ageing. Geneva, Switzerland: 2011.

Wrzus C, Hänel M, Wagner J, Neyer FJ. Social network changes and life events across the life span: A meta-analysis. Psychological bulletin. 2013; 139:53–80. DOI: 10.1037/a0028601 [PubMed: 22642230]

Yorkston KM, Bourgeois MS, Baylor CR. Communication and aging. Physical Medicine & Rehabilitation Clinics of North America. 2010; 21:309–319. DOI: 10.1016/j.pmr.2009.12.011 [PubMed: 20494279]

Ytterstad E, Brenn T. Mortality after the death of a spouse in Norway. Epidemiology. 2015; 26:289–294. DOI: 10.1097/EDE.0000000000000266 [PubMed: 25695353]

Zettel LA, Rook KS. Substitution and compensation in the social networks of older widowed women. Psychology and Aging. 2004; 19:433–443. DOI: 10.1037/0882-7974.19.3.433 [PubMed: 15382994]