

The Role of Mastery and Social Resources in the Associations Between Disability and Depression in Later Life

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Purpose: Although disability is widely acknowledged as a risk factor for late-life depression, few studies have studied the potential of psychosocial factors to alter the association between disability and depression. The present study assessed the impacts of mastery and social resources (social network, social support, and satisfaction with support) on depression and, in particular, whether they modify the link between disability and depression.

Design and Methods: The direct and moderating effects of mastery and social resources were empirically tested using a sample of 406 community-dwelling older adults who were cognitively intact (mean age = 72.3). **Results:** Higher level of mastery and greater satisfaction with support had significant direct effects on depression and also buffered the adverse impact of disability on depression.

Implications: The findings support the importance of psychosocial factors in modifying the association between disability and depression and suggest that efforts to enhance positive psychosocial attributes should be emphasized in interventions for older adults.

Key Words: Disability, Depression, Mastery, Social resources

Disability has been widely appreciated as one of the important risk factors for late-life depression (Kennedy, Kelman, & Thomas, 1990; Prince, Harwood, Thomas, & Mann, 1998; Williamson & Schulz, 1992; Zeiss, Lewinsohn, Rohde, & Seeley, 1996; for a comprehensive review on late-life disability and depression, refer to Bruce, 2001). However, the associa-

tion between disability and depression is not inevitable. Some individuals with severe disability enjoy a high quality of life, and others may become depressed with minor physical inconvenience. Identification of the factors responsible for these individual variations in outcome is essential to understand the impacts of disability and its consequences.

In the prevailing model of disablement process, Verbrugge and Jette (1994) have suggested that individuals' internal and external resources influence the progression to disability. Recent studies have demonstrated substantial roles of psychosocial factors in the developmental process of disability (Femia, Zarit, & Johansson, 1997, 2001; Jang, Haley, Mortimer, & Small, 2001; Kempen et al., 1999). However, few studies have considered the potential of psychosocial factors to alter the association between disability and depression in contrast to a sizable research that has emphasized physical exercise or rehabilitation to promote functioning and well-being.

Psychological resources and social support have been widely viewed as important coping resources. In particular, social support has been extensively researched, and many longitudinal studies have evidenced that social support protects older individuals against harmful stresses and promotes physical and emotional well-being (Mendes de Leon, Gold, Glass, Kaplan, & George, 2001; Oxman, Berkman, Kasl, Freeman, & Barrett, 1992; Unger, McAvay, Bruce, Berkman, & Seeman, 1999). Because psychological factors reflect individuals' subjective perception and evaluation of situations, they may have substantial roles in adaptation to disability. However, little has been done to explore the potential roles of psychological attributes in the disability-depression relationship, and this relationship is of great interest in the present study.

As a positive emotional state, mastery or sense of control may play an important role in perceiving functioning and well-being. Mastery is defined as the extent to which a person feels that he or she has control over his or her life and environment (Pearlin & Schooler, 1978). Numerous studies have shown positive associations of mastery with physical and emotional well-being

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(Bienenfeld, Koenig, Larson, & Sherrill, 1997; Pearlin, Lieberman, Menaghan, & Mullan, 1981; Roberts, Dunkle, & Haug, 1994; Schieman & Turner, 1998; Thoits, 1987). Mastery has also been found to provide psychological resilience and to facilitate adaptation under stressful life situations, including medical events (Kempen, Jelicic, & Ormel, 1997), functional decline (Femia et al., 1997; Kempen et al., 1999; Reich & Zautra, 1991), caregiving (Bookwala & Schulz, 1998), and elder mistreatment (Comijs, Penninx, Knipscheer, & van Tilburg, 1999).

There is general consensus regarding the positive roles of social resources in responding to life stress and enhancing well-being. Studies have consistently shown that individuals with strong social ties and social interactions are in better physical and mental health (Cohen & Wills, 1985; George, 1996; Mendes de Leon et al., 2001). In particular, individuals with more social resources have been shown to have a more rapid functional and emotional recovery in health-related stressful situations, such as medical events or injury (Kempen, Scaf-Klomp, Ranchor, Sanderman, & Ormel, 2001; Magaziner, Simonsick, Kashner, Hebel, & Kenzora, 1990; Wilcox, Kasl, & Berkman, 1994) and functional decline (Newsom & Schulz, 1996; Wallsten, Tweed, Blazer, & George, 1999).

Psychosocial factors may not only directly influence emotional states but may also interact with disability. As suggested by the stress-buffering hypothesis (Cohen & Wills, 1985), social support has been shown to modify adverse physical and mental consequences associated with stress (Hays, Steffens, Flint, Bosworth, & George, 2001; Penninx et al., 1997; Wallsten et al., 1999). Studies have also shown that individuals' psychological resources attenuate the adversity of stressful life situations and improve adaptation. Mendes de Leon, Seeman, Baker, Richardson, and Tinetti (1996) reported a significant interaction between self-efficacy and changes in physical performance, suggesting that self-efficacy buffers functional decline in the face of diminished physical capacity. Another study (Roberts et al., 1994) showed that greater sense of control significantly altered the negative impacts of stress, defined as daily strains and life events, and protected emotional well-being. Exploring moderating effects of psychosocial resources on depression can identify risk-enhancing and risk-reducing factors, which are relevant to the development of interventions.

Given the potential of psychosocial resources to alter the effects of disability on depression, the following research questions were generated:

1. How are disability, mastery, and social resources associated with depression?
2. How do mastery and social resources modify the disability–depression relationship?

We hypothesized that higher levels of mastery and more social resources would attenuate the negative impacts of disability on depression. These research questions were addressed in cognitively intact older individuals because cognitive impairment can affect

disability and depression and reduce the validity of self-reported responses.

Methods

Sample

The sample was drawn from the Charlotte County Healthy Aging Study (CCHAS). The CCHAS is a community-based, cross-sectional study of older adults living in Charlotte County, Florida. A detailed description of this study can be found elsewhere (Small et al., 2000). To be eligible to participate, participants had to live in randomly selected blocks of two U.S. Census tracts in Charlotte County and be between the ages of 60 and 84. Individuals living in long-term care facilities were excluded. Invitations to participate in this study were made by sending potential participants a letter indicating that a staff member would be contacting them by telephone within 3–4 days. Up to nine telephone calls were made to age-eligible participants before they were classified as unreachable. Among the 808 persons with whom contact could be established, 466 (57.7%) agreed to participate in the face-to-face interviews. For the present analysis, participants who were cognitively impaired were excluded. This was done by excluding those who scored below 77 on the Modified Mini-Mental State Examination (Teng & Chui, 1987), resulting in a sample size of 444. A listwise deletion further reduced the final sample size to 406 participants who had complete records on all of the study variables.

Measures

Disability.—Disability was measured with 17 items from a composite measure consisting of the activities of daily living (Katz, 1983), the instrumental activities of daily living (Lawton & Brody, 1969), the Physical Performance Scale (Nagi, 1976), and the Functional Health Scale (Rosow & Breslau, 1966). Individuals were asked to report their functional status for each activity in the list. Responses were coded as 0 (no difficulty), 1 (some difficulty), 2 (a lot of difficulty), or 3 (unable to do). Total scores were calculated by summing responses for the 17 questions. The potential range of scores was 0 (no disability) to 51 (severe disability). Cronbach's alpha for this measure in the present sample was high ($\alpha = .82$).

Mastery.—Mastery was measured with Pearlin and Schooler's (1978) Mastery Scale. Respondents described their feelings about seven items such as "I cannot solve my problems" and "My future mostly depends on me" on a 4-point Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree). Responses to negatively worded items were reverse-coded, and all responses were summed for the total score. Scores on the Mastery Scale ranged from 7 (low mastery) to 28 (high mastery). Cronbach's alpha for this scale was satisfactory in the present sample ($\alpha = .78$).

Social Resources.—Social resources included three subscales: Social Network, Social Support, and Satisfaction With Support. Social network was measured with six items from Lubben's (1988) Social Network Scale. Measures included the number of relatives or friends seen at least once a month (0 to 9 or more), frequency of contact (less than monthly to daily), and the number of relatives or friends the participant felt close to (0 to 9 or more). Cronbach's alpha for social network was high in the present sample ($\alpha = .71$). Social support and satisfaction with support were measured with a composite measure from the work of Krause and Borawski-Clark (1995). The items in the scale represented various dimensions of social support, including instrumental support (such as help with chores), informational support (such as sharing suggestions and information), and emotional support (such as having others listen and show interest). For each support activity, respondents reported how often they received the support (never to very often). In addition, respondents were asked to report how satisfied they were with the instrumental, informational, and emotional support they received, using a 4-point Likert scale ranging from 1 (not at all) to 4 (very). Cronbach's alpha was found to be satisfactory for Social Support (11 items, $\alpha = .87$) and Satisfaction with Support (3 items, $\alpha = .68$).

Depression.—The Geriatric Depression Scale-Short Form (GDS-SF; Sheikh & Yesavage, 1986) was used to assess depressive symptoms. The GDS-SF was designed specifically for the assessment of depressive symptoms in older populations. Respondents describe their feelings about 15 items such as "Do you feel your life is empty?" and "Are you in good spirits mostly?" using a yes/no format. The GDS-SF scores are calculated by counting the number of responses that suggest possible depression. Scores on the GDS-SF ranged from 0 (no depressive symptoms) to 15 (severe depressive symptoms). Cronbach's alpha for this measure was shown to be satisfactory in the present sample ($\alpha = .77$).

Other Variables.—Demographic information included age (in years), gender (0 = male, 1 = female), marital status (0 = not married, 1 = married), and educational attainment (in years). Chronic conditions were measured with a checklist by asking the respondents whether a doctor had ever told them that they had specific diseases or conditions. The list included 11 chronic diseases and conditions, including heart disease, high blood pressure, diabetes, stroke, cancer, and arthritis. The total number from the list was used in the analysis.

Analytic Strategy

To test direct and moderating effects of psychosocial attributes, a hierarchical regression model of depression was estimated by entering independent blocks of predictors, with the entry order being (a) demographic variables and chronic conditions, (b) disability,

(c) mastery and social resources, and (d) interaction terms between disability and psychosocial factors. In computing interaction terms, centered scores were used to avoid problems associated with lack of scale invariance and to minimize the multicollinearity between the direct effects and interaction terms (Aiken & West, 1991). The scale transformation was conducted by subtracting the mean from each score. When significant interactions were found, the sample was divided into low and high groups based on the median scores of the moderating factors, and the correlation coefficients between disability and depression in two groups were compared using Fisher's r -to- z transformation, a statistical method to determine the difference between independent correlation coefficients (Steiger, 1980).

Results

Description of the Sample and Study Variables

The present sample was composed of 406 older adults with a comparable gender distribution (51.7% female). The sample was on average 72.3 years of age ($SD = 6.13$; range = 60–84). More than three quarters of the sample (76.8%) were married and living with a spouse. The average years of education was approximately 14 years. The mean number of chronic conditions was 2.20 ($SD = 1.56$; range = 0–8). Compared with the general older population, the present sample had a much higher percentage of Caucasian participants (98.5%) and was biased toward older persons of higher socioeconomic status.

The mean score for mastery was 21.8 ($SD = 3.28$; range = 11–28). Social network, social support, and satisfaction with support averaged 19.2 ($SD = 4.89$; range = 2–30), 24.9 ($SD = 7.97$; range = 11–44), and 10.4 ($SD = 1.88$; range = 3–12), respectively. The means for disability and depression were 2.33 ($SD = 4.35$; range = 0–30) and 1.78 ($SD = 2.16$; range = 0–14), respectively.

Associations Among Study Variables

To assess underlying associations among study variables, bivariate correlations were examined, and the results are presented in Table 1. All correlation coefficients were below .50. To reduce confounding resulting from shared variance between physical and mental health, we used GDS-SF (Sheikh & Yesavage, 1986) as an index of depression. This scale was designed with items for somatic symptoms excluded, which reduces confounding between physical conditions and mental health. However, a high correlation of disability with depression ($r = .45$, $p < .001$) was still obtained. Depression also was highly associated with mastery ($r = -.47$, $p < .001$). The strong association between mastery and depression is not surprising because lack of mastery indicates helpless or fatalism. However, numerous studies have shown that mastery and depression are correlated yet distinguished constructs (Bienenfeld et al., 1997; Pearlin et

Table 1. Correlations Among Study Variables

	1	2	3	4	5	6	7	8	9	10	11
1. Age	—	-.05	-.16**	-.05	.13*	.25***	-.21***	-.04	-.08	-.15**	.15**
2. Gender		—	-.21***	-.22***	-.01	.09	-.06	.11*	.12*	.03	-.01
3. Marital status			—	.10*	-.05	-.11*	.02	.12*	.22***	.05	-.10*
4. Education				—	-.04	-.10*	.26***	-.00	.00	.11*	-.15**
5. Chronic conditions					—	.20***	-.09	.04	.05	-.11*	.18***
6. Disability						—	-.24***	-.06	.13**	-.15**	.45***
7. Mastery							—	.06	-.03	.26***	-.47***
8. Social network								—	.28***	.28***	-.17**
9. Social support									—	.36***	.01
10. Satisfaction with support										—	-.30***
11. Depression											—

Note: Gender, 0 = male, 1 = female; marital status, 0 = not married, 1 = married.

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

al., 1981; Roberts et al., 1994; Thoits, 1987). Given the high associations, results need to be carefully interpreted, and possible confounding among the variables should be kept in mind.

Disability was inversely associated with mastery and satisfaction with support but positively associated with social support, indicating that individuals with greater levels of disability were less likely to feel in control and be satisfied with support and were more likely to receive support from others. Mastery and satisfaction with support were positively associated with each other. The three types of social resources were positively interrelated. Greater level of depression was observed among individuals with older age, no spouse, less education, more chronic conditions, more disability, lower mastery, smaller social network, and less satisfaction with support.

Predictors of Depression

Table 2 summarizes the results of the hierarchical regression model of depression. Demographic variables and chronic conditions explained 7% of the variance of depression, with lower levels of education

and more chronic conditions being significant predictors. Disability explained an additional 15% of the variance. After controlling for background variables and disability, psychosocial resources explained an additional 16% of the variance. Individuals with lower levels of mastery, smaller social network, and less satisfaction with support were more likely to be depressed. In addition to the direct effects, significant interactions were obtained for Disability \times Mastery and Disability \times Satisfaction With Support. The interaction terms added 3% to the variance explained, resulting in a total of 41% of variance of depression accounted for by the model.

For the interpretation of interaction effects, the sample was divided into low and high groups on the basis of the median scores of the moderating factors (mastery or satisfaction with support), and correlation coefficients between disability and depression in each group were assessed. The correlation between disability and depression was stronger in the low-mastery group ($r = .48$, $p < .001$, $n = 213$) than in the high-mastery group ($r = .31$, $p < .001$, $n = 193$), and the difference was statistically significant, $t(1) = 2.02$, $p < .05$. In addition, the associations between disability

Table 2. Regression Model of Depression

Step	Predictor	B	β	t	R ²	ΔR^2
1	Age	.03	.08	1.58	.07***	.07***
	Gender	-.14	-.04	-0.67		
	Marital status	-.29	-.06	-1.12		
	Education	-.12	-.15	-2.93**		
	Chronic conditions	.22	.16	3.16***		
2	Disability	.21	.41	8.55***	.22***	.15***
3	Mastery	-.23	-.36	-7.99***	.38***	.16***
	Social network	-.04	-.09	-1.98*		
	Social support	.01	.04	0.80		
	Satisfaction with support	-.16	-.14	-2.84**		
4	Disability \times Mastery	-.02	-.18	-3.77***	.41***	.03**
	Disability \times Social Network	-.001	-.00	-0.11		
	Disability \times Social Support	.002	.01	0.20		
	Disability \times Satisfaction With Support	-.02	-.12	-2.68**		

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

and depression in the low-satisfaction group ($r = .55$, $p < .001$, $n = 167$) and the high-satisfaction group ($r = .30$, $p < .001$, $n = 239$) were significantly different, $t(1) = 3.04$, $p < .01$).

Discussion

The present study was designed to address how mastery and social resources are associated with depression and how they modify the association between disability and depression. The direct and moderating effects were tested with a hierarchical regression analysis. The results lend support for the proposed hypothesis, showing the importance of psychosocial resources in buffering the adverse effects of disability on depression.

In the regression model for direct effects, education, chronic conditions, disability, mastery, social network, and satisfaction with support were identified as significant predictors of depression. The findings are consistent with previous studies that showed a higher prevalence of depressive symptoms among older individuals with lower socioeconomic status, poorer health and functional conditions, and lack of psychosocial resources (George, 1996; Roberts et al., 1994; Zeiss et al., 1996). In the current study, psychosocial resources explained a considerable amount of the variance of depression even after adjusting for the effects of disease and disability.

In addition to these direct effects, mastery and satisfaction with support were shown to have significant interactions with disability in predicting depression. The association between disability and depression was stronger among individuals with lower levels of mastery and less satisfaction with support. Conversely, individuals who had greater levels of mastery and more satisfaction with support were less likely to experience depressive symptoms in the presence of disability. This finding suggests that psychosocial resources may serve as a stress moderator that buffers the adverse consequences of disability.

Mastery as an Indicator of Psychological Resilience

The present study provided further support to the considerable body of literature that showed the protective role of mastery in buffering life stress (Kempen et al., 1999; Roberts et al., 1994). The beneficial effects of mastery may be explained in several ways. First, mastery may enable individuals to prevent or effectively manage health-related problems. Studies have shown that individuals with high mastery or control are more likely to use preventive care, have good health behaviors (e.g., not smoking, exercise, and proper nutrition), seek treatment early, and use health services properly (Menec & Chipperfield, 1997; Seeman & Seeman, 1983). Second, mastery may help individuals effectively mobilize personal resources and coping strategies. Individuals with high mastery are likely to have more social resources and better skills to use them in times of need. Also, they are more likely to use problem-focused coping when they are con-

fronted with stressful situations (Thoits, 1987). These preventive behaviors and effective management skills associated with mastery may alter negative consequences of disability and facilitate better adaptation.

Unlike many personality traits, the stability of mastery is subject to controversy. Some studies have suggested that mastery or control is a stable construct over time (Aneshensel, Pearlin, Mullan, Zarit, & Whitlatch, 1995), whereas others have viewed it as responsive to life events or situations (Schieman & Turner, 1998). If mastery is a modifiable construct, it is possible that decline in physical functioning may erode individuals' levels of mastery. Then mastery may represent a psychological resource as well as a consequence of disability. To clarify the stability or change in mastery over time and to examine the feedback loop in the process, a longitudinal study design is needed.

Beneficial Effects of Social Resources

Consistent with previous studies that showed the positive effects of social integration on emotional states (George, 1996), the present study found a significant connection between social network and depression. Several explanations may be considered for the effects of social network on depression. First, individuals with better social relationships with relatives and friends may be more extroverted and less vulnerable to negative emotional states. Second, older individuals with larger social networks may be more likely to participate in health-promoting activities and social events, which may in turn enhance emotional well-being. Third, individuals who are socially active and connected with others may use their networks as coping resources to confront disability and avoid depression. Finally, the feeling of support may bolster self-worth and self-esteem and lead to positive emotional well-being.

The present study showed that satisfaction with support was a significant predictor of depression, whereas received social support was not. The finding implies the importance of the role of quality of support over that of quantity of support. Studies have shown that perception of support is more meaningful than objective amount of support in predicting emotional well-being (George, 1996; Wallsten et al., 1999). It is noteworthy that satisfaction with support was not only connected with fewer depressive symptoms but also interacted with disability to mitigate the harmful effects of disability on depression. This finding suggests that individuals with disability may be protected from progression of depression when they are highly satisfied with support.

Limitations and Implications

Some limitations of the present study should be noted. One important concern is the nature of the participants who were examined. The present study used a nonrepresentative sample with a low response rate. In addition, the sample was biased toward older

adults of higher socioeconomic status and generally good health; therefore, extreme cases of illness and frailty are underrepresented. A second limitation is related to the nature of cross-sectional study design, which restricts the ability to draw causal inferences concerning the directionality among the constructs. The possible reciprocal relations between disability and depression and changes in each construct over time need to be explored with a longitudinal study design. The utilization of self-report as an assessment tool for disability should be noted as a limitation as well. Because self-reports are subject to individuals' emotional states or characteristics, it is possible that the association between disability and depression may be overstated by some degree. Another limitation is that we used a crude measure of chronic conditions by summing the total number of conditions without considering the severity or the unique characteristics of each condition.

In spite of the aforementioned limitations, the present study has implications for research and practice. In addition to the growing literature that suggests the importance of psychosocial resources in the disablement process (Femia et al., 1997, 2001; Jang et al., 2001; Kempen et al., 1999), the present study shows that they also influence how individuals promote well-being under the conditions of disability. Given that some aspects of psychosocial resources are modifiable, the present study suggests ways to enhance well-being of functionally challenged older populations. First, enhancement of sense of control and modification of environments to assist those with disability may empower functionally challenged older individuals and help them manage the adversity of disability. Research has reported that older individuals benefit from control-enhancing interventions and experience an increased sense of mastery (Reich & Zautra, 1989). Second, efforts to enrich older individuals' social networks and to maximize satisfaction with support will be useful in protecting older individuals from depression. Given the finding that subjectively perceived quality of support is more meaningful than quantity of support, interventions should target both support providers to better understand elders' support needs and expectations and support-receiving elders to bolster positive evaluations and appreciation of situations. In addition, acknowledgment of positive outcomes from stressful experiences, such as finding meaning in life, developing better coping skills, and recognizing the value of social relationships, may be useful in preventing depression (Taylor, Kemeny, Reed, Bower, & Gruenewald, 2000).

Along with the widely acknowledged importance of behavioral interventions, such as physical exercise and rehabilitation, psychological approaches altering individuals' feelings and perceptions need more attention. Studies have demonstrated the effectiveness of psychotherapy among disabled older individuals in reducing depression and improving functioning (Landreville & Gervais, 1997), as well as educational interventions targeted to older individuals to teach new coping strategies (Zarit & Zarit, 1998). Given the findings from the present study and the promising ev-

idence for the effectiveness of therapeutic or educational interventions provided by other studies, psychosocial factors should be taken into account in designing programs for older adults with disability.

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EXECUTIVE DIRECTOR THE BROOKDALE CENTER ON AGING AT HUNTER COLLEGE

The Brookdale Center on Aging at Hunter College, an internationally recognized academic gerontology center founded in 1975, invites applications for the position of Executive Director.

The Executive Director will build on the Center's strengths and strategically shape the Center's future growth in the areas of gerontological research, program development, and program evaluation. With a current budget of \$3 million and fifty staff, the Center now provides workforce development and education in gerontology for 10,000 people each year through courses, workshops, and conferences. The Center advocates for older adults through its Samuel Sadin Institute on Law and Rights of Older Adults, the Grandparent Caregiver Law Center, and the Reingold Institute for Prevention of Financial Exploitation of Elders. The Center also pioneered the development of an innovative community-based adult day service program for Alzheimer's patients and respite services for their caregivers.

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Send resume, cover letter, and the names of three references to: **Charles Hayes, Director of Human Resources, Hunter College, 695 Park Avenue, E1502, New York, NY 10021; Fax: 212-772-4329; E-mail: charles.hayes@hunter.cuny.edu** References will not be contacted without the applicant's prior permission. For more information please go to <http://hr.hunter.cuny.edu/>.

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