Negative Attributional Style and Academic Achievement: The Moderating Role of Attribution of Uncontrollability and Previous Academic Performance

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Abstract: This study examined if the relationship between a negative attributional style and academic achievement was moderated by controllability attributions and previous academic performance. One hundred and eighty seven undergraduate students filled in the Academic Attributional Style Questionnaire and reported their perception of uncontrollability for negative academic evens. Academic achievement was measured at the middle and end of the semester. The results indicated that the students with a negative attributional style and midterm exam performance were significant predictors of the final course exam. The findings offer a more complex view of attributional styles and suggest that a depressive attributional style may not be uniformly harmful.

***Keywords*:** negative attributional style, attribution of uncontrollability, midterm exam performance, final exam performance

Introduction

The patterns of attributions about the causes of events are significant determinants of peoples' generalised expectancies (Abramson, Seligman, & Teasdale, 1978; Abramson, Metalsky, & Alloy, 1989; Carver, Scheier & Segerstrom, 2010). The attributional style has implications for many areas of daily life, previous research findings showing that attributional style is a significant predictor of students' negative emotions (Fresco, Alloy & Reilly-Harrington, 2006; Sanjuan & Magallares, 2009) or academic performance (Martin-Krumm, Sarrazin & Peterson, 2005; Butnaru, Gherasim, Iacob & Amariei, 2010). Moreover, some studies indicated that the relationship between an attributional style and academic outcomes may be moderated by different individual factors, such as control perception, self-efficacy, previous performance or learning strategies (see Au, Watkins, Hattie & Alexander, 2009 for review). The goal of this study was to examine the relationships between the attributional style and performance in an academic context, and if this relation if moderated by previous academic and attribution of controllability.

Negative attributional style and academic achievement

According to the reformulated learned helplessness model (Abramson et al., 1978) and its revision, the hopelessness theory (Abramson et al, 1989; Peterson & Seligman, 1984) attributional style is a cognitive personality variable that reflects the habitual way of explaining the causes of events. People with a negative

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(or pessimistic) attributional style have the tendency to explain negative events with internal, stable, and global causes and positive events with external, unstable one, and specific causes are more likely to develop depression when faced with stressful situations then people with an positive (or optimistic) attributional style. These people have the tendency to explain negative events with external, unstable and specific causes to explain negative events but are good with internal, stable, and global causes. A fourth dimension of attributions, controllability, was introduced by Peterson and Seligman (1984) as a dimension of the attributional style in order to measure perception of controllability over events.

Most of the previous research was centred on the relationship between negative attributional style and depression. These studies confirmed a strong association between depression and the attributional style of negative events, as well as positive events, although the association was weaker in the latter case (see Mezulis, Abramson, Hyde, & Hankin, 2004 for review, Fresco et al., 2006). Longitudinal studies showed that this style has a causal role in the development of depressive symptoms (Sanjuan & Magallares, 2009; Gherasim, Butnaru, Gavreliuc, & Iacob, in press) sometimes in interaction with stressful events (Haeffel & Vargas, 2011). Also, previous studies indicated that a negative attributional style is correlated with other negative emotions, such as anxiety, hostility and negative affects (Fresco et al., 2006).

The studies of the relationship of hopelessness conceptions to achievement (see Au et al., 2009 for review) reported mixed findings. Some studies reported that a negative attributional style was associated to lower grade point averages (Gibb, Zhu, Alloy, & Abramson, 2002; Fazio & Palm, 1998; Peterson & Barrett, 1987) and lower school grades (Butnaru et al., 2010, Martin-Krumm et al., 2005). Conversely, other studies have reported that students with a negative attributional style scored higher on a voluntary midterm exam (Houston, 1994), earned higher grade point averages (Satterfield, Monahan & Seligman, 1997) and higher grades on course examinations during the semester (Yee, Pierce, Ptacek & Modzelesky, 2003). Finally, other studies have found no significant relationship between the attributional style and academic achievement (Bridges, 2001; Tiggemann & Crowley, 1993).

Academic risk factors: Uncontrollability and previous academic experience

Over time, researchers have invoked different explanations for the controversial relationship between the attributional style and academic outcomes. Researchers focused on variables responsible for the learning processes, such as aptitude (Bridges, 2001; Gibb et al., 2002), prior academic experience (Yee et al., 2003), prior knowledge (Hailikari, Nevgi & Komulainen, 2008) or perception of controllability (Yee, Edmondson, Santoro, Begg, & Hunter, 1996) that could interact with the attributional style, increasing or decreasing its effects on academic performance. Our study we investigated if the relationship between the attributions

and academic outcomes is moderated by previous academic performance and attribution of controllability.

Control is a multivariate construct. Studies have found that outcome expectancies (Stipek & Weisz, 1981) or causal attributions (Weiner, 2010) influence effort, strategy use, self-regulation, and achievement in academic domains. Factor analyses of component control beliefs (self-efficacy, outcome expectancies, causal attributions, and expectancy of success) have found that these are not reducible to a single latent dimension (Shell & Husman, 2008). Factor structures basically confirm that the component beliefs are distinct from one another, with each typically forming its own factorial dimension. In this study we examined the role of control beliefs measured as a causal attribution.

The perception of uncontrollability, which occupied a central role in both the original and reformulated theories, gradually has been replaced with the construct of event valence (see Au et al, 2009 for review; Peterson & Seligman, 1984). Perceptions of controllability are a product of the attribution process, resulting from the degree to which individuals perceive the cause(s) of an event as lying within their control (Weiner, 1985, 2010). Weiner's attribution theory treats controllability as an independent causal dimension; emotional reactions to events depending partially on controllability attributions. Causal attributions or a perceived causal explanation of outcomes, are expected to influence expectancy of success and subsequent achievement behaviour and affects (Weiner, 1985, 2010).
However, little attention has been paid to the role played by the controllability dimension in the relationships between the attributional style and negative outcomes (Sanjuan & Magallares, 2009). Studies found that the negative attributional style and attributions of uncontrollability interacted in predicting negative emotions (Brown & Siegel, 1988; Bruch & Belkin, 2001; Sanjuan & Magallares, 2009): internal, stable and global attributions for negative events were positively related to increase depression only when the events were attributed to uncontrollable causes, but not when the events were attributed to controllable causes. These findings suggest that the risk to people with a negative explanatory style could develop depressive symptoms which would be increased when they also explain the negative events with uncontrollable causes. Thus, the attributions of controllability may be critical when it comes to the non-consistent relationships between attributions and achievement.

Experimental studies of learned helplessness have explored the role of prior experiences on learned helplessness deficits, the findings suggesting that modest levels of initial failure enhance subsequent performance, while higher levels of initial failure might lead to a decrease in performance (Tiggemann & Crowley, 1993; Yee et al., 1996). Although both positive and negative relationships between the attributional style and previous performance have been demonstrated across academic settings, the researchers have not answered the question of what effects naturally previous experiences would have on the performance of participants with a negative attributional style (see Au et al., 2009

for review). Few previous studies analyzed whether the effect of an attributional style on academic achievement was mediated by previous academic experience. The results indicated that the negative attributional predicted a significant variation of course performances at the end of semester even after controlling other predictors, such as prior performance (Yee et al., 2003). In these studies, previous academic experience did not mediate the impact of the attributional style on predicted subsequent academic performance (Yee et al., 2003). This present study attempted to examine whether the effect of the negative attributional style on academic achievement was mediated by previous academic performance.

The present study

The first aim of the study was to examine the relationship between negative attributional style and academic achievement and whether this relationship is moderated by attributions of uncontrollability. Previous research (see Au et al, 2009 for review; Sanjuan & Magallares, 2009) did not consider the role of attributions of uncontrollability in the relation between the negative attributional style and academic performance. Controllability may be critical to understand the controversial relationship between attributions and achievement. Specifically, we expected that attributions for negative events were negatively related to achievement only when the events were attributed to uncontrollable causes, but not when the events were attributed to controllable causes.

This second aim of the study was to examine if the relationship between the negative attributional style and final exam performance is moderated by previous performance measured at the midterm exam. To test this aim, we conducted a short longitudinal study in which students completed two examinations during the semester. Thus, the effects of natural previous experiences on students' academic performance with a negative attributional style could be analyzed more accurately. In addition to our study, the relationship between a negative explanatory style, attributions of uncontrollability, and academic performance was tested on a sample of youth and senior undergraduate students. The reformulated model of academic hopelessness had not been tested with samples of adults, since attributional research used samples formed by youth undergraduates, adolescents or children (Leeson, Ciarrochi & Heaven, 2008).

Method

Participants

Two hundred and twenty four students from the first year enrolled in an obligatory statistics course participated in exchange for the course credits. Students who did not want to participate in the research were offered the opportunity to complete an alternative assignment for credits. Students participated voluntarily in the research. Participants who provided incomplete data were excluded, yielding a

sample of 208 participants. Of these, 187 (12.8% male and 87.2% female, age 30.92 ± 7.37 years) participated in both course examinations. Men and women were not found to differ significantly in age, t(185)=1,43, ns.

Measures

Academic Attributional Style.
The Academic Attributional Style Questionnaire (AASQ; Peterson & Barrett, 1987) is a self-reporting measurement of the attributional style containing 12 negative academic events. The AASQ is an academic revision of the Attributional Style Questionnaire (ASQ; Peterson et al., 1982) and was developed to assess the attributional style specific to negative academic events (e.g., "You failed a final examination"; "You are dropped from the university because your grades are too low"). The participants were instructed to write a cause for each event and to rate this cause on an eight-point scale according to its internality, stability and globality. A fourth dimension, controllability, was added, asking subjects to rate the degree of control that they believed they would have in these situations (Peterson & Seligman, 1984). Scores on each dimension range from 1 to 8, with a higher score indicating more internal, stable, global and uncontrollable attributions. Scores for each of the four attributional dimensions were calculated by averaging the participants` responses for each dimension across all events. The alpha coefficients scales range between .61 and .70, similar with other studies (Peterson & Barrett, 1987; Sanjuan & Magallares, 2009). A composite score was computed using the responses to the internality, stability and globality dimensions. Higher scores indicated a more depressive attributional style and a higher perception of uncontrollability.

Academic achievement
Both midterm and final exams followed the same format and consisted in applying specific statistical methods to verify the hypothesis.

Procedure
The participants filled in the Academic AASQ at the beginning of the semester. Data collection occurred during regularly scheduled classes. Two exams were organised approximately seven weeks apart, during week 8 and 16 of the semester. The students' grades for the statistics course examinations were obtained from the instructors, with the permission of both students and instructors.

Results

Since no gender differences were found in the analyzed variables (attributional style, midterm and final performance, all ps>.30), male and female data was analyzed together. A 2 (gender) x 2 (exams) mixed design ANOVA with gender as a between subjects factor and exams as a repeated measures factor was computed to evaluate possible differences in men and women students' performance on the exams over time. No significant main effects or interactions were observed. Correlations, means and standard deviations of all measures are presented in Table 1. Performance on the final exam correlated significantly with a negative attributional style; the students with a negative attributional style were more likely to perform better in the final exam.

Table 1: *Correlations, means and standard deviations (SD) of the variables*

	1	2	3	4	5
1. Age	-				
2. NAS	.08				
3. Controllability	-.003	.21**			
4. Midterm exam	.06	-.06	-.03		
5. Final exam	.02	.16*	-.01	.41**	
Mean(SD)	30.92(7.37)	61.7(16.32)	24.56(9.19)	8.00(1.45)	5.27(2.53)

N=187, NAS – Negative Attributional Style; $^{**}p<.01$, $^{*}p<.05$

We computed a series of multiple regression analyses to evaluate the extent to which the effect of the attributional style was moderated by previous performance on the midterm exam (Aiken & West, 1991). The participants' gender, age and the grades from the midterm exam were entered in the equation as a set on Step 1 and negative attributional style and attributions of controllability were entered in the second step, and the Midterm exam x ASQ, Midterm exam x Controllability interactions were entered in the third step. The results, which are summarized in Table 2, showed that the midterm exam grades ($\beta=.41$, $p<.01$) and NAS were significant predictors of the final course exam ($\beta=.20$, $p<.01$). Those students who had higher grades on the midterm exam or had a negative attributional style were more likely to report higher grades in the second examination. The interactions between a depressive attributional style and the midterm exam as well as between attributions of uncontrollability and the midterm exam were not significant.

Table 2: *Hierarchical regression analysis to predict final exam performance*

Predictors	β	t	ΔR^2
Step 1			
Age	.007	.11	
Gender	.03	.53	
Midterm exam	.41	6.21**	
Model R^2=.16, F(3,183)=12.84, p<.01			.17**
Step 2			
NAS	.20	2.95**	
Controllability	-.04	-.59	
Model R^2=.19, F(5,181)=9.73, p<.01			.03*
Step 3			
Midterm exam x NAS	-.11	-1.68	
Midterm exam x Controllability	.06	-.97	
Model R^2=.20, F(7,179)=7.67, p<.01			.01

N=187; NAS - Negative Attributional Style; ** p<.01; * p<.05

Discussion

The goal of this study was to examine the relationship between the negative attributional style and academic performance across time. Specifically, we examined whether the negative attributional style interacted with the midterm exam performance when it came to predicting the performance on the final exam. The results indicated that the negative attributional style was positively related to the final exam performance. Contrary to the hypothesis of the helplessness and hopelessness theories (Abramson et al., 1978, 1989), in our study participants with a negative attributional style were found to be more likely to increase performance. Our findings are consistent with results reported by other researchers who have also found positive links between the negative attributional style and performance in academic settings (Houston, 1994; Satterfield et al., 1997; Yee at al., 2003). These findings offer a more complex view of attributional styles and suggest that a negative attributional style may not be uniformly deleterious.

The regression analyses indicated that controllability attributions did not predict academic performance, either on the midterm or final exams. Even though previous studies showed a significant effect of controllability in predicting students' depressive feelings (Bruch & Belkin, 2001; Sanjuan & Magallares, 2009) it seems that attributions made on this dimension had no impact on academic performance. These findings did not eliminate the role of control perception on performance. Other components of control beliefs (Shell & Husman, 2008), such as self-efficacy or outcome expectancies could be more important in determining achievement in the academic domain.

The second goal of the study was to examine if the relationship between the negative attributional style and academic performance on final exam is moderated by previous performance. The regression analyses showed that the previous performance from the midterm exam is a significant positive predictor of

performance in the final exam. These results confirm previous findings indicating that previous experience is a significant predictor of performance (Yee, et al, 2003). Moreover, the results indicated that the negative attributional style and previous performance did not interact as predicted in the performance of the final exam. These results suggest that previous experience is not a necessary precursor of enhancement effects associated with a negative attributional style. Our findings are similar to the other longitudinal studies carried out in an educational context which reported that a negative attributional style predicted increased academic performance (Houston, 1994; Satterfield et al., 1997; Yee, et al, 1996, 2003). However, because these longitudinal studies have focused on aggregate measures of performance, it was not possible to determine how initial performance may influence subsequent performance and if the negative attributional style interacted with prior experience when it came to determining subsequent performance.

Our study tested undergraduate students who had passed the midterm exam; those who did not pass the first exam could not be present in the final exam and thus, they were excluded from the analyses. Consequently, the sample contains highly achieving students. It may be possible that the positive relation between attribution and achievement explain only the results of a highly achieving group of students. These findings are similar to Houston's (1994) results, which also reported a positive relationship between highly achieving students' achievement and their negative attributional style. Because we collected data, including information regarding examination performance, from the students who passed the midterm exam, it is not possible to evaluate whether those who did and those who did not participate in the present study differed from one another in any systematic ways (regarding motivation to perform well in the course or prior knowledge). Replication of the study with a different sample would enable examination of the generalizability of the findings. Also, it may be important to examine performance in other domains to explore the generalizability of these findings for other task domains. We are also aware that we have excluded other important variables from our predictive model, such as students' emotions, goal orientations or learning strategies, which may have influenced our results. Further research should address these issues.

Both prior academic experience and negative attributional style are important factors in learning activities. Assessing students' prior academic performance and attributional style, researchers can obtain valuable insights into individuals' personality traits and subsequent performance. Students may be unaware of their prior academic achievement and attributional style, and thus hold false beliefs about themselves. Our findings provide further evidence that both prior academic performance and attributional style have positive and complementary consequences for performance and should be taken into account in instruction.

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