

## **EXPLANATORY FLEXIBILITY AND NEGATIVE LIFE EVENTS INTERACT TO PREDICT DEPRESSION SYMPTOMS**

DAVID M. FRESCO AND NINA K. RYTWINSKI  
*Kent State University*

LINDA W. CRAIGHEAD  
*University of Colorado at Boulder*

This study examined how explanatory flexibility and explanatory style, two indices derived from the Attributional Style Questionnaire (ASQ), were related to each other and to symptoms of depression. At Time 1, seventy-three college students completed the ASQ and a self-report measure of depression, and at Time 2, approximately eight weeks later, completed the depression measure once again as well as a self-report measure of negative life events. Explanatory flexibility demonstrated relative independence from explanatory style. Additionally, explanatory flexibility, but not explanatory style, interacted with negative life events to predict change in depression symptoms such that rigidity was associated with higher levels of depression in the face of negative life events. These findings add to research suggesting that explanatory flexibility is distinct from, but related to, explanatory style and that both constructs add to our understanding of depression.

Cognitive diathesis–stress theories of depression (Abramson, Seligman, & Teasdale, 1978; Beck, 1967, 1976) have advanced our understanding of the etiology, maintenance, and treatment of depression. These theories posit that vulnerability to depression arises through early life experiences that lead one to adopt a depressogenic view of the world. Specifically, the reformulated learned helplessness theory (Abramson et al., 1978) and hopelessness theory (Abramson, Metalsky, & Alloy, 1989) both conceptualize risk for depression in terms of a depressogenic or pessimistic explanatory style (the tendency to view negative events as

---

Correspondence concerning this article should be addressed to David M. Fresco, Department of Psychology, 226 Kent Hall Annex, Kent State University, Kent, OH 44242; E-mail: fresco@kent.edu

arising from stable, global, and internal causes). Similarly, vulnerability for depression in Beck's (1967, 1976) theory is associated with dysfunctional attitudes and negative schemas regarding the self, world, and future.

Explanatory style is typically assessed using the Attributional Style Questionnaire (ASQ; Peterson et al., 1982). The ASQ is a self-report instrument comprised of 12 hypothetical situations—six negative situations and six positive situations. Respondents are asked to vividly imagine that each of the negative and positive events is occurring to them—one at a time. After getting each situation in mind, respondents are asked to write down the one major cause if that event were to occur and to rate that cause on likert-type scales of internality, stability, and globality. However, work from Abramson et al. (1989) has de-emphasized the internality dimension and thus explanatory style is usually measured as a composite score of the stability and globality dimensions, which is called generality. A negative or pessimistic explanatory style is the tendency to assign stable and global causes to negative events whereas an optimistic explanatory style is the tendency to assign specific and unstable causes to negative events. Seligman (1981) posited that an important goal in psychotherapy was to target a negative or pessimistic explanatory style and to make it more optimistic. However, more recent theorizing within the cognitive-behavioral framework recognizes that instilling optimism may be too simple a treatment goal. Instead, a flexible approach to explaining and confronting events may be more adaptive (Peterson & Bossio, 1991; Seligman, 1991).

The present study contributes to the development of a cognitive flexibility measure in which Fresco and colleagues (Fresco, Williams, & Nugent, 2006; Fresco, Heimberg, Abramowitz, & Bertram, 2006; Moore & Fresco, in press) have christened explanatory flexibility. They surmised that being flexible, in the manner that one assigns causes to negative life events, would likely represent an ability to generate multiple perspectives, and thus multiple solutions, that may be especially responsive to factors unique to the current situation. Thus, explanatory flexibility is calculated as an intra-individual standard deviation for the stable and global items associated with the six hypothetical negative events on the ASQ. When an individual's standard deviation is large we regard that person as flexible; when a standard deviation is small we regard that individual as rigid. Our measure of explanatory flexibility utilizes responses to the stable and global items to remain comparable to the generality subscale of the ASQ favored by Abramson et al. (1989). Furthermore, explanatory flexibility is conceptualized to be independent of cognitive content because, unlike a mean or sum, a standard deviation provides no information about the type of answers a participant

selected. For example, an individual who rated the stability of all of the negative events on the ASQ as “Will never be present again” (e.g., extremely optimistic) would have the same standard deviation, and thus the same level of explanatory flexibility, as an individual who rated them “Will always be present” (e.g., extremely pessimistic), as there is no variability in either of these individuals’ responses. Any lack of sensitivity to contextual factors and event nuance is conceptualized as evidencing rigidity whether the individual habitually stays in optimistic territory, pessimistic territory, or rather constantly chooses moderate responses (i.e., fours on the ASQ). In contrast, an individual who can take a more contextualized approach to the hypothetical situations on the ASQ may assign causes and ratings that are specific to that situation irrespective if one or more of the causes are rated as relatively stable and global. That person’s explanatory flexibility score would be higher, owing to the increased degree of variability in their responses, which we would hypothesize to be more adaptive.

Several studies demonstrate the construct validity of explanatory flexibility as well as its relationship to depression. For example, Moore and Fresco (in press), in two large college student samples, demonstrated that explanatory style and explanatory flexibility were related but separate constructs as evidenced by modest zero order correlations ( $r = -.18$ ) and relatively even distribution of explanatory style and explanatory flexibility scores across high, medium, and low strata in each variable’s distribution. Fresco, Heimberg, et al. (2006) obtained participants with and without a self-report history of major depression who completed measures of explanatory flexibility prior to and immediately after listening to a piece of music known to induce a sad mood. All participants became sadder after listening to the sad music, but non-dysphoric individuals, Beck Depression Inventory (BDI)  $< 10$ , with a history of depression experienced drops in explanatory flexibility whereas dysphoric participants (BDI  $> 9$ ) with a history of major depression and never depressed participants did not. The authors speculated that the decrease in flexibility among nondysphoric individuals with a history of depression may serve to dampen the effects of induced sadness at the cost of making these individuals more susceptible to a future depression. Such a decrease in flexibility may cause individuals to be less able to generate multiple perspectives or solutions to negative situations. Interestingly, in a separate sample, Fresco and Moore (2007) found that drops in explanatory flexibility following the same emotion evocation challenge moderated the relationship of intervening life events to predict levels of depression six weeks and six months after controlling for baseline levels of depression. Fresco, Schumm, and Dobson (2007) conducted a secondary analysis of the Jacobson et al. (1996) component analysis of Beck,

Rush, Shaw and Emery's (1979) cognitive therapy for depression and found that a combination of high levels of post-treatment explanatory flexibility and low levels of post-treatment pessimistic explanatory style conferred maximal protection against relapse of depression for all responders, irrespective of treatment condition. Finally, Fresco et al. (2006) administered self-report measures of explanatory flexibility, coping flexibility (a measure of one's willingness to deploy a variety of coping strategies), depression and anxiety symptoms to a sample of undergraduate students. Findings indicated that the association of explanatory flexibility to depression and anxiety symptoms was partially mediated by coping flexibility—suggesting that flexible thinking promotes flexible coping, which in turn is associated with lower levels of concurrent depression.

Although the findings of these previous studies are encouraging and suggest that both explanatory flexibility and explanatory style may be factors related to depression, it is necessary to evaluate whether they moderate the relationship between negative life events and subsequent depression to investigate their role as vulnerability factors for depression—in essence, a test of the diathesis–stress interaction. The present study sought to further evaluate the relationship of explanatory flexibility to explanatory style, symptoms of depression, and negative life events. Specifically, we attempted to address three hypotheses. The first hypothesis posited that explanatory flexibility would demonstrate relative independence from explanatory style in that explanatory flexibility would not simply serve as a proxy for pessimistic explanatory style. The second hypothesis posited that explanatory style would moderate the association between negative life events and subsequent symptoms of depression after controlling for initial levels of depression. Specifically, the combination of high explanatory style and many negative life events would be associated with higher levels of subsequent symptoms of depression. Similarly, the third hypothesis posited that explanatory flexibility would moderate the association between negative life events and subsequent symptoms of depression after controlling for initial levels of depression. Specifically, the combination of low explanatory flexibility and many negative life events would be associated with higher levels of subsequent symptoms of depression. This moderation effect would remain statistically significant after controlling for explanatory style.

## METHOD

*Participants.* Seventy-eight undergraduates (54 women) participated in this study to fulfill partial course requirements of an introductory psychology class. Of the 78 students who attended the first session, 71 at-

tended the second session and completed all measures. The sample was predominately Caucasian ( $n = 70$ ), and included 6 African Americans and two 2 Asians. The average age of the sample was 20 years ( $SD = 3.7$ ).

*Measures.* The Beck Depression Inventory (BDI; Beck et al., 1979) is a 21-item instrument that broadly assesses the symptoms of depression including the affective, cognitive, behavioral, somatic, and motivational components, as well as suicidal wishes. Beck, Steer, and Garbin (1988) conducted a meta-analysis of studies of the BDI and reported the mean coefficient alpha across 25 years of studies in psychiatric populations to be .86 and .81 in nonpsychiatric populations. In the current study, the BDI achieved good internal consistencies at time 1 ( $\alpha = .76$ ) and time 2 ( $\alpha = .80$ ).

The Attributional Style Questionnaire (Peterson et al., 1982) is a self-report inventory that assesses attributions for six positive and six negative hypothetical events along the dimensions of internality, stability, and globality. In the present study, explanatory style demonstrated good internal consistency at time 1 ( $\alpha = .76$ ). Explanatory style was operationalized as the mean of an individual's responses to the stable and global dimensions of the negative scenarios. Explanatory flexibility was calculated as the standard deviation of an individual's responses to the stable and global dimensions of the negative scenarios.

The Life Experiences Survey (LES; Sarason, Johnson, & Siegel, 1978) is a 57-item instrument designed to assess the occurrence and subjective impact for both positive and negative life events. Participants indicate which of pre-determined list of 57 events they have encountered over the last year by rating specific events on a scale from extremely negative (-3) to extremely positive (+3). The 57 items include common events but may not include every good or bad event that an individual may have encountered. Sample items include, "Death of a close friend" and "Foreclosure on mortgage or loan." For the current study, the instructions of the LES were modified to include only the interval of time during one's participation in the study—the eight weeks between the questionnaire sessions. Because of concerns that impact ratings are susceptible to magnification in the perceptions of depressive individuals, the number of negative events was used as the measure of life stress in the subsequent analyses (cf. Robins, Hayes, Block, Kramer, & Villena, 1995).

*Procedure.* At the beginning of the semester, participants gave informed consent and then completed a set of questionnaires including the BDI and the ASQ. Approximately eight weeks later, participants again completed the BDI and also the LES spanning the time interval since session 1. Following the second questionnaire session, participants were awarded their course credit and debriefed.

TABLE 1. Means, (standard deviations), Ranges, and Zero-Order Correlations Among Measures of Cognitive Style and Depression

	Mean (SD) Range	FLEX	GENBAD	BDI1
FLEX	1.33 (0.41) 0.46–2.16	—		
GENBAD	4.30 (0.67) 2.83– 5.92	-.27*	—	
BDI1	8.10 (6.68) 0–28	.06	.06	—
BDI2	7.07 (6.70) 0–29	-.20*	.18	.65**

Note. FLEX = ASQ explanatory flexibility; GENBAD = ASQ explanatory style (generality) for negative events; BDI1 = Time 1 Beck Depression Inventory; BDI2 = Time 2 Beck Depression Inventory; \* $p < .05$ , \*\* $p < .01$ .

## RESULTS

Table 1 presents zero order correlations and sample mean and standard deviation values for measures of explanatory flexibility and style, depression, and negative life events.<sup>1,2</sup> As with most unselected college student samples, levels of depression symptoms were relatively low.

The first hypothesis posited that explanatory flexibility would demonstrate relative independence from explanatory style. In partial support of this hypothesis, the zero order correlation of these two measures ( $r = -.27$ ) was moderate but statistically significant indicating some de-

1. We also examined flexibility for the positive scenarios, all three dimensions of the ASQ, as well as positive and negative scenarios combined. These variables were moderately, but significantly correlated. However, as predicted based upon previous research with explanatory style, the explanatory flexibility variable that was composed of standard deviation of the scores from the stable and global dimensions of the negative scenarios was the best moderator between negative life events and changes in BDI scores. Please contact the corresponding author for more detailed results of these analyses.

2. Fresco, Sampson, Craighead, and Koons (2001) published a study using the same data that examined the relationship between sociotropy and autonomy to symptoms of depression and anxiety. Sociotropy ( $r = .01$ ) and autonomy ( $r = -.09$ ) were uncorrelated with explanatory flexibility.

gree of overlap in the direction of indicating a connection between low flexibility and a pessimistic explanatory style.

Hypotheses 2 and 3 focused on whether explanatory style and explanatory flexibility would moderate the association between negative life events and subsequent depression symptoms after controlling for baseline symptoms of depression. In essence, these hypotheses assess for the presence of a diathesis–stress interaction or that the relationship of life stress to depression differs as a function of a putative moderator variable (cognitive style). A commonly used strategy is the multiple regression/correlation technique for prospective psychopathology research outlined by Cohen and Cohen (1983). To adequately test these hypotheses, a hierarchical regression analysis was conducted. All predictor variables were centered by subtracting the sample mean from each person's score. Centering simplifies the interpretation of regression coefficients and addresses potential problems of multicollinearity (Aiken & West, 1991). Time 1 depression was entered in Step 1. Explanatory style and explanatory flexibility were entered in Steps 2 and 3. Then, the number of negative life events was entered in Step 4. Next the 3 two–way interactions between the three independent variables were entered into the model in three separate steps. The order in which the 2–way interaction terms were entered in the regression was chosen allow to explanatory style the maximal chance to explain variance prior to the entry of explanatory flexibility. The three–way interaction was added in the final step. Time 2 depression was the dependent variable.<sup>3</sup>

The results of this model are shown in Table 2. Explanatory flexibility and negative life events, but not explanatory style, were main effect predictors of Time 2 depression after controlling for Time 1 depression. The interaction of explanatory flexibility and negative life events was the only significant two–way interaction in the model. The effect size for this term approached Cohen's (1988) convention for a medium effect. ( $f^2 = .08$ ). The three–way interaction did not add significantly to the model. The significant two–way interaction between explanatory flexibility and negative life events offers support for hypothesis 3 which predicted that explanatory flexibility would moderate the relationship between nega-

---

3. Other models were tested to examine whether cognitive style moderated the relationship between negative life events and residual depression when cognitive flexibility was not included in the model. Similarly, a model was tested that included only cognitive flexibility. Models that only included each of the two–way interactions individually were also tested. However, the results of these models were similar to the comprehensive model presented in this document. These models are available from the corresponding author.

TABLE 2. Hierarchical Regression Analysis Evaluating Whether Explanatory Flexibility and Explanatory Style Moderate the Relationship Between Negative Life Events and Depression

Step	Predictor	Regression Coefficients					Regression Model				
		<i>B</i>	<i>SE</i>	<i>pr</i>	<i>t</i>	<i>p</i>	<i>R</i> <sup>2</sup>	Change	<i>F</i>	<i>df</i>	<i>P</i>
1	BDI1	.64	.09	.65	7.15	<.001	.43		51.07	1, 69	<.001
2	GENBAD	1.44	.90	.19	1.61	<i>ns</i>	.45	2.58	1, 68	<i>ns</i>	
3	FLEX	-3.82	1.49	-.30	-2.55	.01	.50	6.52	1, 67	.01	
4	NEGEV	.70	.22	.37	3.26	.002	.57	10.62	1, 66	.002	
4	GENBAD*NEGEV	.30	.42	.09	.73	<i>ns</i>	.57	.53	1, 65	<i>ns</i>	
5	FLEX*GENBAD	2.63	2.65	.12	.99	<i>ns</i>	.58	.99	1, 64	<i>ns</i>	
6	FLEX*NEGEV	.90	.42	-.26	-2.14	.04	.60	4.57	1, 63	.04	
7	FLEX*GENBAD*NEGEV	.02	1.50	.002	.02	<i>ns</i>	.60	<.001	1, 62	<i>ns</i>	

Note. *B* = unstandardized regression coefficient; *SE* = standard error of the unstandardized regression coefficient; *pr* = partial correlation between predictor and dependent measure; *R*<sup>2</sup> = Percent of variance explained by the model; BDI1 = centered BDI scores at time 1; GENBAD = centered ASQ explanatory style (generality); FLEX = centered ASQ explanatory flexibility; NEGEV = centered number of LES negative events.

tive life events and depression even after controlling for explanatory style. However, the lack of a significant two-way interaction between explanatory style and negative life events contrasts with hypothesis 2, which predicted that explanatory style would moderate the relationship between negative life events and Time 2 depression symptoms.

To understand the nature of the significant interaction, the analysis of partial variance (APV) procedure, developed by Cohen and Cohen (1983) was conducted. The APV procedure uses the coefficients from the full-model regression analysis and inputs various levels of the predictor variables. In this case, our full model represented the model prior to the entry of the three-way interaction, which showed a significant two-way interaction between explanatory flexibility and negative life events. The model was solved at +1 standard deviation and/or -1 standard deviation of the relevant predictors. For individuals high in explanatory flexibility, there was little association between negative life events and Time 2 depression scores. In contrast, for individuals low in explanatory flexibility, there was a strong positive association between the number of negative life events and Time 2 depression scores.<sup>4</sup>

4. The graphical representation of this relationship is available from the corresponding author.



## DISCUSSION

Findings from the current study supported the utility of explanatory flexibility. First, although the correlation of explanatory style and explanatory flexibility was statistically different from zero and the magnitude of the correlation was close to Cohen's (1988) convention for a medium effect size, this correlation was of a fairly modest magnitude given that the variables were derived from the same measure administered at the same time.

Second, explanatory flexibility but not explanatory style moderated the association of negative life events to subsequent depression. When compared to studies of explanatory style that also utilized a longitudinal prospective design with moderation analyses, the magnitude of the moderation effect of explanatory flexibility corresponds favorably to published studies evaluating explanatory style as a vulnerability factor for subsequent depression in unselected student populations (Alloy & Clements, 1998; Metalsky & Joiner, 1992). These two explanatory style studies each reported a  $pr = .24$  for the interaction of explanatory style (generality) and negative life events compared with a  $pr = -.28$  in the current study.<sup>5</sup> The pattern of the moderation effect in the current study conformed to the prediction that low explanatory flexibility would be associated with higher levels of depression in the face of negative life events. The strength of this association remained undiminished even after controlling for the influence of explanatory style as a main effect and in interaction with the number of negative life events.

One somewhat unexpected finding in the current study was the relatively weak association of explanatory style (generality) as a vulnerability factor for subsequent depression in the face of negative life events. However, this finding may be due to the use of an undergraduate sample with fairly mild symptoms of depression in the current study. To the best of our knowledge, only two studies (Alloy & Clements, 1998; Metalsky & Joiner, 1992) have found explanatory style to interact with intervening negative life events to predict subsequent levels of depression using an unselected undergraduate population. It would be interesting to repeat this study with a clinical sample.

Similarly, the lack of a significant two-way interaction between explanatory flexibility and explanatory style or a significant three-way

---

5. The Metalsky and Joiner (1992) study did not provide sufficient information to compute Cohen's  $f^2$ . Consequently, we use the partial correlation as a comparative effect size index for the respective interaction terms since this statistic is available in all three studies.

interaction may appear somewhat surprising given that Fresco et al.'s (2007) secondary analysis of the Jacobson et al. (1996) data found that a combination of high levels of post-treatment explanatory flexibility and low levels of post-treatment pessimistic explanatory style conferred maximal protection against relapse of depression. Thus, it would be expected that few negative life events, high explanatory flexibility and an optimistic explanatory style would be maximally beneficial. However, the dependent variable in the Fresco, Moore, et al. (2006b) study was relapse rather than changes in depression scores. Furthermore, Fresco, Moore, et al. (2006) used a clinical sample rather than an undergraduate population. However, future research should continue to address this question and resolve these inconsistencies.

Explanatory flexibility is offered as one approach to cognitive flexibility, but we make no claim that it represents the only way to conceptualize cognitive flexibility. Teasdale et al. (2001) examined one kind of rigidity in terms of causal explanations for negative events. Specifically, the authors reported findings consistent with the conclusion that cognitive rigidity represents a vulnerability to relapse of depression. In their study, 158 patients with partially remitted major depression were randomly assigned to receive medication continuation ( $n = 78$ ) or medication continuation plus cognitive therapy ( $n = 80$ ). Patients who endorsed extremely pessimistic or optimistic responses (responding with 7 or 1, respectively) on the ASQ were at greater risk for relapse than participants who did not respond so extremely. Further, the reduction in the tendency to make these extreme responses appeared to be the mechanism by which cognitive therapy conferred protection against relapse. Similarly, Beevers, Keitner, Ryan, and Miller (2003) found that patients with extreme thinking had quicker relapse compared with patients who had reductions in extreme thinking. Petersen et al. (2007) treated a sample of patients with major depression with open-label antidepressant medication (ADM) and then randomized them to medication continuation with and without cognitive behavior therapy augmentation (CBT). Findings revealed that extreme responding on the stable/unstable dimension of the ASQ predicted a worse treatment outcome over the 8 weeks of treatment with ADM. Furthermore, during the maintenance phase, patients in ADM-only group evidenced significantly greater increases in extreme responding on the stable/unstable dimension as compared to the CBT augmentation group. Although Peterson and colleagues did

not conduct a long-term follow up, these changes in extreme thinking may be predictive of relapse.<sup>6</sup>

A potentially fruitful area of future research will be to simultaneously examine multiple indices of flexibility as they relate to each other and to outcomes such as the concurrent and subsequent experience of depression. Currently, research on extreme responding and explanatory flexibility suggests that a lack of versatility in finding explanations for events may be an important contributor to negative affect and depression.

The cognitive behavioral theories advanced our field beyond the power of positive thinking to the power of non-negative thinking (Kendall, 1992). Findings from the current study and past research on explanatory flexibility suggest that such cognitive process variables may play an important part in what makes individuals vulnerable to dysphoric reactions following life stress. Such a perspective is compatible with contemporary cognitive behavioral theories (e.g. Fresco, Moore, et al., in press; Segal, Williams, & Teasdale, 2002) as well as traditional and contemporary behavioral models (e.g., Ferster, 1973; Fresco, et al., 2007; Hayes, Strosahl, & Wilson, 1999; Jacobson, Martell, & Dimidjian, 2001). All of these frameworks emphasize the importance of non-judgmentally observing and decentering from negative thinking, instead of attempting to engage with and change this thinking. Thus, the present findings are consistent with the theoretical and empirical emphasis on process rather than content factors in depression. However, rather than representing a point of departure from traditional cognitive therapy, these mindfulness- and acceptance-based approaches serve to complement the cognitive behavioral perspective. The concept of explanatory flexibility is offered as one possible way to assess the rigidity

---

6. Unfortunately, extreme responding could not be examined in the current manuscript because the range of extreme responses was severely attenuated due to the fact that most people did not choose any extreme responses. However, we created a composite extreme responding variable (i.e., the number of times a participant chose one or seven for all 12 scenarios on all 3 dimensions). Although the range of this variable was still somewhat attenuated, the correlation between this variable and explanatory flexibility was significant, but still fairly modest considering the fact that mathematically, people who are extreme scorers will also tend to be more rigid ( $r = .39$ ). Thus, these findings suggest that these two variables are related, but different constructs. We also examined whether this variable moderated the relationship between negative life events and residual depression scores. Although future research with a data set that is more amenable to extreme responding research is needed, the results suggest that it is indeed rigidity and not extreme responding that is predictive of changes in depression symptoms as neither the main effect, nor the extreme responding  $\times$  life events interaction were significant predictors in the model. Please contact the corresponding author for more information.

of cognitive processing separate from the content or the valence of one's thinking.

Some limitations in the present study deserve mention. First, the sample consisted of a convenience sample of relatively high functioning college students whose level of depression symptoms were generally low and of a limited range. The BDI scores are representative of an unselected college student sample, but limit the generalizability of the findings in the current study until future studies have corroborated the pattern of findings using community participants or patient samples. Second, the sample was relatively small. Although the design and sample size had power = .80 to find interaction effects as small as a moderate effect size ( $f^2 = .11$ ), not all phenomena in psychology have such a large effect size. Thus, low power may account for why an effect for explanatory style was not found and replication with a larger sample would be beneficial. Third, given that the BDI contains many items assessing cognitive symptoms of depression, it is possible that the association between cognitive style measures and depression is overstated. A potentially fruitful area of future study is to examine the relationship of cognitive measures to the non-cognitive components of depression. Fourth, the findings from the current study do not speak to the possibility of whether low explanatory flexibility represents an enduring vulnerability associated with greater difficulties with emotional problems or coping with life difficulties. Longitudinal, prospective studies using a behavioral high-risk design (Alloy & Abramson, 1999) and repeated assessment of explanatory flexibility may represent an important future step in understanding the potential impact of low explanatory flexibility. Finally, a revised version of the ASQ, the Cognitive Styles Questionnaire (Alloy et al., 2000) is now available that has better psychometric properties than the original ASQ. However, it is longer than the ASQ and includes dimensions assessing inferences about self, world, and future that are not relevant to the current study. When participant burden is not a factor, researchers may want to include this measure in future research examining explanatory style or explanatory flexibility.

In summary, findings from the current study add to a growing body of research suggesting that explanatory flexibility is distinct from but related to explanatory style and that both constructs add to our understanding of depression. Evaluating the relationship of explanatory flexibility to other conceptualizations of rigidity (i.e., behavioral, physiological) represents an important area of future study.

## REFERENCES

- Abramson, L. Y., Metalsky, G. I., & Alloy, L. B. (1989). Hopelessness depression: A theory-based subtype of depression. *Psychological Review*, *96*, 358–372.
- Abramson, L. Y., Seligman, M. E. P., & Teasdale, J. D. (1978). Learned helplessness in humans: Critique and reformulation. *Journal of Abnormal Psychology*, *87*, 49–74.
- Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park, CA: Sage.
- Alloy, L. B., & Abramson, L. Y. (1999). The Temple–Wisconsin cognitive vulnerability to depression project: Conceptual background, design, and methods. *Journal of Cognitive Psychotherapy*, *13*, 227–262.
- Alloy, L. B., Abramson, L. Y., Hogan, M. E., Whitehouse, W. G., Rose, D. T., Robinson, M. S. et al. (2000). The Temple Wisconsin cognitive vulnerability to depression (CVD) project: Lifetime history of Axis I psychopathology in individuals at high and low cognitive risk for depression. *Journal of Abnormal Psychology*, *109*, 403–418.
- Alloy, L. B., & Clements, C. M. (1998). Hopelessness theory of depression: Tests of the symptom component. *Cognitive Therapy and Research*, *22*, 303–335.
- Beck, A. T. (1967). *Depression: Causes and treatment*. Philadelphia: University of Pennsylvania Press.
- Beck, A. T. (1976). *Cognitive therapy and the emotional disorders*. New York: International Universities Press.
- Beck, A. T., Rush, A. J., Shaw, B. F., & Emery, G. (1979). *Cognitive therapy of depression*. New York: Guilford.
- Beck, A. T., Steer, R. A., & Garbin, M. G. (1988). Psychometric properties of the Beck Depression Inventory: Twenty-five years of evaluation. *Clinical Psychology Review*, *8*, 77–100.
- Beevers, C. G., Keitner, G. I., Ryan, C. E., & Miller, I. W. (2003). Cognitive predictors of symptom return following depression treatment. *Journal of Abnormal Psychology*, *112*, 488–496.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.
- Cohen, J., & Cohen, P. (1983). *Applied multiple regression/correlation analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.
- Ferster, C.B. (1973). A functional analysis of depression. *American Psychologist*, *28*, 857–870.
- Fresco, D. M., Heimberg, R. G., Abramowitz, A., & Bertram, T. L. (2006). The effect of a negative mood priming challenge on dysfunctional attitudes, explanatory style, and explanatory flexibility. *British Journal of Clinical Psychology*, *45*, 167–183.
- Fresco, D. M., & Moore, M. T. (2007). Drops in explanatory flexibility following mood priming challenge interact with negative life events to predict future depression. Unpublished manuscript. Kent State University, OH.
- Fresco, D. M., Moore, M. T., van Dulmen, M., Segal, Z. V., Teasdale, J. D., Ma, H., & Williams, J. M. G. (2006). *Initial psychometric properties of the Wider Experiences Questionnaire: A self-report survey of decentering*. Manuscript under review.
- Fresco, D.M., Sampson, W.S., Craighead, L.W., & Koons, A.N. (2001). The relationship between sociotropy and autonomy to symptoms of depression and anxiety. *Journal of Cognitive Psychotherapy*, *15*, 17–31.
- Fresco, D. M., Schumm, J. A., & Dobson, K. S. (2007). *Explanatory flexibility and explanatory style: Modality-specific mechanisms of change when comparing behavioral activation with and without cognitive interventions*. Manuscript under review.

- Fresco, D. M., Williams, N. L., & Nugent, N. R. (2006). Flexibility and negative affect: Examining the associations of explanatory flexibility and coping flexibility to each other and to depression and anxiety. *Cognitive Therapy and Research, 30*, 201–210.
- Hayes, S. C., Strosahl, K. D., & Wilson, K. G. (1999). *Acceptance and commitment therapy: An experiential approach to behavior change*. New York: The Guilford Press.
- Jacobson, N. S., Dobson, K. S., Truax, P. A., Addis, M. E., Koerner, K., Gollan, J. K. et al. (1996). A component analysis of cognitive-behavioral treatment for depression. *Journal of Consulting and Clinical Psychology, 64*, 295–304.
- Jacobson, N. S., Martell, C.R., & Dimidjian, S. (2001). Behavioral activation treatment for depression: Returning to contextual roots. *Clinical Psychology: Science and Practice, 8*, 255–270.
- Kendall, P. C. (1992). Healthy thinking. *Behavior Therapy, 23*, 1–11.
- Metalsky, G. I., & Joiner, T. E. (1992). Vulnerability to depressive symptomatology: A prospective test of the diathesis-stress and causal mediation components of the helplessness theory of depression. *Journal of Personality and Social Psychology, 63*, 667–675.
- Moore, M. T., & Fresco, D. M. (in press). The relationship of explanatory flexibility to explanatory style. *Behavior Therapy*.
- Petersen, T. J., Feldman, G., Harley, R., Fresco, D. M., Graves, L., Holmes, A. et al. (2007). Extreme response style in recurrent and/or chronically depressed patients—Change with acute antidepressant treatment and stability during continuation treatment. *Journal of Consulting and Clinical Psychology, 75*, 145–153.
- Peterson, C., & Bossio, L. M. (1991). *Health and optimism*. New York: Free Press.
- Peterson, C., Semmel, A., von Baeyer, C., Abramson, L. Y., Metalsky, G. I., & Seligman, M. E. P. (1982). The attributional style questionnaire. *Cognitive Therapy and Research, 6*, 287–300.
- Robins, C. J., Hayes, A. M., Block, P., Kramer, R. J., & Villena, M. (1995). Interpersonal and achievement concerns and the depressive vulnerability and symptom specificity hypotheses: A prospective study. *Cognitive Therapy and Research, 19*, 1–20.
- 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.
- Segal, Z. V., Williams, J. M. G., & Teasdale, J. D. (2002). *Mindfulness-based cognitive therapy for depression: A new approach to preventing relapse*. New York: The Guilford Press.
- Seligman, M. E. P. (1981). A learned helplessness point of view. In L. Rehm (Ed.), *Behavior therapy for depression: Present status and future directions* (pp. 123–142). New York: Academic Press.
- Seligman, M. E. P. (1991). *Learned Optimism*. New York: Random House.
- Teasdale, J. D., Scott, J., Moore, R. G., Hayhurst, H., Pope, M., & Paykel, E. S. (2001). How does cognitive therapy prevent relapse in residual depression? Evidence from a controlled trial. *Journal of Consulting and Clinical Psychology, 69*, 347–357.