

Relationships Among Disease, Social Support, and Perceived Health: A Lifespan Approach

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Published online: 13 October 2015

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Abstract We examined the relationship between the cumulative presence of major disease (cancer, stroke, diabetes, heart disease, and hypertension), social support, and self-reported general and emotional well-being in a community representative sample of predominantly White and African American respondents ($N = 1349$). Across all ages, greater presence of disease predicted poorer reported general health, and predicted lower emotional well-being for respondents 40 and above. In contrast, social support predicted better-reported general and emotional well-being. We predicted that different types of social support (blood relatives, children, friends, community members) would be relatively more important for health in different age groups based on a lifespan or life stage model. This hypothesis was supported; across all ages, social support was related to better reported general and emotional health, but sources of support differed by age. Broadly, those in younger age groups tended to list familial members as their strongest sources of support, whereas older group members listed their friends and community members. As a whole, social support mediated the effect of disease on reported well-being, however, moderated mediation by type of support was not significant. The results are consistent with a lifespan approach to changing social ties throughout the life course.

Keywords Social support · Disease · Lifespan development

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Introduction

Chronic disease can negatively affect well-being, whereas social support predicts both better health and well-being (Gallant 2003; Kruger et al. 2007; Rutledge et al. 2004). Less is known about whether different facets of social support (from friends, family, children, and community) differ in importance for health throughout the life-course and differentially ameliorate the effects of disease. Using a lifespan approach (Erikson 1964; Heckhausen and Schulz 1995; Schulz and Heckhausen 1996) to social support, we provide evidence that the importance of different sources of support may change as individuals age. We do not intend this study to be a test or empirical validation of lifespan models, though we use content from lifespan models to make empirical predictions. Our hypothesis rests on the basic premise that the social roles of individuals shift over the course of adulthood and the importance of particular social relationships will vary across life stages.

Life Span Theory

In his Life Span Theory of development, Erikson (1964) proposed that personality develops in a series of predetermined psychosocial stages. His model is notable in that he emphasized the role of culture and society in comparison to other psychoanalytic theories. Erikson's model highlights important social development during the lifecourse; young adults move toward non-kin relationships (as opposed to family), middle adults shift their focus to their spouse/partner and children, and older adults shift their focus to community-based relationships. As different social ties take more prominence during the lifespan, individuals may be more likely to draw on those relationships during times of need.

More recent theorizations of the role of social relationships and health in adulthood emphasize the dynamic nature of social networks throughout the life span. In the Convoy Model (Antonucci et al. 2013; Kahn and Antonucci 1980), researchers argue that individuals construct and reconstruct social networks to cope with both normative (natural maturation and common milestones; e.g., workplace entry/retirement, marriage, child rearing) and non-normative (e.g., relocation; disability/severe illness) life events which prompt transitions in social support needs (Levitt 2005). Here, a ‘convoy’ of close to more peripheral (yet still meaningful) relationships travels with the individual throughout the lifespan, sharing experiences and life events while providing reciprocal support (Berkman and Glass 2000). In this framework no assumptions are made regarding the specific roles or functions of network members; for example, a spouse or immediate family member may not be included as a person closest to the individual. The dynamic nature of the convoy allows for both personal and contextual influences to influence the individual’s interaction with and reliance on their network as their support needs change. Although the closest relationships are thought to be the most stable across time (Antonucci et al. 2004), those close individuals are likely to change as individuals age and experience significant life events (Walen and Lachman 2000).

Social Support

Social support, broadly defined as the provision of emotional, instrumental, or informational assistance or guidance (Finfgeld-Connett 2005), is included as one of five critical factors necessary for successful aging along with diet, education, exercise and nutrition (Schulz and Heckhausen 1996). Previous research documents how supportive social relationships can mediate the effect of a variety of diseases and lead to better physical and mental health outcomes (Gallant 2003; Karb et al. 2012). Moreover, social support has benefits for individuals across the lifespan (Gurung et al. 2003). Researchers have reported variation in both the type of support individuals receive and the source of support. Evidence indicates that spouses/partners (Cotten 1999; Väänänen et al. 2005), children (Ha 2010; Wolff and Kasper 2006), family (Almeida et al. 2011; Dressler 1985), friends (Ystgaard et al. 1999), as well as colleagues, neighbors and community members (Stansfeld et al. 1997) can each be vital sources of support during periods of poor health and concomitant stress.

Despite a large body of empirical work on sources of support, researchers have paid less attention to examining if sources of support change across the lifespan. Because

social networks are not typically static as individuals age (Walen and Lachman 2000), it is likely that preferred sources of support will change. Younger adults, for example, typically have more friends in their networks compared to older adults, but older adults may be more likely to draw on their friends for support (Gupta and Korte 1994). Although the number of close emotional ties individuals hold are relatively stable as they age, older adults frequently report fewer peripheral relationships than younger adults (Fung et al. 2001). In addition, although immediate and extended family members are frequently cited as the most enduring source of support, those relationships may also change over time (Gupta and Korte 1994; Ha 2010). A lifespan perspective provides a framework with which to examine how sources of support change as individuals age. An underlying assumption of this perspective is that as social relationships change over the life course, so too will sources of support. That is, the individuals from whom young adults draw support may be very different than those in middle or late adulthood.

Researchers have found some evidence to support changing sources of support across the lifespan. In a sample comparing young/middle-aged adults (28–60) to older adults (60–92), Okun and Keith (1998) found that spouse/partner support was associated with better mental health for the younger age group, but older adults also drew support from their children as well as friends and other relatives. Though these results support lifespan variations in source of support, the age ranges within groups (32 years) may have masked important differences. In a more age-sensitive analysis, a study of five age groups found that individuals across the age spectrum use similar coping mechanisms when trying to mitigate stress, although they did vary in the extent they used a particular strategy (Amirkhan and Auyeung 2007). Given that seeking social support is a common coping strategy (Kardum and Krapic 2001; Roder et al. 2002), it may also be true that individuals draw on the same kind of support as they age (e.g. instrumental vs. emotional vs. informational), but vary in the extent to which they rely on others, as well as the individual(s) on whom they rely.

Sources of Support

Given initial evidence supporting changing sources of support across the lifespan, we identify four primary sources of social support and relate each to a lifespan perspective in order to predict when individuals may be most likely to draw on a particular source given their life stage: family (blood relatives), friends, children, and community members.

Family

Extended family has long been recognized as a primary source of social support (Dressler 1985), but can also be source of strain (Symister 2011). In a sample of older adults with heart disease, receiving support from non-family sources as opposed to family sources was related to lower positive affect and decreased life satisfaction (Friedman 1993). Similarly, Almeida and colleagues found that family, relative to friend, support was associated with lower rates of depression (Almeida et al. 2011). Evidence is mixed, however, whether support from blood relatives is used across the lifespan. Previous work on older adults (55–85) documented shifting social networks with a decreasing number of friends, but an increasing number of close relatives (Van Tilburg 1998). This suggests that, for older individuals, close relatives may be an important source of support. In contrast, others have noted concerns that familial obligations may lead older adults to depend more on friends (who elect to provide support) compared to other family members or children (who may consider support obligatory) (Gupta and Korte 1994).

Friends

The role of one's peer group increases dramatically in adolescence with a greater focus on, and more time spent with, peers compared to those in younger ages; a trend that continues into young adulthood (Brown 2004). Adolescents and young adults often turn to friends, rather than parents, for self-disclosure and conversations about important topics (Lefkowitz et al. 2004). The essence of friendship is sharing, exchange of resources and emotional support (Hartup and Stevens 1999), and friends may therefore be a key source of support for young adults. As individuals age, friendships tend to decrease, particularly for men. In a sample of adults over 60, age was related to fewer friends, but the vast majority of participants were in frequent contact with those friends they did have (Berkman et al. 2012). Further, although time with friends declines in middle adulthood, a small increase in time spent with friends often occurs in late adulthood (Hartup and Stevens 1999). This suggests friends may be relatively more important in early and late adulthood compared to middle adulthood.

Children

Parent–child relationships often represent one of the most enduring relationships during the lifecourse (Ha 2010). A growing number of children around the world are assuming primary caregiver responsibilities for their elderly parents, second only to perhaps spouses (Wolff and Kasper 2006). Evidence is mixed, however, with support from children

associated with psychological wellbeing in some studies (Silverstein and Bengtson 1994; Zunzunegui et al. 2001), but not in others (Dean et al. 1990). Women who do not have a spouse can compensate by drawing support from their children (Cantor 1979; Friedman 1993), but such support may not always be positive (Ha and Ingersoll-Dayton 2008). In a sample of older adults (aged 70–79), men reported receiving most of their support from their partner or spouse, while women were also likely to include children, as well as friends and relatives as sources (Gurung et al. 2003). Ethnic differences may also be important. For both African and Mexican Americans, social support from children was shown to be associated with better health (Lawrence et al. 1992; Ulbrich et al. 1989), whereas the same was not necessarily true for White, especially high-income, parents.

Community

Social capital, the degree to which neighborhood residents are trustworthy and helpful, predicts stress and depressive symptoms (Kruger et al. 2007). Community level support can mitigate stressors. Support from the community, for example, was related to decreased biological stress response to neighborhood violence (Karb et al. 2012). Increased social contact within a community is also related to increased social support (Dean et al. 1990). Opportunities for interaction, however, decrease in older adulthood and may be reflected by decreased support (Wrzus et al. 2013). Because social networks typically decrease as individuals age due to death or disability of members (Van Tilburg 1998), community members may become a more important source of support for elderly adults.

Current Study

Based on a lifespan framework, we propose that sources of social support will differ in importance throughout the life-course. In early adulthood, friends and family members may be the most important providers of social support; in middle adulthood, children will become more prominent; and in late adulthood the social support from the broader community may be paramount. We examine this prediction in a community representative sample of predominantly White and African American respondents. We focus on perceived support as it is more closely related with positive health outcomes than objective support (Barrera 2000; Uchino 2009). Moreover, perceived support is stable over time (Shaw et al. 2004), and thus reports from participants are less likely to be time dependent.

Because major disease is a life event that could prompt changes in social networks (Levitt 2005), we also examine the relationship between the cumulative presence of major

disease (cancer, stroke, diabetes, heart disease and hypertension) and perceived general and emotional well-being. Social support affects the development and progression of disease in three ways: by preventing risk factors in healthy individuals; by delaying the onset of disease for those who are at risk; or by promoting recovery in those already ill (Wills and Fegan 2001). We hypothesize that greater cumulative presence of disease will be related to decreased general and emotional well-being, whereas increased social support will be related to increased well-being. We test whether social support mediates the effect of disease on perceived well-being, mitigating the effect, and whether that mediated effect varies by age (i.e., moderated mediation).

Method

We tested our prediction with data from adult participants ($N = 1349$) in a countywide survey conducted in Spring 2009. The community survey utilized in this analysis was developed through an academic–community partnership with community based organizations in Flint and Genesee County, MI. The survey was designed to be responsive to the needs of the local community and was populated with items to assess residents' behaviors and perceptions not available in administrative data sets. Survey committee representatives polled their respective members to determine topics of interest, which were then chosen based on most salient needs. Households in each residential Census Tract were randomly selected and contacted until quotas were reached. Professional survey staff conducted computer-aided telephone interviews. The response rate was 25 %. The sample was predominantly female (73 %) and White (67 %) (Black = 27 %, Hispanic = 1 %, multiracial 3 %, Native American = 1 %). Most people in the sample had a high school degree (33 %), with smaller numbers reporting some college (24 %), a bachelor's degree (13 %), an associate's degree (9 %), or a graduate degree (9 %). A little under half the sample was married (48 %), with 17 % reporting as single/never married, 16 % as widowed and 12 % as divorced. Mean age was 56.8 years ($SD = 16.1$). The sample was representative of the broader county in terms of race (72.6 % White, 20.6 % Black), education (88.7 % high school or above, and marital status (43.3 %), but was both older and more female than the county population as a whole (U.S. Census Bureau 2010).

Health and Disease

The survey included general and mental health items taken from the Behavioral Risk Factor Surveillance System (BRFSS); participants rated both their general health and

emotional health on 5-point scales (1 = Poor, 2 = Fair, 3 = Good, 4 = Very Good, and 5 = Excellent). To assess the presence of disease, we asked respondents if they had ever been diagnosed by a doctor as having high blood pressure, heart disease, stroke, cancer, or diabetes. Respondents replied yes or no to each item. Total positive answers were summed to create a six-point cumulative disease measure ranging from having been diagnosed with no disease to having been diagnosed with all 5 diseases.

Social Support

We included six social support items from Midlife in the United States—A National Study of Health & Well-Being (Brim et al. 2000; <http://midus.wisc.edu/>). Participants rated perceptions on 5-point scales (1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree). Items included: I have a close and warm relationship with my own children; I often get emotional support and practical help from my blood relatives (blood relatives); I often get emotional support and practical help to my friends (friends); I am closely connected to and involved in my community (community).

Control Variables

We included participant sex, race, and educational attainment in all analyses to control for differences in disease susceptibility and availability of support (Haines and Hurlbert 1992; Mickelson and Kubzansky 2003). Educational attainment was assessed through a fixed-choice item with higher values indicating higher levels of attainment (1 = 'Less than High School'; 2 = 'High School Graduate'; 3 = 'Some college'; 4 = 'Technical school'; 5 = 'Associates Degree'; 6 = "Bachelor's Degree"; 7 = 'Masters, Doctoral, Post-Doctoral'). Because previous studies have shown that being married leads to more access to and benefit from social support (Krause 1986), we also controlled for marital status. The proportion of married participants varied substantially across the different age ranges included in the analyses, with the youngest (18–30 years; 48.3 %) and oldest (71+ years; 36.6 %) participants least likely to be married. Sixty percent or more of middle-age group participants were married at the time of data collection (31–40 = 77.1 %; 41–50 = 59.9 %; 51–60 = 63.3 %; 61–70 = 61.4 %).

Statistical Analyses

We first conducted a series of hierarchical regression analyses to assess the respective contributions of cumulative disease and each type of social support—children, blood relatives, friends and community—as predictors of both

perceived general and mental health. We ran separate analyses predicting perceived health based on respondents' age: 18–30 ($n = 62$), 31–40 ($n = 140$), 41–50 ($n = 217$), 51–60 ($n = 332$), 61–70 ($n = 311$), 71+ ($n = 287$). We entered control variables in step 1 (sex, race, education and marriage status), followed by the presence of disease in step 2, and social support variables in step 3. After determining which, if any, sources of support were significant predictors, we tested whether the effect of cumulative disease is mediated through social support. For both general and mental health outcomes, we tested multiple mediation models examining the separate indirect effects of each social support variable. We first specified models using the entire sample (i.e. all ages), followed by models including age categories as effect modifiers (i.e., moderated mediation). All analyses were conducted using SPSS v22 (IBM, 2014).

Results

Descriptive Statistics

Correlations between incidences of disease, social support measures, perceived health outcomes and control variables are reported in Table 1. Approximately 40 % of respondents indicated that they had never been diagnosed with one of the major diseases we included. Twenty-nine percent had been diagnosed with one disease, 19 % with two diseases, 9 % with 3 diseases, 2 % with 4 diseases and <1 % (2 respondents) indicated they had been diagnosed with all 5 diseases. Major disease was negatively associated with each source of social support, whereas support in one domain was generally associated with support in other domains.

Average levels of social support by age range are reported in Table 2. There was variability in levels and source of support both within and across age ranges. Support from community members was the least reported across age ranges, while support from children tended to be the most reported.

Cumulative Presence of Disease, Social Support, and General Health

Results of the hierarchical regression predicting reported general health are presented in Table 3. Across multiple age ranges, education was a consistent predictors of perceived general health with more educated participants reporting better health (step 1). The association between sex and general health varied across age ranges, but suggested that older women were more likely to report better general health. Race and marital status did not appear to influence general health in the presence of other predictors. Controlling for sex, race, education and marital status,

greater presence of disease was associated with lower reported general health across all ages (step 2). In contrast, more social support, regardless of source, was associated with reports of better general health (step 3). As predicted, however, sources of support differed by age group. For 18–30 year olds, only social support from friends was predictive of better general health. For adults in the 30 s, social support from children emerged as the sole predictor of better general health. For adults in their 40 s, only support from blood relatives was related to better perceived health. For adults in their 50 s, support from their community was primary and support from children was marginally related. For both adults in their 60 s and over 70, community support was the only source related to better perceived health.

Cumulative Presence of Disease, Social Support and Emotional Health

Considering reported emotional health, greater presence of disease was related to lower reported mental health in each age group with the exception of adults in their 30 s (see Table 4). Demographic effects were largely similar to those of the general health outcome, although marital status emerged as a significant positive predictor of emotional health in mid-life (ages 31–60). Similar to reports of better general health, receipt of social support from any source was related to better emotional health. Also similar to general health, the source of support related to better emotional health differed by age group. For young adults aged 18–30, receiving support from blood relatives was associated with better reported emotional health. By the time adults reached their 30 s, both support from blood relatives and children were related to better perceived health. Receiving support from blood relatives was also related to better emotional health for adults in their 40 s although support from children was not. Receiving support from both children and friends was related to better emotional health for adults in their 50 s. Interestingly, only support from friends was related to perceived emotional health for adults in their 60 s. For those adults 71 and above, both friends and community were related to better emotional health.

Mediation Analyses

For both general and emotional health outcomes, mediation models were significant for the entire sample, but not by individual age group. Consistent with the results above, age was positively associated with support from friends and community members, but negatively associated with support from children (Table 5). Being female and more educated were each associated with more social support

Table 1 Descriptive statistics and correlations for independent, dependent, mediating and control variables

	1	2	3	4	5	6	7	8	9	10	M	SD
1. General Health	1										3.13	1.14
2. Mental Health	.47**	1									3.75	1.07
3. Disease	-.42**	-.16**	1								6.08	1.09
4. SS Children	.16**	.20**	-.09**	1							4.53	.63
5. SS Blood Relatives	.14**	.20**	-.06*	.41**	1						4.17	.77
6. SS Friends	.19**	.24**	-.07**	.32**	.41**	1					4.10	.76
7. SS Community	.19**	.19**	-.06*	.21**	.30**	.37**	1				3.39	1.01
8. Sex	.04	-.01	-.05	.19**	.15**	.16**	.05	1				
9. Race	-.07	-.10**	-.01	-.08	-.07*	-.11**	.01	.03	1			
10. Education	.24**	.22**	-.15**	.18**	.13**	.13**	.18**	-.01	-.10**	1	3.46	1.85
11. Married	.12**	.12**	-.15**	.13**	.05	.09**	.10**	-.08**	-.22**	.19**		

‘Male’, ‘White’, and unmarried respondents were referent categories for Sex, Race, and Marriage respectively. Higher values indicate more positive ratings of general health

** $p < .01$, * $p < .05$

Table 2 Average reported social support by source and age range

Social support source	Age range (years)					
	18–30	31–40	41–50	51–60	61–70	71+
Friends	3.85 (.14)	4.17 (.07)	4.08 (.05)	4.09 (.04)	4.17 (.04)	4.09 (.04)
Children	4.63 (.07)	4.64 (.05)	4.62 (.04)	4.53 (.04)	4.50 (.04)	4.42 (.04)
Blood relatives	4.24 (.09)	4.23 (.07)	4.20 (.05)	4.09 (.05)	4.23 (.04)	4.11 (.04)
Community	3.22 (.13)	3.42 (.10)	3.41 (.07)	3.32 (.06)	3.51 (.06)	3.32 (.06)
N=	62	140	217	332	311	287

Standard errors in parentheses

across each source, while marital status was positively associated with greater support from children, friends, and community members. Across all ages, social support from friends partially mediated the effect of disease on perceived general and emotional health, such that the overall effect of disease was greater due to *decreases* in friend support. No other social support variable mediated the effect of disease. To further test the role of sources of social support at different life stages, two additional models included conditional indirect effects based on age of the respondents (i.e., age as a moderator of the specific indirect effects of disease through social support). Including the indirect effect modifier explained very little additional variance for either general or mental health and no specific age by source interactions were significant mediators of the effect of disease on health outcomes, indicating no moderated mediation was present.

Discussion

Results indicate that social support is not a unitary construct in its relation to health outcomes. As predicted, different sources of support are relatively more important

during different adult developmental stages. Based on previous research, we predicted that young adults would draw mainly from friends (reflecting expanding social networks; Brown 2004), whereas middle aged adults would draw primarily from children (Ha 2010), and elderly would be more likely to draw from the community (Wolff and Kasper 2006). Our results partially supported our predictions and were dependent on the outcome considered. Consistent with our expectations, children were most commonly cited as sources of support in middle adulthood (31–40 for both outcomes, 51–60 for mental health), whereas respondents over 60 were more likely to cite either friends or community members. These differences were reflected in the results of the regression analyses where social support from children had a stronger association with health outcomes (net other predictors) for younger respondents and the effects of social support from friends and community members emerged for later age ranges. These findings may reflect different life stages as individuals move from a family to community focus during middle to late adulthood.

One explanation for the importance of both community and friend support later in life is because older adults are more likely to see changes in their social networks (Gurung

Table 3 Hierarchical regression of perceived general health on incidence of disease and facets of social support

	Age				N								
	18–30	31–40	41–50	51–60		61–70							
	62	140	217	332	311								
Step 1: Covariates													
Sex	-.23 ⁺	.18	-.21 ⁺	.10	.14	.07	-.02	.04	-.10 ⁺	-.08	-.11 [*]	.10 ⁺	.08
Race	.02	.06	.15	.03	-.01	.01	-.04	-.04	-.14 [*]	-.11 [*]	-.10 [*]	-.02	-.05
Education	.27 [*]	.30 [*]	.23 ⁺	.24 ^{**}	.22 ^{**}	.20 [*]	.12 ⁺	.03	.24 ^{***}	.23 ^{***}	.20 ^{***}	.33 ^{***}	.22 ^{***}
Marriage	.02	.06	-.01	.02	-.02	-.08	.12	.12 ⁺	.09	.03	.00	.09	.03
Disease	-.31 [*]	-.37 ^{**}	.38 ^{**}	-.33 ^{**}	-.30 ^{**}	-.33 ^{**}	-.48 ^{***}	-.47 ^{***}	.04	-.37 ^{***}	-.36 ^{***}	-.35 ^{***}	-.34 ^{***}
Friends			-.12			.23 ^{**}	.10	.09	.09 ⁺	.08	.03	.03	
Children			.12			-.03	.15 [*]	.10	.09 ⁺	.08	.03	.03	
Blood relatives													
Community			-.06			.08	.06	.06	.13 [*]	.13 [*]	.11 [*]	.11 [*]	
Model <i>F</i>	2.41 ⁺	3.41 ^{**}	3.12 ^{**}	2.79 [*]	5.28 ^{**}	4.14 ^{**}	3.77 [*]	15.74 ^{**}	11.90 ^{**}	10.45 ^{**}	14.54 ^{**}	10.77 ^{**}	18.55 ^{**}
Model <i>R</i> ²	.15	.23	.35	.08	.17	.22	.07	.27	.34	.11	.25	.12	.23
<i>R</i> ² change	.09 ^{**}	.12 ⁺	.12 ⁺	.06 [*]	.09 ^{***}	.06 [*]	.21 ^{***}	.07 ^{***}	.13 ^{***}	.04 ^{**}	.11 ^{***}	.11 ^{***}	.01
N													
	Age												
	71+												
	287												
Step 1: Covariates													
Sex			.21 ^{**}		.11 [*]	.07							
Race			.02		.04	.03							
Education			.06		.09	.06							
Marriage			.01		-.01	-.00							
Disease					-.42 ^{***}	-.40 ^{***}							
Friends						.09							
Children						.02							
Blood relatives						-.02							
Community						.11 ⁺							
Model <i>F</i>			3.18 [*]		15.09 ^{**}	9.49 ^{**}							
Model <i>R</i> ²			.04		.21	.24							
<i>R</i> ² change					.17 ^{***}	.02 ⁺							

All values are standardized coefficients. 'Male', 'White', and unmarried respondents were referent categories for Sex, Race, and Marriage respectively. Higher values indicate more positive ratings of general health

*** $p < .001$ ** $p < .01$, * $p < .05$, + $p < .10$ (two-tailed)

Table 5 Parallel mediation results of the effects of disease on general and emotional health through social support

Predictor	Mediators as outcomes (paths a_1 – a_4)				Outcomes	
	Blood relatives Coefficient (SE)	Children Coefficient (SE)	Friends Coefficient (SE)	Community Coefficient (SE)	General health Coefficient (SE)	Emotional health Coefficient (SE)
Constant	3.66 (.17)***	4.04 (.14)***	3.50 (.16)***	2.74 (.22)***	3.80 (.30)***	2.03 (.30)***
Sex	0.28 (.05)***	0.28 (.04)***	0.30 (.05)***	0.14 (.06)*	–0.00 (.06)	–0.12 (.06)
Age	–0.003 (.002)	–0.003 (.001)*	0.004 (.002)**	0.004 (.002)*	0.01 (.00)***	0.01 (.00)***
Race	–0.08 (.05)	–0.09 (.04)*	–0.13 (.04)**	0.11 (.06)	–0.08 (.06)	–0.06 (.06)
Education	0.05 (.01)***	0.05 (.01)***	0.05 (.01)***	0.09 (.02)***	0.09 (.02)***	0.08 (.02)***
Marriage	0.06 (.04)	0.13 (.03)**	0.10 (.04)*	0.17 (.02)***	0.03 (.06)	0.12 (.06)*
Disease	–0.02 (.02)	–0.004 (.02)	–0.05 (.02)*	–0.04 (.03)	–0.45 (.03)***	–0.18 (.03)***
Social Support						
Friends	–	–	–	–	0.12 (.04)**	0.19 (.04)***
Children	–	–	–	–	0.10 (.05)*	0.16 (.05)**
Blood relatives	–	–	–	–	0.02 (.04)	0.09 (.04)*
Community	–	–	–	–	0.11 (.03)***	0.06 (.03)*
Model F	11.27***	22.57**	15.42***	10.13***	44.96***	23.80***
Model R^2	.05	.09	.06	.04	.25	.15
Direct, total indirect, and specific indirect effects of disease						
Direct effect					–0.45 (–.51, –.40)	–.18 (–.23, –.12)
Total indirect					–0.01 (–.02, .001)	–0.02 (–.03, –.001)
Friends					–0.01 (–.02, –.001)	–0.01 (–.02, –.003)
Children					–0.00 (–.005, .003)	–0.001 (–.01, .004)
Blood relatives					–0.00 (–.005, .001)	–0.002 (–.001, .00)
Community					–0.005 (–.01, .001)	–0.003 (–.01, .000)

$N = 1349$. ‘Male’, ‘White’, and unmarried respondents were referent categories for Sex, Race, and Marriage respectively. Higher values indicate more positive ratings of general health. Brackets are 95 % confidence intervals

*** $p < .001$ ** $p < .01$, * $p < .05$

et al. 2003) and may thus try to broaden their networks. As spouses and family pass away, friends and community members become even more important outlets. It is surprising that children were not significant sources of support for older adults. This may be due to the fact that providing support for elderly parents can create strain in the relationship (Ha and Ingersoll-Dayton 2008), that elderly parents may not wish to burden their children with their care (Wallen and Lachman 2000), or that geographic distance limits the ability of children to provide support for their parents (Greenwell and Bengtson 1997). The ‘U’ shaped pattern of friend support in our results is consistent with previous work (Hartup and Stevens 1999) and may reflect a shifting focus in the lifespan during middle adulthood as individuals settle with romantic partners and begin families.

Interestingly, sources of support changed when considering general versus emotional health, even though all four sources of support emerged as predictors of well-being at some point for both outcomes. Researchers have argued that different classes of supporters may offer different

forms of social support (e.g. emotional encouragement versus coping assistance) (Thoits 2011). It could be the case that individuals turn to these different sources depending on their needs. Our results, for example, suggest that younger adults may be more comfortable seeking emotional support from their children, spouses or kin as opposed to friends or community members. If it is indeed the case that preferred sources of support change with an individual’s need, it is still interesting that those sources of support would shift across the life course. More work examining this disparity and different points of the lifespan may reveal changing support needs or preferences. Contextual influences may also interact with sources of social support. Bjornstrom et al. (2013), for example, found that perceptions of both neighborhood disorder and social cohesion each influenced self-reported health. Residents who have lived in communities for longer periods may have broader social support networks than more itinerant individuals and may be more likely to draw on peer or community support. Examining social support during key life transitions (e.g., moving to a new area; major career

change) may also further understanding of how social support may change during the lifespan.

A critical result not to be overlooked was the consistently positive relationship between social support (regardless of source) and better perceived general and emotional health. This finding adds to the large body of social support literature arguing for the positive benefits of social support (Gallant 2003; Kruger et al. 2007; Rutledge et al. 2004). Though not measured as social support, *per se*, marital status was associated with emotional, but not general health and generally operated in the same direction as the social support sources included. Moreover, social support operated as a buffer to the presence of risk associated with disease, partially or in some cases fully compensating for the negative effect of chronic disease on well-being (Fergus and Zimmerman 2005). Previous researchers have also found support for peer-based interventions (Bryan and Arkowitz 2015) which, combined with the present findings, suggest that friends/peers may be a particularly meaningful source of support especially later in life.

An important contribution of our design was the increased discrimination resulting from considering (roughly) decades in the lifespan. Frequently, studies will focus on one specific population (e.g. elderly adults) or broader groupings (e.g., young adults, middle age, and elderly). Increasing granularity provides additional insight regarding changing supportive networks. Given the variability in reported sources of support across age groups, other studies utilizing similar or perhaps even smaller age ranges may be valuable.

Limitations and Future Directions

A notable limitation of this study is that we did not differentiate in type of support from the different sources of support we studied. Crohan and Antonucci (1989), for example, found that family members more often provide instrumental support and that friends more often provide emotional support and companionship. Depending on the interpretation of our items, participants may have responded differently if they were thinking of one form of support over another. Respondents could endorse as many sources as they wished, however, and only rarely did multiple sources of support emerge as significant predictors. We further recognize that we did not include items on support from romantic partners or caregivers, as these were not in the original item set. Each is associated with well-being (Casale et al. 2015; Väänänen et al. 2005) and including such items may have provided an even more comprehensive set of contrasting predictions. Moreover, survey length and competing needs raised by our community partners

limited our ability to include multi-item social support scales, resulting in social support estimates drawn from one or two items. Although reliability and other psychometric analyses are not possible given the limited number of items, the measures were drawn from previously validated scales and each construct was associated with other covariates in ways consistent with previous research. Although our results add to the literature on social support by including more distinct age groups, future work including more discriminating items would be useful. Our focus, however, was more on the source of support over time, rather than the type and/or extent of any given form of support that may have been addressed with more discriminating items.

Another limitation of the study was our decision not to differentiate between diseases, thus assuming that the effect of heart disease on general health, for example, would be similar to that of stroke or diabetes. It may be the case that certain combinations of disease may have greater influence on perceived health relative to others, thus making it difficult to draw conclusions from our cumulative disease variable. Still, because each disease would reasonably be expected to be a significant burden for the individual, accounting for the compounding effects of multiple diseases provides some important information. Relatedly, the cross-sectional nature of the survey made it impossible to know precisely when individuals were diagnosed with a particular disease. An implicit assumption is that the negative ramifications associated with chronic diseases like cancer, heart disease and diabetes do not significantly diminish over time, but may still influence reported well-being. Future research that examines these issues over time might be able to explore the effects of support before the onset of disease to determine how it might change post diagnosis and how that may have differential effects. Further, it is also impossible to know if cohort effects were present in the current study as different generations may have different social support preferences. Given the large age span of interest, longitudinal designs capable of following cohorts as they progress through the life span (e.g., accelerated longitudinal design) are needed to better understand how social support evolves and changes over time. Because fewer researchers have considered multiple sources of social support, this study was an important first step to see if sources differed by age. Furthermore, though we can say less about causal linkages and the effect of disease over time, results from this study can.

Finally, caution should be exercised when extrapolating findings from this study to other communities. Data for this study were drawn from a single geographic area which may not be representative of other urban areas. Moreover, respondents were disproportionately female and the overall

response rate was 25 %, which may have influenced the results. Sample size, too, may have influenced the results. Though we utilized a fairly large sample, post hoc power analyses of both the mediation and moderated mediation analyses using Monte Carlo simulations (Thoemmes et al. 2010) revealed that a larger sample size would be necessary to consistently detect specific indirect effects of the magnitude we observed. Researchers have demonstrated that large samples are necessary when small mediated effects are expected (Fritz and MacKinnon 2007) and future studies should be planned accordingly in light of these results.

Conclusion

Perceived social support was positively related to both health outcomes, even when controlling for the presence of disease and demographic covariates. Despite the consistent positive relationship, not all sources of support were significant in every portion of the life course. Interestingly, the effects of different sources of support also differed depending on the outcome under consideration. Our results suggest that the presence of multiple diseases can have a compounding effect on perceived general and mental health. This effect was consistently negative across the lifespan and held in most cases even after controlling for participant demographics.

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