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Depressive Symptoms, Social Support, and Walking Among Hispanic Older Adults

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Abstract

Objectives—Depressive symptoms and physical inactivity are health risks among minority older adults. This study examined whether social support moderated the relationship of depressive symptoms to walking behavior among 217 community-dwelling, Hispanic older adults.

Method—Cross-sectional analyses were used to test whether different forms of social support interacted with depressive symptoms to affect both likelihood and amount of walking.

Results—Analyses showed a significant interaction between depressive symptoms and instrumental support related to the likelihood of walking and a marginally significant interaction between depressive symptoms and instrumental social support related to the amount of walking. Depressive symptoms were associated with a lower likelihood and lower amount of walking among participants receiving high levels of instrumental social support (e.g., help with chores) but not low instrumental support. Emotional and informational support did not moderate the depression to walking relationship.

Conclusion—Receiving too much instrumental support was related to sedentary behavior among depressed older adults.

Keywords

older adults; Hispanics/Latinos; depressive symptoms; walking; social support

Depressive symptoms have been associated with low levels of physical activity in various populations, including older adults (Dunn, Trivedi, & O'Neal, 2001; Krause, Goldenhar, Liang, Jay, & Maeda, 1993; Kritz-Silverstein, Barrett-Connor, & Corbeau, 2001; Morgan & Bath, 1998). Symptoms of depression, such as diminished interest in activities and fatigue, can in and of themselves interfere with activities of daily living and physical activity (e.g., Crane, 2005; Machado, Gignac, & Badley, 2008; Nguyen, Koepsell, Unutzer, Larson, & LoGerfo, 2008; Satariano, Haight, & Tager, 2000). However, there may be other mechanisms by which depressive symptoms influence physical activity. A better understanding of these mechanisms may help promote physical activity, a health behavior related to many positive health outcomes including positive quality of life (Bassuk &

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Manson, 2005; Bath & Morgan, 1998; Hirvensalo, Rantanen, & Heikkinen, 2000; Nelson et al., 2007; Reynolds, Haley, & Kozlenko, 2008; Taylor et al., 2004).

Social support is a factor that may prevent depressive symptoms from leading to a sedentary lifestyle, promoting healthy behaviors, mental and physical health. Existing research shows that certain forms of social support may protect individuals from depressive symptoms (Barnett & Gotlib, 1988; Dean, Kolody, & Wood, 1990; Lu, 1999), high blood pressure (Uchino, Cacioppo, & Keicolt-Glaser, 1996), metabolic syndrome, and cardiovascular disease, among other health problems (Horsten, Mittleman, Wamala, Schenck-Gustaffson, & Orth-Gomer, 1999; Smith & Ruiz, 2002). There is evidence that social relationships may influence health outcomes through their impact on neuroendocrine and immune functioning, among other physiological mechanisms (see Seeman, 2000; Uchino, 2006). Social support may also improve health by encouraging healthy behaviors, such as physical activity (Stahl et al., 2001). Indeed, family and other members in one's own social network can monitor and exert pressure on individuals to behave in healthier ways (Tucker, 2002; Umberson, 1987). Having someone provide support and encouragement to exercise has been found to increase exercise (Oka, King, & Young, 1995). Similarly, receiving support to exercise in the form of an exercise partner or friends/family members who exercise regularly can also improve physical activity (Booth, Owen, Bauman, Clavisi, & Leslie, 2000; Shores, West, Theriault, & Davison, 2009).

More general forms of social support—in other words, support not specifically directed toward encouraging physical activity—have also been related to physical activity, although not in a consistent manner. In a cross-sectional study of adults aged 20 to 79, Fischer Aggarwal, Liao, and Mosca (2008) found that both emotional and instrumental support (e.g., receiving help with chores) were associated with more physical activity. Conversely, Kaplan, Lazarus, Cohen, and Leu (1991) reported that social isolation and being unmarried (a possible indicator of lower social support) were related to physical inactivity 9 years later in the Alameda County study. In a study of 50- to 68-year-olds, Hawkey, Thisted, and Cacioppo (2009) found that loneliness, which tapped into a person's satisfaction with his or her social network, was related to a higher likelihood of physical inactivity over 3 years. However, the literature is unclear regarding how different forms of social support influence physical activity, specifically among older adults with depressive symptoms.

Among the complexities of this type of research is that social support has multiple dimensions and that not all have had consistent or even positive effects on health and well-being (Kawachi & Berkman, 2001; Krause & Rook, 2003; Newsom & Schulz, 1998; Seeman, 2000; Uchino, 2009). A distinction has been made between the structural aspects of social support, which include group membership, network size, and frequency of contact, versus the functional aspects of social support, which encompass the type of support received, such as emotional, informational, or instrumental support (see Cohen & Wills, 1985).

Cohen and Wills (1985) further clarified certain complexities of this research by proposing two theoretical models to explain how social support might influence health. The stress-buffering model suggests that social connections are most beneficial when individuals are distressed, whereas the main effects model suggests that social connections are beneficial whether the person is distressed or not. Some have found that structural aspects of social support (e.g., integration within a social network) may have a more direct effect on health as posited by the main effects model, whereas functional aspects of social support (e.g., emotional support) may be more likely to buffer the impact of distress by promoting better coping strategies (Berkman, Glass, Brissette, & Seeman, 2000; Kawachi & Berkman, 2001).

Building on these theoretical models and existing research, this article examines the role of social support as a possible mechanism by which depressive symptoms are related to walking in a sample of Hispanic older adults. The main research question asks whether the relationship of depressive symptoms to walking differs depending on whether older adults experience different forms of functional social support. Specifically, analyses investigate whether emotional, instrumental, informational, and overall functional social support interact with depressive symptoms to affect the likelihood and amount of walking. Given the inconsistent findings from previous studies, results of this study are expected to fill a gap in the literature by providing additional information on the ways in which depressive symptoms, social support, and walking are related to one another among older adults. In particular, analyses may help explain whether functional social support (i.e., emotional, informational, or instrumental support) might buffer the effects of depressive symptoms on walking. This is a particularly important research question for vulnerable subgroups of U.S. older adults, including Hispanic older adults and those of lower socioeconomic status (SES), who tend to have high rates of both depressive symptoms (Black, Markides, & Miller, 1998; Falcón & Tucker, 2000; Mendes de Leon, Rapp, & Kasl, 1994) and physical inactivity (Crespo, Ainsworth, Keteyian, Heath, & Smit, 1999; Marquez, McAuley, & Overman, 2004). Previous findings with this sample of Hispanic older adults show high levels of depressive symptoms, comparable with or higher than other population-based samples of U.S. Hispanic older adults (Perrino, Mason, Brown, & Szapocznik, 2009). A strength of this study is its focus on walking behavior, the most common and accessible form of physical activity among older adults (Centers for Disease Control and Prevention [CDC], 1999). Given the challenging factors involved in effectively preventing and managing depressive symptoms and physical inactivity among older adults (see Fiske, Wetherell, & Gatz, 2009; King, Rejeski, & Buchner, 1998), identifying other potential mechanisms that may affect walking can lead to better targeted prevention and treatment interventions.

Method

Participants

Data were collected as part of a larger, population-based, prospective cohort study of Hispanic older adults in Miami, Florida, titled “The Hispanic Elders' Behavioral Health Study,” which focuses on the relationship between neighborhood environmental factors and older adults' well-being, specifically the built (physical) environment and residents' mental health outcomes (for further details on the larger project, please consult Brown et al., 2009). To obtain a population-based sample, all 16,000 households in a single urban Miami community were enumerated to identify all Hispanic adults 70 years or older. One Hispanic older adult was randomly selected from each block in which at least one older adult lived. Of all 3,322 older adults enumerated, 521 were randomly chosen and approached for participation. To participate, individuals at baseline had to (a) be 70 years of age or older, (b) have immigrated from a Spanish-speaking country, (c) reside in this specific Miami neighborhood, (d) reside in housing in which he or she can walk outside (excluded nursing homes), (e) be of sufficient physical health to go outside, and (f) score 17 or above on the Mini-Mental State Examination (MMSE; Folstein, Folstein, & McHugh, 1975), a test of global cognitive functioning. Of the 521 initially approached, 30 had died since enumeration, 87 had moved or could not be located/contacted, 95 refused participation, 10 had incorrect home addresses, 24 did not meet full eligibility criteria, and 2 moved to a different block from which a participant had already been sampled, resulting in 273 participants who provided informed consent and completed the baseline assessment.

Participants completed yearly, home-based assessments in Spanish. This study utilizes data collected at the 2-year follow-up (the study's third assessment time point) because walking behavior was not assessed at the preceding baseline or 1-year follow-up assessments. The 2-

year follow-up was completed between 2004 and 2005, and the sample had decreased from 273 to 217. Attrition was due to death ($n = 25$), refusal ($n = 11$), moving out of the region ($n = 7$), and loss to follow up ($n = 13$). Compared with participants remaining at follow-up, participants who were lost to follow-up were older (80.48 vs. 77.96; $F(1, 269) = 5.1, p = .008$) and more likely to be male (63.0% vs. 43.9%; $\chi^2 = 6.80, p = .009$). There were no statistically significant differences between participants who remained or were lost to follow-up on baseline education, income, marital status, depression score, or social support. Fewer than 1% of yearly evaluations were missed by survivors at each time point for reasons other than those given above (i.e., the participant could not be engaged for that year's evaluation). Additional missing data for the measures of depressive symptoms, social support, and walking were less than 1% (i.e., the participant either refused or could not complete either the depressive symptoms or the physical activity measure).

Measures

Depressive symptoms—Depressive symptoms were assessed using the Depressive Affect subscale of the Center for Epidemiologic Studies Depression Scale or CES-D (Radloff, 1977), which reliably assesses depressive mood symptoms while removing somatic symptoms that are at least partly confounded with age and physical health in older populations (Fonda & Herzog, 2001). This subscale is made up of seven items assessing depressive symptoms in the preceding week, such as “I felt lonely” and “I had crying spells.” Responses are made on a 4-point Likert-type scale from 0 = *rarely or none of the time (<1 day)* to 3 = *most or almost all of the time (5-7 days)*. A continuous total sum score is computed such that higher scores indicated more depressive symptoms. The Cronbach's alpha in this sample was .82. The CES-D has demonstrated good test-retest reliability and has been used successfully with Hispanic and Spanish-speaking older adults (Black et al., 1999).

Social support was assessed using four indicators of social support. The first, overall social support, was composed of 10 items measuring frequency/amount of social support received by the participant in the last month (Krause & Markides, 1990). It is scored on a 4-point Likert-type scale ranging from 0 = *never* to 3 = *very often*. The Cronbach's alpha was .81. This 10-item scale is made up of the following three social support subscales: (a) Instrumental Social Support made up of two items on assistance received with daily tasks such as chores, groceries, and the like (Cronbach's $\alpha = .73$); (b) Emotional Social Support made up of four items involving supportive behaviors received related to comfort and caring ($\alpha = .74$); and (c) Informational Social Support made up of four items related to advice and information received ($\alpha = .81$).

Walking—Participants were asked to report their walking routes during the preceding 7 days using the timeline follow-back technique (Sobell & Sobell, 1996), an established interview method that uses a calendar as a cue to remind the respondent of life events in the last week. The events are recorded on the calendar to assist recall before asking for target behaviors (in this case, walking). In this method, the assessor begins by producing a 7-day calendar form and placing the day of the week for each of the 7 days, asking the participant to recall events that have occurred in any of the past 7 days, including destinations outside the home (e.g., trip to the doctor, friend's birthday). Next, the assessor shows the calendar form to the older adults, along with a large map of the neighborhood. The calendar is used to cue the participant's memory for his or her behaviors in the last 7 days that might be associated with walking (e.g., walking to a friend's house for a birthday). Then, the assessor shows the participant where he or she lives on the map and asks the participant where he or she walked on for each day's walking trip and what route he or she took to get there. The assessor traces the actual route walked on the map and notes the specific blocks walked.

This process is repeated for the return route, including a note of any transportation that the older adult might have taken on either the initial or return trips (e.g., car, bus, taxi). Data were transformed into a specific identification number assigned to that block, and the number of blocks that are walked is then summed to obtain “total blocks walked.”

Control variables include gender, age, years of education, marital status (married versus unmarried), perceived financial strain, and body mass index (BMI). Perceived financial strain was assessed using a single item about how difficult it was to pay for basic needs using a response scale ranging from 1 = *easy* to 7 = *very difficult*. Participant height (measured in meters) and weight (measured in kilograms) were assessed and used to calculate BMI, an indirect measure of body fat computed as $\text{weight (kg)} / [\text{height (m)}]^2$ (CDC, 2010).

Ethical considerations—This study was approved by the University of Miami’s Institutional Review Board. Participants who evidenced suicide ideation or clinically relevant levels of depressive symptoms were assessed by a study psychologist or mental health counselor and were referred for further mental health assistance in the community.

Analytic Strategy

Analyses were conducted using SPSS version 17.0 (SPSS, 2008). Preliminary analyses examined variable distributions and sample characteristics. Statistical analyses investigated whether the relationship between older adults’ depressive symptoms and walking varied by the amount of social support they received. In terms of walking, both the likelihood of walking (binary variable of number of blocks walked vs. any blocks walked) and the amount of walking (continuous variable of number of blocks walked) were examined. For the binary outcome, logistic regression analyses examined the interaction of depressive symptoms and social support using the outcome variable of no walking versus walking. For the continuous outcome, a negative binomial regression was used because of the count nature of the outcome variable (e.g., number of blocks walked) as well as the fact that the variable was substantially skewed.

To test the moderation effect of the social support variables, the interactions of depressive symptoms by overall social support, instrumental social support, emotional social support, and informational social support were tested separately for significance in the regression analyses. For both analyses, main effects for depressive symptoms and social support were also entered into the regression. If a significant Depressive symptoms $\times$ Social support interaction was found, regression analyses were reconducted separately for the subpopulation using the median split on the social support variable. Analyses controlled for age, gender, education, marital status, perceived financial strain, and BMI.

Results

Sample characteristics and descriptive information

The mean age was 79.95 ($SD = 6.0$; range = 72-102). Sixty-two percent were female. Baseline statistics indicate that all participants were Hispanic, 86% being Cuban and 10% from Central or South American countries. Participants had lived in the United States for an average of 29 years. The sample was of low SES, with 71% reporting annual household income less than US\$10,000 and most reporting working-class jobs prior to retirement (e.g., factory worker, housekeeper). The sample averaged 7.1 years of education ($SD = 4.3$; range = 0-20 years). Approximately, 32% ($n = 69$) of participants were married and 75% were not. Of the 145 unmarried, approximately 55% (80) were widowed, 32% (47) were divorced, and 12% (18) were never married.

Ranges, means, and standard deviations for the main study and control variables are presented in Table 1. The average score on depressive symptoms was 3.87 ($SD = 4.18$; range = 0-18). As noted, the walking behavior variable (i.e., blocks walked) was skewed, with a mean of 25.2 ($SD = 40.4$; range = 0-302). Approximately, 44% ($n = 93$) of participants did not walk any blocks at all (i.e., nonwalkers), whereas 56% ($n = 120$) had walked at least one block (i.e., walkers).

Regression and moderator analyses

As shown in Table 2, the negative binomial regression showed a significant main effect between depressive symptoms and walking such that higher levels of depressive symptoms were related to fewer blocks walked ($b = -.083$, $p = .003$). Results also show a significant main effect of social support on walking such that higher levels of instrumental social support were related to fewer blocks walked ($b = -.232$, $p < .001$). Control variables in this analysis were gender, age, education, financial strain, marital status, and BMI.

For the models including the interaction terms, the logistic regression analysis showed that controlling for these same variables, instrumental social support significantly moderated the relationship between depressive symptoms and the likelihood of walking ($b = -.036$; $OR = 0.97$, $p = .044$). Similarly, the negative binomial regression showed a marginally significant interaction between depressive symptoms and instrumental social support as related to number of blocks walked ($b = -.018$, $p = .058$).

Post hoc analyses were subsequently conducted to identify the locus of this interaction by performing a median split of the instrumental support variable and then examining whether depressive symptoms were associated with the likelihood of walking (versus not walking) separately for those older adults in the lower half of instrumental support scores and those in the upper half of instrumental support scores. These findings are illustrated in Figure 1 (a and b). Again, adjusting for the same control variables, higher depressive symptoms were significantly associated with a lower likelihood of walking but only for participants receiving higher levels of instrumental social support ($b = -.143$; $OR = 0.87$, $p = .023$). Depressive symptoms were unrelated to the likelihood of walking for participants receiving lower levels of instrumental support ($b = -.028$; $OR = 0.97$, $p = .654$). Similarly, higher depressive symptoms were related to less walking (i.e., fewer blocks walked) for those with higher levels of instrumental social support ($b = -.138$, $p < .001$). However, depressive symptoms were not related to the amount of walking for those with lower levels of instrumental social support ($b = -.035$, $p = .319$). There were no statistically significant interactions between depressive symptoms and any of the other three social support variables in relation to the likelihood of walking or amount of walking, including overall social support, emotional or informational social support.

Discussion

Initial study results indicate that higher levels of depressive symptoms were significantly related to fewer blocks walked. This finding supports the conclusions of several previous research studies that depressive symptoms may interfere with older adults' walking behavior (Dunn et al., 2001; Krause et al., 1993; Kritz-Silverstein et al., 2001; Penninx, Leveille, Ferrucci, van Eijk, & Guralnik, 1999; Perrino, Mason, Brown, & Szapocznik, 2010). This is important, given the health benefits associated with physical activity (Bath & Morgan, 1998; Taylor et al., 2004).

The interaction analyses found no evidence that functional social support (i.e., total, emotional, informational, instrumental support) buffered the negative impact of depressive symptoms on walking, as suggested by the stress buffering theory of social support (Cohen

& Wills, 1985). Instead, results show evidence that receiving high levels of instrumental social support was related to a lower likelihood of walking among older adults with high levels of depressive symptoms. In contrast, among older adults receiving lower levels of instrumental support, there was no significant relationship between depressive symptoms and the likelihood of walking.

Although some forms of social support have been found to promote health and health behaviors (Dean et al., 1990; Uchino et al., 1996), the present findings suggest that too much instrumental support, for example, assistance with chores and shopping, may have the reverse effect by reducing the likelihood of walking among depressed older adults. Even well-intentioned efforts by family members or caregivers to help older adults by completing daily tasks for them may inadvertently eliminate their need or motivation to walk. These supportive acts can limit opportunities to obtain some of the salutary effects associated with walking.

An alternate way by which instrumental support may lower older adults' likelihood of walking is by interfering with their self-efficacy to walk. When daily living tasks are carried out for them, older adults may receive the implicit message that they are unable or ineffective at doing the tasks themselves, thus reducing their self-efficacy for walking (Clark, 1999; Lee, Arthur, & Avis, 2008) and conceivably encouraging helplessness and dependence (see, for example, Langer & Rodin, 1976; Lawton, Moss, Winter, & Hoffman, 2002). Indeed, self-efficacy in one's own exercise ability is an important predictor of physical activity among older adults (Booth et al., 2000). Similarly, providing too much instrumental support may reduce opportunities to independently engage in activities that may enhance feelings of accomplishment and self-worth. For instance, Lawton et al. (2002) found that engaging in "personal projects," which may include personal care, shopping, and home maintenance, was related to positive mental health and feelings of accomplishment in older adults. Similarly, personal responsibility for tasks has been found to enhance older adults' alertness, active participation, and feelings of well-being (Langer & Rodin, 1976), and engagement in these activities can provide critical opportunities for personal reinforcement, ultimately improving mental health (see Fiske, Wetherell, & Gatz, 2009).

Indeed, it is likely that a good person–environment fit between the individual's competencies and the support provided by the environment is an important determinant of walking behavior among older adults. In Lawton and Nahemow's Competence-Press Model (1973), an individual's level of adaptive behavior is a consequence of environmental demands that are commensurate with his or her competencies. Consistent with this model, an environment in which daily living tasks are performed for an able older adult may encourage sedentary behavior.

Other research findings support the present study's results. In a cross-sectional study of veterans with cancer, Sultan et al. (2004) found that more instrumental support was related to poorer physical health–related quality of life. It is possible that receiving too much instrumental support may have interfered with potentially beneficial health behaviors such as physical activity, which may ultimately impact perceived physical health (Nelson et al., 2007). Others have found that high levels of instrumental social support increase the risk of disability among older adults (Hays, Saunders, Flint, Kaplan, & Blazer, 1997; Mendes de Leon, Gold, Glass, Kaplan, & George, 2001; Seeman, Bruce, & McAvay, 1996). The process of "deconditioning" is hypothesized to be the operating force, whereby receiving assistance diminishes the older adult's ability to carry out these tasks and function independently (Siegler, Stineman, & Maislin, 1994). Similarly, physical activity is related to better physical functioning and lower risk of disability among older adults (see Nelson et al., 2007). It has been argued that social support will promote health only if it encourages

personal competence and self-efficacy to engage in health-protective behaviors (Berkman, 1995).

Another notable finding from the current study is that other forms of social support, including emotional, informational, and total levels of social support, did not affect the relationship between depressive symptoms and walking, either positively or negatively. Unlike instrumental support, neither emotional nor informational support involves physically performing tasks for the older adult, and this may be the reason why these forms of support did not affect walking behavior. Moreover, it is important to consider that the receipt of support does not necessarily mean that it is positive, welcome, or helpful in ameliorating depressive symptoms or the consequences of depressive symptoms. For instance, Cruza-Guet, Spokane, Caskie, Brown, and Szapocznik (2008) found that informational support (e.g., advice, explanations) was associated with greater psychological distress among the older adults in the current study's sample. The authors hypothesize that older adults may dislike receiving advice or explanations, interpreting this type of information as critical or implying cognitive decline, further increasing the older adult's distress levels. Nagumey, Reich, and Newsom (2004) found that older men who reported a preference for being more independent were more likely to have negative responses to receiving social support. Tucker (2002) found that attempts by social network members to influence older adults' health behaviors can result in positive health behaviors; however, when there is limited satisfaction with these relationships, older adults may show negative affect as well as attempt to hide unhealthy behaviors. Indeed, certain social interactions or patterns can have a negative impact on physical and mental health (see Seeman, 2000).

This study has a number of limitations. First, the cross-sectional design does not permit a determination regarding the causal direction of these relationships or whether bidirectional relationships between the variables may be present. This limits the conclusions that can be drawn from these analyses. Second, the sample size is fairly small and the low levels of walking in this group may have resulted in insufficient power to detect significant interaction effects with some of the social support variables or more than a marginally significant interaction effect for the continuous outcome variable of amount of walking. Third, analyses did not directly control for health and disability even though these factors can be related to depressive symptoms, physical inactivity (Berkman et al., 1986; Lian, Gan, Pin, Wee, & Ye, 1999), and amount of social support received. However, the use of the CES-D measure's Depressive Affect subscale may provide some control for the effects of health and disability. As noted, this subscale reliably assesses depressive mood symptoms without the somatic symptoms items, which are at least partly confounded with age and physical health in older populations (Fonda & Herzog, 2001). Fourth, although the study's physical activity measure assesses walking, the most common form of physical activity among older adults (CDC, 1999), the self-report measure has certain shortcomings. It is not an objective measure, such as pedometers or accelerometers, it only assesses walking in the preceding week, and it does not assess the intensity, duration, or regularity of walking, all of which can impact health outcomes (Nelson et al., 2007).

There are characteristics of the present study's sample that may have further influenced the findings. This sample is composed of an "older" sample of older adults (70 to 100 years old), who may be at greater risk of health problems and less likely to engage in physical activity than "younger" older adults (Kaplan et al., 1991; Newsom, Kaplan, Huguet, & McFarland, 2004). Nonetheless, low rates of physical activity are common among older adults across the United States (Eyler, Brownson, Bacak, & Housemann, 2003; United States Department of Health and Human Services, 1996), particularly Hispanics and other minority groups (Kruger, Ham, & Sanker, 2008, Marquez et al., 2004), including those of

low SES (Yancey et al., 2005). As such, the study's findings are most likely to reflect the reality of many present-day, disadvantaged older adults.

This study's findings add to the literature by establishing a connection between depressive symptoms, social support, and walking, and offering an additional explanation of how depressive symptoms might influence walking behavior among older adults. It is important to stress that these results do not suggest that family members and caregivers should limit or withhold social support from older adults. Instead, they suggest that as depressive symptoms increase, social support must be well targeted to the older adults' true needs. That is, instrumental assistance should be commensurate with, but not substantially exceed, the person's real physical need for assistance (e.g., Langer & Rodin, 1976; Lawton, 1985). Otherwise, there is a risk that this assistance might interfere with physical activity, reducing opportunities for older adults to experience the salutary benefits that walking and completing these tasks can provide. Indeed, the findings suggest that providing emotional and informational social support does not carry a risk of interfering with older adults' walking behavior. Although examining and replicating these findings in other samples and in longitudinal studies will be necessary, clinicians serving older adults with depressive symptoms may be well served to monitor the type and amount of support provided by others to ensure there are no unintended consequences on health behaviors. Given the challenges of successfully preventing and managing depression and physical inactivity among older adults (see Fiske et al., 2002; King et al., 1998), a better understanding of the mechanisms by which depressive symptoms and physical inactivity are related should lead to more targeted prevention interventions.

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Figure 1. Relationship between depressive symptoms and (a) probability of walking and (b) amount of walking (i.e., number of blocks walked) by amount of instrumental social support received (high vs. low)

Table 1
Descriptive Statistics for Main and Control Variables

Variable	<i>N</i>	Range	<i>M</i>	<i>SD</i>
Main study variables				
Depressive symptoms	212	0-18	3.87	4.18
Social support				
Total	212	0-26	10.09	5.88
Instrumental	211	0-6	3.24	2.45
Emotional	212	0-12	5.08	2.85
Informational	212	0-8	1.76	2.12
Blocks walked ^a	213	0-302	25.20	40.40
Control variables (continuous only ^b)				
Age	212	72-102	79.95	6.00
Education	211	0-20	7.14	4.28
Financial need	212	1-7	3.33	2.00
BMI	202	16.04-52.67	27.49	5.20

Note. BMI = body mass index.

^a56% (*n* = 120) walked at least 1 block. 44% (*n* = 93) did not walk at all.

^bCategorical control variables of gender and marital status reported in text.

Table 2
Negative Binomial Regression and Logistic Regression Results

	Logistic regression (Dependent variable: walking vs. no walking)		Negative binomial regression (Dependent variable: number of blocks walked)	
	Main effects model: <i>b</i> (SE)	Model with interaction: <i>b</i> (SE)	Main effects model: <i>b</i> (SE)	Model with interaction: <i>b</i> (SE)
Depressive symptoms	-.074 (.04); <i>p</i> = .066	.051 (.07); <i>p</i> = .495	-.083 (.03); <i>p</i> = .003	-.022 (.04); <i>p</i> = .557
Instrumental social support	-.211 (.08), <i>p</i> = .005	-.073 (.10); <i>p</i> = .457	-.232 (.05); <i>p</i> < .001	-.148 (.06); <i>p</i> = .014
Interaction of Depressive symptoms × Instrumental social support	—	-.036 (.02); <i>p</i> = .044	—	-.018 (.01); <i>p</i> = .058

Note. Control variables: gender, age, education, financial strain, marital status, and body mass index.