

Expanded Hopelessness Theory of Depression: On the Mechanisms by which Social Support Protects Against Depression

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Abstract The inverse relationship between social support and depression has been robust to a wide variety of conceptual replications with college, community, and clinical samples. However, there is inadequate understanding of the mechanisms by which social support protects against depression. In this paper, we define a subtype of social support, adaptive inferential feedback, which is more precise than the general concept of social support. We elaborate two possible mechanisms for the beneficial effect of adaptive inferential feedback on depression by incorporating this type of social support into a specific etiological model of depression, the Hopelessness Theory of depression. Empirical tests are conducted for the two hypothesized mechanisms by which adaptive inferential feedback protects against depression as well as the full expanded Hopelessness Theory proposed herein. Our results supported both the specific mechanisms proposed as well as the full expanded hopelessness theory. We found that adaptive inferential feedback predicts more positive inferences for stressful events and a more positive inferential style prospectively. It also interacts with cognitive risk and stress to predict future hopelessness and depressive symptoms as well as concurrent diagnoses of hopelessness depression over and above the contributions of stress, cognitive risk, and general social support which are known predictors of depressive symptoms and disorders. Thus, this newly defined subtype of social support may be an important contributor in the etiology of hopelessness depression.

Keywords Social support · Adaptive inferential feedback · Depression · Hopelessness theory · Inferential style

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Introduction

Poor social support has been proposed as both a risk factor for (Brown & Harris, 1978; see Cohen & Wills, 1985, for a review) and a consequence of depression (Coyne, 1976; Joiner, Alfano, & Metalsky, 1993). An inverse association between social support and depression has been well documented and it is likely that social support and depression influence one another reciprocally (e.g., Barnett & Gotlib, 1988; Cohen & Wills, 1985; Roberts & Gotlib, 1997). However, in spite of a wealth of literature supporting a protective effect of social support on depression, the construct of social support remains ill-defined and little understood. Some social support researchers (e.g., Cohen & Wills, 1985; Pierce & Lakey, 1997; Sarason, Sarason, & Pierce, 1990) have called for theoretical development that will shed light on the mechanisms of the relationship between social support and depression. Others (e.g., Dunkel-Schetter & Bennett, 1990) have suggested that the “global concept of social support should be abandoned in favor of more precise concepts and narrower models” (p. 288).

In this article, we elaborate two possible mechanisms for the beneficial effect of social support on depression by incorporating social support into a specific etiological model of depression, the Hopelessness Theory of depression (Abramson, Metalsky, & Alloy, 1989). Although the causal pathway to hopelessness and depression described by Abramson et al. (1989) has received considerable empirical support (e.g., see Abramson et al., 2002 and Alloy, Abramson, Safford, and Gibb in press for reviews), other causal pathways they suggested, such as the effect of inadequate social support on hopelessness and depression, have not yet been elaborated or tested. Further, in proposing an Expanded Hopelessness Theory, we elaborate a subtype of social support that is more precise than the general concept of social support.

In this article, we focus on the effect of social support on reducing risk for dysphoria and depression. However, it's important to note that over time, depressed people may erode their social support networks as friends and family become increasingly rejecting of the depressed person (Coyne, 1976, 1990; Joiner, Metalsky, Katz, & Beach, 1999). Future tests of the Expanded Hopelessness Theory might also examine the impact of depression on social support.

Hopelessness theory of depression

The Hopelessness Theory of depression is a vulnerability-stress model that describes the etiology of a subtype of depression—“Hopelessness Depression”—in terms of the operation of cognitive vulnerabilities and the occurrence of negative life events (Abramson et al., 1989). Specifically, a style or tendency to infer negative characteristics about the self, negative consequences for the future, and stable, global causes for negative events is hypothesized to increase the likelihood that negative inferences about causes, consequences, and the self will be made when a negative event occurs, thereby increasing the likelihood that hopelessness and the symptoms of Hopelessness Depression will develop. Hopelessness is considered the proximal cause of the development of Hopelessness Depression, a depression subtype that shares defining features of traditional depressive disorders but involves a specific subset of symptoms (see Alloy et al., 2000 for criteria).

Brown, Andrews, Harris, Adler, and Bridge (1986) speculated that social support may prevent “...the subject from despairing of a better future” (p. 826). This idea is

consistent with our proposed expansion of the Hopelessness Theory in which the effect of social support on depression is hypothesized to be mediated through hopelessness. Indeed, Johnson and colleagues (2001) found that hopelessness was a mediator of the relationship between low levels of social support and increases in depressive symptoms in a 6-month longitudinal study of HIV positive men. Consideration of social support in the context of the Hopelessness Theory contributes to the social support literature in several ways. First, *adaptive inferential feedback* (AIF), a specific subtype of social support, is defined. Second, specific mechanisms by which social support, including AIF, impacts hopelessness and, thereby, Hopelessness Depression are proposed. Third, the unique contribution of AIF to explaining dysphoria and Hopelessness Depression, over and beyond cognitive variables such as negative inferential style (that are likely to influence perceptions of social support), are elucidated by empirical tests of the proposed model. An examination of the unique contribution of AIF over and beyond the negative inferential style to explaining dysphoria and depression is important because the perception of poor social support may represent either another aspect of cognitive vulnerability to depression—the tendency to interpret events negatively—or reflect negative inferences once depression has occurred (Lahey & Cassady, 1990; Ross, Lutz, & Lahey, 1999).

Although the degree to which perceived social support is influenced by personality variables such as inferential style cannot be resolved in this article, it is important to note that our empirical test of the proposed Expanded Hopelessness Theory examines whether perceived AIF makes a unique contribution to explaining variance in dysphoria and depression beyond the contributions of general social support, stress, and inferential style. If it does, then the hypothesis that social support is at least partly determined by factors other than inferential style and stress is supported.

An expanded hopelessness theory of depression: the role of social support

Based on prior evidence for buffering effects of social support on depression (see Cohen & Wills, 1985 for a review), we propose at least two points of potential impact for social support in the etiological chain featured in the Hopelessness Theory of depression (see Fig. 1). First, social support, in particular AIF, may work to reduce the cognitive vulnerability to depression by decreasing or attenuating negative inferential styles. Second, social support and especially, AIF, may decrease the likelihood of making maladaptive inferences about negative life events in particular cases regardless of whether it affects one's general tendency to make negative inferences. We also note in Fig. 1 the potential reverse influences of depression and negative inferential style on reducing social support; however, these consequences of depression and negative inferential style for social support are not the focus of the present article. Figure 1 also reflects the possibility of direct effects of social support on negative life events and situational cues that are not elaborated or tested in the present article. Moreover, other points of impact are likely as well. For example, the potential impact of social support on recovery once a depressive episode has occurred (Brugha, Bebbington, Stretch, MacCarthy, & Wykes, 1997; Lara, Leader, & Klein, 1997) is not depicted in Fig. 1. The two potential points of impact of AIF on hopelessness and depression that we test are described further below.

First, social support may influence the development and maintenance of a depressogenic inferential style. Cognitive therapy for depression (Beck, Rush, Shaw, & Emery, 1979) focuses on changing negative belief systems and is highly effective (e.g., Dobson, 1989; Hollon, Thase & Markowitz, 2002). Individuals in the social support network

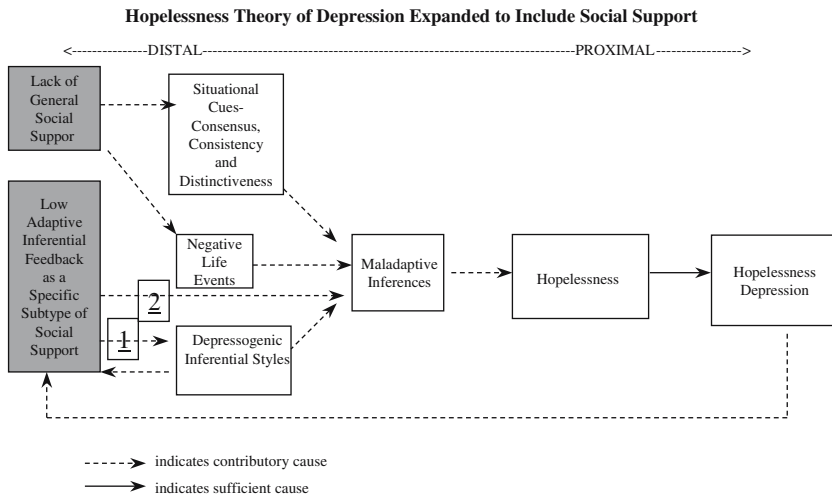


Fig. 1 Hopelessness theory of depression expanded to include social support and adaptive inferential feedback. The two potential points of impact for adaptive inferential feedback (AIF) are marked: (1) AIF may attenuate negative inferential styles; and (2) AIF may decrease the likelihood of maladaptive inferences about actual stressful life events

might facilitate change in negative cognitive styles by consistently providing schema-inconsistent evidence, proposing more adaptive alternative ways of accounting for the same information, and pointing out the negatively biased inferences used by the cognitively vulnerable person (see Ross, 1977). Over time, feedback inconsistent with depressogenic inferences (i.e., AIF) may actually modify negative inferential styles.

A second point of impact for social support is that it may reduce the likelihood of maladaptive inferences for particular negative events, regardless of one's inferential style or the potential influence of support over time on general beliefs discussed above (e.g., Cohen, 1992; Cohen, Sherrod, & Clark, 1986). This buffering effect of social support may occur either before the subjective experience of stress (after a potentially stress-inducing event has occurred) by influencing event appraisal, or after the experience of stress but prior to the onset of hopelessness and depression by influencing appraisal of coping abilities or resources (Cohen & Wills, 1985).

Adaptive inferential feedback

The hypothesized effect of social support on negative inferential styles and maladaptive inferences for stressful events involves a type of social support that can be uniquely defined and explicated in terms of the Hopelessness Theory—*adaptive inferential feedback* (AIF). AIF is the offering of adaptive inferences for negative events by persons in the support network. Adaptive inferences are the converse of negative or depressogenic inferences discussed earlier. That is, when a negative event has occurred, adaptive inferences do not suggest negative consequences for the future or negative characteristics about the self, and they ascribe the cause of the negative event to unstable, specific factors rather than to stable, global factors. For example, suppose a person has an argument with his boss and expresses the following to a close friend:

“Now, I’ll never get promoted: I am so stupid, I always foul things up.” This is a depressogenic inference for the event because it expresses negative consequences for the future (never get promoted), negative characteristics about the self (stupid), globality (stupid is a widespread cause), and stability (never, always), and therefore, increases the likelihood that the person will become hopeless. If the friend offers an adaptive inferential alternative, e.g., “She will forget about it in no time and you will still be promoted because most of your work is really good. You are not stupid; your boss is just very difficult to get along with and you are doing better at it all the time,” the affected individual may be prompted to re-evaluate his thinking, thereby modifying the original maladaptive inference or at least decreasing its certainty and thereby, the likelihood of hopelessness. It should be noted that this friend could offer social support in a different way, such as by suggesting going out to dinner to unwind.

AIF likely occurs frequently with other types of social support such as tangible support (Brown, Alpert, Lent, Hunt, & Brady, 1988), acceptance (Brown et al., 1988), informational support, and companionship (Cohen & Wills, 1985). Among types of social support commonly identified in the literature, AIF most closely parallels informational and emotional support in that it involves feedback both about potential stressors and about other’s feelings and evaluations in the face of potential stressors (Cohen & Wills, 1985). However, the definition of AIF is necessarily more explicit than the definitions of informational and emotional support in that it specifies exactly what type of feedback is provided. Further, because AIF involves both emotional and informational components, it may be a particularly powerful type of social support. For example, Harlow and Cantor (1995) found that emotional support mitigated negative affect whereas informational support facilitated positive psychological states. Elliott, Marmarosh, and Pickelman (1994) found that a reassurance of worth, which is similar to one of the components of AIF (countering negative inferences about the self), was a better predictor of depressive symptoms in students undergoing final examinations after controlling for trait negative affectivity than other subtypes of social support.

It is expected that when people in the social support network counter negative inferences made by someone for a particular event, the negative inferences will be weakened or modified, making development of hopelessness (and Hopelessness Depression) less likely. Indeed, in a recent experimental study, we (Dobkin, Panzarella, Nesbitt, Alloy & Cascardi, 2004) demonstrated that individuals who received AIF from a friend or partner following a laboratory stressor showed greater decreases in depressogenic inferences and dysphoria compared to those who received general or no social support.

It is also expected that adaptive feedback will be associated with positive changes in inferential style over time, especially in a sample that is experiencing change in their social network composition (we test our model with college freshmen who are experiencing changes in their social network as they move away from home). Although negative inferential styles are by definition not easy to change with conflicting information, research on stereotypes provides evidence that people can and do modify fairly rigid beliefs under certain conditions (see Hilton & von Hippel, 1996 for a review). Research on cognitive therapy for depression also suggests that self-beliefs and negative attributional styles are modifiable under certain conditions (Dobson, 1989; Hollon, Shelton, & Loosen, 1991). In effect, the essence of cognitive therapy is an effort to get depressed people to seek out evidence that will likely disconfirm their negative views, so that they will modify their depressogenic beliefs and adopt more adaptive ones (Beck et al., 1979). Although natural supporters are not likely to be as highly trained or as

consistent in offering AIF as cognitive therapists, they can offer it more frequently than a therapist does. Further, naturally occurring AIF may be available from several sources making it potent because it is difficult for the recipient to discount it as an exception (e.g., “You just say I’m a worthy person because you are my therapist”).

Hypotheses for the present test of the expanded hopelessness theory of depression

Below are four hypotheses designed to test the Expanded Hopelessness Theory. First, we test the two proposed mechanisms by which AIF may contribute to attenuating negative inferential styles and negative inferences for actual life events. Then, we test the buffering role that AIF plays with life stress and negative inferential styles in predicting decreased hopelessness, dysphoria, and Hopelessness Depression. To examine the unique contributions of AIF, each of the hypotheses was tested controlling for general social support.¹

Two points of impact: does aif predict change in negative inferential style and inferences for actual events?

- (1) AIF will be associated with positive changes in inferential style over time after partialing out the contribution of stressful life events.
- (2) AIF will be associated with more adaptive inferences for actual negative life events.

Full model tests: predicting hopelessness and depression

- (3) Additionally, AIF, negative life events, and inferential style will interactively predict the likelihood of hopelessness, dysphoria and hopelessness depression onset. AIF will predict variance in hopelessness, dysphoria and hopelessness depression over and above general social support, inferential style and negative life events. Specifically, the negative inferential style/high stress/low AIF group is hypothesized to be more vulnerable to hopelessness and depression than groups possessing fewer of these risk factors. The group that is low on all three vulnerability factors should have the lowest hopelessness and depression.²
- (4) The 3-way interaction of inferential style, stress, and AIF in predicting subsequent dysphoria and hopelessness depression hypothesized above will be mediated by hopelessness.

¹ In as much as the measure of Adaptive Inferential Feedback was newly developed for this study, we originally tested each of the hypotheses separately for general social support and Adaptive Inferential Feedback. Both sets of analyses yielded results in support of each point of impact as well as the overall model. Therefore, we decided to subject the new Adaptive Feedback measure to the more rigorous test of determining if it contributed to explaining variance in hopelessness and depression after controlling for the more established general social support measure.

² Given that there is no previous work indicating which of the vulnerability factors (negative inferential style, stress, or poor AIF) might be more potent, no specific predictions about how groups who have the same number of vulnerability factors might differ are offered.

Methods

Participants and sample selection

A subset of freshmen in the Temple-Wisconsin Cognitive Vulnerability to Depression (CVD) Project (Alloy & Abramson, 1999; Alloy et al., 2000, in press) participated in this study. The CVD Project is a large scale, longitudinal prospective study designed to test the etiological hypotheses of the Hopelessness and Beck (1967, 1987) theories of depression. Data from participants at the Temple site of the CVD Project only were used for this study, because only the Temple participants completed the social support and AIF measures. Freshmen were selected for the CVD Project based on either high or low hypothesized cognitive vulnerability to depression (top and bottom quartiles on measures of both negative inferential styles and dysfunctional attitudes; hereafter referred to as high [HR] and low risk [LR] respectively) featured in Hopelessness and Beck's theories. Additionally, only freshmen who were non-depressed and had no other current Axis I disorders (as determined by structured diagnostic interview) at the beginning of the study were included in the sample. Participants with a lifetime history of mania, hypomania, or cyclothymia or a current serious medical illness were also excluded.

Participants were paid \$25–\$50 for each assessment after the screening. The final sample at the Temple site included 170 freshmen (83 HR and 87 LR). Demographic and cognitive style characteristics of these 170 participants as well as more details on sample selection procedures may be found in Alloy and Abramson (1999) and Alloy et al. (2000). Eight participants from the final sample at Temple did not complete the social support and AIF measures critical to the current study and are not included in the present analyses. Thus, the final sample for the present study included 162 freshmen, 79 HR and 83 LR. Table 1 shows the demographic and cognitive style features for these 162 participants.

Sample representativeness

The final sample was representative of the original screening sample ($n = 2438$) on age and ethnic composition but had more women (67.1%) than did the screening sample (56.8%). Also, the final sample did not differ significantly on demographics or cognitive style scores from those who were eligible but refused participation in the longitudinal study or were dropped prior to the longitudinal study (as a result of inability to locate, 5 or more missed appointments, or poor English speaking ability). Thus, the final sample was generally representative of the population from which it was drawn on

Table 1 Demographic and cognitive style characteristics of the sample

Temple site	High-risk ($N = 79$)	Low-risk ($N = 83$)
DAS-E Mean item score	4.40 (.55)	2.20 (.29)
CSQ-NEG. Mean item score	4.99 (.47)	2.81 (.43)
Age (yrs.)	19.67 (1.40)	20.63 (2.98)
Sex	65% Women	66% Women
Ethnic group	65% Caucasian	56% Caucasian

Note: DAS-E = Dysfunctional Attitudes Scale, Expanded; CSQ-NEG. = Cognitive Style Questionnaire-Negative Event Composite

demographics (but, obviously, not on cognitive vulnerability) and appeared to be unbiased in important respects relative to other eligible persons who did not participate (see Alloy et al., 2000 for more details).

Measures

The means, standard deviations, and ranges for all of the measures used in hypothesis testing as a function of risk group status are shown in Table 2.

Cognitive vulnerability and inference measures

Cognitive style questionnaire (CSQ)

Participants' inferential styles for negative events were assessed with the CSQ (Alloy et al., 2000), a modified version of the Attributional Style Questionnaire (ASQ; Peterson et al., 1982). In the CVD Project, a composite score for negative events based on a sum of the stability, globality, consequences, and self dimensions was used (along with the DAS below) to select HR and LR groups as described above. Coefficient alpha's based on the screening sample at both sites ($n = 5378$) for the negative and positive event composites were .88 and .86, respectively. Retest stabilities over a 1 year interval based on the final sample at both sites ($n = 349$) were both .80. Further details on the psychometric properties of the CSQ and its development from the ASQ are available in Alloy and Abramson (1999) and Alloy et al. (2000).

Table 2 Means, standard deviations, and ranges for measures used in hypothesis testing

Measure	High risk			Low risk		
	<i>M</i>	<i>SD</i>	Range	<i>M</i>	<i>SD</i>	Range
<i>Cognitive style (risk) measures</i>						
CSQ-NEG. (mean item score)	5.0	0.5	4.4–6.3	2.8	0.4	1.6–3.6
DAS-E (mean item score)	4.4	0.6	3.7–6.4	2.2	0.3	1.4–2.9
<i>Inference measures</i>						
IQ (mean item score)	–5.6	3.4	–13.0 to 0.0	–3.7	2.6	–9.0 to 0.0
<i>Stress measures</i>						
Number of NLEs	10.4	10.5	0–62	7.4	6.2	0–26
Ave. Stressfulness of NLEs	2.8	3.6	0–26	2.5	3.6	0–22
<i>Social support measures</i>						
SSI	191.8	72.8	39.0–273.0	214.5	71.1	7.0–273.0
AIFQ	5.9	3.8	–5 to 12	7.9	3.1	0–12
<i>Hopelessness and depression measures</i>						
HS	1.6	2.7	0–13	0.6	1.3	0–6
BDI	2.5	3.4	0–15	1.1	1.6	0–8
Number of HD Episodes	0.6	1.1	0–5	0.1	0.4	0–2

Note: Data reported are from Time 1 (the first complete administration of all measures) except for the diagnoses, which are summed across the entire 9 month time period. CSQ-NEG. = Cognitive Style Questionnaire-Negative Event Composite; DAS-E = Dysfunctional Attitudes Scale, Expanded; IQ = Inference Questionnaire; NLEs = Negative Life Events; SSI = Social Support Inventory-Satisfaction Index; AIFQ = Adaptive Inferential Feedback Questionnaire; HS = Hopelessness Scale; BDI = Beck Depression Inventory; HD = Hopelessness Depression

Dysfunctional attitudes scale, expanded (DAS-E)

The DAS (Weissman & Beck, 1978) assesses dysfunctional attitudes regarding concern with approval by others and perfectionism. For the CVD Project, the original 40-item DAS was expanded by adding an extra 24 items that measured dysfunctional beliefs in achievement and interpersonal domains specifically. Coefficient alpha for the expanded DAS was .90 in our screening sample and retest reliability over 1 year in the final sample (both sites) was .78. In the CVD Project, cognitive risk-based on both the CSQ negative event composite and the expanded DAS-predicted lifetime history of major depression and Hopelessness Depression (Alloy et al., 2000) and prospective first onsets and recurrences of major depression, minor depression, and Hopelessness Depression over the 2.5-year follow-up period (Alloy et al., 2005), as well as suicidal ideation (Abramson et al., 1998). The CSQ and DAS were given at the initial screening and yearly, thereafter.

Inference questionnaire (IQ)

The IQ (Alloy & Abramson, 1999) was developed for the CVD Project to assess inferences made for particular events that have actually been experienced. It is an 11-item questionnaire that asks the participant to think of the most stressful event encountered over the past 6 weeks and to make inferences about the cause, consequences, implications for the self, and controllability of the named event. For this study, we used a negative composite of the IQ that contained the same inference domains as the negative composite of the CSQ (inferences about the stability, globality, self and consequences of negative events). The alpha coefficient for the IQ negative composite was .65. Retest reliability examined over 12 weeks was $r = .49$, $P < .01$. The IQ was inversely correlated significantly with measures of hopelessness (Hopelessness Scale [HS]; $r = -.27$, $P < .01$) and dysphoria (Beck Depression Inventory [BDI]; $r = -.38$, $P < .01$), indicating that as the adaptiveness of inferences for actual events increased, hopelessness and dysphoria decreased. In addition, the IQ was positively correlated significantly with the AIFQ, the measure of AIF ($r = .43$, $P < .01$), indicating more adaptive inferences for actual events was associated with more AIF for the same events.³

Social support measures

Social support inventory (SSI)

The SSI provided a 39-item general measure of social support and was developed by Brown and colleagues (Brown et al., 1988, 1987; Multon & Brown, 1987) to measure satisfaction with social support in terms of perceived fit between support needs and supply. The SSI was chosen for this study because although it focuses on perception of the adequacy of actual received support, it does not merely reflect quantity of received support. Measures that ask how much support has been received have been criticized for not adequately distinguishing between the availability of social support and the need to

³ Note that a correction for attenuation calculation (Cohen & Cohen, 1983) indicated a maximum possible correlation of .70 between the IQ and the measure of AIF.

utilize it (Cohen & Wills, 1985; Monroe & Steiner, 1986). The Expanded Hopelessness Model suggests that actual responses by friends and family to depressogenic inferences are key to averting Hopelessness Depression. However, it is the content or quality of the responses in terms of countering depressogenic inferences rather than quantity per se that is expected to be critical. Thus, it was important to select a measure of general social support that would pertain to quality of provided support, not mere perceptions of availability of support or quantity of received support. The SSI has been factored into five subscales representing commonly recognized categories of social support: (1) acceptance and belonging; (2) appraisal and coping assistance; (3) behavioral and cognitive guidance; (4) tangible assistance and material aid; and (5) modeling. The overall scale and each subscale have been shown to be reliable and valid (Brown et al., 1988; Multon & Brown, 1987). The overall alpha coefficient achieved for the SSI in the present sample was 0.98 (Time 1). In retest reliability analyses, the SSI composite yielded a Pearson correlation of 0.65 ($P < .01$) over one year. The Pearson correlations for the subscales ranged from .52 to .63 (P 's $< .01$) over the same year. As social support is a construct expected to change over time depending on factors such as stressors and emotions, the overall SSI composite and 5 subscales demonstrate adequate levels of retest reliability. The SSI-Fit score was negatively correlated with concurrent measures of hopelessness (the HS; $r = -0.31$, $P < .001$) and dysphoria (the BDI; $r = -0.20$, $P < .05$) as expected. The same pattern of results held for the five SSI subscales as well.

Adaptive inferential feedback questionnaire (AIFQ)

The AIFQ was specifically developed for this study by using both the CSQ and the IQ (see descriptions above) as models for tapping into the inferential domains germane to Hopelessness Theory: Causality, consequences, and self-implications. Like the IQ, the AIFQ asks respondents to think of an actual event (the most stressful event of the past 6 weeks) while answering each question. Like the CSQ, the respondent rates inferences about the globality and stability of causes, consequences for the future, and implications for the self on 7-point Likert scales. However, unlike the CSQ, the participant reports what three people from whom he or she sought social support told him or her about the event rather than what the participant him or herself thought about the event. Thus, the AIFQ mirrors the negative composite of the CSQ except that it asks for inferential feedback from three other people as recollected by the participant rather than the inferences the participant made. Responses for up to three people in the social network are averaged for each item and then summed to obtain an overall score for AIF.⁴ If the participant did not speak to anyone about the stressor, then the AIFQ is not scored. The AIFQ is contained in Appendix A.

Items comprising the AIFQ demonstrated loadings ranging from .55 to .83 on the same factor in a three factor rotated solution. The AIFQ had an alpha coefficient of .66 (for the 4 items of stability, globality, consequences and self). Retest reliability for the AIFQ was .48 ($P < .01$) over 12 weeks and .33 ($P < .01$) over 1 year. These correlations

⁴ Up to three supporters were reported to allow for the possibility that conflicting feedback might occur from close confidants. A person who receives both highly adaptive and highly maladaptive feedback will be lower overall on AIF than one who receives highly adaptive feedback only. Given prior research indicating that a single confidant can be a potent buffer against depression (Brown & Harris, 1978), no additional weighting was given for having more than one confidant.

are adequate for a construct that is expected to change over time in response to stressors, emotional states, and other life circumstances. The AIFQ was positively correlated with inferences for actual negative events (IQ, $r = .43$, $P < .001$) such that higher adaptive feedback was associated with more positive inferences for actual events. The AIFQ was negatively correlated with measures of inferential style in this sample (CASQ, $r = -0.32$, $P < .001$ and DAS, $r = -0.29$, $P < .001$) indicating that higher adaptive feedback was related to less negative inferential styles. However, Dobkin et al. (2004) found that the AIFQ was not correlated with inferential style in an experimental study of the effects of general social support versus AIF versus no support. Further, AIF was not significantly related to inferential style in the condition in which participants' partners were trained to offer AIF and blind coders confirmed that it occurred. Finally, Dobkin et al. found that participants' perceptions of AIF tended to be related to blind coders' reports of the number of adaptive feedback statements made by partners during a two-minute exchange ($r = .19$; $P = .09$). Finally, the AIFQ showed the strongest correlations with the SSI-Fit subscales that were hypothesized to be the most similar to AIF: "Appraisal and Coping Assistance" ($r = -.31$, $P < .01$) and "Behavioral and Cognitive Guidance" ($r = -.34$, $P < .01$). It was significantly correlated with all of the SSI subscales except for "Tangible Assistance and Material Aid" ($r = -0.6$, ns), which was hypothesized to be the least related to AIF.⁵ Findings from the present study, reported below, provide substantial support for the predictive validity of the AIFQ.

Life events measures

Life events were assessed with a combination self-report/interview procedure every 6 weeks in the CVD project. This study includes 3 of these assessments (referred to as Times 1–3). Our stress assessment procedures contained several features designed to decrease variability across participants in what types of experiences were "counted" as events. Specifically, self-report items were written to decrease ambiguous and redundant events. Further, explicit decision rules and event definition criteria were applied to interview data. Finally, we used objective, not subjective, ratings of event severity. We also guarded against the confounding of events and symptoms in several ways: (1) Items that reflect obvious symptoms were not included; (2) The interview contained criteria/decision rules and probes to determine if a given event was likely to be a symptom of depression; (3) Accurate dating of events and symptoms greatly decreased the likelihood of this confound; and (4) Events that occurred after symptom onset were not used as predictors of the onset of that depressive episode.

Life events scale (LES) and stress interview (SI)

The Life Events Scale (LES; Alloy & Clements, 1992; Needles & Abramson, 1990) was developed for the CVD Project and includes 134 major and minor episodic events in a wide variety of content domains relevant for college students (e.g., school, family, finances, romantic relationships). Participants indicated the number of occurrences of episodic events separately for each of the 3, 2-week periods in the 6-week intervals

⁵ Keep in mind that the SSI-Fit score is essentially a measure of unmet social support needs so we expect negative correlations between SSI-Fit scores and the AIFQ for which higher scores indicate more adaptive inferential (social) feedback.

between assessments. We have documented that the LES has excellent reliability and validity (e.g., Alloy & Clements, 1992; Needles & Abramson, 1990).

The Stress Interview (SI) served as a check on the reliability and validity of the LES and provided for more exact dating of events. It was conducted by interviewers who were blind to participants' risk status. The SI was a critical feature for standardizing event definitions across participants and minimizing errors such as inaccurate dating or double-reporting of events. The SI also incorporated aspects of Brown and Harris' (1978) Life Events and Difficulties Schedule (LEDS) and used their contextual threat method, as modified by Monroe (Monroe & Roberts, 1990), to enable interviewers to rate the objective severity of events. Although objective severity ratings were provided for each LES event a priori, interviewers could increase or decrease the severity rating for an event through a consensus panel of judges based on the context surrounding the event's occurrence and the participant's biographical circumstances. Interviewers were trained to an adequate level of reliability on the SI prior to the initiation of data collection and reliability checks were conducted throughout the CVD study to prevent interviewer drift. A retest reliability study of 40 interviews in which different interviewers blindly and independently interviewed the same participant with the SI within 2 days for the same reporting interval yielded an average correlation of $r = .89$ between interviewers for identification and dating of life events. In addition, in a validity study in which the SI was compared to daily reports of life events over a 28-day period, major events were dated to the exact day with 92% accuracy and minor events with 80% accuracy. Further details of the CVD Project life events assessment procedures may be found in Alloy and Abramson (1999).

Hopelessness, dysphoria, and depression measures

Hopelessness scale (HS)

The 20-item HS is the most widely used measure of the extent of hopelessness about the future (Beck, Weissman, Lester, & Trexler, 1974). Reliability and validity for the HS have been demonstrated (e.g., Beck, Steer, Kovacs, & Garrison, 1985; Beck et al., 1974). In the CVD Project, the HS mediated the predictive association between cognitive style (based on the CSQ and DAS) and suicidal ideation over the 2.5-year follow-up (Abramson et al., 1998) and between a history of childhood emotional maltreatment and both prospective suicidal ideation and depressive episodes (Gibb et al., 2001a,b).

Beck depression inventory (BDI)

The BDI (Beck et al., 1979) is the most widely used self-report measure of depressive symptoms. Internal consistency of the BDI is high ($\alpha = .81$ for non-psychiatric samples), and it has reasonable retest reliability ($r > .60$; Beck, Steer, & Garbin, 1988). Validity with both psychiatric and normal samples has been demonstrated (e.g. Beck et al., 1988). The BDI was used to measure levels of depressive symptoms (dysphoria) at each 6-week assessment.

Modified schedule for affective disorders and schizophrenia—lifetime and change versions (Mod-SADS-L and Mod-SADS-C)

The Lifetime and Change versions of the SADS (Spitzer & Endicott, 1978) are widely used structured diagnostic interviews. The lifetime version is used to arrive at current

and past diagnoses according to the Research Diagnostic Criteria (RDC; Spitzer, Endicott, & Robins, 1978). The change version is used to assess changes in diagnoses or onsets of new diagnoses over time. The original SADS-L and SADS-C interviews were expanded for the CVD Project by adding probes to allow for the assignment of DSM-III-R and DSM-IV, as well as RDC diagnoses. Explicit project criteria for diagnosing the hypothesized subtype of Hopelessness Depression were also created (see Alloy et al., 2000 for criteria).

In addition, features of the Longitudinal Interval Follow-up Evaluation (LIFE II; Shapiro & Keller, 1979) were incorporated into the mod-SADS-C interview to provide a systematic method for tracking the course of a disorder prospectively. Whereas LIFE II interviews provide weekly assessments of symptoms, the mod-SADS-C allowed us to track symptoms daily. Specifically, because we inquired about the presence or absence of every individual symptom of depression on each day throughout each 6-week interval, our mod-SADS-C allowed for the accurate dating of the onset, duration, and offset of episodes of Hopelessness Depression as well as each symptom of depression. Interviewers used the same procedures for dating symptoms as for dating events in the SI, including use of calendars, anchoring events, and structured probes. The Mod-SADS-L was used during the second stage of screening to exclude participants from the study who met criteria for a psychiatric disorder at the time of the first screening of cognitive styles. The Mod-SADS-C was used to assess psychiatric disorder and symptoms prospectively (every six weeks), including Hopelessness Depression, which is the focus of this study. Interviewers were blind to participants' risk group status.

Diagnostic training, calibration, and reliability

Diagnostic interviewers completed an intensive training program for administration of the SADS-L and SADS-C interviews and for assigning DSM and RDC diagnoses that was modeled after ideal programs (Amenson & Lewinsohn, 1981; Gibbon, McDonald-Scott, & Endicott, 1981). In addition, we calibrated our diagnoses across interviewers within and between sites, as well as with recognized diagnostic experts (see Alloy et al., 2000 for further details). We conducted an inter-rater reliability study on approximately 80 of the SADS-L and 125 of the SADS-C interviews. Based on joint ratings of these randomly selected interviews, the kappa coefficient was $\geq .90$ for all project diagnoses.

Procedure

HR and LR participants in the final sample for the CVD project were assessed every 6 weeks on life events, cognitions, symptoms and diagnoses. Social support and AIF were assessed every 12 weeks. The first full assessment of the social support measures occurred approximately 18 weeks into the CVD project or after three earlier assessments of the other measures due to instrument and procedure development delays.⁶ Interviewers were blind to participants' cognitive risk status. This study examines

⁶ In fact, the social support measures were developed and given on schedule at the second assessment (6 weeks into the study) of the CVD project, but an incorrect version of the AIF was erroneously given to approximately one-third of the participants. All analyses reported here were also conducted on the smaller sample who received the correct version of the AIF at the earlier point in the CVD project and the results were the same as those reported here.

symptom, diagnostic, stress and cognition data from the first nine months of the CVD project. In addition, a repeat administration of the CSQ at 1-year after baseline is used to test the hypothesis that AIF will be associated with change in inferential style over time. Most analyses utilize the first full assessment of social support measures, which we refer to as Time 1, predicting to either the next assessment of other CVD Project measures 6 weeks later or predicting to the next assessment of all measures including social support measures (general social support and AIF) 12 weeks later, referred to as Time 2 for this study. Therefore, most analyses were conducted as prospective tests with predictors taken from Time 1 and dependent variables from Time 2 (6 weeks later in most cases; 12 weeks if the dependent variables involved the next assessment of social support measures). Note, however, that tests involving diagnoses of hopelessness depression as the dependent variable were only partially prospective, as it was necessary to use diagnoses across the entire 9-month time period in order to have enough power to conduct these tests.

Results

Our data analytic approach is described under the results for each hypothesis. To examine the unique contribution of AIF, all hypotheses were tested controlling for general social support (SSI). In addition, to examine whether the effects of AIF differed for HR versus LR participants, we included the Risk by AIF interaction in each analysis as well. Degrees of freedom varied across analyses as a function of missing data.⁷

First point of impact: is AIF associated with changes in inferential styles?

Hypothesis 1

According to Hypothesis 1, AIF should predict changes in negative inferential style over time after partialing out the contribution of general social support and stressful events. We tested this hypothesis with a hierarchical regression analysis in which CSQ negative event composite scores assessed at the end of the first year of follow-up were regressed on CSQ negative event composite scores from the baseline screening (Step 1), general social support (Step 2), stress (Step 3) and AIFQ scores (Step 4), the interaction of inferential style and stress (Step 5), and the interaction of AIF and stress (Step 6) at Time 1. AIF was a significant predictor of inferential style over time (6 months later) after controlling for baseline inferential style (cognitive risk), general social support and stressful events⁸ ($t(117) = -2.41, P < .02$). The more AIF participants reported at Time 1, the less negative their inferential styles were six months later. The two-way interactions of stress with risk and with AIF were not significant. Table 3 presents the t values and delta R^2 for this analysis.

⁷ These missing data were primarily due to participants indicating on the AIFQ that they did not seek support from anyone regarding any stressful events during the previous 6-week interval and, therefore, leaving the remainder of the AIFQ blank.

⁸ Inferential style was assessed at the baseline of the study. Social support, stress and AIF were assessed regularly. For this analysis, the social support, stress and AIF measures were all taken from Time 1.

Table 3 Hierarchical Regression Analyses Predicting Change in Negative Inferential Style (CSQ-NEG. Scores) Over Time as a Function of Adaptive Inferential Feedback

Predictor in order of Entry into the series	Dependent variable: CSQ, 1-year follow-up		
	Cumulative R^2	Increment in R^2	t for Increment
CSQ-NEG., Baseline	.641	.641	14.32***
SSI, Time 1	.644	.003	-0.98 NS
Stress, Time 1	.645	.002	0.67 NS
AIFQ, Time 1	.663	.018	-2.41**
Stress by risk	.663	.000	0.40 NS
Stress by AIFQ	.666	.003	1.06 NS

Note: CSQ-NEG. = Cognitive Style Questionnaire-Negative Event Composite; SSI = Social Support Inventory—Satisfaction Index; AIFQ = Adaptive Inferential Feedback Questionnaire. Risk = cognitive vulnerability to depression measured by the CSQ and DAS.

NS = not significant; ** $P < .02$; *** $P < .001$

Second point of impact: Is AIF associated with negative inferences for actual events?

Hypothesis 2

We predicted that AIF would be associated with more adaptive inferences for actual negative events experienced during the same assessment period. We tested this hypothesis with a hierarchical regression analysis in which inferences for actual events were regressed on the predictor variables of general social support (SSI, Step 1), inferential style (Risk, Step 2), AIF (Step 3), and the interaction of cognitive risk and AIF (Step 4). AIF was a significant predictor of actual inferences after controlling for general social support and cognitive risk at both administrations of the AIFQ ($t(125) = 3.58$, $P < .001$ at Time 1 and $t(105) = 6.28$, $P < .001$ at Time 2). Greater AIF was associated with less negative inferences. There was also a main effect for cognitive risk at both Time 1 ($t(125) = -4.30$, $P < .001$) and Time 2 ($t(117) = -4.13$, $P < .001$), such that HR participants made more maladaptive inferences for actual negative events than did LR participants at both times. The interaction of AIF and cognitive risk was not significant at either time. Table 4 presents the t values and delta R^2 for these analyses.

Full model tests: predicting hopelessness, dysphoria, and hopelessness depression

We predicted that AIF would explain significant variance in hopelessness, dysphoria and hopelessness depression over and above the predictive effects of general social support, inferential style and negative life events. This hypothesis was tested with a series of stepwise hierarchical regression analyses of partial variance (Cohen & Cohen, 1983), on three dependent variables: (1) HS scores (hopelessness) at Time 2; (2) BDI scores at Time 2; and (3) number of Hopelessness Depression episodes occurring during the first nine months of the CVD study.⁹ HS and BDI scores at Time 2 were chosen in

⁹ Some of the symptoms hypothesized to be part of the Hopelessness Depression syndrome (e.g., sadness, suicidal ideation) are completely overlapping with symptoms that are part of Diagnostic and Statistical Manual of Mental Disorders, IV (DSM-IV; American Psychiatric Association, 1994) criteria for major depression, others only partially overlap with symptoms for major depression (e.g., retarded initiation of voluntary responses). In addition, some symptoms currently described as part of major depression, such as anhedonia, guilt, irritability, and appetite disturbance, are not hypothesized to be part of the Hopelessness Depression syndrome (Abramson et al., 1989; Alloy & Clements, 1992).

Table 4 Hierarchical regression analyses predicting actual inferences for negative life events as a function of adaptive inferential feedback

Predictor in order of Entry into the series	Dependent variable: IQ		
	Cumulative R^2	Increment in R^2	t for Increment
<i>Time 1 series</i>			
SSI	.011	.011	1.18 NS
Cognitive Risk	.141	.130	-4.30***
AIF	.224	.083	3.58***
Risk*AIF	.238	.014	1.48 NS
<i>Time 2 series</i>			
SSI	.030	.030	1.89 NS
Cognitive Risk	.156	.126	-4.13***
AIF	.395	.239	6.28***
Risk*AIF	.395	.000	0.35 NS

Note: IQ = Inference Questionnaire; SSI = Social Support Inventory, Satisfaction Index. Measures general social support. AIFQ = Adaptive Inferential Feedback Questionnaire

NS = not significant; ** $P < .01$; *** $P < .001$

order to allow a truly prospective test (predicting across a 6-week interval from Time 1 to Time 2) of the association between AIF and future hopelessness and depressive symptoms. When the diagnosis of Hopelessness Depression served as the dependent measure, a partially prospective test was conducted using the diagnostic information summed across the first nine months of follow-up, because there was not enough power to conduct fully prospective tests (due to insufficient numbers of diagnoses without summing across a larger portion of the study period).

The stepwise approach allows for analysis of covariates by entering them into the regression equation before the research factors of interest. In the analyses for which HS or BDI scores at Time 2 were the dependent variables, the HS or BDI scores from Time 1, respectively, were entered first into the regression equation. In analyses for which number of Hopelessness Depression diagnoses was the dependent variable, there was no need to enter a diagnostic covariate first inasmuch as participants had no current depression diagnoses at the outset of the study. General social support was entered next for all analyses. Following the entry of the covariate(s), Cognitive Risk (inferential style), Stress (number of negative events \times their objective severity ratings) at Time 1, and the interaction of Cognitive Risk and Stress were entered into the regression equations in that order before entering AIF (AIFQ) at Time 1. By entering AIF last, we could examine whether it predicted significant variance in hopelessness, dysphoria or hopelessness depression episodes over and beyond the effects of cognitive risk, stress, and their interaction.

Table 5 presents the results of these hierarchical regression analyses. The main effect of AIF (AIFQ) did not predict significant variance in hopelessness 6 weeks later, after the variance accounted for by earlier hopelessness, social support, cognitive risk, stress, and the interaction of cognitive risk and stress had been partialled out (see Step 6 in first section of Table 5). On the other hand, AIF did predict significant variance in depressive symptoms (BDI scores) six weeks later (Step 6 in second section of Table 5) after controlling for the variance accounted for by earlier depressive symptoms, social support, cognitive risk, stress, and the two-way interaction of stress and cognitive risk. Finally, AIF explained significant variance in Hopelessness Depression episodes over

the first nine months of follow-up after controlling for social support, stress, cognitive risk, and the interaction of stress and cognitive risk (see Step 5 in third section of Table 5). Thus, we found that AIF explained variance in dysphoria and Hopelessness Depression diagnoses, but not hopelessness, after accounting for the effects of earlier dysphoria, general social support, cognitive risk and stress.

Hypothesis 3

Hypothesis 3 was that the 3-way interaction of cognitive risk, stress, and AIF would predict the likelihood of hopelessness, dysphoria, and Hopelessness Depression onset. We tested Hypothesis 3 by adding the two, 2-way interactions of Cognitive Risk \times AIF and Stress \times AIF, followed last by the 3-way interaction of Cognitive Risk \times Stress \times AIF into the hierarchical regression equations used to test the contribution of AIF described above.

Table 5 Hierarchical Regression Analyses Predicting Hopelessness, Dysphoria, and Hopelessness Depression Episodes Over Time as a Function of Risk Status (Inferential Style), Stress, and Adaptive Inferential Feedback

Predictor in order of Entry into the series	Dependent variable: HS scores, Time 2		
	Cumulative R^2	Increment in R^2	t for Increment
1	.232	.232	6.11***
SSI	.244	.012	-1.19 NS
Cognitive risk	.251	.007	1.06 NS
Stress, Time 1	.261	.010	1.30 NS
Risk \times Stress	.266	.005	0.90 NS
AIFQ, Time 1	.280	.014	-1.52 NS
Risk \times AIFQ	.300	.020	-1.80 ⁺
Stress \times AIFQ	.301	.001	-0.34 NS
Risk \times Stress \times AIFQ	.325	.024	-2.03*
Predictor in order of Entry into the series	Dependent variable: BDI scores, Time 2		
BDI, Time 1	.258	.258	6.53***
SSI	.245	-.013	-0.62 NS
Cognitive Risk	.256	.011	1.34 NS
Stress, Time 1	.261	.005	0.85 NS
Risk \times Stress	.265	.004	0.81 NS
AIFQ, Time 1	.298	.033	-2.36*
Risk \times AIFQ	.311	.013	-1.47 NS
Stress \times AIFQ	.397	.086	-4.04***
Risk \times Stress \times AIFQ	.437	.040	-2.85**
Predictor in order of Entry into the series	Dependent variable: number of hopelessness depressive episodes in 9 month follow-up		
SSI	.024	.024	-1.70 NS
Cognitive Risk	.048	.024	1.73 NS
Stress, Time 1	.068	.020	1.55 NS
Risk \times Stress	.075	.007	0.98 NS
AIFQ, Time 1	.109	.034	-2.07*
Risk \times AIFQ	.128	.019	-1.58 NS
Stress \times AIFQ	.157	.029	-1.95*
Risk \times Stress \times AIFQ	.192	.035	-2.19*

Note: HS = Hopelessness Scale; BDI = Beck Depression Inventory; SSI = Social Support Inventory, Satisfaction Index. Measures general social support. AIFQ = Adaptive Inferential Feedback Questionnaire

NS = not significant; ⁺ $P < .10$; * $P < .05$; ** $P < .01$; *** $P < .001$

Table 5 (the last step of each section) also shows the results of the test of Hypothesis 3. As can be seen in Table 5, the Cognitive Risk \times Stress \times AIF 3-way interaction predicted significant variance in all three of the dependent measures (hopelessness, dysphoria, and Hopelessness Depression episodes), after controlling for the covariates, all main effects, and 2-way interactions of Cognitive Risk, Stress, and AIF.

To explore the patterns of the 3-way interactions among Cognitive Risk, Stress, and AIF for each of the three dependent variables, the Stress and AIF scores were dichotomized into high and low groups by conducting median splits. Tukey tests were then conducted post-hoc to determine which of the 8 groups formed on the basis of high or low Cognitive Risk, high or low Stress, and high or low AIF significantly differed.¹⁰ When hopelessness was the dependent variable, 6 of 7 groups had significantly lower HS scores (P 's $< .01$) than did the HR/high stress/low AIF group expected to be the most vulnerable to hopelessness. As predicted, participants with all 3 vulnerability factors (high cognitive risk/high stress/low AIF) had considerably more hopelessness prospectively (6 weeks later) than participants with 0 vulnerability factors (low cognitive risk/low stress/high AIF), with the participants having 1 or 2 vulnerability factors intermediate. When dysphoria (BDI scores 6 weeks later) was the dependent variable, 4 of 7 groups differed significantly (P 's $< .01$) from the group hypothesized to be most vulnerable to dysphoria (high cognitive risk/high stress/low AIF). Finally, for the number of Hopelessness Depression diagnoses, the group hypothesized to be most vulnerable (HR/high stress/low AIF) had significantly more episodes of Hopelessness Depression (over nine months) than all other groups (P 's $< .01$). Thus, Hypothesis 3 was supported for the interaction among cognitive risk, stress, and AIF.

Hypothesis 4

Given that the 3-way interaction among cognitive risk, stress, and AIF predicted all three dependent variables, we tested Hypothesis 4 by conducting mediation analyses to determine whether the 3-way interactions that predicted to dysphoria, and Hopelessness Depression diagnoses were mediated by hopelessness using the criteria for mediation established by Baron and Kenny (1986) and Kenny, Kashy, and Bolger (1998). First, we tested the mediation hypothesis for depressive symptoms (BDI scores). The first criterion for mediation, that the 3-way interaction predicted the mediator (hopelessness) was demonstrated in our tests of Hypothesis 3 above. Thus, we added hopelessness at Time 2 on the last step of the regression equation predicting Time 2 BDI scores shown in the second section of Table 5. As can be seen in Table 6 (first section), when hopelessness at Time 2 was added to the regression equation predicting Time 2 BDI scores, hopelessness was a significant predictor of BDI scores, whereas the cognitive risk \times stress \times AIF interaction was reduced in significance. Thus, hopelessness partially mediated the cognitive risk \times stress \times AIF interaction for prediction of depressive symptoms prospectively.

Next, we tested the mediation hypothesis for number of Hopelessness Depression episodes over the nine months of follow-up. We used average hopelessness scores over the nine months of follow-up as the mediator in these analyses, so we first needed to establish that the 3-way interaction predicted average hopelessness scores across the

¹⁰ The groups are as follows: (1) Low risk/low AIF/low stress; (2) Low risk/low AIF/high stress; (3) Low risk, high AIF/low stress; (4) Low risk/high AIF/high stress; (5) High risk/low AIF/low stress; (6) High risk/low AIF/high stress; (7) High risk/high AIF/high stress; and (8) High risk/high AIF/low stress.

nine months. Indeed, the Cognitive Risk \times Stress \times AIF interaction predicted average hopelessness significantly ($t(113) = -2.67, P < .01, \text{delta } R^2 = .04$), even after controlling for all main effects and 2-way interactions of Social Support, Cognitive Risk, Stress, and AIF. Next, we added average hopelessness scores across the nine months on the last step to the regression equation with Cognitive Risk \times Stress \times AIF as a predictor of Hopelessness Depression diagnoses. Table 6 (last section) shows that hopelessness was a significant predictor of Hopelessness Depression diagnoses and the 3-way interaction no longer significantly predicted Hopelessness Depression diagnoses, controlling for hopelessness. Thus, hopelessness mediated the Cognitive Risk \times Stress \times AIF interaction for diagnoses of Hopelessness Depression.

Discussion

Implications for the expanded hopelessness theory

The results of the present study suggest that Hopelessness Theory indeed may be improved by expanding the theory to include variations in social support as another contributory cause of hopelessness and Hopelessness Depression. Two potential points of impact for AIF, a particular subtype of social support, in the etiological chain featured in the Hopelessness Theory of depression were tested. Findings from the present study are consistent with an effect of AIF at both proposed points of impact.

Consistent with the first proposed point of impact of AIF in the etiological chain of depression, higher levels of AIF were predictive of a more positive inferential style over a 6 month period, even after controlling for the effects of general social support and stressful life events. Thus, even if individuals with negative inferential styles are less likely to elicit or process positive feedback, to the extent that they manage to receive some AIF, such feedback may serve to gradually decrease the negativity of their inferential styles. However, we await more powerful tests of the effects of AIF on change in inferential style that employ experimental manipulations of levels of AIF before drawing any definitive conclusions.

Table 6 Final step of hierarchical regression analyses predicting dysphoria and hopelessness depression episodes as a function of risk status (inferential style), stress, and adaptive inferential feedback with hopelessness (HS) as the mediator

Predictor	Before HS enters		After HS Enters	
	<i>t</i>	<i>P</i>	<i>t</i>	<i>P</i>
	Risk \times Stress \times AIFQ	-2.74	.007	-1.66
HS, Time 2	–	–	6.67	.000
Dependent variable: number of hopelessness depressive episodes in 9 month follow-up				
Risk \times Stress \times AIFQ	-2.32	.022	-1.14	.255
Average HS	–	–	5.16	.000

Note: HS = Hopelessness Scale; Risk = cognitive vulnerability to depression measured by the CSQ and DAS. AIFQ = Adaptive Inferential Feedback Questionnaire

This table lists only the final predictors in the series that were significant followed by HS as the last step. The complete set of prior steps in each series is shown in Table 5

The second point of impact we proposed was that AIF may decrease the likelihood of making maladaptive inferences about particular stressful life events experienced. Consistent with this hypothesis, we found that higher levels of AIF were associated with more adaptive inferences for actual negative events participants experienced, controlling for general social support and cognitive risk. This finding is consistent with another study from our lab that experimentally manipulated AIF. Following failure on a test of cognitive abilities, participants whose partners were taught to provide AIF showed greater decreases in negative inferences and dysphoria than those whose partners were taught to provide general social support or who provided no social support (Dobkin et al., 2004). It is possible that repeated instances of receiving AIF following individual stressful events would not only lead to individuals forming more adaptive inferences for each of these events, but would also lead over time to the development of a more positive general inferential style (as discussed above).

The present study also clearly showed that higher levels of AIF were associated with reduced levels of depressive symptoms prospectively as well as lower incidence of clinically significant Hopelessness Depression episodes. These predictive associations were not merely attributable to the effects of general social support, inferential style and stress on subjective reports of AIF, because AIF explained variance in depressive symptoms and episodes after controlling for the effects of social support, inferential style, stress, and their interaction. That AIF predicted change in inferential styles, inferences for actual stressful events, dysphoria, and Hopelessness Depression episodes over and beyond the effects of general social support suggests that AIF has unique palliative features that are not explained by shared components with general social support. Because this study focused on whether AIF as a particular type of social support would make a contribution to explaining variance in Hopelessness Depression over and above previously identified contributors that have been empirically supported, it remains for future studies to determine if the effect of AIF obtained is unique to Hopelessness Depression or if it might apply to other types of depression as well. Indeed, in adjunctive analyses, we found that the 3-way interaction of stress, negative inferential style and AIF also predicted major and minor depressive episodes as defined by DSM-IV and Research Diagnostic Criteria ($t [1, 125] = -3.07, P < .01$).¹¹ However, Hopelessness Depression cuts across existing nosological categories of depression such that someone can meet criteria for both Hopelessness Depression and Major Depressive Disorder, for example (Alloy et al., in press). Thus, future studies should examine if AIF is predictive of depressive disorders that do not meet the etiological and symptomatic criteria of Hopelessness Depression.

Further, as hypothesized, the 3-way interaction among inferential style, stress, and AIF predicted hopelessness, depressive symptoms, and Hopelessness Depression episodes, even after controlling for the relevant main effects and 2-way interactions. In each case, individuals who displayed all 3 of the hypothesized vulnerability factors for hopelessness and depression—negative inferential style, high stress, and low AIF—were substantially more likely to exhibit hopelessness, depressive symptoms, and Hopelessness Depression episodes than individuals with fewer of these vulnerability factors. Moreover, our findings also suggest that hopelessness is a partial mediator of the combined effects of inferential style, stress, and AIF on depressive symptoms and a full

¹¹ This is the result of the last step of a hierarchical regression in which all main effects and two-way interactions were entered prior to the 3-way interaction of stress, inferential style, and AIF.

mediator of the effect of the 3 vulnerability factors on onsets of the Hopelessness Depression subtype.

Limitations of the present study

Several limitations of our study should be noted. First, this test of the Expanded Hopelessness Theory was conducted in an undergraduate sample. Whether our findings would generalize to samples of depressed patients is unknown and awaits replication in a clinical sample. Second, the measure of AIF used in this study assesses participants' recollections of inferences provided by significant others. Future research might examine actual social interactions for AIF. Third, the self-report measure of AIF contained only four items (one for each of the four types of inferences featured in the Hopelessness Theory). Although the present study provides substantial support for the predictive validity of the AIFQ, internal reliability was lower than desirable ($\alpha = .66$). Further psychometric development of the AIFQ should be pursued (see Panzarella, Dobkin, Truesdell, Cascardi, & Alloy, 2005). Other items tapping the four types of inferences should be developed in order to obtain an instrument with better convergent validity and reliability. Fourth, our findings do not allow us to discern which aspects of AIF are critical to its effects. Experimental studies that examine the differential effects of the informational content of AIF versus the supportive nature of the interaction or the timing of adaptive feedback provision could shed light on this issue.

Future research should attend to factors that may influence whether or not social support and AIF are sought. One such factor is the certainty of one's negative self-image (e.g., Swann, Wenzlaff, & Tatarodi, 1992). Further, people with low self-esteem may be more likely to seek help in threatening situations than those with high self-esteem (Nadler, 1997). Based on Social Comparison Theory, people may be more likely to rely on others in evaluating a stressful situation when it is ambiguous or anxiety-arousing (Festinger, 1954; Gibbons & Gerard, 1991). In contrast, individuals may be disinclined to turn to others for support in situations that evoke feelings of guilt or embarrassment (Gibbons, Benbow, & Gerrard, 1994; Nadler, 1997). Thus, both characteristics of the individual and features of the environment are likely to be important determinants of AIF seeking.

Additionally, more research is needed to understand the conditions under which AIF is likely to be elicited or provided when it is sought. The type of negative life event experienced may influence how likely it is that adaptive feedback will be sought or elicited. Some events (e.g., events that are generally seen as independent of one's behavior such as the death of a friend) may tend to elicit different kinds of social support than others (e.g., those that are generally seen as being dependent on one's behavior such as performing poorly while giving a presentation). Personality characteristics may also influence how likely one is to seek, elicit, or utilize AIF. For example, some researchers (e.g., Gotlib & Beatty, 1985; Gurtman, 1987) have demonstrated that people react more negatively to a stimulus person when he or she makes depressotypic inferences for a negative event than when he or she makes adaptive inferences for the same event. However, reactions to a depressed stranger may differ from reactions to a depressed relative or friend (Pietromonaco, Rook, & Lewis, 1992). Coyne's (1976; 1990) interpersonal model of depression also predicts that depressed persons will initially be supported but eventually rejected by members of their social network because their excessive reassurance-seeking becomes frustrating and burdensome to others (Joiner et al., 1999). Perhaps social support and AIF protect against depression if the recipient

is, at least, somewhat responsive to the information provided by the social network. When this occurs, members of the social network may be reinforced for providing help. People who are not responsive to AIF may frustrate social network members and eventually erode their social support. Thus, past research suggests that several situational and individual difference variables may play an important role in determining if AIF is sought, offered, and utilized. Given that the present study demonstrated that AIF, a particular type of social support, is associated with lower hopelessness and depression, much further research is needed to more fully understand the conditions under which AIF is offered and utilized.

This article proposed an expanded Hopelessness Theory of Depression by addressing the role of social support in its etiology. We focused on elaborating a subtype of support, AIF, which may be uniquely important in the development of hopelessness depression. Future studies will need to explore if this effect is unique to hopelessness depression. Further, the Expanded Hopelessness Theory also allows for points of impact other than those we tested here. Specifically, it is likely that other types of social support impinge directly on negative life events, a contributor in the development of Hopelessness Depression. We await further studies that explore the role of different types of social support at various points in the etiological chain of Hopelessness and other types of depression.

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Appendix A

Adaptive Inferential Feedback Questionnaire Panzarella, Lipman, & Alloy, 1990

1. Please describe the most stressful event or situation that you have been dealing with over the past week in the space below.

2. Please list below the FIRST NAME and LAST INITIAL of up to THREE people who talked with you about this stressful event. Also please describe their relationship to you (family member, boyfriend/girlfriend/spouse, friend, other):

1 = family member

2 = boyfriend/girlfriend/spouse

3 = friend

4 = other

	First name and last initial	Relationship
Person 1		
Person 2		
Person 3		

3. Please indicate with an “X” in the appropriate boxes below if, as a result of PERSON 1, PERSON 2, and PERSON 3 talking with you, you have felt better, worse, or the same about the stressor. Put “NA” (for “not applicable”) whenever there was no person named above or if they did not say or indicate anything about the stressor. For example, if you listed two persons in Question 4 (two persons with whom you talked about the stressful event), then write “NA” in the row next to PERSON 3 below:

	WORSE	BETTER	THE SAME
PERSON 1 made me feel			
PERSON 2 made me feel			
PERSON 3 made me feel			

Questions 4–7 ask you what Persons 1, 2, & 3 have told you about the stressor listed in Question 1. FOR EACH QUESTION, the responses from which you may choose are listed and described below the question. SELECT the number of the response that best characterizes what EACH of the persons that you identified in Question 4 indicated to you about the stressor. Then, PLACE THE RESPONSE NUMBER WHICH YOU SELECT IN THE BOXES NEXT TO PERSONS 1, 2, & 3. If you did not select three persons in Question 4, then write “NA” in the boxes for which there is no person identified, or if the person did not say or indicate anything about the occurrence of the stressor.

4. What did Person 1, Person 2, & Person 3 indicate to you about whether the **cause** of the stressor has to do with this particular circumstance or if it will lead to problems in other areas of your life?

Please put one of the response numbers listed below in the boxes next to Person 1, Person 2, and Person 3.

RESPONSE NUMBERS:

0 = completely unlikely to lead to other problems

1 = very unlikely to lead to other problems

2 = somewhat unlikely to lead to other problems

3 = somewhat likely to lead to other problems

4 = very likely to lead to other problems

5 = completely likely to lead to other problems

5. What did Person 1, Person 2, & Person 3 indicate to you about whether the **cause** of the stressor is something that will frequently be causing problems?

	RESPONSE#
PERSON 1	
PERSON 2	
PERSON 3	

Please put one of the response numbers listed below in the boxes next to Person 1, Person 2, and Person 3.

0: completely unlikely to frequently cause problems

1: very unlikely to frequently cause problems

2: somewhat unlikely to frequently cause problems

3: somewhat likely to frequently cause problems

4: very likely to frequently cause problems

5: completely likely to frequently cause problems

RESPONSE#

PERSON 1
PERSON 2
PERSON 3

6. What did Person 1, Person 2, & Person 3 indicate to you about whether the **occurrence** of the stressor will lead to a lot of problems?

Please put one of the response numbers listed below in the boxes next to Person 1, Person 2, and Person 3.

- 0: completely unlikely to lead to a lot of problems
- 1: very unlikely to lead to a lot of problems
- 2: somewhat unlikely to lead to a lot of problems
- 3: somewhat likely to lead to a lot of problems
- 4: very likely to lead to a lot of problems
- 5: completely likely to lead to a lot of problems

RESPONSE#

PERSON 1
PERSON 2
PERSON 3

7. What did Person 1, Person 2, & Person 3 indicate to you about whether the **occurrence** of the stressor means there is something wrong with you?

Please put one of the response numbers listed below in the boxes next to Person 1, Person 2, and Person 3.

- 0: completely unlikely to mean there is something wrong with me
- 1: very unlikely to mean there is something wrong with me
- 2: somewhat unlikely to mean there is something wrong with me
- 3: somewhat likely to mean there is something wrong with me
- 4: very likely to mean there is something wrong with me
- 5: completely likely to mean there is something wrong with me.

RESPONSE#

PERSON 1
PERSON 2
PERSON 3

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