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Penninx, B.W.J.H.; van Tilburg, T.G.; Boeke, A.J.P.; Deeg, D.J.H.; Kriegsman, D.M.W.; van Eijk, J.T.M.

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# Effects of Social Support and Personal Coping Resources on Depressive Symptoms: Different for Various Chronic Diseases?

Brenda W. J. H. Penninx, Theo van Tilburg, A. Joan P. Boeke, Dorly J. H. Deeg,
Didi M. W. Kriegsman, and Jacques Th. M. van Eijk
Vrije University

Effects of psychosocial coping resources on depressive symptoms were examined and compared in older persons with no chronic disease or with recently symptomatic diabetes mellitus, lung disease, cardiac disease, arthritis, or cancer. The 719 persons without diseases reported less depressive symptoms than the chronically ill. Direct favorable effects on depressive symptoms were found for having a partner, having many close relationships, greater feelings of mastery, greater self-efficacy expectations, and high self-esteem. Buffer effects were observed for feelings of mastery, having many diffuse relationships, and receiving emotional support. Buffer effects were differential across diseases for emotional support (in cardiac disease and arthritis only) and for diffuse relationships (in lung disease). Receiving instrumental support was associated with more depressive symptoms, especially in diabetes patients.

Key words: chronic disease, social support, mastery, coping resources, depressive symptoms, elderly

An extensive literature reveals that social support and personal coping resources may contribute to variability in the impact of chronic illness on psychological health. Chronically ill patients who receive considerable social support and have strong feelings of mastery, self-efficacy, and self-esteem have a decreased risk of subsequent depression (Brown, Andrews, Harris, Adler, & Bridge, 1986; Holahan & Holahan, 1987). There are two different models concerning the impact of psychosocial coping resources. The *direct-effect model* assumes that these resources have a beneficial effect on psychological health, regardless of whether stress (e.g., due to disease) is present (Broadhead et al., 1983; Cassel, 1976). According to the *buffering model,* coping resources may mitigate the negative influence of stressors on health (Cobb, 1976). Despite theoretical controversies, there is empirical evidence in favor of both models (Cohen & Syme, 1985).

As most previous studies have mainly been restricted to one specific disease, it is not possible to determine whether

Brenda W. J. H. Penninx, A. Joan P. Boeke, Didi M. W. Kriegsman, and Jacques Th. M. van Eijk, Institute for Research in Extramural Medicine, Vrije University, Amsterdam, the Netherlands; Theo van Tilburg, Department of Social Research Methodology, Vrije University, Amsterdam, the Netherlands; Dorly J. H. Deeg, Department of Psychiatry and Department of Sociology and Social Gerontology, Vrije University, Amsterdam, the Netherlands.

Correspondence concerning this article should be addressed to Brenda W. J. H. Penninx, EMGO Institute, Vrije Universiteit, v.d. Boechorststraat 7, 1081 BT Amsterdam, the Netherlands. Electronic mail may be sent to BWJH.Penninx.EMGO@med.vu.nl.

the effects of psychosocial coping resources differ across people with different diseases. However, there are some indications for such a disease specificity, as effects of psychosocial coping resources may depend on disease-specific characteristics (Folkman & Lazarus, 1980; Penninx, Kriegsman, van Eijk, Boeke, & Deeg, 1996). For example, as emotion-focused strategies are more effective in situations that are not amenable to individual control (Pearlin & Schooler, 1978), coping strategies that focus on the emotional distress caused by a disease may be most successful in diseases that cannot be managed by individual or medical intervention. Moreover, the degree of life threat (Feifel, Strack, & Nagy, 1987; Rolland, 1987) and the extent of functional incapacitation (Fitzpatrick, Newman, Archer, & Shipley, 1991) are also considered to be critical aspects. In a life-threatening disease, emotional support from others appears to protect against depression (Ell, Nishimoto, Morvay, Mantell, & Hamovitch, 1989), whereas in functionally disabled patients, instrumental support is a more important determinant of depression (Fitzpatrick et al., 1991). In sum, as chronic diseases have different characteristics regarding prognosis, extent of functional incapacitation, and amenability to treatment, the effects of psychosocial coping resources may also differ for patients with different diseases.

The present study aims to explore the effects of coping resources on depressive symptomatology across distinct diseases. It includes recently symptomatic older persons with diabetes mellitus, chronic obstructive lung disease, cardiac disease, arthritis of knee or hip, and cancer. In addition, healthy older persons are included to enable the distinction between direct and buffer effects. The following research questions will be addressed: Which aspects of social support and personal coping resources have a direct

effect on depressive symptoms, irrespective of the presence of disease? Which aspects of social support and personal coping resources buffer the association between chronic disease and depressive symptoms? Do these latter effects differ for the five diseases under study?

## Method

### Sample

Data are from the Longitudinal Aging Study Amsterdam (LASA), a study on predictors and consequences of changes in autonomy among older persons (Deeg, Knipscheer, & van Tilburg, 1993). A random sample of people aged 55 to 85 years, stratified by age and sex, was drawn from population registers of 11 municipalities in The Netherlands. The cohort was recruited in 1991 for the study Living Arrangements and Social Networks of Older Adults (LSN; response rate, 62.3%). Of the 3,805 LSN participants, a total of 3,107 (81.7%) took part in the LASA interview. In all, 126 (3.3%) had died before approach, 44 (1.2%) could not be contacted, 134 (3.5%) were too ill or cognitively impaired to be interviewed, and 394 (10.4%) refused to participate. Attrition was higher in the older people ($p < .001$), but it was not related to sex. Institutionalized participants ($n = 126$) were excluded from the present study, inasmuch as their social support is incomparable with that of elderly people living independently. Participants who were unable to complete the full interview ($n = 136$) were also excluded. These people were older ($p < .001$) and had more chronic diseases ($p < .01$) than did participants who completed the interview. As a result, the study sample is a relatively healthy selection of the original sample, although the stratified sampling frame guaranteed the inclusion of sufficient participants in the oldest age category, as well as individuals with physical problems. A total of 35 respondents were excluded because of incomplete disease data, leaving a study sample of 2,810 persons.

### Measures

*Disease status.* Respondents were asked whether they had diabetes mellitus, chronic obstructive lung disease (i.e., asthma, chronic bronchitis, or emphysema), cardiac disease, arthritis of knee or hip, or cancer. Self-reports of chronic diseases were compared with data from respondents' general practitioners (Kriegsman, Penninx, van Eijk, Boeke, & Deeg, 1997). The agreement was reasonably high, with kappa values ranging between 0.60 and 0.85. Moreover, depressive symptoms did not influence the agreement between patients' and general practitioners' information.

As psychosocial coping resources can be assumed to be most effective in patients faced with stressful experiences of their disease (Lazarus & Folkman, 1984), only recently symptomatic patients were included in our study. Recent disease symptoms were determined by additional disease-specific questions. Recent diabetes mellitus was considered to be present when daily dietary and medical regimens were reported. For cancer, recent disease experiences were present if the respondent used cancer medication or had regular medical checkups, or both. Chronic obstructive lung disease and cardiac disease were considered to be recently symptomatic if at least one disease-specific symptom was reported. Lung disease symptoms were as follows: daily coughing, phlegm production, wheezing, or shortness of breath during rest. Cardiac disease symptoms were as follows: pain in the chest during exertion that disappeared within 10 min after stopping or taking sublingual nitroglycerine (angina pectoris), or shortness of breath or edema of the lower extremities, or both (congestive heart

failure). Finally, arthritis of knee or hip was considered to be symptomatic if at least two symptoms (pain, morning stiffness, and swelling) were present on most days during the previous 3 months.

In addition, the presence of comorbid disease was assessed (i.e., stroke, peripheral atherosclerosis, gastro-intestinal disease, kidney or endocrine disease, chronic back pain, arthritis of arm or shoulder, and neurological disease). Using all of the disease data, comorbidity was defined as the presence of any other disease in addition to the index disease.

*Social support.* As previously described (Penninx, van Tilburg, Deeg, et al., 1997; Penninx, van Tilburg, Kriegsman, et al., 1997), structural aspects of support as well as functional support exchanges were measured. Structural aspects included partner status and the number of close and diffuse social relationships. For partner status, respondents had a positive score if they were either married or had someone they considered to be their partner. Socially active relationships of a respondent were determined using the procedure of Cochran, Larner, Riley, Gunnarson, and Henderson (1990). Network members aged 18 years and older with whom the respondent maintained an important and regular relationship were identified by name in seven domains (household members, children, other relatives, neighbors, work and study contacts, contacts in organizations, and other contacts). A distinction was made between close relationships (children, siblings, parents, and household members) and diffuse relationships (neighbors, friends, acquaintances, colleagues, and others). Functional support exchanges within social relationships were measured by the mean amount of instrumental and emotional support received from network members. Questions were asked about each of nine network members (excluding the partner, to ensure comparable values of participants with and without a partner) with whom contact was most frequent. Instrumental support received was measured by asking how often during the previous year the respondent had received help with daily chores around the house, such as preparing meals, cleaning the house, transportation, and small repairs. Emotional support received was measured by asking how often during the previous year the respondent had talked to their network member about personal experiences and feelings. Response categories were *never, rarely, sometimes,* or *often.* The mean of the amount of support received across the various relationships was computed, ranging from *no or never supportive relationships* (0) to *all relationships are often supportive* (3).

*Personal coping resources. Mastery* was measured by an abbreviated five-item version of the Pearlin Mastery Scale and concerns the extent to which a person considers life chances to be influenced by personal control, in contrast to a fatalistic approach (Pearlin & Schooler, 1978). This scale, ranging from 5 to 25, with a higher rating indicating a greater sense of mastery, showed reasonable reliability in our sample (Cronbach's $\alpha = .67$). Self-efficacy refers to personal judgments of how well behavior can be implemented in situations that contain novel, unpredictable, or stressful elements and was measured according to a 12-item version of the general Self-Efficacy Scale of Sherer et al. (1982). Response categories range from *totally disagree* (1) to *totally agree* (5). The total scale is not unidimensional but contains three subscales (cf. Woodruff & Cashman, 1993), which were used separately. The dimensions are as follows: willingness to initiate behavior (three items, Cronbach's $\alpha = .64$), persistence in the face of adversity (four items, Cronbach's $\alpha = .65$), and willingness to expend effort in completing the behavior (five items, Cronbach's $\alpha = .63$). For all subscales, a higher score indicates higher perceived self-efficacy. Self-esteem was assessed on the basis of the answers to the statement "On the whole I am satisfied with myself." Response categories range from *totally disagree* (1) to *totally agree* (5).

*Depressive symptoms.* Depressive symptoms were measured according to the Center for Epidemiologic Studies Depression (CES–D) Scale, a 20-item self-report scale designed to measure depressive symptomatology in the general population (Radloff, 1977). This scale, ranging from 0 to 60, has been shown to have good psychometric properties (Beekman, van Limbeek, Deeg, Wouters, & van Tilburg, 1994). In our study the Cronbach's alpha was .87.

## Data Analyses

Six categories were distinguished: the healthy category of respondents without any chronic disease and five specific disease categories (diabetes mellitus, chronic obstructive lung disease, cardiac disease, arthritis of knee or hip, and cancer). Using multiple linear regression analysis, predictive models were constructed for the depression score within the six categories. The continuous CES–D score was first regressed on the set of social support variables and, in a second analysis, on the set of personal coping resources. All regression analyses included control for age, sex, and comorbidity, as these were associated with both depression and the independent variables.

Direct and buffer effects were distinguished by determining whether the association of social support and personal coping resources with depressive symptoms differed between the specific disease categories and the healthy reference category. Therefore, for each of the five diseases, the standardized regression coefficients between a specific disease category and the reference category were compared. The null hypothesis of equality of regression coefficients between the disease and the reference category was tested by means of the multigroup method of analysis incorporated into the linear structural equation (LISREL) program (Jöreskog & Sörbom, 1988). This procedure analyzes the regression models of the disease and the reference category, with the assumption that coefficients in both groups are equal. It statistically tests whether the equality of a regression coefficient should be rejected, which yields similar results compared with testing cross-product terms (between disease status and coping resource) in multiple regression analyses. A direct effect is considered to be present if a social support or personal coping resource variable is significantly associated with depressive symptoms in the category of healthy respondents as well as in the specific disease categories. A buffer effect is considered to be present if the association between a social support or personal coping resource variable with depressive symptoms differs between a specific disease category and the healthy category, and the association is stronger for the disease category than for the healthy category.

## Results

Of the initial 2,810 respondents, 719 (25.6%) reported no chronic disease and constituted the healthy reference category, 204 (7.3%) reported diabetes mellitus, 314 (11.2%) reported chronic obstructive lung disease, 537 (19.1%) reported cardiac disease, 731 (26.0%) reported arthritis of knee or hip, and 247 (8.8%) reported cancer. Those who met the criteria for recent disease symptoms were all of the 204 diabetes mellitus patients, 280 of the 314 (89.2%) lung disease patients, and 179 of the 247 (72.5%) cancer patients. For cardiac disease and arthritis, the application of the criteria reduced the numbers more considerably. Of the 537 cardiac patients, 336 (62.6%) had angina pectoris or congestive heart failure symptoms. As expected, these symptomatic

cardiac patients had higher depression scores than the nonsymptomatic patients (mean CES–D score was 10.1 and 7.3, respectively, $p < .001$). Of the 731 knee or hip arthritis patients, 359 (49.1%) had at least two symptoms (of pain, stiffness, or swelling). Again, symptomatic arthritis patients were more depressed than asymptomatic ones (mean CES–D score was 11.5 and 7.9, respectively, $p < .001$).

In total, 1,051 respondents had at least one of the five chronic diseases under study. Of these respondents, 261 (24.8%) had more than one of the five diseases. Table 1 gives a description of all study variables for the five disease categories and the healthy category. Respondents with no chronic disease were younger, more often had a partner, and reported less depressive symptoms ($M = 5.4$) than the chronically ill ($M = 11.5$ for arthritis, and $M = 10.1$ for the other diseases).

Intercorrelations among the social support variables and among the personal coping resources were low. Correlations between social support variables did not exceed .17, and correlations between personal coping resources were all below .33, except for the correlation between mastery and the Self-Efficacy subscale Persistence Facing Adversity ($r = .55$). As intercorrelations were not extremely high, the independent variables may be considered to be empirically distinct dimensions.

## Social Support

Table 2 shows the multiple regression analyses of the CES–D score on social support for each disease category, after adjustment for age, sex, and comorbidity. The variance explained ($R^2$) was relatively low in healthy respondents and arthritis patients (8%), but much higher in diabetes mellitus and lung disease patients (21%). In participants with no disease, partner status ($\beta = -.18$) and the number of close relationships ($\beta = -.09$) were negatively associated with depressive symptoms. As tested with the multigroup comparison procedure within the LISREL program that compares each specific disease category with the healthy category (see columns C in Table 2), the coefficients of partner status and number of close relationships can be considered equal. Thus, favorable effects of having a partner and many close relationships represented direct effects, as they occur irrespective of the presence of chronic disease.

Furthermore, two buffer effects were observed. For diffuse relationships, negative associations were found in patients with diabetes mellitus ($\beta = -.15$), lung disease ($\beta = -.20$), arthritis ($\beta = -.11$), and cancer ($\beta = -.14$; ns), whereas this association was not found in healthy participants ($\beta = -.02$). Correspondingly, LISREL analyses demonstrated that for patients with diabetes mellitus and lung disease, the coefficients differed significantly compared with healthy participants. For emotional support, favorable negative associations with depressive symptoms were found in cardiac disease and arthritis ($\beta s = -.13$ and $-.12$, respectively), which, as confirmed by the LISREL analyses, differed significantly from the association found in the healthy category ($\beta = -.04$). Thus, emotional support and diffuse relationships interacted with the presence of specific

Table 1

*Comparison of Characteristics Between Participants With a Specific Disease and Participants With No Disease*

| Variable | No chronic disease (n = 719) | Diabetes mellitus (n = 204) | Lung disease (n = 280) | Cardiac disease (n = 336) | Arthritis of knee or hip (n = 359) | Cancer (n = 179) |
|---|---|---|---|---|---|---|
| Age (years) | 67.2 (8.6) | 73.3 (7.7)*** | 71.7 (7.8)*** | 72.8 (8.3)*** | 70.3 (8.8)*** | 71.4 (7.9)*** |
| Sex (% men) | 57.6 | 47.0** | 55.4 | 53.3 | 25.9*** | 41.9*** |
| Duration of disease | | 13.1 (16.0) | 25.6 (24.3) | 12.8 (15.4) | 16.8 (17.2) | 8.1 (11.1) |
| Comorbidity (% yes) | | 82.4 | 83.2 | 83.6 | 74.9 | 77.2 |
| Social support | | | | | | |
|   Partner status (% partner) | 75.5 | 61.8*** | 68.6* | 62.2*** | 57.7*** | 67.0* |
|   No. of close relationships | 5.7 (3.7) | 5.7 (3.8) | 5.5 (4.0) | 5.5 (3.7) | 5.6 (3.8) | 5.6 (3.9) |
|   No. of diffuse relationships | 8.1 (6.9) | 7.2 (6.0) | 7.2 (7.2) | 7.1 (6.1)* | 8.0 (7.1) | 7.4 (6.5) |
|   Instrumental support | 0.7 (0.7) | 0.9 (0.8)*** | 0.9 (0.8)*** | 0.9 (0.8)*** | 0.9 (0.8)*** | 0.8 (0.8)* |
|   Emotional support | 1.7 (0.7) | 1.6 (0.8)** | 1.7 (0.9) | 1.7 (0.8) | 1.9 (0.7)** | 1.7 (0.9) |
| Personal coping resources | | | | | | |
|   Mastery | 18.3 (3.0) | 16.4 (3.4)*** | 16.4 (3.5)*** | 16.7 (3.3)*** | 16.2 (3.5)*** | 16.7 (3.5)*** |
|   Self-efficacy | | | | | | |
|     Willing to initiate behavior | 8.6 (2.5) | 7.7 (2.3)*** | 8.0 (2.4)*** | 7.9 (2.5)*** | 8.1 (2.5)*** | 8.1 (2.4)* |
|     Persistence facing adversity | 14.8 (2.5) | 13.9 (2.9)*** | 13.8 (2.9)*** | 14.0 (2.8)*** | 13.6 (2.9)*** | 13.9 (2.8)*** |
|     Effort to complete behavior | 19.6 (2.5) | 19.3 (2.7) | 19.4 (2.4) | 19.3 (2.8) | 19.5 (2.5) | 19.4 (2.4) |
|   Self-esteem | 4.1 (0.7) | 4.0 (0.8)* | 3.9 (0.9)*** | 3.9 (0.8)*** | 3.9 (0.9)*** | 4.0 (0.8)* |
| Depressive symptoms | 5.4 (6.3) | 10.1 (9.2)*** | 10.1 (9.4)*** | 10.1 (8.1)*** | 11.5 (8.9)*** | 10.1 (9.4)*** |

*Note.* $p$ values result from the univariate analyses ($t$ statistics or chi-square statistics) comparing the characteristics between the specific disease group and the reference group (no disease). Standard deviations are in parentheses.

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

diseases in predicting depressive symptoms; favorable effects emerged only in the presence of (some of the) chronic diseases. In healthy participants, instrumental support was positively associated with depressive symptoms ($\beta = .11$). In patients with lung disease, cardiac disease, and arthritis, this association was not significant, but coefficients did not differ significantly from those in the healthy category. However, in diabetes mellitus patients, instrumental support was more strongly associated with depressive symptoms ($\beta = .30$) than in healthy participants.

### Personal Coping Resources

Table 3 demonstrates the adjusted regression coefficients for personal coping resources. The variance ($R^2$) of depressive symptoms explained by personal coping resources was higher in participants with diseases than in healthy participants. In the healthy category, mastery ($\beta = -.23$), persistence facing adversity ($\beta = -.23$), and self-esteem ($\beta = -.08$) were negatively associated with depressive symptomatology, indicating direct effects. Mastery, however, was also found to have buffer effects: The effect of mastery was significantly higher in participants with lung disease ($\beta = -.29$), arthritis ($\beta = -.34$), and cancer ($\beta = -.44$) than in healthy participants. For diabetes mellitus, comparable results were found for persistence facing adversity ($\beta = -.33$). Considering the high correlation between this item and mastery ($r = .55$), this buffer effect might indicate the same phenomenon as the buffer effect found for mastery. Finally, differences in regression coefficients of the Self-Efficacy subscale Effort to Complete Behavior were observed: Only in diabetes and arthritis, and not in other diseases, higher self-efficacy toward the effort to complete behavior was associated with more depressive symptoms ($\beta$s = .14 and .10, respectively).

### Discussion

Our data provide preliminary evidence for favorable effects of both social support and personal coping resources on depressive symptoms in a community-based sample of elderly people. Regardless of the presence of chronic disease, direct favorable effects on psychological status were found for having a partner and many close relationships. This conforms with the proposition of Cohen and Wills (1985) that direct health effects tend to be found when structural support measures are used, whereas buffer effects tend to be found when functional measures are used. This latter is also supported by our findings, as we found a buffer effect for emotional support.

Personal coping resources (i.e., high self-esteem, high sense of mastery, and high self-efficacy toward persistence facing adversity) were directly associated with less depressive symptoms in both persons with and without diseases. This suggests that the effectiveness of personal coping resources is relatively independent of a specific individual situation, and that, in general, a more positive judgment of a person's ability to cope with events reduces psychological distress (Connell, Davis, Gallant, & Sharpe, 1994; Krause,

**Table 2**
*Regression of Depressive Symptoms (CES-D Score) on the Social Support Variables Within Each Disease Category*

| Social support | No disease (n = 713) | | Diabetes mellitus (n = 198) | | | Lung disease (n = 275) | | | Cardiac disease (n = 333) | | | Arthritis (n = 356) | | | Cancer (n = 165) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | b | β | b | β | C | b | β | C | b | β | C | b | β | C | b | β | C |
| Partner (yes vs. no) | -2.64 | -.18*** | -2.23 | -.12 | ns | -3.89 | -.19** | ns | -4.19 | -.25*** | ns | -2.39 | -.13* | ns | -1.19 | -.06 | ns |
| No. of close relationships | -0.14 | -.09* | -0.36 | -.16* | ns | -0.07 | -.03 | ns | -0.21 | -.10* | ns | -0.25 | -.11* | ns | -0.13 | -.06 | ns |
| No. of diffuse relationships | -0.02 | -.02 | -0.22 | -.15* | *** | -0.26 | -.20*** | *** | -0.04 | -.03 | ns | -0.14 | -.11* | ns | -0.19 | -.14 | ns |
| Instrumental support | 1.03 | .11** | 3.49 | .30*** | *** | 0.74 | .06 | *** | 0.40 | .04 | ns | 0.72 | .06 | ns | 2.14 | .18* | ns |
| Emotional support | -0.30 | -.04 | -0.18 | -.02 | ns | -0.61 | -.06 | ns | -1.39 | -.13** | ** | -1.52 | -.12* | ** | -0.67 | -.07 | ** |
| $R^2$ | .08 | ** | .21 | *** | | .21 | *** | | .13 | *** | | .08 | *** | | .13 | ** | |

*Note.* Adjusted for age, sex, and comorbidity. C = Comparison of regression coefficients of the specific diseases with the reference category no disease, using the multigroup comparison procedure within LISREL analysis. Differences are indicated by asterisks. CES-D = Center for Epidemiologic Studies Depression Scale.
*p < .05. **p < .01. ***p < .001.

Table 3
Regression of Depressive Symptoms (CES-D Score) on Personal Coping Resources, Age, and Sex Within Each Disease Category

| Personal coping resources | No disease (n = 700) | | | Diabetes mellitus (n = 196) | | | Lung disease (n = 268) | | | Cardiac disease (n = 328) | | | Arthritis (n = 349) | | | Cancer (n = 161) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | b | β | C | b | β | C | b | β | C | b | β | C | b | β | C | b | β | C |
| Mastery | -0.49 | -.23*** | | -0.58 | -.22** | ns | -0.78 | -.29*** | ** | -0.60 | -.24*** | ns | -0.87 | -.34*** | ** | -1.09 | -.44*** | *** |
| Self-efficacy | | | | | | | | | | | | | | | | | | |
| Willing to initiate behavior | 0.25 | .10** | | 0.14 | .04 | ns | 0.12 | .03 | ns | 0.14 | .04 | ns | 0.17 | .05 | ns | 0.16 | .05 | ns |
| Persistence facing adversity | -0.56 | -.23*** | | -1.04 | -.33*** | * | -0.82 | -.26*** | ns | -0.84 | -.28*** | ns | -0.60 | -.20*** | ns | -0.50 | -.16* | ns |
| Effort to complete behavior | 0.01 | .00 | | 0.50 | .14* | *** | 0.04 | .01 | ns | 0.04 | .01 | ns | 0.38 | .10* | ** | 0.03 | .01 | ns |
| Self-esteem | -0.68 | -.08* | | -1.78 | -.17** | ns | -1.39 | -.13* | ns | -0.67 | -.07 | ns | -1.44 | -.14** | ns | -0.80 | -.07 | ns |
| R² | .20 | *** | | .32 | *** | | .34 | *** | | .24 | *** | | .28 | *** | | .33 | *** | |

Note. Adjusted for age, sex, and comorbidity. C = Comparison of regression coefficients of the specific diseases with the reference category no disease, using the multigroup comparison procedure within LISREL analysis. Differences are indicated by asterisks. CES-D = Center for Epidemiologic Studies Depression Scale.
*p < .05. **p < .01. ***p < .001.

1987; C. A. Smith, Dobbins, & Wallston, 1991; Terry, 1992). Mastery also acted as a buffer, as favorable effects were stronger among chronically ill than among healthy persons. The buffer effect of mastery among people facing high levels of stress have been demonstrated before (Pearlin, Lieberman, Menaghan, & Mullan, 1981; Roberts, Dunkle, & Haug, 1994).

There were some indications for disease specificity in the buffer effects found for social support. Emotional support was associated with less depressive symptoms (buffered) in cardiac disease or arthritis patients, but had little effect for those with diabetes, cancer, or lung disease. In addition, diffuse relationships buffered mostly in chronic obstructive lung disease and less clearly in other diseases. As diffuse contacts can be characterized by less strain on dependence (Dean, Kolody, & Wood, 1990), they may be more diverting in times of disease than close contacts and, consequently, may be more important in preventing depression. The buffer effect was particularly strong in chronic obstructive lung disease patients. Diffuse network members are not continually confronted with lung disease, because of its alternation of periods with and without symptoms (Williams, 1989). Furthermore, the image of a wheezing, coughing, breathless person often arouses little sympathy (Williams, 1989). In view of these considerations, the maintenance of diffuse contacts might be under more pressure in lung disease, which might explain the importance of diffuse relationships for depressive symptomatology in these patients.

Our study found that receiving instrumental support was associated with more depressive symptoms. One explanation might be that depressed people receive more instrumental support because they arouse sympathy. Others argue that receiving considerable instrumental support causes feelings of helplessness or dependency, both of which may cause depression (Penning & Strain, 1994; T. W. Smith, Christensen, Peck, & Ward, 1994). In diabetes mellitus, this association was most obvious. The possibilities for others to provide tangible assistance with the specific disease-management behavior in diabetes are great. However, diabetes patients do not always want a lot of help with their diabetes management (Connell, 1991). In fact, individuals who receive more help than they want are more depressed (Manne & Zautra, 1989).

Some limitations should be noted in the interpretation and generalization of our results. Most important, we used disease diagnosis as a proxy for exposure to disease-specific stressful experiences to distinguish direct and buffer effects. Although there was an association between disease status and stress (chronically ill persons were more depressed than healthy persons), there is probably also a degree of nonoverlap. The additional restriction to recently symptomatic patients may have affected the generalizability of our results to all patients. However, this restriction also limited the variety of patients within one disease group, which made comparison across disease groups more appropriate. Because other stressors such as acute diseases and life events were not considered, the direct effects demonstrated can to some extent be interwoven with buffer effects, as healthy participants could have experienced other stressors. Further-

more, our cross-sectional data do not allow causal inferences. Longitudinal data are needed to further unravel the complex interplay between health, coping resources, and psychological functioning.

Nevertheless, our findings are relevant in achieving a more complete understanding of the mechanisms that cause coping resources to affect psychological functioning. Our data suggest that specific aspects of social support and personal coping resources do not affect depressive symptoms in the same way, but can vary across different chronic disease populations. Considering specific aspects of patients' situations is necessary for our further understanding of why some coping resources are more effective in one specific chronic disease than in another. Thus, the question for future research is not whether coping resources are important, but to specify in more detail for whom, from whom, and under what circumstances various types of social support and personal coping resources can be expected to influence health.

## References

Beekman, A. T. F., van Limbeek, J., Deeg, D. J. H., Wouters, L., & van Tilburg, W. (1994). Screening for depression in the elderly in the community: Using the Center for Epidemiologic Studies Depression Scale (CES–D) in The Netherlands. *Tijdschrift voor Gerontologie en Geriatrie, 25,* 95–103.

Broadhead, W. E., Kaplan, B. H., James, S. A., Wagner, E. H., Schoenbach, V. J., Grimson, R., Heyden, S., Tibblin, G., & Gehlbach, S. H. (1983). The epidemiologic evidence for a relationship between social support and health. *American Journal of Epidemiology, 117,* 521–537.

Brown, G. W., Andrews, B., Harris, T., Adler, Z., & Bridge, L. (1986). Social support, self-esteem and depression. *Psychological Medicine, 6,* 238–247.

Cassel, J. (1976). The contribution of the social environment to host resistance. *American Journal of Epidemiology, 104,* 107–123.

Cobb, S. (1976). Social support as a moderator of life stress. *Psychosomatic Medicine, 38,* 300–314.

Cochran, M., Larner, M., Riley, D., Gunnarson, L., & Henderson, C. R. (1990). *Extending families: The social networks of parents and their children.* Cambridge, England: Cambridge University Press.

Cohen, S., & Syme, S. L. (1985). *Social support and health.* New York: Academic Press.

Cohen, S., & Wills, T. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin, 98,* 310–357.

Connell, C. M. (1991). Psychosocial contexts of diabetes and older adulthood: Reciprocal effects. *The Diabetes Educator, 17,* 364–371.

Connell, C. M., Davis, W. K., Gallant, M. P., & Sharpe, P. A. (1994). Impact of social support, social cognitive variables, and perceived threat on depression among adults with diabetes. *Health Psychology, 13,* 263–273.

Dean, A., Kolody, B., & Wood, P. (1990). Effects of social support from various sources on depression in elderly persons. *Journal of Health and Social Behavior, 31,* 148–161.

Deeg, D. J. H., Knipscheer, C. P. M., & van Tilburg, W. (1993). *Autonomy and well-being in the aging population: Concepts and design of the Longitudinal Aging Study Amsterdam.* Bunnik, The Netherlands: Netherlands Institute for Gerontology.

Ell, K., Nishimoto, R., Morvay, T., Mantell, J., & Hamovitch, M.

(1989). A longitudinal analysis of psychological adaptation among survivors of cancer. *Cancer, 63,* 406–413.

Feifel, H., Strack, S., & Nagy, V. T. (1987). Degree of life-threat and differential use of coping modes. *Journal of Psychosomatic Research, 31,* 91–99.

Fitzpatrick, R., Newman, S., Archer, R., & Shipley, M. (1991). Social support, disability and depression: A longitudinal study of rheumatoid arthritis. *Social Science & Medicine, 33,* 605–611.

Folkman, S., & Lazarus, R. S. (1980). An analysis of coping in middle-aged community sample. *Journal of Health and Social Behavior, 21,* 219–239.

Holahan, C. K., & Holahan, C. J. (1987). Self-efficacy, social support, and depression in aging: A longitudinal analysis. *Journal of Gerontology: Psychological Sciences, 42,* 65–68.

Jöreskog, K. G., & Sörbom, D. (1988). *LISREL VII: A guide to the program and its application.* Chicago: SPSS.

Krause, N. (1987). Life stress, social support, and self-esteem in an elderly population. *Psychology and Aging, 2,* 340–356.

Kriegsman, D. M. W., Penninx, B. W. J. H., van Eijk, J. Th. M., Boeke, A. J. P., & Deeg, D. J. H. (1997). Self-reports and general practitioner information on the presence of chronic diseases in community-dwelling elderly: A study of agreement and determinants of disagreement. *Journal of Clinical Epidemiology, 49,* 1407–1417.

Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping.* New York: Springer.

Manne, S. L., & Zautra, A. J. (1989). Spouse criticism and support: Their association with coping and psychological adjustment among women with rheumatoid arthritis. *Journal of Personality and Social Psychology, 4,* 608–617.

Pearlin, L. I., Lieberman, M. A., Menaghan, E. A., & Mullan, J. T. (1981). The stress process. *Journal of Health and Social Behavior, 22,* 337–356.

Pearlin, L. I., & Schooler, C. (1978). The structure of coping. *Journal of Health and Social Behavior, 19,* 2–21.

Penning, M. J., & Strain, L. A. (1994). Gender differences in disability, assistance and subjective well-being in later life. *Journal of Gerontology: Social Sciences, 49,* 202–208.

Penninx, B. W. J. H., Kriegsman, D. M. W., van Eijk, J. Th. M., Boeke, A. J. P., & Deeg, D. J. H. (1996). Differential effect of social support on the course of chronic diseases: A criteria based literature study. *Families, Systems & Health, 22,* 223–244.

Penninx, B. W. J. H., van Tilburg, T., Deeg, D. J. H., Kriegsman, D. M. W., Boeke, A. J. P., & van Eijk, J. T. M. (1997). Direct and buffer effect of social support and personal coping resources in individuals with arthritis. *Social Science & Medicine, 44,* 393–402.

Penninx, B. W. J. H., van Tilburg, T., Kriegsman, D. M. W., Deeg, D. J. H., Boeke, A. J. P., & van Eijk, J. T. M. (1997). Effects of social support and personal coping resources on mortality in older age: The Longitudinal Aging Study Amsterdam. *American Journal of Epidemiology, 146,* 510–519.

Radloff, L. S. (1977). The CES–D Scale: A self-report depression scale for research in the general population. *Applied Psychological Measurements, 1,* 385–401.

Roberts, B. L., Dunkle, R., & Haug, M. (1994). Physical, psychological, and social resources as moderators of the relationships of stress to mental health of the very old. *Journal of Gerontology: Social Sciences, 49,* 35–43.

Rolland, J. S. (1987). Chronic illness and the life cycle: A conceptual framework. *Family Process, 26,* 203–221.

Sherer, M., Maddux, J. E., Mercadente, B., Prentice-Dunn, S., Jacobs, B., & Rogers, R. W. (1982). The Self-Efficacy Scale: Construction and validation. *Psychological Reports, 51,* 663–671.

Smith, C. A., Dobbins, C. J., & Wallston, K. A. (1991). The
    mediational role of perceived competence in psychological
    adjustment to rheumatoid arthritis. *Journal of Applied Social
    Psychology, 21,* 1218–1247.
Smith, T. W., Christensen, A. J., Peck, J. R., & Ward, J. R. (1994).
    Cognitive distortion, helplessness, and depressed mood in rheu-
    matoid arthritis: A four-year longitudinal analyses. *Health Psy-
    chology, 13,* 213–217.
Terry, D. J. (1992). Stress, coping and coping resources as

correlated of adaptation in myocardial infarction patients. *British
    Journal of Psychology, 31,* 215–225.
Williams, S. J. (1989). Chronic respiratory illness and disability: A
    critical review of the psychosocial literature. *Social Science &
    Medicine, 28,* 791–803.
Woodruff, S., & Cashman, J. (1993). Task, domain, and general
    efficacy: A reexamination of the Self-Efficacy Scale. *Psychologi-
    cal Reports, 72,* 423–432.