



Empirical study

Motivation and coping with the stress of assessment: Gender differences in outcomes for university students



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ABSTRACT

The main objectives of the present research were to test a conceptual model linking motivational processes involved in coping with the stress of university assessment, and to examine gender differences in these processes. Self-determined motivation was hypothesized to predict coping strategies and the response to assessment-related stress, and coping was hypothesized to play a considerable role in short- and long-term outcomes of assessment. We examined this model using multiple group path analysis. In Study 1 (N = 265), music students' use of engagement-coping strategies led to stronger musical career intentions, while disengagement-coping strategies led to weaker intentions. In Study 2 (N = 340), students' increased use of engagement coping, and decreased use of disengagement coping strategies led to higher grades, higher positive affect and lower negative affect. In both studies, engagement and disengagement-coping were predicted by autonomous and controlled motivation, respectively. Motivation also indirectly predicted academic outcomes through stress appraisal and coping. While women experienced higher levels of stress, men were more negatively affected by the use of disengagement-oriented coping. Gender differences were also found on the links between engagement-oriented coping and outcomes. These results fill an important gap in the literature regarding gender differences in the outcomes coping in education, as well as contributing to a better understanding of the processes linking motivation, coping and academic outcomes.

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1. Introduction

Men and women tend to react differently to stress, women being more likely to perceive events as stressful. Yet, in many educational domains, women tend to outperform men, and to show greater intentions to persist at university, than men (Smith & Naylor, 2001; Voyer & Voyer, 2014). What, then, can explain these differences? At university, markers of performance derived from high-stakes assessment are often important determinants of short-term and long-term cognitive and affective experiences of students. When faced with stressful assessment situations, students use strategies with varying levels of effectiveness to attempt to cope with them. Some strategies lead students to study and work toward their goals effectively, deal with the stress of

assessment, and achieve positive outcomes, while others lead students to more ineffective study strategies, and maladaptive behaviors such as procrastination and avoidance. The predictors of coping have been the subject of a vast research literature. Research has demonstrated that coping effectively is important for performance and persistence, and that motivation is strongly connected to the kinds of coping strategies people use in evaluation-salient circumstances. Yet there is little conceptual understanding of how motivation, coping, and assessment outcomes are connected.

A large body of evidence has suggested that men and women differ in the way they engage and cope with stressors (Tamres, Janicki, & Helgeson, 2002), including at school. Two recent meta-analyses of more than 400 studies including students from primary school through to university have indicated that women now outperform men in all areas of education, including mathematics (Richardson, Abraham, & Bond, 2012; Voyer & Voyer, 2014). Furthermore, Smith and Naylor (2001) have found with a sample of more than 400,000 university students, that female students are

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both more likely to display long term persistence in their chosen academic area than male students, and that persistence for females was significantly less influenced by their grades. Gender differences may also exist in the degree to which males and females benefit from different coping strategies at university (Tamres et al., 2002), but this line of inquiry has not been substantially pursued. In sum, to some extent, female and male students seem to experience short-term and long-term university outcomes differently; these differences may lie in their ways of coping with university-related stress.

In the present research, we aimed to more deeply understand motivation, coping with the stress of university assessment experiences, and the impact of coping on short-term performance and affective outcomes, as well as longer-term behavioral intentions to pursue a career in one's chosen area of study. We also aimed to investigate gender differences in light of the evidence that these may be critical in understanding the relationships between these factors.

1.1. An integrative model of motivation and coping in academic settings

This research is grounded in the self-determination theory (SDT; Deci & Ryan, 1985; Ryan & Deci, 2000a) and coping perspectives (Lazarus & Folkman, 1984). Ntoumanis, Edmunds, and Duda's (2009) integrative conceptual framework of motivation and coping is especially helpful in understanding how motivation regulations, stress and coping can explain behavioral and psychological outcomes in healthcare settings. Evidence suggests that Ntoumanis et al.'s model is generalizable to educational outcomes and may be an effective way to understand motivation and coping in relation to university assessment. As such, we propose a modified version of Ntoumanis et al.'s model, adapted to educational settings. This adapted model has three main components. First, motivation regulation (autonomous versus controlled motivation) is hypothesized to have an impact on stress appraisals in evaluative contexts. Second, motivation regulation and stress appraisals in turn lead students to use different coping strategies to face the stress of assessments. Third, the types of coping strategies used are expected to play an important role in the affective, cognitive, and academic experiences of students facing assessment and examinations. Research supporting the relationships in this model is presented in the following sections.

1.2. Motivation, stress, and coping

Coping refers to the actions and thoughts people use to face a situation that is perceived as threatening or stressful (Folkman, 1984; Folkman & Lazarus, 1985; Lazarus & Folkman, 1991). Coping is one of the more proximal processes that predicts psychological and behavioral responses to stress (Ntoumanis et al., 2009). Hundreds of coping strategies can be identified that can be categorized in a limited number of higher-order categories (Skinner, Edge, Altman, & Sherwood, 2003). Carver and Connor-Smith (2010), Connor-Smith, Compas, Wadsworth, Thomsen, and Saltzman (2000), and Connor-Smith and Flachsbart (2007) have further emphasized that the distinction between engagement and disengagement coping strategies might be the most important. Engagement-oriented coping responds to stressful events by using strategies such as planning and positive reinterpretation, while disengagement-oriented coping includes strategies such as disengaging, denial, and blame (Carver, Scheier, & Weintraub, 1989). Research has agreed that the effectiveness of the various coping strategies is context-specific (Folkman & Moskowitz, 2004). No individual coping strategy is effective in all situations—the

effectiveness of a specific coping strategy depends on its suitability to the stressor (Lazarus & Folkman, 1984).

Coping processes are also thought to be influenced by individuals' motivational orientations in a given situation (Lazarus & Folkman, 1991; Ntoumanis et al., 2009). SDT accounts for the different types of motivational orientations that may impact coping processes. The potential of SDT in this context lies in its strong explanatory power in terms of engagement, persistence, and success in a given activity, as well as the psychological consequences of engaging in this activity. SDT proposes that behavioral regulation ranges on a continuum from controlled (e.g., external, introjected) regulation to more autonomous (e.g., identified, integrated, intrinsic) regulation (Ryan & Deci, 2000b). At the controlled end, behavior is not undertaken for its own sake, but is considered as the means to an external or internal end (e.g. to get a reward, to avoid a punishment, or to relieve internal feelings of guilt). At the autonomous end, behavior is undertaken for its own sake (e.g., for the inner enjoyment, excitement, and interest that is inherent to the learning activity).

Motivation influences coping strategies by regulating the appraisal or experience of stress (Ntoumanis et al., 2009). In turn, motivation and stress appraisals lead to distinct coping responses. Students with autonomous motivation are more likely to use more engagement coping strategies, such as planning (Amiot, Gaudreau, & Blanchard, 2004; Thompson & Gaudreau, 2008), because their behavior is perceived to be initiated and caused by the self, and they thereby feel capable of influencing the outcomes. Students with controlled motivation are more likely to use disengagement coping strategies, such as using distraction, to avoid thinking about an important examination (Amiot et al., 2004; Schellenberg & Bailis, 2016), because the outcomes of their behavior are perceived to be determined by external influences.

1.3. Motivation, stress, and coping at university

The aforementioned research demonstrates that motivation predicts stress and coping. There is mixed evidence for these relationships in relation to short- and long-term outcomes of assessment, or to academic adjustment more broadly defined, and no research to date has integrated all of these factors in a single empirical model. This section presents evidence supporting the components of our model with three long- and short-term academic outcomes: vocational intentions, achievement, and affect. Examining students' intentions is essential because students are required to make academic choices according to their future vocational intentions early on. Past research has shown that future intentions of students are a key educational outcome that is related to other academic consequences, such as achievement and dropout (Bong, 2001; Otis, Grouzet, & Pelletier, 2005; Vallerand, Fortier, & Guay, 1997). In addition, long-term academic and career goals in adolescence are predictive of career attainment in mid-adulthood (Schoon, 2001), and have been related to domain-specific achievement (Schoon, 2001; Smith & Naylor, 2001; Titus, 2004). Positive and negative affects have also been shown to be an integral part of academic adjustment (Chemers, Hu, & Garcia, 2001; Gillet, Vallerand, Lafrenière, & Bureau, 2012; Zuckerman, Kieffer, & Knee, 1998).

Several studies have found that engagement and disengagement coping were predicted by intrinsic and extrinsic motivation, respectively (Amiot et al., 2004; Moneta & Spada, 2009). Motivation has been linked directly with academic outcomes, such as achievement, persistence, and positive affect (Ryan & Deci, 2000a; Taylor et al., 2014; Vallerand et al., 1997). Two experiments, for example, have demonstrated the impact of autonomous versus controlled motivation on assessment outcomes. In the first (Amabile, 1979), college art students painted less creative, and less

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