Cognitive Vulnerability to Depressive Symptoms Among Men and Women[1]

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Previous research examining Beck's diathesis-stress model of depression has been conducted with combined samples of men and women or with female subjects alone. In the present study, the moderating effect of dysfunctional attitudes on the relations of depression with both social support and stressful life events was investigated separately for men and women. A large sample of subjects completed measures of depression twice, 3 months apart, as well as measures of dysfunctional attitudes, social support, and stressful life events. The results indicated that among women, the interaction of dysfunctional attitudes with social support, but not with stressful life events, significantly predicted the severity of subsequent depressive symptoms. In contrast, dysfunctional attitudes did not have either a main or a moderating effect among men. Potential subtypes of cognitive vulnerability to depression were also explored in this study, although the results suggested that the Dysfunctional Attitudes Scale may be best employed as a unitary measure of vulnerability to depressive symptoms in response to negative interpersonal experiences. These findings are discussed with reference to types of vulnerability and precipitating events, and to sex differences in the development and maintenance of depressive symptoms.

KEY WORDS: depression; gender differences; vulnerability; stress; social support.

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Numerous studies have reported evidence of cognitive abnormalities among currently depressed individuals. A self-deprecating attributional style, negative automatic thoughts, and thoughts of hopelessness and loss have all been found to be associated with current depression (cf. Barnett & Gotlib, 1988c). In addition to these symptoms of depression, Beck, Rush, Shaw, and Emery (1979) have identified certain "latent" cognitions, labeled dysfunctional attitudes, that are thought to represent a stable vulnerability to depression. A depressive episode is precipitated when stressful experiences activate these cognitions, leading to the development of symptoms.

Consistent with the Beck et al. (1979) formulation, currently depressed persons have been found to endorse significantly more dysfunctional attitudes than have nondepressed individuals (e.g., Dobson & Shaw, 1986; Eaves & Rush, 1984; Gotlib, 1984; Hamilton & Abramson, 1983; Hollon, Kendall, & Lumry, 1986; Olinger, Kuiper, & Shaw, 1987; Simons, Garfield, & Murphy, 1984). The results of studies examining the etiological role of dysfunctional attitudes in depression, however, have been inconsistent (cf. Barnett & Gotlib, 1988c; Coyne & Gotlib, 1983, 1986). Whereas some studies have demonstrated that recovered depressives exhibit a greater number of dysfunctional attitudes than do nondepressed controls (e.g., Eaves & Rush, 1984), other investigations have found no evidence of a stable cognitive vulnerability to depression (e.g., Gotlib & Cane, 1987; Hamilton & Abramson, 1983; Simons et al., 1984). Similarly, although some investigators have found dysfunctional attitudes to predict subsequent symptoms of depression (e.g., Rush, Weissenburger, & Eaves, 1986), others have not (e.g., O'Hara, Rehm, & Campbell, 1982).

Further investigation of three issues provide a better understanding of the reasons underlying these inconsistencies. First, research has been concerned primarily with the main effect relationship between dysfunctional attitudes and depression, or depressive symptoms. The cognitive vulnerability model of depression, however, is a diathesis-stress model. Indeed, cross-sectional research with students has found that the interaction of dysfunctional attitudes with stressful life events accounts for a significant amount of the variance in depressive symptoms (Olinger et al., 1987, Study 2; Wise & Barnes, 1986). In a prospective extension of this research, Barnett and Gotlib (1988a) examined the effects of both stressful life events and social support on changes in depressive symptoms in a sample of women. Although social support is typically conceptualized as a buffer between stress and emotional distress, there is considerable evidence that low social support may function as a depressogenic stressor (Cutrona, 1984; Phifer & Murrell, 1986). Consistent with this view, Barnett and Gotlib found that the interaction of dysfunctional attitudes with social support predicted the severity of future depressive symptoms, whereas the interaction of dysfunctional attitudes with negative life events did not. Although these results suggest that women with

dysfunctional attitudes may be particularly susceptible to depressive symptoms when they lack social support, the data were collected from a relatively small sample, and these findings require replication.

A second, related, issue concerns possible gender differences in cognitive vulnerability. Although there is some evidence that men endorse a greater number of dysfunctional attitudes than do women (e.g., Gotlib, 1984; Wise & Barnes, 1986), this difference is not always observed (e.g., Dobson & Breiter, 1983; Oliver & Baumgart, 1983). Moreover, we know little about the differential impact of dysfunctional attitudes on depression in men and women. Relevant cross-sectional research has used mixed samples of male and female subjects (Olinger et al., 1987, Study 2; Wise & Barnes, 1986), and prospective research has been conducted only with female subjects (Barnett & Gotlib, 1988a). It is possible that different kinds of stress interact differently with the cognitive vulnerabilities of men and women, evoking dysphoric responses in one sex but not in the other (cf. Whiffen & Gotlib, 1989).

Finally, several studies have examined the relations of two types of dysfunctional attitudes with depression (e.g., Barnett & Gotlib, 1988b; Cane & Gotlib, 1987; Pilon, 1987). Cane, Olinger, Gotlib, and Kuiper (1986) recently factor-analyzed the Dysfunctional Attitudes Scale (DAS; Weissman & Beck, 1978), a self-report measure of cognitive vulnerability to depression. Cane et al. suggested that the two DAS factors that were obtained, Performance Evaluation and Approval of Others, may be related to two different personality types thought to be characteristic of people who are vulnerable to depression: "socially dependent" and "autonomous" personality types (Beck, 1983), or "dependent" and "self-critical" types (Blatt, 1974). There is currently some evidence that individuals with one or the other of these two types of vulnerability may be particularly sensitive to certain kinds of negative events (e.g., Hammen, Marks, Mayol, & DeMayo, 1985; Zuroff & Mongrain, 1987). By investigating the interactions of the two DAS factors with different kinds of stress, it may be possible to observe different types of cognitive vulnerability to depression among men and women.

The present study was designed to address these issues. Depressive symptoms, dysfunctional attitudes, and psychosocial stress were measured in a large sample of men and women. In addition, the use of a longitudinal design permitted a test of the Beck et al. (1979) diathesis stress model of depression. Subjects' levels of depression and dysfunctional attitudes were assessed at Time 1 (T1), and severity of depressive symptoms was measured again 3 months later, at Time 2 (T2), as were the impact of negative life events and perceived social support. On the basis of the results of our previous study (Barnett & Gotlib, 1988a), we predicted that dysfunctional attitudes would moderate the effect of social support on females' level of depression when

the effects of initial symptoms and concurrent life events were controlled. Because little relevant research has been conducted with males, it was hypothesized only that the interaction of the DAS with either or both sources of stress would predict males' level of symptoms at T2. Finally, it was hypothesized that the relation of social support with depression for both males and females would be moderated by the DAS Approval of Others subscale.

METHOD

Subjects

Subjects were 199 female and 69 male undergraduate students at the University of Western Ontario who volunteered to participate in the study. All subjects received research credit for their participation.

Measures

Depression. The Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) is a 21-item self-report measure of the severity of depressive symptoms. The BDI has been shown to have good validity as a measure of depression severity in a university population, using interview-based psychiatric diagnosis as the criterion (Bumberry, Oliver, & McClure, 1978; Gotlib & Cane, 1989). Scores on the BDI can range from 0 to 63, with scores greater than 9 indicating mild depression or dysphoria.

Dysfunctional Cognitions. The Dysfunctional Attitudes Scale, Form A (DAS; Weissman & Beck, 1978) is a 40-item inventory designed to measure depressogenic beliefs about self hypothesized by Beck et al. (1979) to represent a vulnerability to depression. Subjects indicate their agreement with statements primarily concerning self-worth contingencies (e.g., "I am nothing if a person I love doesn't love me"). Acceptable psychometric properties have been reported for the DAS (e.g., Dobson & Breiter, 1983; Oliver & Baumgart, 1983; Weissman & Beck, 1978). As noted earlier, there are two intepretable factors of the DAS (Cane et al., 1986). The first factor, Performance Evaluation, contains 15 items, and the second factor, Approval by Others, contains 10 items.

Life Events. The Life Experiences Survey (LES; Sarason, Johnson, & Siegel, 1978) is a 57-item inventory of stressful life events. Subjects were requested to indicate which of the LES events they had experienced in the past month, and to rate the valence and magnitude of the event's impact on them. As in previous research (e.g., Barnett & Gotlib, 1988a; Olinger et al., 1987;

Wise & Barnes, 1986), the impact, or severity, scores associated with negative events were used in the present study. Impact scores likely provide a more meaningful index of the level of stress experienced than does a frequency score, which would equate events of clearly disparate severity, such as death of a spouse and receiving a traffic ticket. Finally, a 1-month retrospected period was used both in order to be consistent with previous research (Barnett & Gotlib, 1988a; Olinger et al., 1987) and to assess ongoing or recent stress rather than past difficulties that may have been resolved.

  Social Support. The Provision of Social Relations Scale (PSR; Turner, Frankel, & Levin, 1982) contains 15 items written to reflect Weiss's (1974) multidimensional conceptualization of social support. Items assess the subjective experience or quality of the individual's relationships. For each item, subjects indicate on a 5-point scale the extent to which it reflects their experience. Internal consistency of the PSR is high, and Turner et al. reported a significant correlation between PSR score and subjects' reports of the social resources available to them.

Procedure

  Subjects were run in small groups of from 5 to 15. Each subject participated in two sessions, separated by a 3-month interval. In the first session, each subject was given a booklet containing the BDI and the DAS. In the second session, the booklets contained the BDI, LES, and PSR. Two different orders of the booklets were used in each session, with half of the subjects completing one version, and half the other. At the end of the first session, subjects were told that they would be contacted to complete another session in about 3 months. All subjects were fully debriefed at the end of the second session.

RESULTS

  Listwise deletion of missing data resulted in the data of 22 female and 6 male subjects being discarded, leaving complete data available for 177 females and 63 males. Means and standard deviations of the predictor variables and the BDI at T1 and T2 were calculated separately for males and females and are presented in Table I. Two-tailed t tests were performed to compare the means for males and females on all seven variables. Compared with females, males reported significantly more dysfunctional attitudes on the Performance Evaluation factor ($t(240) = 2.54, p < .05$) and less social support ($t(240) = 2.70, p < .01$); gender differences on the other variables

Table I. Predictor Variables and Measures of Depression for Males and Females

	Male ($n = 63$)			Female ($n = 177$)		
Variable[a]	Mean	SD	Range	Mean	SD	Range
BDI1	5.6	(5.0)	0–22	6.1	(5.4)	0–28
BDI2	5.7	(4.9)	0–19	6.3	(5.5)	0–28
DAS1	126.0	(23.0)	81–169	113.6	(23.5)	66–206
DAS-PE1	38.6	(13.2)	15–67	31.5	(10.7)	15–76
DAS-AO1	40.2	(7.8)	20–57	39.3	(8.9)	16–61
PSR2	60.6	(10.0)	32–75	64.4	(7.3)	42–75
LES2	4.0	(6.1)	0–36	3.7	(4.1)	0–22

[a]BDI = Beck Depression Inventory, DAS = Dysfunctional Attitudes Scale, DAS-PE = Performance Evaluation subscale, DAS-AO = Approval by Others subscale, PSR = Provisions for Social Relations Scale, LES = Life Experiences Survey, 1 = Time 1, 2 = Time 2.

were not significant (all p's $> .10$). Pearson correlations among the variables are presented separately for males and females in Table II.

Multiple regression analyses were conducted separately for males and females to test the hypothesis that after removing the effects of T1 depressive symptoms, the interactions of the DAS with the LES and the PSR would significantly predict the severity of T2 depressive symptoms.[3] Specifically, T2 BDI was regressed on T1 BDI, the three predictor variables, and their interactions. Using a hierarchical regression procedure, T1 BDI was entered into the regression equation first, to control for the effects of initial symptomatology. The three predictor variables — DAS, LES, and PSR — were then entered simultaneously. Finally, the two-way cross products, which contain the two-way interaction effects among these variables (Cohen & Cohen, 1983), were entered, followed by the three-way cross product. The results of this analysis for females is presented in Table III and, for males, in Table IV.

For females, main effects were found for stressful life events ($F(1, 172) = 22.29, p < .001$) and social support ($F(1, 172) = 12.92, p < .001$), but not for dysfunctional attitudes ($F(1, 172) < 1$). None of the interactions involving life events was significant (all p's $> .20$). Only the predicted interaction between dysfunctional attitudes and social support was significant ($F(1, 169) = 4.17, p < .05$). The nature of this interaction was examined by plot-

[3]It would be appropriate to examine gender differences by entering gender as a independent variable and including the higher-order interactions involving gender in the regression analysis. However, the large number of variables sharing a high proportion of common variance resulted in a violation of the minimum tolerance level accepted by SPSS-X. Because this violation can result in computational errors, the greater interpretability afforded by analyzing the four-way interaction was sacrificed for the validity of a more accurate regression equation. In interpreting the results of the two three-way analyses, we have been careful not to make comparative statements, but simply to indicate which factors significantly predict severity of T2 symptoms for each gender.

Table II. Correlations Among the Variables for Males and Females

	1	2	3	4	5	6
		Male	subjects	($n = 63$)		
1. BDI1						
2. BDI2	63^d					
3. DAS1	52^d	40^c				
4. DAS-PE	41^d	37^c	88^d			
5. DAS-AO	42^d	33^c	68^d	38^c		
6. PSR2	-46^d	-40^d	-51^d	-58^d	-21	
7. LES2	10	41^d	-07	-21	14	16
		Female	subjects	($n = 177$)		
1. BDI1						
2. BDI2	56^d					
3. DAS1	28^d	21^c				
4. DAS-PE	25^d	28^d	85^d			
5. DAS-AO	25^d	12	80^d	53^d		
6. PRS2	-27^d	-35^d	-11	-27^d	03	
7. LES2	29^d	42^d	11	05	14^b	-10

[a]BDI = Beck Depression Inventory, DAS = Dysfunctional Attitudes Scale, DAS-PE = Performance Evaluation subscale, DAS-AO = Approval by Others subscale, PSR = Provisions for Social Relations Scale, LES = Life Experiences Survey, 1 = Time 1, 2 = Time 2.
[b]$p < .05$.
[c]$p < .01$.
[d]$p < .001$.

Table III. Prediction of Level of Depression at Time 2 Among Female Subjects[a]

Variable	R	$\triangle R^2$	F model	F change	Beta
Step 1	.56	.31	78.84 (1, 175)[c]		
BDI1				78.84 (1, 175)[c]	0.56
Step 2	.66	.12	32.60 (4, 172)[c]		
PSR2				12.92 (1, 172)[c]	−0.21
DAS1				0.37 (1, 172)	0.04
LES2				22.29 (1, 172)[c]	0.28
Step 3	.68	.02	20.15 (7, 169)[c]		
DAS1 × LES2				1.46 (1, 169)	0.38
LES2 × PSR2				1.12 (1, 169)	−0.50
DAS1 × PSR2				4.77 (1, 169)[b]	−1.05
Step 4	.68	.00	17.57 (8, 168)[c]		
DAS1 × PSR2 × LES2				0.56 (1, 168)	−1.39

[a]BDI = Beck Depression Inventory, DAS = Dysfunctional Attitudes Scale, PSR = Provisions for Social Relations Scale, LES = Life Experiences Survey, 1 = Time 1, 2 = Time 2, R = change in R, F change = F ratio for evaluating variance explained by the variable entered, Beta = standardized beta for variable when entered.
[b]$p < .05$.
[c]$p < .001$.

Table IV. Prediction of Level of Depression at Time 2 Among Male Subjects[a]

Variable	R	$\triangle R^2$	F model	F change	Beta
Step 1.	.62	.40	40.04 (1, 61)[d]		
BDI1				40.04 (1, 61)[d]	.63
Step 2.	.75	.17	7.81 (4, 58)[d]		
PSR2				3.98 (1, 58)[b]	− .21
DAS1				0.75 (1, 58)	.09
LES2				21.19 (1, 58)[d]	.41
Step 3	.80	.07	3.57 (7, 55)[b]		
DAS1 × LES2				2.84 (1, 55)	− .95
LES2 × PSR2				10.67 (1, 55)[c]	−3.16
DAS1 × PSR2				1.01 (1, 55)	− .54
Step 4	.81	.01	2.45 (8, 54)		
DAS1 × PSR2 × LES2				2.44 (1, 54)	−9.12

[a]BDI = Beck Depression Inventory, DAS = Dysfunctional Attitudes Scale, PSR = Provisions for Social Relations Scale, LES = Life Experiences Survey, 1 = Time 1, 2 = Time 2, R = change in R, F change = F ratio for evaluating variance explained by the variable entered, Beta = standardized beta for variable when entered.
[b]$p < .05.$
[c]$p < .01.$
[d]$p < .001.$

ting the values of T2 BDI that are predicted when the four combinations of high and low values for the two interacting variables, and means for all other variables, are inserted into the regression equation. Scores 1 standard deviation above and below the mean of the two variables were used as high and low values, respectively (cf. Wise & Barnes, 1986). The two regression lines defined through the use of this procedure are displayed graphically in Figure 1. This analysis indicates that an increase in level of depressive symtomatology is more probable among women with high dysfunctional attitudes and low social support than among either attitudinally vulnerable women with high social support or women with few dysfunctional attitudes.

Two additional regression analyses were performed on the females' data to investigate whether different patterns of results might be obtained using the subscales of the DAS as moderator variables. Because of the exploratory nature of these analyses, and because two sets of secondary analyses were being performed on the same data set that was used for the main analysis, a more conservative significance level was chosen by dividing the original alpha level (.05) by the total number of analyses (3), yielding a new alpha level of .017. Variables were entered into the regression analysis as described above, but the DAS subscales were substituted for the full DAS score in the first and second analyses, respectively. In the analysis of the Approval by Others subscale, neither a significant main effect nor a significant moderator effect was found (all p's > .1). In contrast, when the Performance Evaluation sub-
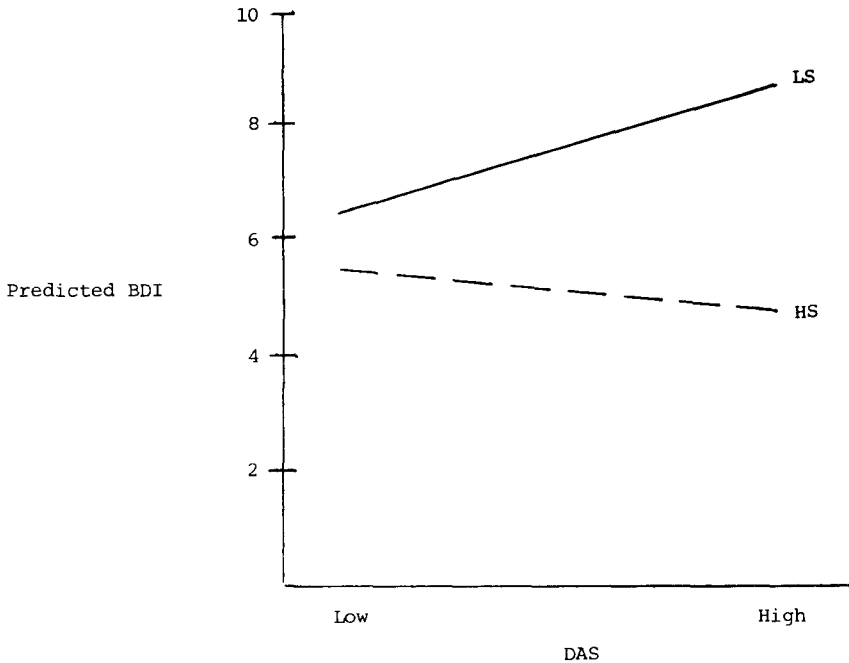
Fig. 1. Women's BDI scores as a function of cognitive style and social support (BDI = Beck Depression Inventory, DAS = Dysfunctional Attitudes Scale, LS = Low Social Support, HS = High Social Support).

scale was examined, the results were virtually identical to those obtained when the DAS total score was used.[4]

A different pattern of results emerged for males in both the main and secondary analyses. When the full DAS was used, dysfunctional attitudes did not account for a significant proportion of the variance in T2 BDI, and none of the interactions involving the DAS was significant (all p's $> .05$).[5]

[4]Specifically, a significant two-way interaction was found between the Performance Evaluation subscale and the PSR ($F(1, 169) = 6.72, p < .017$), which accounted for approximately 3% of the variance in T2 BDI scores after controlling for initial symptoms and the main effects of the predictor variables. The interaction was plotted graphically and was found to be identical to the interaction involving the full DAS: Women with high Performance Evaluation dysfunctional attitudes at T1 and low social support at T2 were more likely than were other women to report an increase in level of depressive symptoms at T2.

[5]Significant main effects were found for stressful life events, $F(1, 61) = 21.19, p < .001$, and for social support, $F(1, 61) = 3.98, p = .05$. In addition, the interaction between social support and stressful life events also predicted change in severity of depressive symptomatology at T2, $F(7, 61) = 12.15, p < .001$. When social support is low, an increase in stressful life events predicts a substantial increase in severity of depression. In contrast, when social support is high, an increase is stressful life events predicts only a slight increase in the severity of symptoms. Because the DAS was not involved in these main effects or interaction for males, however, it will not be discussed further.

Furthermore, neither main effects nor moderator effects were found for either of the two DAS subscales in the two additional regression analyses for males (all p's > .05).

DISCUSSION

The present study was designed to test hypotheses generated by Beck et al. (1979) regarding the role of dysfunctional attitudes in the course of depression. It was predicted that dysfunctional attitudes would moderate the relation of social support with depressive symptoms among women, and the relations of social support and stressful life events with depressive symptoms among men. In addition, the relations of possible subtypes of cognitive vulnerability with depression were also investigated. When the effects of initial symptoms and concurrent life events were controlled, dysfunctional attitudes moderated the relation of social support with depressed mood among women, but not among men. Furthermore, the interaction between negative life events and dysfunctional attitudes did not significantly predict subsequent dysphoria among either women or men. These results both replicate and extend the findings of our earlier study (Barnett & Gotlib, 1988a). In both studies, the combination of elevated dysfunctional attitudes at T1 and low social support at T2 was found to predict higher depressed mood scores at T2 among women that did any other combination of scores on these variables. Moreover, the results of both studies also failed to support inferences drawn from cross-sectional studies suggesting that negative life events activate depressogenic schemas to precipitate a depressive episode.

These results offer limited support for what has been the "principle of specificity" (cf. Zuroff & Mongrain, 1987). Briefly, according to this principle, affective states are triggered when a match occurs between a narrow range of experiences and a schema-based vulnerability to those experiences. In contrast, the "principle of nonspecificity" holds that latent negative self-schemas may be activated by any stressful external stimulus (cf. Teasdale, 1988). In both the present study and our previous investigation, women with high dysfunctional attitudes were found to be particularly sensitive to a lack of social support, but not to the stress of a number of diverse negative events that could include both negative interpersonal and noninterpersonal experiences.

In this context, it is puzzling that, although one of the DAS subscales did interact with social support to predict change in depressive symptoms in women, it was the Performance Evaluation, rather than the Approval of Others, subscale. In understanding this finding, it may be important to note that approximately half of the items constituting the Performance Evaluation subscale are, in fact, concerned with obtaining or maintaining other peo-

ple's approval. Thus, despite the fact that these subscales were derived from an orthogonal rotation of factors, the apparent similarity of the attitudes contained in two DAS subscales raises the question of whether they are valid measures of different types of cognitive vulnerability. Indeed, in our own laboratory, we have found high positive correlations between the two factors, a result replicated in the present study (Barnett & Gotlib, 1988b; Cane & Gotlib, 1987). We must conclude, therefore, that, pending additional research, the DAS may be best employed as a unitary measure of vulnerability to depressive symptoms in response to negative interpersonal experiences.

As we noted earlier, this is the second prospective study that has failed to replicate the results of cross-sectional research with respect to the interaction of the DAS and LES (Olinger et al., 1987; Wise & Barnes, 1986). This discrepancy may be explained by methodological differences between the two types of studies. Whereas in cross-sectional research the measurement of dysfunctional attitudes is influenced by subjects' level of depressive symptoms, in the present study this influence was controlled statistically. Furthermore, it is possible that an assessment of the effects of social support in cross-sectional research would have produced different results.

Although these results do not necessarily illuminate the process by which dysphoria develops among women with high dysfunctional attitudes and low social support, they are consistent with existing theories concerning the development of depressive symptoms. Kuiper and Olinger (1986; Olinger et al., 1987) have hypothesized that individuals vulnerable to depression have specific self-worth contingencies; symptoms develop when these contingencies are not met. A similar, but more restricted, theory suggests that depressives maintain their labile self-esteem through dependent relationships with others, and that depression results when these relationships are absent or untenable (Hirschfeld, Klerman, Chodoff, Korchin, & Barrett, 1976). The present results suggest that the perception of low social support may threaten the self-worth contingencies of women with dysfunctional attitudes, producing a depressive response. Clearly, additional research is required to explore the specific aspects of support that are highly valued and threatening when absent.

In the present study, the DAS did not moderate the relation of stress with the symptoms of depression among men. This finding is open to a number of possible interpretations. For example, Nolen-Hoeksema (1987) suggested that whereas women tend to ruminate about the cause of their dysphoria, men tend to defend against an incipient depressive episode through activity. Therefore, although dysfunctional attitudes may be activated and lead to some initial dysphoria among both men and women, men may limit the duration and severity of their distress by distracting themselves, whereas women may increase their dysphoria by focusing on their negative thoughts. This differential functioning would explain why the DAS, although signifi-

cantly correlated with current symptoms among both men and women, predicted symptom change only in women.

An alternative explanation is that low social support does not threaten the self-worth of men with high dysfunctional attitudes. Indeed, these results suggest that the role of social support is different for men and women. Whereas social support appears to buffer the impact of negative events among men, low support among women may itself be depressogenic. The reason for this gender-specific function of support is not clear. Perhaps being popular or having close friends is more important for women, and particularly for women with high dysfunctional attitudes. Among men, support was found to have an impact on mood primarily when many life events were appraised as being negative; under low stress, the impact of social support on mood was minimal. Future studies may discover that other threats to self-worth, such as failure experiences, are more salient for men than is low social support.

Future investigations also need to consider the fact that both life event impact and social support measures have a cognitive component, and it is possible, therefore, that cognitive style might affect these scores. Interestingly, some available data suggest that this may not be the case. Hammen et al. (1985) found that subjects in each of two schema-based vulnerability groups did not perceive schema-relevant events as more stressful than they did schema-irrelevant events, nor did the two groups differ in their appraisals of groups of events. Similarly, Barnett and Gotlib (1988a) reported low correlations among concurrent measures of dysfunctional attitudes, stressful life events, and social support. Nevertheless, the cognitive component of the social support and life events measures used in the present study should be recognized.

A number of limitations of the present study must be acknowledged. First, conclusions concerning the role of dysfunctional attitudes among men based on the results of the present study should be regarded as preliminary. It is possible that different results would have been obtained with a larger sample of male subjects. However, one reason for suspecting that this may not be the case is that significant results were obtained among an even smaller female sample in our previous study of the moderating effects of dysfunctional attitudes (Barnett & Gotlib, 1988a) — results that were fully corroborated in the present study. Nevertheless, the difference in the sample sizes employed here may have affected the pattern of results, and these gender differences warrant replication. Second, as in our previous study, severity of depression was measured concurrently with social support and life events. Thus, scores of these independent variables may have been biased by subjects' level of depression. More important, the nature of the causal path between stress and depression cannot be ascertained on the basis of this kind of design. This study does provide evidence, however, that dysfunctional attitudes may influence the development or maintenance of depressive symptoms.

Third, the amount of variance accounted for by the interaction of the DAS with social support was small. Nevertheless, it is useful to bear in mind that the high colinearity between individual predictors and their cross products, and between initial BDI and subsequent BDI, substantially decreses the amount of variance unaccounted for by predictors entered into the regression equation ahead of two-way interactions (Cohen & Cohen, 1983). Thus, although the clinical significance of the present findings is not clear, their statistical significance does offer support for the Beck et al. (1979) hypotheses concerning the role of dysfunctional cognitions in the development or maintenance of depressive symptoms. A fourth, but related, caution concerns the clinical implications of the present results given the use of a nonclinical undergraduate sample. These results need to be replicated among a clinical sample to examine the role of dysfunctional attitudes in more extreme affective disorders and among individuals with a broader range of life experiences.

Finally, future research might extend the scope of this investigation of gender differences in depressogenic cognitions by examining other kinds of cognitive activity. For example, although we focused on a cognitive vulnerability to depression, one interpretation of our results suggests that men and women differ not in their vulnerability but in the responses to negative cognitions and mood. A paradigm for testing this hypothesis has been formulated by Pyszczynski and Greenberg (1987), who suggested that under certain conditions, a pattern of prolonged self-focus might lead to the development of a depressive episode. Integrating these hypotheses, then, it would be predicted that women would exhibit greater self-focused attention over time in response to stress than would men. Future research examining these variables might also evaluate the roles of social and personality factors, thus reflecting a greater appreciation of the multifactor etiology of depression.

REFERENCES

Barnett, P. A., & Gotlib, I. H. (1988a). Dysfunctional attitudes and psychosocial stress: The differential prediction of subsequent depression and general psychological distress. *Motivation and Emotion, 12,* 251-270.

Barnett, P. A., & Gotlib, I. H. (1988b, June). *Personality and depression: New scales and a model of relationships.* Paper presented at the Annual Convention of the Canadian Psychological Association, Montreal.

Barnett, P. A., &. Gotlib, I. H. (1988c). Psychosocial functioning and depression: Distinguishing among antecedents, concomitants, and consequences. *Psychological Bulletin, 104,* 97-126.

Beck, A. T. (1983). Cognitive therapy of depression: New perspectives. In P. J. Clayton & J. E. Barrett (Eds.), *Treatment of depression: Old controversies and new approaches,* New York: Raven Press.

Beck, A. T., Rush, A. J., Shaw, B. F., & Emery, G. (1979). *Cognitive therapy of depression.* New York: Guilford Press.

Beck, A. T., Ward, C. H., Mendelson, M., Mock, J., & Ebaugh, J. (1961). An inventory for measuring depression. *Archives of General Psychiatry, 4,* 53-61.

Blatt, S. J. (1974). Level of object representation in anaclitic and introjective depression. *Psychoanalitic Study of the Child, 29,* 107-157.

Bumberry, W., Oliver, J. M., & McClure, J. (1978). Validation of the Beck Depression Inventory in a university population using psychiatric estimate as a criterion. *Journal of Consulting and Clinical Psychology, 46,* 150-155.

Cane, D B., & Gotlib, I. H. (1987). *Assessing dependent and self-critical dimensions of depression: A preliminary investigation of their relationship.* Paper presented at the Annual Meeting of the Canadian Psychological Association, Vancouver.

Cane, D. B., Olinger, L. J., Gotlib, I. H., & Kuiper, N. A. (1986). Factor structure of the Dysfunctional Attitudes Scale in a student population. *Journal of Clinical Psychology, 42,* 307-309.

Cohen, J., & Cohen, P. (1983). *Applied multiple regression/correlation analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.

Coyne, J. C., & Gotlib, I. H. (1983) The role of cognition in depression: A critical appraisal. *Psychological Bulletin, 94,* 472-505.

Coyne, J. C., & Gotlib, I. H. (1986). Studying the role of cognition in depression: Well-trodden paths and cul-de-sacs. *Cognitive Therapy and Research, 10,* 695-706.

Cutrona, C. E. (1984). Causal attributions and perinatal depression. *Journal of Abnormal Psychology, 93,* 378-390.

Dobson, K. S., & Breiter, H. J. (1983). Cognitive assessment of depression: Reliability and validity of three measures. *Journal of Abnormal Psychology, 92,* 107-109.

Dobson, K. S., & Shaw, B. F. (1986). Cognitive assessment with major depressive disorders. *Cognitive Therapy and Research, 10,* 13.29.

Eaves, G., & Rush, A. J. (1984). Cognitive patterns in symptomaic and remitted unipolar major depression. *Journal of Abnormal Psychology, 93,* 31-40.

Gotlib, I. H. (1984). Depression and general psychopathology in university students. *Journal of Abnormal Psychology, 93,* 19-30.

Gotlib, I. H., & Cane, D. B. (1987). Construct accessibility and clinical depression: A longitudinal approach. *Journal of Abnormal Psychology, 96,* 199-204.

Gotlib, I. H., & Cane, D. B. (1989). Self-report assessment of depression and anxiety. In D. Watson & P. C. Kendall (Eds.), *Anxiety and depression: Distinctive and overlapping features.* (pp. 131-169). San Diego: Academic Press.

Hamilton, E. W., & Abramson, L. Y. (1983). Cognitive patterns and major depressive disorder: A longitudinal study in a hospital setting. *Journal of Abnormal Psychology, 92,* 173-184.

Hammen, C., Marks, T., Mayol, A. & DeMayo, R. (1985). Depressive self-schemas, life stress, and vulnerability to depression. *Journal of Abnormal Psychology, 94,* 308-319.

Hirschfeld, R. M. A., Klerman, G. L., Chodoff, P. Korchin, S., & Barett, J. (1976). Dependency, self-esteem, and clinical depression. *Journal of the American Academy of Psychoanalysis, 4,* 373-388.

Hollon, S. D., Kendall, P. C., & Lumry, A. (1986). Specificity of depressotypic cognitions in clinical depression. *Journal of Abnormal Psychology. 95,* 52-59.

Kuiper, N. A., & Olinger, L. J. (1986). Dysfunctional attitudes and a self-worth contingency model of depression. In P. C. Kendall (Ed.), *Advances in cognitive-behavioral research and therapy* (Vol. 5, pp. 115-142). New York: Academic Press.

Nolen-Hoeksema, S. (1987). Sex differences in unipolar depression: Evidence and theory. *Psychological Bulletin, 101,* 258-282.

O'Hara, M. W., Rehm, L. P., & Campbell, S. B. (1982). Predicting depressive symptomatology: Cognitive-behavioral models and postpartum depression. *Journal of Abnormal Psychology, 91,* 457-461.

Olinger, L. J., Kuiper, N. A., & Shaw, B. F. (1987). Dysfunctional attitudes and stressful life events: An interactive model of depression. *Cognitive Therapy and Research, 11,* 25-40.

Oliver, J. M., & Baumgart, E. P. (1983). The dysfunctional attitude scale: Psychometric properties and relation to depression in an unselected adult population. *Cognitive Therapy and Research, 9,* 161-167.

Phifer, J. F., & Murrell, S. A. (1986). Etiologic factors in the onset of depressive symptoms in older adults. *Journal of Consulting and Clinical Psychology, 95,* 282-291.

Pilon, D. J. (1987 August). *Validation of Beck's sociotropic and autonomous models of depression*. Paper presented at the Annual Meeting of the American Psychological Association, New York.

Pyszczynski, T., & Greenberg, J. (1987). Self-regulatory perseveration and the depressive self-focusing style: A self-awareness theory of reactive depression. *Psychological Bulletin, 102,* 122-138.

Rush, A. J., Weissenburger, J., & Eaves, G. (1986). Do thinking patterns predict depressive symptoms? *Cognitive Therapy and Research, 10,* 225-236.

Sarason, I. G., Johnson, J. H., & Siegel, J. M. (1978). Assessing the impact of life changes: Development of the life experiences survey. *Journal of Consulting and Clinical Psychology, 46,* 932-946.

Simons, A. D., Garfield, S. L., & Murphy, G. E. (1984). The process of change in cognitive therapy and pharmacotherapy for depression: Changes in mood and cognition. *Archives of General Psychiatry, 41,* 45-51.

Teasdale, J. D. (1988). Cognitive vulnerability to persistent depression. *Cognition and Emotion, 2,* 247-274.

Turner, R. J., Frankel, B. G., & Levin, D. (1982). Social support: Conceptualization, measurement and implications for mental health. In J. R. Greenley (Ed.), *Research in community and mental health* (Vol. 3). Greenwich, CT: JAI Press.

Weiss, R. (1974). The provisions of social relationships. In Z. Rubin (Ed.), *Doing unto others.* Englewood Cliffs, NJ: Prentice-Hall.

Weissman, A. N., & Beck, A. T. (1978). *Development and validation of the Dysfunctional Attitudes Scale: A preliminary investigation.* Paper presented at the Annual Meeting of the Educational Research Association, Toronto.

Whiffen, V. E., & Gotlib, I. H. (1989). Stress and coping in maritally satisfied and dissatisfied couples. *Journal of Social and Personal Relationships, 6,* 327-344.

Wise, E. H., & Barnes, D. R. (1986). The relationship among life events, dysfunctional attitudes, and depression. *Cognitive Therapy and Research, 10,* 257-266.

Zuroff, D. C., & Mongrain, M. (1987). Dependency and self-criticism: Vulnerability factors for depressive affective states. *Journal of Abnormal Psychology, 96,* 14-22.