



The importance of “importance”: a longitudinal confirmation of the attributional-stress model of depression measuring the importance of the attributions and the impact of the stressor

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Abstract

In this study, we tested the hypothesis that the interaction between a negative attributional style for achievement-related events and a related stressor (i.e. failing a mid-term exam) predicted depression only in a small subset of the cognitive vulnerable subjects from the total sample ($n = 241$). In line with the theoretical proposals of the hopelessness theory, the highest depression scores were observed in those subjects who not only had a negative attributional style for hypothetical achievement-related events, but had also judged such events as personally *important*, failed a mid-term exam, and judged that failing the exam was of major *importance*. Following on from these findings, we discuss the necessity of more adequate tests of diathesis-stress models of depression by considering the motivational factors in the models which have often been neglected. © 2001 Elsevier Science Ltd. All rights reserved.

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1. Introduction

According to the original version of the learned helplessness model, depression is caused when subjects develop expectations of uncontrollability for negative outcomes (Seligman, 1975). These expectations lead subjects to believe that their responses will not affect outcomes; as a consequence, subjects show motivational emotional and cognitive deficits that resemble those of clinical depression. Some years later, in the so-called reformulated learned model (Abramson, Seligman, & Teasdale, 1978) two further factors were added to overcome some insufficiencies of the former model. The first of these was the inclusion of a *cognitive* vulnerability factor (i.e. a

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depressogenic attributional style) as a way to increase the predictive power of the model. The attributional style is defined as a general tendency to make consistent causal attributions when one is confronted with different outcomes at different times. Thus, this style is often thought of as akin to a stable personality trait (Alloy, Hartlage, & Abramson, 1988). The model thus no longer proposes that everyone exposed to uncontrollable events will develop helplessness symptoms. It now poses that only 'vulnerable' subjects (i.e., those who make internal, global and stable attributional style for negative events) will be likely to develop those symptoms. The second new factor is *motivational* in nature. The reformulated model, and the more current formulation of the hopelessness model of depression (Abramson, Alloy, & Metalsky, 1988; Alloy, Abramson, Metalsky, & Hartlage, 1988), assume that experiencing a highly aversive event or the loss of a highly desirable outcome, will produce dysphoric or depressive-like symptoms. Therefore, it is now hypothesised that depressive symptoms are a product of the interaction between a negative attributional style (i.e. the diathesis factor) and the occurrence of a highly negative experience (i.e. the stress factor; cf. Metalsky, Abramson, Seligman, Semmel, & Peterson, 1982).

However this last motivational factor has often been neglected in the research agenda (Peterson, 1991). Firstly, although the diathesis component of the model (i.e., causal attributions) have received much attention (Hill & Larson, 1992; Sweeney, Anderson, & Bailey, 1986), one of the shortcomings of the diathesis measurement is that the *personal importance* of the events on which the attributions are formulated is often not measured and/or included in the analysis (e.g. Metalsky, Joiner, Hardin, & Abramson, 1993; Sakamoto & Kambara, 1998). Thus, subjects' attributional style is measured on either hypothetical (Halberstadt & Abramson, 1987; Peterson, Semmel, von Baeyer, Abramson, Metalsky, & Seligman, 1982; von Baeyer, 1979) or real events (Hammen, Marks, Mayol, & DeMayo 1985) of often unknown importance for the subjects. Even though questionnaires like the Attributional Style Questionnaire (ASP; Peterson et al., 1982) include a question to assess subjective *importance* of the situations, the results on this item are typically ignored to compute subjects' attributional style (Peterson, 1991). This type of problem in testing the reformulated model (see Alloy, Hartlage & Abramson, 1988 for a general discussion) may partially explain why attributions have been found to play such a limited role in depression. While most studies consistently show a negative attributional style present in depressed groups [see Sweeney et al. (1986) meta-analysis], its causal role in depression, if any, is limited (Brewin, 1985; Dalglish & Power, 1998).

Secondly, the motivational dimension of the model's stress component is also quite often ignored. This is particularly important because, as stress research has demonstrated, the chronicity of the stressor, its desirability, and its intensity, are very important parameters in assessing its impact (Kessler, 1997; Monroe & Simons, 1991). As Tennen and Affleck (1991) have noted, many studies related to the reformulated learned helplessness model have not adequately addressed this issue and therefore cannot be considered as actual tests of the model's validity (e.g. Halberstadt, Andrews, Metalsky, & Abramson, 1984; Nolen-Hoeksema, Girgus, & Seligman, 1986; Peterson, Seligman, & Vaillant, 1988; Zullo & Seligman, 1990). Therefore, a proper test of this model should *always* include an assessment of the specific impact and relevance that specific stressors have on each subject (see a related discussion in Alloy, Hartlage, 1988). Such assessment is crucial to the model, which proposes that only highly aversive events will interact with the diathesis component to produce depressive symptoms. There are studies which have generally addressed this issue. For instance, some studies have measured attributions for only those *outcomes* perceived

as extremely important (Gong-Guy & Hammen, 1980). Using naturalistic stressors, more specifically, grades on university exams, Tabachnik, Alloy, Romer, and Crocker (1986) assessed the importance of the stressor by not taking the obvious pass/fail as a stressor itself but combining several subjective factors (i.e. subjects' previous expectations of the grade and the degree of importance assigned to the ASQ achievement situations). Other studies have used a different approach by asking subjects to evaluate their performance satisfaction and using this as a stress index (Follette & Jacobson, 1987; Metalsky et al., 1982; Tiggemann & Crowley, 1993).

Despite the fact that naturalistic longitudinal studies are highly adequate to test any diathesis-stress model of psychopathology (Hammen, 1988), few studies so far have used such a methodology to test the hopelessness model of depression (Abramson, Alloy, & Metalsky, 1995). In general, the results of these studies have supported the validity of the predicted Attributional style \times Stress interaction as a possible sufficient cause of depression. In one of the earlier studies, Metalsky et al. (1982) found that undergraduate students with an internal or global attributional style for negative outcomes experienced a depressive response when confronted with a low grade several weeks later. Metalsky et al. (1987) demonstrated that students with a stable, global attributional style for negative achievement outcomes showed a more enduring, two-days, depressive mood reaction when facing a naturally occurring stressor (i.e. failing a mid-term exam) than did students with an unstable, specific attributional style. Using a similar 'mid-term' methodology, Metalsky et al. (1993) have shown that only subjects with both a depressogenic attributional style (i.e. global and stable for negative outcomes) and low self-esteem presented enduring depressive reactions (of 5 days) after experiencing an academic stressor. In a more recent study conducted in Japan, Sakamoto and Kambara (1998) failed to show that the interaction between subjects' depressogenic attributional style and negative life events predicted their depression 3 months later. Yet, none of these studies have directly addressed the issue of the motivational component of the model.

The aim of the study presented here is to test the attributional-stress model of depression in a naturalistic setting (i.e. reactions to a pass/fail mid-term exam) measuring the often neglected *subjective importance* of both the attributional situations and the academic stressors to which the subjects are exposed. One goal of our study is to adequately test the hopelessness theory closely following its premises just as its proponents (Abramson, Alloy, & Hogan, 1997; Alloy et al., 1988) have repeatedly called for. Thus, following the specific predictions of the hopelessness model (Abramson, Metalsky, & Alloy, 1989), which originally combined both *cognitive* and *motivational* explanatory factors, we expect that subsequent depression will be more likely among subjects who show a depressogenic attributional style for *important* events and, furthermore, fail an academic test that is subjectively considered as *important*.

2. Method

2.1. Subjects

Two-hundred and eighty-nine university students volunteered to participate in the study. They were informed that their results would be anonymous. Subjects were evaluated at two different times: before taking an exam (T1) and, some weeks later, after having received their exam grade

(T2). Each session lasted an average of 30 min. Of the initial sample, 241 students were assessed in both sessions and only their results are shown in this paper. The participants who completed the study did not differ from those who did not complete the study on any of the measures at T1. The average age was 22.1 years (range = 19–53). Eighty percent of the sample were women.

2.2. Measures

2.2.1. Attributional Style Questionnaire (ASQ; Peterson et al., 1982; Seligman et al., 1979)

In order to match the type of stressor and the diathesis content (Metalsky et al., 1993), subjects were given this questionnaire. The ASQ consists of 12 hypothetical events (six positive and six negative), half related to achievement and half related to dependency. Subjects' task consisted of writing down the one major cause of each event, in an open-ended format, and then rating the cause on a 1–7-point scale for degree of Internality, Stability, and Globality. Only the three negative *achievement*-related questions of the ASQ (ASQ-A) were used to evaluate the diathesis component of the model. Furthermore, following Abramson et al.'s (1988) procedure, we used both Internality and Generality (an average of the Stability and Globality) parameters in the analysis (see a description of this procedure in Metalsky et al., 1987, 1993). A subject was initially classified as "Vulnerable" or "Non-vulnerable" if their total attributional score was, respectively, above or below 22 (i.e. a score above the mid-point on the ASQ-A: 3 situations \times 2 dimensions \times 7 points in the Likert-type scale; maximum possible = 42). Following Peterson's (1991) suggestions, only hypothetical situations which were subjectively *relevant* for each subject were entered to compute the attributional style. Thus, a subject was considered as "vulnerable" only when he/she rated the situations in the ASQ-A as important. Therefore only subjects with a score above 11 (i.e. a score above the mid-point of the maximum possible score in the importance assigned to the ASQ-A situations: 3 situations \times 7 points in the Likert-type scale; maximum possible = 21) were finally included in the "Vulnerable" subgroup.

2.2.2. Academic questionnaire

Subjects were also evaluated on a number of relevant areas related to their academic performance and grade expectations. This questionnaire had two different versions (one for T1 and another for T2). It includes a number of 7-point Likert scales to assess different issues relative to both personal academic expectations and perceived abilities: (1) How important is this subject to you (from 1 to 10)?; (2) What grade do you expect to get on the next mid-term exam (from 1 to 10)?; (3) What grade do you expect to get on the final exam (from 0 to 10)?; (4) How difficult will it be for you to pass this subject (from 1 to 10)?; (5) How good a student are you (from 1 to 7)?. This set of questions was common to the T1 and T2 questionnaires. The AQ at T1 added another question: How important would it be if you failed this exam?.

2.2.3. Academic failure/success

Two categories were created: *Success* and *Failure*. Academic failure was defined as either a grade below five (signifying a test retake months later) or, following a procedure similar to Metalsky et al. (1987), a grade which was three or more points below the student's expected grade. Any other outcome was considered as a "success" case.

2.2.4. *Level of importance assigned to the stressor*

Based on subjects' answers to one of the AQ items (i.e. How important would failing this exam be to you?) three different groups of subjects were created based on the "a priori" importance that they gave to the stressor: *High importance* (i.e. subjects scoring 7 in the 7-point Likert scale, $n=69$); *Medium importance* (i.e. subjects scoring 6, $n=97$) and *Low importance* (i.e. subjects scoring 5 or less, $n=70$). Only 15% of the subjects in the Low importance level scored below 5.

2.2.5. *Beck Depression Inventory (BDI; Beck, 1978 as reprinted in Beck, Rush, Shaw, & Emery, 1979)*

The depression level was assessed using the Spanish version of the BDI (Sanz & Vázquez, 1998; Vázquez & Sanz, 1997). The BDI is a widely-used, 21-item inventory of depressive symptoms. This version is based on the 1978 form of the inventory, which has shown both high reliability and validity (Beck, Steer, & Garbin, 1988). The BDI was administered at both T1 and T2.

2.3. *Procedure*

The design of the study was longitudinal. The subjects' attributions were measured 2 weeks before taking the exam and their depression levels 2 weeks after the subjects found out their grades.

2.3.1. *T1 assessment*

Two weeks before taking the exam, the subjects were asked to fill out the ASQ-A, BDI, and the AQ.

2.3.2. *T2 assessment*

One week after receiving their grades (which on average occurred one week after taking the exam), subjects were asked again to fill out the BDI and the AQ.

3. **Results**

The prediction that depressed mood would result from the interaction of a negative attributional style for personally important events and the occurrence of a personally relevant stressor was tested using a $2 \times 2 \times 3$ analysis of covariance (ANCOVA) — Cognitive vulnerability \times Exam results \times Importance assigned to the stressor — on subjects' BDI scores at T2. Thus, strictly following the diathesis-stress learned helplessness model (Abramson et al., 1989; Metalsky et al., 1982, 1987), a three-way interaction was predicted. In order to rule out the impact of initial differences in depression, we used BDI scores at T1 as a covariate.

Results from the ANCOVA showed that while the subjects' depressed mood at T1 (the covariate) was significantly related to their depressed mood at T2 [$F(1,223)=198.4$, $P < 0.00001$], neither the Cognitive vulnerability component alone (i.e. a negative attributional style for the achievement domain) [$F(1,223)=0.9$, n.s.] nor the interaction of this Cognitive vulnerability with the Exam result [$F(1,223)=178.3$, n.s.] significantly affected the subjects' mood at T2. However, the Exam result factor alone (i.e., the stress component) did significantly affect subjects' scores on

the BDI at Time 2 [$F(1,223) = 11.8, P = 0.0007$], as did the Cognitive vulnerability \times Importance interaction [$F(2,223) = 6.3, p = 0.0021$]. All of these effects were qualified by a significant three-way interaction: in line with the predictions of the hopelessness model, there was a significant interaction of Vulnerability by Exam result by self-rated Importance [$F(2,223) = 9.2, P = 0.0002$]. Tukey's post-hoc tests, following Spjøtvoll and Stoline's procedure for unequal n 's (see Kirk, 1982, p.118), showed that any pair of mean differences above the critical value of 6.60 was statistically significant [T' (d.f. = 221) = 6.60, $P < 0.05$]. Therefore, vulnerable subjects who had failed the exam and had previously given the highest importance to failing showed significantly higher scores on the BDI at T2 than did vulnerable subjects who also failed but gave either medium or low importance to eventually failing the exam (see Table 1). Furthermore, vulnerable subjects who failed the exam and gave the highest importance to it also had higher BDI scores at T2 than did nonvulnerable subjects who also failed the exam regardless of the importance that this latter group gave to the eventual fact of failing the exam (Table 1).

In order to exclude the explanation that the pattern of results was due to changes in *Importance* ratings from T1 to T2, these were studied in a $2 \times 2 \times 3$ analysis of variance (ANOVA). No significant effects were found. Thus the subjects did not change their appraisals of the importance of the stressor as a function of their actual grades. We also addressed the issue of whether passing or failing the exam would consequently affect subjects' perceived self-efficacy as a student [i.e. 'How good a student are you (from 1 to 7)?']. The full $2 \times 2 \times 3$ interaction model was significant [$F(1,223) = 3.09, P = 0.047$]. In line with the predictions, the subjects' differential scores in perceived self-efficacy were the lowest ($T1 - T2 = -2.64$) for those cognitively vulnerable participants who, besides failing the exam, rated the possibility of failing as high.

Finally, it is interesting to note that subjects in the *Success* condition had significantly lower BDI scores at T2 than those in the *Failure* condition (i.e. those who failed the exam): 4.5 vs. 6.6, respectively [$t(183) = 5.50, P < 0.001$] thus demonstrating the *effectiveness* of the stressor in our study.

Table 1

Subjects' mean Beck Depression Inventory (BDI) scores at Time 1 and Time 2 as a function of 3 factors: Cognitive diathesis (Attributional vulnerability/non vulnerability), Stressor (Academic failure/success), and Importance given to the stressor (high/medium/low)

Attributional vulnerability	Actual Failure			Actual Success		
	High importance	Medium importance	Low importance	High importance	Medium importance	Low importance
<i>Vulnerable subjects</i>						
BDI Time 1	11.20	5.42	3.71	7.87	6.80	9.29
BDI Time 2	13.30	4.14	3.00	4.39	5.47	8.64
Adjusted mean	9.99	4.41	4.33	3.15	4.89	6.52
(Number)	(10)	(7)	(7)	(23)	(40)	(17)
<i>Non vulnerable subjects</i>						
BDI Time 1	5.41	5.54	5.43	4.92	3.82	3.93
BDI Time 2	4.83	6.00	6.62	3.04	2.48	3.50
Adjusted mean	5.11	6.20	6.89	3.63	3.75	4.90
(Number)	(12)	(11)	(16)	(24)	(39)	(30)

4. Discussion

The proponents of the learned hopelessness model have often warned about the fact that, in many cases, the theory is not adequately tested (Alloy, Hartlage et al., 1988). For instance, the conclusion that causal attributions alone are not predictive of depression (e.g. Brewin, 1985) may be based on flawed studies that have not adequately tested the underlying cognitive models. In this same line, despite the fact that motivational factors are systematically introduced in cognitive models of depression (Haaga, Dyck, & Ernst, 1991), empirical studies aimed at validating those models typically ignore such motivational components.

The results of this study confirm the idea (see also Metalsky et al., 1987, Tiggemann & Crowley, 1993) that just testing a diathesis×stress interaction may not be enough to test the validity of the model unless taking into account both the importance of the event and the importance of the diathesis component. According to these results, it seems that best results may be obtained when the specific cognitive diathesis (in this case, a negative attributional style for achievement-related topics) is focused only for those events judged to be important for each individual and only when subjective important outcomes are taken into account. Therefore, the results confirm the idea that simply testing a diathesis-stress interaction may not represent an adequate test of the model if no allowance is made for the explicit *motivational* components of the models (related to both the cognitive and the stress factors). In assessing cognitive vulnerability (here, the negative attributional style), only those events which are *important* to each individual should be included. If all these factors are taken into consideration, the predictions of the model seem to gain stronger empirical support.

The prediction of relatively enduring mood reactions by the diathesis-stress interaction in this study is consistent with the findings by Metalsky et al. (1987, 1993). These authors have found that whereas immediate mood reactions (i.e., dysphoria measured from 1 to 5 days after having failed a mid-term exam) are predicted solely by the negative outcome, more enduring subsequent depressive reactions (lasting more than 5 days) are predicted by an interaction of cognitive diathesis (i.e. negative attributions) and the academic failure.

Regarding the importance of the stressor, the results of the current study indicate that later depression was predicted based on the importance assigned to the stressor several weeks *before* it appeared. This interesting finding may be attributed to the fact that, as shown in other studies, the subjects' cognitive appraisal of the stressor may change once it appears, which may contribute to reduce its impact. The subjects' perceived importance of actual stressful life events may be minimised as a way of reducing its personal impact (Taylor, 1989). Therefore, the expected value of the stressor seems to have a powerful predictive power on the eventual negative mood reactions.

In our study, a negative attributional style regarding *hypothetical* events (i.e. the ASQ) in interaction with an important *naturalistic* stressor, was predictive of future depression. In fact, some reviews suggest that negative attributions of *hypothetical* events are not only associated with depression (Sweeney et al., 1986) but they have an even greater predictive power than attributions of real events (Brewin, 1985; Peterson, Raps, & Villanova, 1985). Similarly, Tiggemann, and Crowley (1993) found that, whereas general attributions within the academic domain were related to depression after having failed an exam, specific attributions describing the reasons for that failure were not.

It is still difficult to determine the elements and/or processes underlying the motivational component of the model. It is likely that a higher number of previous negative experiences (Abramson et al., 1997; Kessler, 1997), or a bias in the vividness of memories for past negative events (Matt, Vázquez, & Campbell, 1992), might affect the emotional value attached to a given future stressor. It is important to note that the highest scores on depression at T2 were shown by the subgroup of vulnerable subjects who gave an *extreme* importance (a score of 7 in a 7-point scale) to the possibility of facing the negative event (i.e. fail the exam). This finding may be explained by the notion that a general, trait-like characteristic like Neuroticism, for example, might cause the subject to label his/her reality in a rather frightening way. This interpretation may contribute to an increase in the subjects' vulnerability to dysphoric reactions after actually experiencing the expected stressful event (Martin, 1985).

Although this study was theory-guided by the hopelessness depression model, it does not address all of the issues recently raised by various investigators. For instance, as Abramson et al. (1997) have pointed out, future research based on the model should address the issue of different subtypes of depression (e.g. Dependent/Sociotropic) to increase the predictive power of the model. Therefore, a better match between the type of stressor and specific cognitive vulnerabilities are needed to more adequately test the theory. Along this line, it would be necessary for future studies to assess the specific syndrome hypothesised to constitute the hopelessness subtype of depression (e.g. motivational deficit) — Metalsky & Joiner, 1997 — rather than focusing on the full spectrum of depressive symptoms.

In conclusion, we would like to point out several limitations on the generalisability of these results. It must be noted that the sample consisted of university students, most of them women. This may be important as some studies have shown gender differences in college students' attributions regarding academic failures (Beyer, 1999). Furthermore, although the academic stressor was effective to affect the subjects' mood, it would be necessary to replicate the study using other types of stressors related to academic and non-academic domains. Finally, although the use of subclinically depressed subjects seems to be a valid approach to test models of depression (Vredenburg, Flett & Krames, 1993), it would be necessary in further studies to use clinical samples and/or diagnostic measures for a better validation of the specificity of the model.

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