

AVAILABLE SUPPORT AND RECEIVED SUPPORT: DIFFERENT EFFECTS UNDER STRESSFUL CIRCUMSTANCES

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ABSTRACT

Knowledge about how social support operates under specific circumstances lags behind the amount of research on the relationship between social support and well-being. Therefore, the purpose of our research was to study the mechanisms through which social support influences psychological well-being under stressful circumstances. We distinguished between perceived available support and received support in evaluating a hypothetical model specifying the direct and indirect effects of support on depression of recently diagnosed breast cancer patients. Results from structural equation modeling show that available support has direct beneficial effects on depression and received support has indirect effects (via appraisal and coping). Moreover, dependent on the type of support and coping strategy in the analyses, other effects of available and received support were found.

KEY WORDS • cancer patients • social support • stress-coping process

The importance of social relationships and social support for an individual's well-being has nowadays become common knowledge. Popular magazines and television programs pay a lot of attention to the beneficial effects of good social relations. Many researchers have underlined the relationship between social support and physical and psychological well-being (e.g. Cohen & Wills, 1985).

Research concerning the effectiveness of social support has often been directed by the so-called main-buffer controversy. On the one hand, social support is supposed to have main effects on physical and psychological well-being. This implies that social support is beneficial to one's well-being

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under all circumstances. On the other hand, social support is expected to have buffer effects. This means that social support protects people from the deleterious effects of stress, but is not beneficial to one's well-being in the absence of stress. Empirical evidence has been found for both the main and buffering hypotheses (e.g. Aneshensel & Stone, 1982).

Although this line of research has been useful in the first phase of theory development concerning the role of social support in maintaining or improving well-being, it has not brought insight into the mechanisms through which social support produces effects on physical or psychological well-being. A more theoretically meaningful contribution to social support research would now be to go beyond the black box approach of demonstrating main and/or buffering effects, and study how social support might operate under specific circumstances. A better understanding of how social support operates under stressful circumstances may also offer possible explanations for why buffering effects have sometimes been demonstrated and sometimes not. Therefore, the main goal of the present study was to assess a model that specifies the relationships between several aspects of social support and psychological well-being within a stressful context.

Before developing a model specifying the hypothesized relationships between social support and psychological well-being, it was necessary to specify the concept social support. Heller & Swindle (1983) state that the vagueness of the concept social support may be responsible for the inconsistency in the findings concerning the buffering role of social support: 'Different modes of support (for example, support-seeking, network characteristics, and perceived support) have been discussed as if they were equivalent. Yet the role of social support in mediating stress probably is in part a function of the *type of support* presented and *how it is perceived*' (p. 90).

As far as the effects of social support have been studied, attention has often been directed to the distinction of structural and functional characteristics of social networks (e.g. Cohen & Wills, 1985). Structural characteristics refer to the embeddedness in a social network, whereas functional characteristics refer to the provision of particular resources by one's interpersonal relationships, for example information or comfort. When studying the effects of social support under specific stressful circumstances, one should distinguish between several functional types of support that can be assumed to meet the needs elicited by the stressful event (Cohen & Wills, 1985). However, Schwarzer & Leppin (1991) argue that within a functional perspective the perceived availability of support should be distinguished from the activation of support when needed. When looking at the diverse studies concerning the effects of several support types, it is striking that there is little concern whether these types of support are actually received or mobilized, or whether they are anticipated or perceived to be available. Since perceived available support and actually received support are expected to produce different effects (e.g. Schwarzer & Leppin, 1991), it is important to consider within functional support types separately the effects of available and received support. Therefore, we distinguished between

available support and received support in specifying a hypothetical model concerning the relationships between several types of social support and well-being.

In developing a hypothetical model, the role of social support in the stress-coping process as described by Stewart (1989) can be helpful. According to Stewart, social support can influence both stress appraisal and coping. Although she gives several examples, it is not always clear whether her theoretical notions deal with available and/or received support.

Schwarzer & Leppin (1991) argue that available support may play a role in the stress-coping process; it may influence appraisal. Primary appraisal, the perceived stressfulness of an event, and secondary appraisal, the perceived coping options, are supposed to interact. Since the perception of available support can be considered an additional coping option, available support might help to reduce the stress appraisal, and thus provide a better balance between threat and coping. This idea fits in with the stress prevention model as suggested by Barrera (1986). In this model available support is supposed to reduce the perceived threat of an event, and thus prevent excessive stress. Heller & Swindle (1983) speculate how available support might play a role in the appraisal process. They suggest that it may broaden the range of coping responses by enhancing self-esteem or stimulating the individual to enter into supportive transactions with others. Based on these ideas, we expected available support to have an indirect effect on well-being under stressful circumstances by its impact on the appraisal process.

With regard to the mechanisms through which received support operates, the assumed relationship between social support and coping may be useful. Thoits (1986) reconceptualized social support as 'coping assistance, or the active participation of significant others in an individual's stress-management efforts' (p. 417). Since she laid emphasis on the functional meaning of social support, she was able to draw a parallel between functional types of coping and functional types of support. Thoits (1986) states that there are two sources of stress, the situation itself and one's emotional reactions to the situation, that can be altered behaviorally or cognitively by coping and social support. Behavioral coping and behavioral support directly alter the situation or the emotional reactions, whereas cognitive coping and cognitive support alter the perception of the situations or the perception of emotions. By using the terms 'cognitive' and 'behavioral', Thoits refers to the functions that social support can have in coping with stress: '... significant others can suggest techniques of stress-management (i.e. cognitive support) or can participate directly in those efforts (i.e. behavioral support), thereby facilitating and strengthening a person's own coping attempts' (p. 419). In the light of our distinction between available and received support, it is clear that Thoits' model deals with received support since she talks about the active participation of significant others. Other authors (Heller & Swindle, 1983; Schwarzer & Leppin, 1991) more explicitly mention the support received as a factor that may initiate direct action and thus influence coping behavior. Therefore, on behalf of our hy-

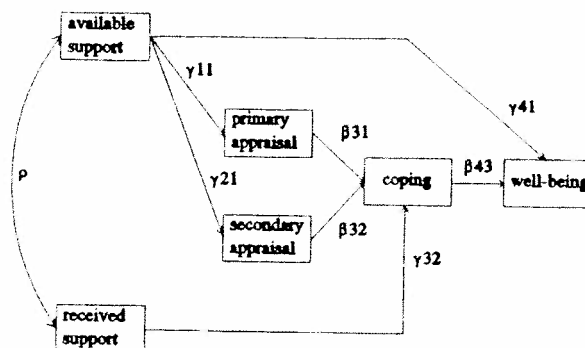
pothetical model, we expected an indirect effect of received support on well-being by its impact on coping behavior.

Apart from the impact of social support on appraisal and coping, which are activated by a stressful event, the often demonstrated main effects suggest that social support may also be beneficial to well-being irrespective of stress level. In this context, Weiss' theory of social provisions (Weiss, 1974) can offer some understanding about how social support directly contributes to well-being. In fact, Weiss' theory deals with the importance of social relationships, and not the importance of social support, for well-being. He states that an individual should have several relationships with other people in order to have access to certain social provisions. These provisions are attachment, reassurance of worth, reliable alliance, guidance, social integration and opportunity for nurturance. All of these provisions are needed by every individual to a certain extent, and experiencing unfulfilled needs with regard to certain provisions leads to specific feelings of unwell-being. For instance, if one's relationships do not provide a sense of attachment, one will feel lonely, whereas if an individual lacks guidance, he/she will feel anxious and uncertain. Cutrona (1990) regards Weiss' model adequate as a theoretical basis to study the direct effects of social support on well-being. They argue that the distinct provisions agree by and large with current support classifications. More specifically, Weiss (1995) suggests that his model can be said to deal with the support that one perceives available based on an evaluation of one's existing social relationships. Based on these considerations, we hypothesized that available support, at least partly, affects well-being without being involved in the stress-coping process. Thus, a direct effect of the perceived available support on well-being was also expected.

With these hypothesized effects of available and received support in mind, we formulated a path model (see Figure 1) that was tested in a population under stressful circumstances, namely recently diagnosed breast cancer patients. Breast cancer can be evaluated by the patient in terms of both threat and harm, due to the life-threatening character of the disease and the radical treatment procedures. Besides severe physical changes, breast cancer may also cause psychological and social problems and the initial crisis of cancer patients may last 2–4 months (Gottesman & Lewis, 1982). Social support can be a valuable resource to cope with the disease and to maintain well-being (Helgeson, 1993).

In order to specify the types of support and coping behavior that were included in this study, we started from Thoits' (1986) distinction of problem-focused coping/support and emotion-focused coping/support. We selected one type of support that is generally perceived as problem-focused, informational support, and one type of support generally perceived as emotion-focused, emotional support. In the case of recently diagnosed cancer patients, these functional support types have also empirically proved to be relevant (e.g. Ros, 1990). Similarly, we selected one type of problem-focused coping, active problem-solving, and one type of emotion-focused coping, support seeking.

FIGURE 1
Hypothetical path model



Method

Women aged 50–80 years who had recently been diagnosed with and operated upon for breast cancer were recruited from 16 hospitals in the Netherlands. During their stay in the hospital, after operation, 219 women received written information about the study and a reply-card. A response rate of 51 percent was reached. The 109 women who entered the study received a structured questionnaire by mail after discharge from hospital.

The mean age of the women was 61.2 years (SD 7.9). Most of the women were married (72%); 7 percent were unmarried, 5 percent were divorced and 16 percent were widowed. About 85 percent of the women had children. Virtually all participants were white. More than half of them (54%) had a low educational level, i.e. had only attended primary school or had lower vocational education. About one-third of the women (38%) had a middle educational level, for example secondary school or intermediate vocational education. The rest (8%) had a high educational level, i.e. higher vocational or university education. The women were treated by surgery only (37%) or by surgery combined with some adjuvant therapy: radiation therapy (33%), radiation and hormonal therapy (17%) or otherwise (12%). The mean time post-surgery was 8.1 weeks (SD 6.2).

The sociodemographic and illness-related characteristics of our sample were compared to national figures of 1991 and regional figures of 1992. Women aged 70 and older were somewhat underrepresented in the sample. With regard to illness-related characteristics, our sample represented the population fairly well. In 1991, 84 percent of the patients aged 50–70 were diagnosed with initial stage breast cancer (Stage \leq II) (Source: Netherlands Cancer Registry). As the age of the majority of the participating patients ranged between 50 and 70 years, the stage distribution of our sample (89% with initial stage disease) did not deviate substantially from the national distribution. Consequently, our sample was also representative with regard to treatment.

To measure the concepts described in the model in Figure 1, we used the following measuring instruments.

With regard to social support two functional types, emotional and informational support, were operationalized. Within these functional support types, we chose separate measures of available and received support.

Available support was measured by two subscales of the Social Provisions

Scale (Russell & Cutrona, 1984): Attachment and Guidance. Attachment can be considered a measure of perceived available emotional support and Guidance a measure of perceived available informational support. Both subscales contain four items, two of them worded in a positive direction and two worded in a negative direction. Respondents indicate on a 4-point scale the level of (dis)agreement with the statements. The Dutch version had previously been tested in a community population of elderly women (Komproe et al., 1991). Cronbach's alphas of the subscales in this study were .75 (Attachment) and .64 (Guidance).

Received support was assessed by the subscale Emotional support for problems of the Social Support List-Interactions (Van Sonderen, 1991), and a scale developed to measure informational support (Komproe et al., 1991). Both scales had been developed from Dutch social support instruments as well as from widely known instruments such as the Inventory of Socially Supportive Behaviors (ISSB), the Norbeck Social Support Questionnaire (NSSQ) and the Social Support Questionnaire (SSQ). The two scales measure the frequency of supportive interactions. The scale Emotional support consists of eight items. Examples of items of this scale are: 'How often does it happen that someone comforts you?' and '... that someone says that you should hang on?'. The scale Informational support consists of six items, such as 'How often does it happen that someone suggests what you could do?' and '... that someone tells you what she/he did in a comparable situation?'. A 4-category response format was used, ranging from *hardly ever or never* to *very often*. Cronbach's alphas of the scales in this study were .92 (Emotional support) and .78 (Informational support).

Appraisal was measured by two single item-instruments and it is clear that both questions refer to reappraisal at the time these questions were answered by our subjects. Primary appraisal, the perceived threat of the situation, was measured by the question: 'How serious do you consider this disease to be?' Respondents could indicate their answers on a 4-point scale ranging from *very serious* to *not serious at all*. In order to assess the secondary appraisal, the perceived options to control the situation, we used the question: 'To what degree do you believe that you have influence on the course of this disease?' Here a 5-category response format was used ranging from *much* to *not any*.

Coping behavior was measured by an abbreviated version of the Utrecht Coping List, a widely used measuring instrument in the Netherlands (Schreurs et al., 1988). The version we employed measures problem-specific coping. Two subscales were used here, namely Active problem-solving (cognitive and behavioral) and Support seeking. Both subscales consist of five items. The following items can be considered exemplary for the scale Active problem-solving: 'Turn a problem over in one's mind' and 'Take action immediately in case of problems'. Examples of items of the scale Support seeking are: 'Asking someone for help' and 'Seeking comfort and sympathy'. The respondents are asked to report the frequency of these coping behaviors with respect to their illness, on a 4-point scale ranging from *hardly ever or never* to *very often*. The Cronbach's alphas of the subscales in this study were .78 (Active problem-solving) and .82 (Support seeking).

Psychological well-being was assessed by the Center for Epidemiologic Studies-Depression scale (CES-D; Radloff, 1977; Hanewald, 1987). This 20-item instrument has been widely used to measure depressive symptomatology. Several authors suggest that the CES-D can best be considered a measure of

non-specific psychological distress and not solely a measure of depression, since the CES-D has been proved to be strongly related to measures of anxiety and self-esteem (e.g. Orme et al., 1986). Respondents are asked to rate the frequency of occurrence of each symptom during the past week on a 4-point scale, which ranges from *rarely (or none)* to *most or all of the time*. Cronbach's alpha of the CES-D total scale in this study was .91.

First, Pearson correlations among all variables of the study were computed to get an impression of the bivariate relationships. Next, we evaluated the quality of our hypothetical model by means of confirmatory path analysis. Dependent on the operationalizations of the social support and coping constructs in the hypothetical model, four conceptually different variants of the model were possible. These variants were *emotional support-active problem-solving (E-A)*, *emotional support-support seeking (E-S)*, *informational support-active problem-solving (I-A)* and *informational support-support seeking (I-S)*. By considering the results of these four variants, we were able to ascertain whether the effects of received and available support on depression were comparable over types of support and coping behavior.

Starting from the E-A variant, we defined a recursive path model with the paths defined in the hypothetical model to be estimated by the computer program LISREL 8 (Jöreskog & Sörbom, 1993). In this model received support and available support were considered to be exogenous variables. The other variables, primary appraisal, secondary appraisal, coping behavior and depression, were specified as endogenous variables. In LISREL terminology two matrices specifying structural relations (here: path coefficients) were important: the matrix beta and the matrix gamma. In the matrix beta the relationships among the endogenous variables were defined. In this case, these relationships represent the stress-coping process: primary and secondary appraisal influence coping, and coping influences depression. Because of the recursive character of the models, feedback processes were not taken into account. In the matrix gamma the relationships between the exogenous variables and the endogenous variables were defined. [The other model specifications are made in the variance/covariance matrices phi and psi. Phi contains specifications of the variances and covariance of the exogenous variables, the two support variables. Psi is the variance/covariance matrix of errors of the endogenous variables, the variables of the stress-coping process. The specifications of the matrices for all models described in this paper are: *gamma*: pattern specification representing path coefficients between exogenous and endogenous variables; *beta*: subdiagonal matrix with fixed zeros, but β_{31} , β_{32} and β_{43} free (pattern specification of the path coefficients among endogenous variables); *phi*: symmetric matrix (diagonal variances, off-diagonal covariance); and *psi*: diagonal matrix (unrelated errors).] Since the purpose of this study was to study the direct and indirect effects of available support and received support on depression, we focused on the matrix gamma.

The estimated path coefficients were evaluated on the base of their *t* values, whereas the fit of the specified model was evaluated on its χ^2 , a goodness-of-fit index (GFI) and a relative (improvement relative to the null model) fit index, the Tucker-Lewis Index (TLI). Criteria for an acceptable fit were a non-significant χ^2 , GFI > .90 (Jöreskog & Sörbom, 1993) and TLI > .90 (Bentler & Bonett, 1980).

TABLE 1
Correlation matrix of variables in the study ($N = 109$)

	Received support Emotional Information	Available support Emotional Information	Appraisal Primary	Appraisal Secondary	Coping Active problem- solving	Coping Support seeking
Received emotional support	1.00					
Received information support	.62**	1.00				
Available emotional support	.44**	.25*				
Available information support	.37**	.13	1.00			
Primary appraisal	.34**	.78**	.13	1.00		
Secondary appraisal	.34**	.15	.16	-.03	1.00	
Active problem-solving	.42**	.21	.30*	.25*	.18	1.00
Seeking support	.52**	.44**	.46**	.32**	-.00	.34**
Depression	.19	-.25*	-.29*	.14	-.07	-.11

* $p = .01$; ** $p = .001$, two-tailed.

Results

Table 1 shows the *Pearson correlations* among the variables involved in this study. The two received support variables as well as the two available support variables were highly correlated, .62 and .78. The correlation between received emotional support and available emotional support was .44, and the correlation between received informational support and available informational support was only .13. These correlations were comparable with the correlations between available and received support measures as described by Dunkel-Schetter & Bennett (1990), which ranged from .01 to .46. These low to moderate correlations can be considered empirical support for the distinction between available and received support. The correlations among the support variables as well as the correlations between the support variables and depression suggest that differentiating between available and received support may be more appropriate than differentiating between functional support types, when studying the effects of social support on psychological well-being.

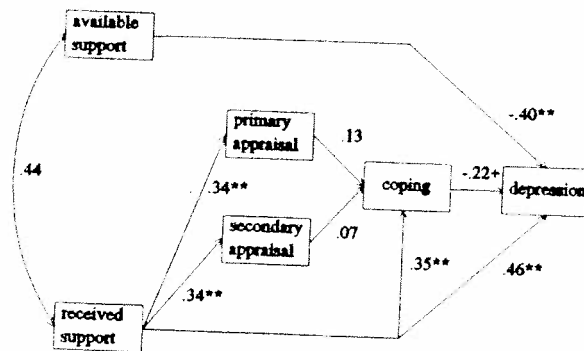
Next, we estimated the standardized coefficients of the hypothetical paths in the E-A variant. The path coefficients of available emotional support on the appraisal variables were not significant, $\gamma = .15$ and $.16$. Received emotional support had a significant positive effect on the use of the coping strategy active problem-solving ($\gamma = .36, p < .001$). Furthermore, available emotional support had a significant negative effect on depression ($\gamma = -.23, p < .001$). This model did not fit the data well: $\chi^2(7) = 46.23, p < .000$; GFI = .88; TLI = .06. Thus, in the case of the E-A variant the hypothetical model specified here could not be held.

The moderate estimates of the path coefficients of available emotional support on the two appraisal variables were particularly disappointing. Consequently, we decided to suppress these paths and defined a new model, in which received emotional support instead of available emotional support was related to the appraisal variables, as had been indicated by the modification indices for gamma. The analysis showed that the path coefficient estimates of received emotional support on the appraisal variables were highly significant ($\gamma = .34$ and $\gamma = .34, p < .001$). Although this model fitted the data better than the original hypothetical model, the absolute fit of the model was still inadequate ($\chi^2(7) = 24.95, p < .000$; GFI = .93; TLI = .57). Based on the modification indices for gamma we added the estimation of another path coefficient, namely the coefficient that describes the direct influence of received emotional support on depression. According to the fit indices, this model reflected the relationships between the constructs very well: $\chi^2(6) = 6.77, p = .34$; GFI = .98; TLI = .98. Figure 2 shows the final model, that was found in the E-A variant.

Since the development of the model in the E-A variant was both theoretically driven and data-driven, we thought it necessary to test this model in all model variants. These variants differ in the type of support and coping strategy that were used as operationalizations of received and available support and coping behavior. We reasoned that if the model found in the E-A variant would hold in all variants, we had sufficient ground to conclude that this model is an adequate representation of the direct and indirect effects of received and available support on depression.

Anderson & Gerbing (1988) describe a procedure to test a structural model of interest relative to more constrained or more unconstrained models by means of sequential chi-square difference tests (SCDTs). The rationale is to find the most constrained model that still has an acceptable fit indicated by its

FIGURE 2
Most adequate model E-A (emotional support-active problem-solving)
variant



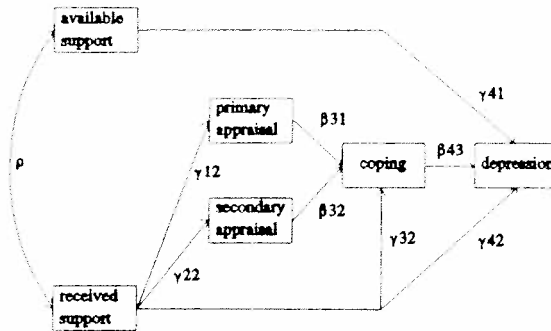
χ^2 value compared to the χ^2 values of other, more constrained or more unconstrained, models. We used a variant of this procedure in which we confined our analyses to models in which only modifications in the specification of gamma were allowed.

The approach is a procedure for nested models. A model is said to be nested within another model, when its set of freely estimated parameters is a subset of those estimated in the other, more unconstrained model. A fully saturated model is a model in which all parameters relating the constructs to one another are estimated. Here, we used the term 'most saturated model' for a model in which all parameters of the matrix gamma were estimated. The other matrices were specified as described before. This model (M_{ms}) had the smallest possible chi-square with the smallest number of degrees of freedom (3). Our model of interest M_i (the model derived from the E-A variant; see Figure 3) was nested in the model M_{ms} . Other models, more constrained or more unconstrained than M_i , were also nested in M_{ms} . The difference between χ^2 values for nested models is itself asymptotically distributed as χ^2 , with degrees of freedom equal to the difference in degrees of freedom for the two models. The null hypothesis of the chi-square difference test is that the χ^2 values of two nested models are not significantly different.

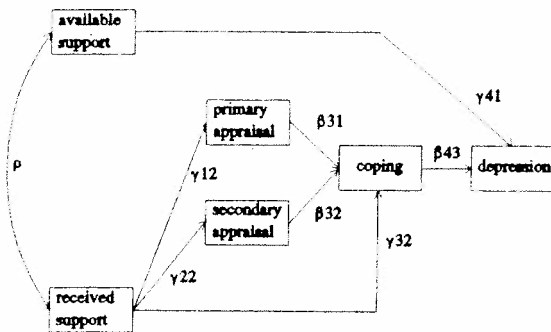
We used chi-square difference tests to determine whether our model of interest M_i was the most adequate model in all equivalent model variants. In that case, the model M_i should meet two criteria. The χ^2 value of the model M_i should be significantly lower than the χ^2 value of the 'next most likely constrained' model M_c , and should not be significantly different from estimated χ^2 values of models that are less constrained, for example the 'next most likely unconstrained' model M_u or the model M_{ms} .

Before performing the analyses we defined the models M_c and M_u relative to the model M_i (see Figure 3). In model M_c it was assumed that received support influences the appraisal and coping variables, but in contrast with the model M_i no direct effect of received support on depression was assumed. In addition, a direct effect of available support on depression was estimated. The model M_u is an extension of the model M_i in the sense that in the first model a direct effect from available support on coping behavior was also assumed. Our strategy was

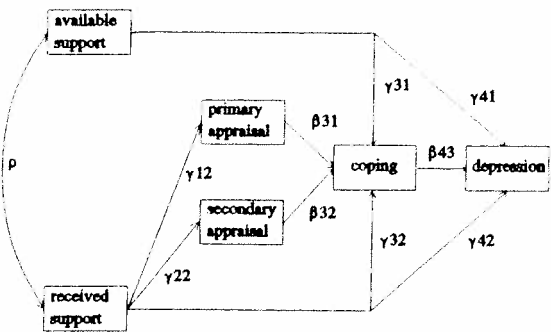
FIGURE 3
Models M_1 , M_c , M_u and $M_{i,alt}$



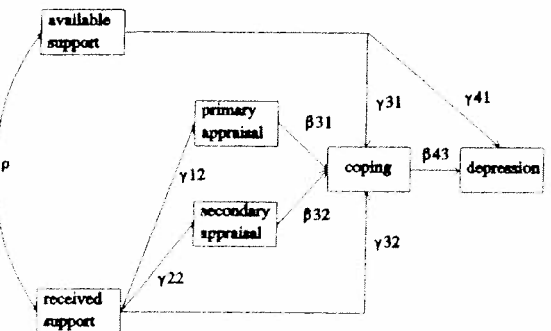
Model of interest M_i



More constrained model M_c



More unconstrained model M_u



Alternative model $M_{i,alt}$

TABLE 2
Chi-square difference tests of the four model variants

	χ^2	d.f.	<i>p</i>	χ^2 diff.	d.f. diff.	<i>p</i>
<i>E-A model</i>						
M_c	24.95	7	.0001			
				18.18	1	.0001
M_i	6.77	6	.34			
				0.14	3	.98
M_{ms}	6.63	3	.09			
<i>I-A model</i>						
M_c	22.51	7	.002			
				6.57	1	.01
M_i	15.94	6	.01			
				6.93	1	.01
M_u	9.01	5	.11			
				3.17	2	.20
M_{ms}	5.84	3	.12			
<i>E-S model</i>						
M_c	20.42	7	.0001			
				6.10	1	.01
M_i	14.32	6	.03			
				9.88	1	.0001
M_u	4.44	5	.49			
				0.02	2	.99
M_{ms}	4.42	3	.22			
<i>I-S model</i>						
M_c	31.87	7	.0001			
				1.06	1	.30
				25.79 (alt.)	1	.0001
M_i	30.81	6	.0001			
$M_{i alt.}$	6.08	6	.41			
				28.95	3	.0001
				4.22 (alt.)	3	.23
M_{ms}	1.86	3	.60			

Key

- E-A, emotional support-active problem-solving;
 I-A, informational support-active problem-solving;
 E-S, emotional support-support seeking;
 I-S, informational support-support seeking.

to test the chi-square difference between our model of interest M_i and the model M_{ms} first. When the chi-square difference between M_i and M_{ms} proved to be non-significant, we did not have to test our model M_i against the model M_u or other more unconstrained models. Table 2 shows that the fit of the model M_i of the E-A variant was significantly better than the fit of the more constrained

model M_c ; whereas the chi-square difference between the M_i model and the most saturated model M_{ms} was not significant. Therefore, M_i was considered to be the most adequate model of the E-A variant.

When informational support instead of emotional support was considered (the I-A model), it showed that the model M_i was a significant improvement with regard to the model M_c . However, the chi-square difference between M_i and M_{ms} was also significant ($\chi^2(3, N = 109) = 10.10, p = .02$). For this reason we tested the model M_u . In comparison with the model M_i , model M_u fitted the data significantly better. The chi-square difference between M_u and M_{ms} was not significant, thus model M_u was the best choice in the I-A variant.

In the case of the E-S variant, model M_i appeared to be a significant improvement with respect to the model M_c , but the chi-square difference between M_i and M_{ms} was still highly significant ($\chi^2(3, N = 109) = 16.00, p = .001$). Therefore, we had to move to the model M_u . This model met the criteria very well.

In the I-S variant, the model M_i did not fit the data better than the model M_c , nor was it a legitimate alternative for the M_{ms} model. Since the preference of model M_i to model M_c could not be justified, we had to search for an alternative of the model M_i that followed the model M_c . In the alternative model, M_i alt. (see Figure 3), it was assumed that available support not only has a direct influence on depression, as was assumed in M_c , but that available support also influences coping behavior. The difference with model M_i was that in model M_i alt. received support does not have a direct impact on psychological well-being and available support was supposed to have a direct effect on coping behavior. Thus, the model M_i alt. assigns a larger part to available support than the model M_i , in which the influence of received support predominates. The model M_i alt. met the criteria very well; its fit was a highly significant improvement with regard to the model M_c , and the chi-square difference between model M_i alt. and model M_{ms} was not significant.

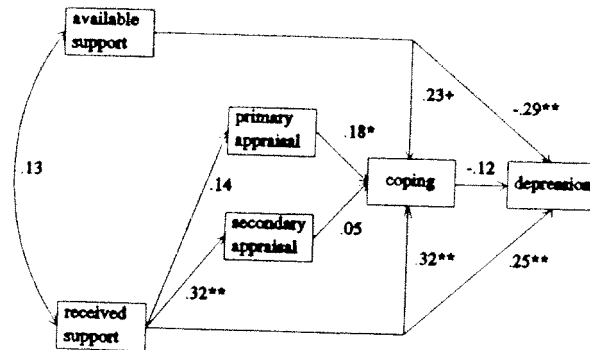
Figure 4 contains the estimated standardized path coefficients of the most adequate models, that is the model M_u for the I-A and E-S variants, and the model M_i alt. for the I-S variant (see Figure 2 for the model M_i for the E-A variant).

Figures 2 and 4 show that received emotional support has a positive effect on the perceived seriousness of the disease, whereas received informational support does not have such a significant effect. Both types of received support have a positive effect on the perceived self-control over the course of the disease and also on coping behavior, active problem-solving as well as support seeking. The direct effects of both received support types on depression are positive, thus indicating more depression. Available support, however, has a direct negative effect on depression. Furthermore, available support is positively related to coping behavior, especially support seeking.

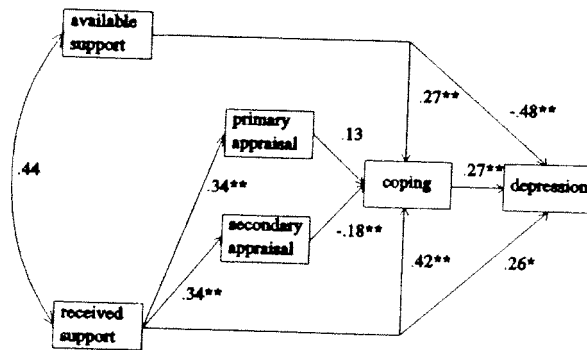
The beta coefficients show that perceived seriousness of the disease has a positive, but not always significant, effect on coping behavior. A lower perceived self-control over the disease is significantly related to more support seeking behavior, which at its turn has a positive effect on depression. Active problem-solving only has a small negative effect on depression in the E-A variant.

The gamma coefficients of the most adequate models were almost all highly significant, but this was not the case for the beta coefficients. The latter finding implies that in spite of the high gamma coefficients, the indirect effects of social

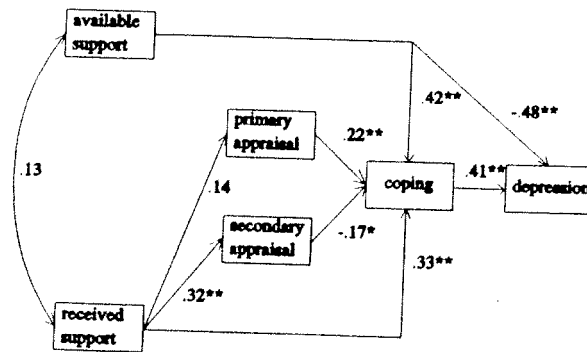
FIGURE 4
Most adequate models



Model I-A (informational support - active problem-solving) variant



Model E-S (emotional support - support seeking) variant



Model I-S (informational support - support seeking) variant

support on depression may be lower than expected. Table 3 shows the direct, indirect and total effects of received and available support on depression. In general, the direct effects of both support dispositions are far more important than the indirect effects. The total effects of received support on depression are positive, mainly because of the positive direct effects. The total effects of available support are negative, since available support has considerable direct negative effects.

The squared standardized total effects can be interpreted as the proportions of variance of depression explained by received support and available support.

TABLE 3
Direct, indirect and total effects of received support and available support on depression in the most adequate models

Model	Received support			Available support		
	Direct	Indirect	Total	Direct	Indirect	Total
E-A (M_v)	.46	-.09	.37	-.40	-	-.40
I-A (M_u)	.25	-.04	.21	-.29	-.03	-.31
E-S (M_u)	.26	.11	.37	-.48	.07	-.41
I-S ($M_{i.alt}$)	-	.13	.13	-.48	.17	-.31

Note: See key to Table 2.

The percentages of variance explained by received support vary from 2 percent in the I-S variant to 14 percent in the E-A and E-S variants. The percentages of variance explained by available support vary from 10 percent in the I-A and I-S variants to 17 percent in the E-S variant.

Discussion

The main purpose of this study was to attain more insight into the mechanisms through which social support is related to psychological well-being under stressful circumstances. Therefore, we described path models assessing the direct and indirect effects of available and received support on depression in women recently diagnosed with breast cancer. Virtually all paths specified in the hypothetical model were based on theoretical ideas about the effects of social support on psychological well-being. From this perspective, the nature of the estimations of the specified paths was confirmative rather than explorative. Because of the confirmative character of our study, some inferences about the direction of the paths are allowed. Nevertheless, reservations with regard to interpretation of the estimated paths in terms of causality are required because of the cross-sectional and retrospective character of our data.

The specification of our hypothetical model was based on general ideas concerning the effects of social support under stressful circumstances. We implicitly assumed a global uniform operation of available and received support under all sorts of stressful circumstances. This assumption may contradict optimal matching, in which the effectiveness of types of support is considered to be dependent on the nature of the stressful event. Based on these ideas, we analyzed the effects of two types of support that had earlier proved to be important during the diagnosis and treatment of cancer: emotional and informational support. However, the lack of evidence for some of the hypothesized paths describing the effects of available and received support suggest that optimal matching may also serve for the disposition of support.

Concerning the role of available support in the stress-coping process, not all results correspond with our expectations: available support does not

have significant effects on the appraisal process, but it seems to promote support-seeking behavior. The latter result can be understood when one realizes that available support can be considered anticipated support (Schwarzer & Leppin, 1991). Support-seeking behavior will not only be based on the demands of the situation, but also on the perception of available support. The path models support the hypothesis that available support has direct effects on psychological well-being. This finding suggests that having support at one's disposal strengthens psychological well-being independently of the appraisal and coping process.

In accordance with our expectations, received support has an indirect effect on psychological well-being by its effect on coping behavior. However, received support also has direct effects. In the case of received support it seems that only indirect effects of received support can have beneficial effects on the psychological well-being of these cancer patients. The direct effects, which have more impact in this study, indicate more depression in women who receive more support. Although we cannot make statements about causality, it is clear that this positive effect precludes the possibility of a strong direct beneficial influence of received support on depression. These findings suggest that emotional support or information received from others can be helpful only as long as they influence the patient's coping process, i.e. when they enable the patient to respond adequately to the perceived stressor.

The positive direct effect of received support on depression corresponds with Barrera's conclusion that positive relationships between social support and distress have generally been demonstrated with measures of received support. According to Barrera (1986), the positive relationship between received support and distress fits in with the support seeking/triage model. This model indicates that those individuals who show the greatest symptomatology receive and/or seek the most support. However, the positive relationship between received support and distress may also reflect real deleterious effects of received support. It is possible that individuals who receive support feel themselves indebted to or less competent than the support providers (e.g. Eckenrode, 1983). The same argument holds for the positive relationship between received (emotional) support and the perceived seriousness of the disease. Since we specified the support variables to be exogenous variables, we could not estimate the effect of the perceived seriousness of the disease on the support received. However, because of the lack of well-founded hypotheses this effect is as plausible as the opposite. Moreover, the influence of the perceived seriousness of the disease on the reception of support can be explained from theoretical ideas about support mobilization (e.g. Barrera, 1986). The indistinctness of these positive effects of received support urges for future research in which the temporal ordering of effects can be realized.

In this study we used a simple stress-coping model. Interactions between primary and secondary appraisal as well as the transactional character of the stress-coping process were not taken into account. Despite this simplification, an indication that the stress-coping model was adequately specified

was found in the fit indices of the most adequate models. These fit indices met the various criteria and thus suggested that not only the gamma coefficients, but also the total model fitted the data well. Nevertheless, most beta coefficients were not highly significant. This may be due to the fact that each model took only one coping strategy into account. As we know from coping research, most people use a broad range of coping strategies to respond to the demands of a stressful encounter.

In this context another question may arise, namely whether all subjects dealt with the same stressful event. Although our subjects had almost all been diagnosed with initial-stage breast cancer and all had undergone primary surgery, they varied with regard to type of breast surgery and adjuvant therapy. In an earlier study with this research group we compared the amount of depressive symptomatology between the women who had undergone mastectomy (56%) and the women who had undergone breast conserving therapy (44%) (Rijken et al., 1995). In accordance with other research on this theme, we could not demonstrate differences in depressive symptoms between the two treatment groups. Therefore, we believe — as Schain et al. (1983) suggest — that the diagnosis of breast cancer rather than the treatment is the most stressful element.

The path models provide some ideas how main and buffering effects that have been demonstrated in other studies could be interpreted. We assume that under normal circumstances available support has direct effects on psychological well-being, whereas received support is far less likely to occur, since received support is typically triggered by signals of a stressful situation or symptoms caused by a stressful situation. Under stressful circumstances, available support still has its beneficial direct effect. Thus, we suggest that available support has a main effect on psychological well-being. When a stressful situation comes up, generally two reactions can be expected, namely a reaction of the individual under stress, the stress-coping process, and a reaction of the individual's social network resulting in the provision of social support. The latter phenomenon is reflected in our models by the positive direct effect of received support on depression. In stressful situations, social support may also influence psychological well-being by its impact on the individual's stress-coping process. In studies where the main and buffering effects of social support have been assessed by means of moderated regression analysis, appraisal and coping were usually not taken into account. Consequently, the interaction effects of stress \times support, which have been considered evidence of the buffering hypothesis (Alloway & Bebbington, 1987), may in fact reflect the impact of social support on appraisal and coping. We speculate that social support does not buffer stress, unless it influences the individual's stress-coping process. The results of our study suggest that main effects are more likely to occur when available support is involved, whereas buffering effects can be created by both available and received support.

We conclude that the distinction between available and received support is useful to shed light upon the mechanisms through which social support operates under stressful circumstances. Since we did not have data from

other populations under stress at our disposal, we were not able to replicate our findings. Comparable studies in other populations under stressful circumstances would therefore be useful.

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