Perceived Control and Treatment Interventions in Competitive Achievement Settings: Effects for Students with Relinquished Control and Fit-Focused Secondary Control

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A thesis submitted to the Faculty of Graduate Studies of

The University of Manitoba

in partial fulfilment of the requirements of the degree of

MASTER OF ARTS

Department of Psychology

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Acknowledgements

I would like to express my gratitude to the many people who have made this thesis possible. First, I would like to thank my family who have unfailingly supported all of my academic endeavours, and for their encouragement throughout the process. I am also indebted to my committee members, Judy and Rod, who have provided me with many research tools, valuable insight, and instruction along the way. Thank you to my "family" from the Emotion, Motivation, and Control (EMCOR) laboratory: Steve and Loring, who were always willing and able to set time aside to help me with any issue big or small; and to Jeremy, who has been a second mentor to me, providing continual guidance in my graduate program, and providing helpful feedback and analytical expertise. I would also like to thank the Social Sciences and Humanities Research Council and the University of Manitoba for supporting me financially throughout my Master's program. Finally, I would like to extend my appreciation to my advisor, Ray, whose mentorship, expertise, patience, support, and advice throughout my graduate program journey has been invaluable.

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Abstract

According to Morling and Evered's (2006) Fit-Focused model of secondary control, an individual can adapt to adverse circumstances by *accepting* the situation and *adjusting* the self. The present study examined this theory in a competitive achievement setting to determine whether vulnerable students who relinquish academic control (high acceptance/low adjustment beliefs) benefit from an Attributional Retraining (AR) treatment intervention compared with a Stress Reduction (SR) treatment. Based on an 8-month quasi-experimental treatment study, a priori *t*-tests were used to test the hypotheses within an Adjustment (low, high) x Treatment (AR, SR) Analyses of Covariance experimental design for individuals high in failure acceptance. Findings revealed that AR (versus SR) facilitated higher long-term learning-related affects and academic performance for relinquished control students. The findings reveal AR's strategic utility for assisting vulnerable individuals who lack Fit-Focused SC, as well as provide empirical support for Morling and Evered's (2006) Fit-Focused model.

Keywords: Fit-Focused secondary control, Attributional Retraining, acceptance, adjustment, relinquished control, achievement motivation, university students

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Introduction

How often do individuals find themselves in circumstances where they fail despite considerable effort, strategy, and course of action to achieve an important goal? For some, failure may be a rare occurrence, but for others it may be experienced more often. Some individuals have the capability to "bounce back" quicker from unanticipated failures by using various psychological explanations to make sense of their failure and attain control over it (e.g., blaming others, blaming environment, or reasoning it was not meant to be). Nevertheless, failure outcomes occur ubiquitously, and how individuals adapt, cope, or engage in perceptions of control to deal with such unwarranted circumstances is worthy of deeper study.

Imagine a bright, motivated university student who has worked hard to complete all but one of the requirements for graduate school. To ensure entrance into a desired psychology program, she must perform particularly well on the Graduate Record Exam (GRE). After many months of hard work, seeking mentorship and support, engaging in good study strategies and exam preparation—all things that have led to academic success in the past—the student fails the examination. She attempts the exam two more times before the program application deadline and is still unable to achieve the required score for admission into the graduate program.

In this illustration, the student is bound to feel a loss of control over her unexplained failure, her future goals, and ultimately her ability and self-concept as a student. As a next step, the student could (1) continue studying and rewrite the GRE for the following year's application. Alternately, she could (2) accept the failure and adjust her goal of getting into this particular graduate program. Or worse, she could (3) withdraw from university and view herself as unfit to be a graduate student.

According to control theory, this dilemma reflects challenges to the student's perceived control in a low-control circumstance. Option 1 initiates what is called primary control (PC), since the student missed the deadline, but can choose to alter the situation (e.g., change plans, pursue a job, reapply next year). Control theorists, Rothbaum, Weisz, and Snyder (1982), introduced a dual-process model of control where one's acting to influence external realities is called PC, while going with the flow and fitting in with the environment is considered secondary control (SC). Option 2 suggests a combination of two kinds of SC (acceptance and adjustment) which is more adaptive than either component alone, according to Morling and Evered's Fit-focused SC theory (2006). Finally, Option 3 suggests that the student relinquishes control, or shows "learned helplessness", where her repeated failure is not perceived as contingent upon her efforts and her consequent behaviour depicts a seemingly helpless individual (Abramson, 1980).

Achievement environments, like the one discussed above, provide an ideal setting to study how people deal with failure because they are based on success and failure. In fact, much research has investigated the various antecedents of students' academic performance. In a meta-analytic report, Richardson, Abraham, and Bond (2012) examined correlates of GPA. Motivational factors (i.e., academic motivation, locus of control, self-efficacy) and psychosocial contextual influences (i.e., academic stress, personal goals) are a few of the correlates of GPA (Richardson et al., 2012), that will be examined in this study. These variables, along with academic grades (the gold standard measures in university), allow researchers to effectively study the factors that play a part in students' academic failure.

One possible solution to assist students who may be at risk of poor academic performance is a control-enhancing intervention called Attributional Retraining (AR). Over the last two decades, evidence suggests that AR, which encourages vulnerable students to change the causal attributions they ascribe to failure, produces impressive achievement outcomes (see Haynes, Perry, Stupnisky, & Daniels, 2009 for a review). The literature consistently reveals AR's positive

effects on student's motivation, academic-related affect, and performance (Perry, Stupnisky, Hall, Chipperfield, & Weiner, 2010; Ruthig, Perry, Hall, & Hladkyj, 2004).

Although there is a wealth of evidence documenting AR's benefits for struggling students, compared to students who were not administered AR, limited research exists that compares AR to alternative competing achievement interventions. Hence, this study examines the impact of two treatment interventions, AR and Stress Reduction (SR), on vulnerable students' learning-related affective dispositions and academic performances. Two unique student groups are the focus of the study: (1) students high in both acceptance and adjustment SC based on Morling and Evered's (2006) theory, and (2) students high in acceptance SC, but low in adjustment SC.

Review of the Literature

Control Theory

The desire for control that people have over their environment has been a driving impetus for the growing body of perceived control literature over the last five decades. Julian Rotter (1966) proposed perceived control is an individual difference variable whereby humans possess relatively stable differences, depending on whether they consider event outcomes within or outside their control. He defined this as having an *internal* or an *external locus of control*. Since its introduction, the perceived control construct has acquired various definitions, labels, and nuances (see Skinner, 1996, and Morling & Evered, 2006, for reviews).

Advancing the perceived control literature, Seligman (1975) argues that psychosocial and behavioural deficits occur when individuals experience events outside of their control. He posits that individuals who learn that expected outcomes are not contingent upon their behaviour experience a perceived loss of control and consequently exhibit helpless behaviour (learned helplessness). Abramson and colleagues (1980) explain the incongruent nature of why some individuals in uncontrollable scenarios are rendered helpless while others are able to bounce

back. They stress the importance of perceived control where individuals attribute internal, stable, and global causes to events in their lives (e.g., failing grades). Their reformulated model reflects Bernard Weiner's attribution theory of motivation and emotion (Weiner et al., 1971) because it suggests "locus of causality" (internal/external) and "stability" (stable/unstable) dimensions, which are germane to Weiner's theory, explain why helplessness varies in temporality and across contexts.

Where Rotter proposed a one-dimensional construct of locus of control for achievement motivation, Weiner (1985a) separates locus and control as distinct dimensions of a particular outcome or event. He also introduces "stability" as another dimension (e.g., whether the outcome is temporary or enduring). He argues that individuals' phenomenological ascriptions for causes vary in terms of controllability, stability and, internal or external loci. Also, where Rotter proposes that individuals with an internal locus should have control, Weiner illustrates scenarios that are both internal and uncontrollable for individuals (e.g., math aptitude).

Perceived control is central to other prominent theories including Bandura's (1977) *Self-efficacy Theory* and Wortman and Brehm's (1975) *Reactance Theory.* Substantial literature focuses on the negative consequences ensuing from a loss of control. Wortman and Brehm (1975) argue that individuals who endure an uncontrollable event respond with increased motivation and desire to perform in order to return to a controllable state. However, the more perceived uncontrollable events experienced, the more likely that individual is to exhibit a state of helplessness.

Related investigations reveal that a loss of control predicts poor psychological and physical well-being (Chipperfield, Perry, & Menec, 1999; Oprendek & Malcarne, 1997; Thompson, Sobolew-Shubin, Galbraith, Schwankovsky, & Cruzen, 1993), depression (Peterson, Seligman, & Vaillant, 1988), and anxiety and stress (Hall, Chipperfield, Perry, Ruthig, & Goetz, 2006; Lazarus & Folkman, 1984; Thompson, Collins, Newcomb, & Hunt, 1996). Longitudinal

studies also link perceived control to health outcomes (Chipperfield and Greenslade, 1999; Schulz & Heckhausen, 1996), whereby perceived control predicted mortality within a 12-year period (Chipperfield, 1993; Chipperfield et al., 2012). Hence, loss of perceived control is interconnected with a long list of harmful ramifications.

Alternately, research on the effects of helplessness also reveals people have a resilient tendency to refrain from relinquishing control and instead seek to stay "in control". Often relinquishing control can be characterized by passive and withdrawing actions (i.e., inward behaviours). Rothbaum and colleagues (1982) have advanced control theory by proposing some behaviours, such as a student dropping a course, are a result of attributing causes to external forces (i.e., chance, powerful others) when perceived control over a situation is low. They argue that these inward behaviours represent attempts people make to seek control by downgrading their expected success, placing a greater effort in chance events, or relying on powerful others, for example.

Rothbaum et al. (1982) propose two kinds of control: *primary control* (PC) where effort is exerted to change the environment to suit one's needs (e.g., student hires a tutor to change his performance), and *secondary control* (SC) where one seeks control by means other than influencing and acting on the environment, but by aligning oneself with it (e.g., student devalues the importance of his performance outcome). SC refers to "going with the flow" and fitting in with the environment. Since the development of Rothbaum's two process model of perceived control, ample literature documents the benefits of PC, yet much less evidence shows the benefits of SC.

Heckhausen and Schulz (1995) present PC striving throughout the lifespan and reason that, in terms of functionality, PC serves a greater purpose than SC because individuals can manipulate their external reality to have their needs met. However, their *Life-Span Theory of Control* emphasizes that mitigating circumstances, such as aging, that alter PC potential may

require modification of PC goals. Consequently, if PC strategies are not ideal to accomplish a goal, SC strategies[1] are used to assist in disengaging from the unobtainable goal. Some examples of SC strategies include downgrading of expectations or task importance, accepting limitations, or perceiving benefits from an otherwise aversive experience (Chipperfield et al., 1999).

Other studies that examine perceptions of PC support the findings that it has adaptive primacy over SC (Thompson, Nanni, & Levine, 1994; Thompson et al., 1996; Weisz, McCabe, & Dennig, 1994). The theoretical premise behind the primacy of PC dovetails with Heckhausen et al.'s (1995) theory because PC is the most adaptive and primal form of sustaining control in life while SC plays a backup role. However, adaptive possibilities related to SC in situations when PC is restricted have also been explored and add to the ongoing specification of the SC construct.

In low-control circumstances, SC can be beneficial and in some ways can, in fact, act as a coping strategy. For example, women diagnosed with early stage breast cancer and who use SC strategies report having lower distress (Carver et al., 1993). Also, positive psychosocial outcomes resulting from SC beliefs are linked to children dealing with homesickness (Thurber & Weisz, 1997), depression in parents (Langrock, Compas, Keller, Merchant, & Copeland, 2002), children and adults with life-threatening illnesses (Jaser et al., 2005; Langrock et al., 2002; McQuillen, Licht, & Licht, 2003), and for older adults dealing with health problems (Bailis, Chipperfield, & Perry, 2005; Chipperfield et al., 1999; 2012). In addition, Thompson et al. (1998) found appearance-related changes become less controllable as people age and that individuals revealed lower emotional distress when they had limited PC but high SC.

[1]Both definitions of perceived control (i.e., beliefs and control strategies) have been mentioned. For clarity, control beliefs refer to the belief that people have the ability to obtain a desired outcome, whereas control strategies refer to one's engagement or mental strategy in goal-oriented behaviour to obtain control (Thompson & Schlehofer, 2007; Chipperfield et al., 1999). Thus, you can have beliefs about being in control (e.g., "I believe I can get better grades") and you can have control strategies (e.g., Study more).

Secondary Control: Acceptance, Adjustment, and Fit-Focused

Morling and Evered (2006) define SC as *fit-focused*, encompassing two components: accepting the environment and adjusting the self to align with it. They argue individuals engage in SC when they can adjust some internal aspect and accept their circumstance the way it is. Thus, "fit" occurs when individuals modify their internal attitudes, preferences, and beliefs to help monitor their lack of control (e.g., seeing the bright side), and this adjustment enables them to align with reality. Morling and Evered (2006) explain that by accepting, people cognitively engage in the evaluation of their circumstance and the degree of control they have over it (e.g., acknowledging their inability).

Adding to this perspective, Skinner (2007) contends Morling and Evered's (2006) model of Fit-Focused (FF) SC should be labelled "accommodation" and not be tied to control focused SC. In response, Morling and Evered (2007) agree FF-SC does require accommodation, but consider it intertwined with control and therefore cannot easily be parted from it. They argue both control and fit are both needed to reflect the intricate SC construct. Morling and Evered and Rothbaum and colleagues' theories posit that adjustment *and* acceptance in these terms need to be present for it to be considered SC and for it to have adaptive consequences.

Research investigating acceptance in very low control circumstances (where participants were HIV inmates) revealed acceptance alone was closely aligned to helplessness (Thompson et al., 1996). Their findings show SC beliefs did not reduce psychological distress for individuals with either high or low PC. Thompson and colleagues (1996) reason that in such low control settings, the disadvantages associated with accepting one's outcomes become very evident for those with limited external control. This evidence suggests that in uncontrollable circumstances, having acceptance SC without adjustment may be maladaptive.

Whereas Morling and Evered (2006) align with Rothbaum's two process model of perceived control, there are others who do not. Heckhausen et al. (1995), for example, consider

SC as the disengagement from pursuing a goal because it is not obtainable. They propose PC striving involves investing more energy, work, and resources to obtain their goals (labelled *selective primary control*) or they seek resources or assistance to attain these goals (labelled *compensatory primary control*). However, Heckhausen defines SC strategies as actually promoting or supporting PC. In other words, when threatened with failure, SC strategies sustain motivation to a certain degree and compensate for negative outcomes.

Empirical research examining the components of acceptance and adjustment SC, as well as exploring FF-SC in less threatening circumstances, is lacking. Underpinning Morling and Evered's (2006) FF-SC construct, Perry et al. (2012, in progress) present two longitudinal studies that assess FF-SC in challenging achievement settings. After one university semester, students in competitive learning conditions who endorse FF-SC beliefs have more favourable cognitive, affective, and motivational resources, as well as more favourable long-term achievement outcomes compared to students who have a relinquished control frame of mind. Here, comparisons across groups were made between students who endorsed FF-SC (acceptance *and* adjustment beliefs) compared to students who relinquished control by not endorsing either acceptance or adjustment beliefs (SC deficient). Those who benefitted the most engaged both acceptance and adjustment SC.

Perry et al. (2012, in progress) expand the SC research literature by (1) creating an elegant measure to examine acceptance and adjustment beliefs via cluster analysis and (2) applying this theory in a competitive learning environment. Furthermore, the authors propose that failure-prone students with high acceptance and low adjustment may be reasonable candidates for *Attributional Retraining* (AR) which promotes adaptive explanatory thinking by encouraging controllable attributions for academic performance (Boese, Stewart, Perry, & Hamm, 2013; Perry et al., 2010). Since AR is advantageous for at-risk students, and since acceptance alone can be maladaptive (Thompson et al., 1996, 1998; Halliday & Grahm, 2000),

failure-prone individuals characterized by high acceptance and low adjustment may be helped by AR.

In turn, Richardson et al. (2012) suggest that investing in theoretically-based interventions (e.g., ones that modify cognitive/self-regulatory processes) might be both important and necessary to facilitate academic achievement. Accordingly, the present study examines the impact of a cognitive and an affective treatment intervention on SC students' affective and academic achievement outcomes. As an affective intervention, the Stress Reduction (SR) treatment is implemented because academic-related emotions have been shown to play an important role for students with high SC beliefs in adverse learning settings, specifically when compared to students with low SC beliefs (Hall et al., 2006). As a cognitive intervention, AR is based on Weiner's (1985a, 2006, 2012) *attribution theory of motivation and emotion* and was designed to increase control beliefs and/or reduce uncontrollable beliefs for vulnerable individuals. These treatments will be discussed more thoroughly in the section titled "Treatment Interventions, SC, and a Low-Control Environment: An Interactive Examination".

Attribution Theory

The ways in which humans make sense of the events around them are at the root of attribution theory. Heider's theory (1958) addresses how people ascribe causes of behaviour that are either internal or external to the individual. Advancing Heider's theory, Weiner and colleagues (1972, 1985a, 1985b) developed a paradigm that substantially enriched the theory. Their theory proposes that human beings regularly encounter events in their environments where they engage in causal analysis to explain important, negative, or unexpected outcomes. Moreover, individuals also want to promote successful outcomes or alter failure outcomes. The nature of making causal attributions can have influential consequences for individuals' subsequent motivation and behaviours (Weiner, 1985).

Weiner suggests three dimensions are used to describe causal attributions, including affective, motivational, and cognitive consequences. A strong emphasis for Weiner's (1985a) theory stems from the ascriptions people make for their failures and successes in achievement settings. For example, students who explain their poor performance due to inability (causal dimensions: internal, stable, uncontrollable) are expected to be far less motivated for upcoming exams knowing that their personal inability is part of who they are and will not change. However, students who explain their poor performance due to bad strategies (causal dimensions: internal, unstable, controllable) can remain motivated for future exams because they consider their strategy within their control.

According to Weiner's theory, there is a sequence that results whenever a person encounters an important, unexpected, or negative outcome. Following one such event, an individual begins a causal search to understand why the outcome resulted. For example, after receiving poor performance feedback, a student may feel disappointed, sad, and even angered by the outcome. Weiner (1985a) posits that such an undesired outcome-dependent affect will then cause the student to search for the causes of the event so that changes can be made to prevent similar negative outcomes in the future. However, what happens if students repeatedly perform poorly even after modifying their strategy, much effort, and exhausting all other options that fall on the internal, unstable, and controllable dimensions? It is in these trying circumstances that this study will examine, in part, by teaching students how to attribute their causes to changeable ones.

Attributional Retraining (AR)

Decades of empirical research indicate the treatment intervention designed to modify causal attributions, referred to as Attributional Retraining (AR), is associated with pronounced improvements in achievement and psychosocial outcomes (Perry et al., 2010, 2014). A number of studies have shown that encouraging individuals to use unstable attributions for failure outcomes leads to improved expectancies for future success, better test performances, and fewer

drop-outs (Wilson & Linville, 1982). In fact, attributional treatments that encourage internal and controllable attributions improve test and exam marks, GPAs, and the exam pass rate for students by approximately 20% over an academic year (Jesse & Gregory, 1987; Noel, Forsyth, & Kelley, 1987; Van Overwalle & Metsenaere, 1990).

In recent research, interventions involving academic skill and self-management were most effective in bolstering course grades and GPAs compared to interventions involving socialization (Robbins, Oh, Le, & Button, 2009). Further, in Richardson and colleagues' (2012) meta-analysis examining correlates of GPA, they show that social cognitive theory (e.g., attribution theory) and goal theory are two important theoretical frameworks for guiding research in the future. Interventions for academic indicators that focus on skill and self-change, and are grounded in social cognitive theory seem to have considerable merit.

In fact, many studies highlight the beneficial value of AR for students with at-risk profiles (e.g., low perceived expectancy for success, external locus of control). Specifically, students with an external locus of control (Menec et al., 1994), who have poor academic performance (Perry et al., 2010), are overly optimistic (Haynes, Ruthig, Perry, Stupnisky, & Hall, 2006), have low perceived academic control (Perry, Hechter, Menec, & Weinberg, 1993), are high in primary academic control but low in secondary control (Hall, Perry, Ruthig, Hladkyj, & Chipperfield, 2006), and are low in cognitive elaboration (Parker et al., 2013) are all amenable to the AR treatment.

Traditionally, AR studies have typically used four sequential phases to administer the treatments: (1) an initial assessment, (2) the AR induction, (3) the AR consolidation, and (4) the post-AR assessment. In phase 1, a *diagnostic assessment* for all participating students allows a pre-AR evaluation via questionnaire based on a multitude of cognitive and psychosocial variables (e.g., perceived academic control). The assessment takes place within the first month of university and is used to differentiate between students adaptation from high school to university

(discussed in detail in the next section). In the past, the AR studies have varied: whether the initial assessment occurs simultaneously to, or following, a process called *causal search* activation which encourages participants to engage in a cognitive causal search where they try to identify the causes for their academic successes and failures (Haynes et al., 2009).

Following the causal search activation phase, the AR *induction phase* (phase 2) consists of giving the treatment group information on the benefits of adopting controllable attributions (e.g., "I need to change my study strategy") and devaluing uncontrollable attributions (e.g., "it was an unfair exam"). The AR induction has been administered through different methods, including videotape (Menec et al., 1994; Struthers, Menec, Schonwetter, & Perry, 1996; Stewart et al., 2011), informational hand-outs (Perry & Struthers, 1994; Ruthig et al., 2004), and multiple media presentations (Hall, Perry, Ruthig, Haynes, & Stupnisky, 2005).

Next, the AR *consolidation phase* (phase 3) helps to solidify the AR content and is therefore instrumental to the treatment. Participants are asked to carefully consider and think deeply about the AR content and to summarize the information by explaining how it is applicable in their own lives. The role of the consolidation stage is to ensure the information content is understood and processed by the student. In past studies, the consolidation has taken the form of aptitude tests, group discussions, take-home information hand-outs, and writing assignments (Haynes et al., 2009; Hall, Perry, Chipperfield, Clifton, & Haynes, 2006; Perry et al., 2010, Stewart et al., 2011). Finally, in the *post-AR assessment* phase (phase 4), students from both the experimental and control groups fill out questionnaires approximately 4 or 5 months after the AR induction phase.

SC and Low Control Settings

In the perceived control review section, outcomes from low control circumstances were discussed with respect to life threatening illness, incarceration, age-related health problems, and educational contexts. Educational settings, in particular, can often involve commonplace learning

conditions where loss of control can have pernicious effects on students' cognitions, emotions (Daniels et al., 2009), motivation, achievement outcomes (Stewart et al., 2011), and psychological and physical health (Ruthig, Haynes, Stupnisky, & Perry, 2009).

Sadly, nearly 20-30% of students who begin their first year at university drop out before the second year (Barefoot, 2004; Feldman, 2005; Stewart et al., 2011), illustrating the many difficulties faced by these undergraduates. Moreover, on average only 57% of undergraduates graduate within a six year span (National Center for Education Statistics, 2010; Perry, Hladkyj, Pekrun, Clifton, & Chipperfield, 2005; Perry, Hladkyj, Pekrun, & Pelletier, 2001). Thus, high school-to-university transitions represent a low-control period infused with novel and unpredictable achievement occurrences such as failing a test. According to Perry (2003), many capable students encounter a *paradox of failure* where they experience failure and subsequently withdraw from their courses or drop out of university.

Hall and his colleagues (2006) found that for unsuccessful students, having both primary and secondary control was more optimal in improving their motivation and performances. Their research supports the positive implications of both SC and PC versus PC alone. Furthermore, Hall et al. (2006) found for unsuccessful students (high in PC and low in SC), those who received AR reduced maladaptive attributions, and improved academic achievement by the end of the academic term.

Surprisingly, to date very few studies have considered SC as a potentially adaptive factor for individuals in achievement settings. They were also the first to demonstrate the efficacy of AR in enhancing academic outcomes for high PC/low SC students. However, their research only looked at students with low-initial performances and with high PC, neglecting to examine AR's effects on individuals who have low PC beliefs and low adjustment beliefs. As a result, their findings exclude such students who are arguably the *most* in need of treatment.

Both Hall et al.'s (2006) studies examined SC based on Rothbaum et al.'s (1982) SC construct involving interpretive control (i.e., "Regardless of what my grades are, I try to see and appreciate how my experience can make me a stronger person overall"), vicarious control (i.e., "Knowing that other students have the same grades as I do gives me a comforting feeling of having something in common with others"), illusory control (i.e., "I seem to have been 'born lucky' because I often do better by blindly guessing on multiple-choice tests"), and predictive control ("There is no point thinking about what the future may bring"). Therefore, their measurement of SC does not consider the acceptance and adjustment components that individuals may be employing to adapt to their low control circumstance (e.g., Fit-Focused).

Furthermore, as components of SC, if acceptance and adjustment are key ingredients in the FF-SC theory, they need to be considered separately to determine differences among student groups that vary in them. Perry et al.'s (2012; in progress) labels have been adopted to describe these groups. Students who endorse high acceptance *and* high adjustment beliefs will be referred to as the *Fit-Focused SC* group. In contrast, students high in acceptance and low in adjustment beliefs can accept the adverse ramifications of their lack of control (e.g., poor course performance), but are unable to adjust to the situation. These students are likely to feel out of control and helpless, and are referred to as the *relinquished control* (RC) group. Hence, the two study groups of interest are characterized by high acceptance SC and low versus high adjustment SC as delineated by Perry et al. (2012; in progress).[2]

The goal of the present study is to facilitate academic adaption for the RC group. Whereas Hall et al. (2006) examined high PC students varying in low and high SC, this study assessed vulnerable individuals with lower PC. These at-risk individuals were identified by

[2]For the present study we are not interested in examining university students low in acceptance beliefs (likely lacking in SC). Individuals with low SC and potentially high PC are not relevant to the study because they would not be at risk of poor academic performance and typically would not benefit from AR. Students characterized by low acceptance and high adjustment beliefs may be an interesting group to compare in the future.

removing individuals scoring 1 standard deviation above the median for perceived academic control from the analyses (Perry et al., 2001). This procedure excludes students who do not endorse high PC beliefs. Since the aim was to examine students who hold acceptance and adjustment beliefs in novel and competitive transitions, removing those who endorse high PC allows us to focus on those with varying levels of SC and lower levels of PC.

Treatment Interventions

To date, there is a paucity of empirical evidence comparing the effects of AR with alternative achievement-related treatments in order to thoroughly validate AR's treatment efficacy. This study examines two academic-related interventions; (1) Attributional Retraining (AR), and (2) Stress Reduction (SR), for students with high acceptance and varying levels of adjustment SC. The SR treatment involved students receiving information content on how to reduce stress (i.e., lowering negative affect). The treatment was based on material taken directly from the Introductory Psychology textbook used in the students' course used as a treatment condition to compare with the AR treatment. The AR treatment has a more cognitive focus (causal attributions), whereas the SR treatment has a more affect focus (reducing stress, and by extension, other negative affects).

Conceivably, the RC students were expected to benefit more from the AR treatment than the SR treatment because AR involves a cognitive attributional transformation that also impacts both affective and motivational states. In other words, AR was predicted to help those low in PC and SC (adjustment beliefs) compared to their peers in the SR treatment condition. Although AR is a PC enhancing treatment (encouraging controllable attributions for poor performance; e.g., "I need to apply more effort"), it could also be predicted to help SC adjustment (encouraging personal change in one's self-process about the poor performance; e.g., "I will try to benefit from it"). Thus, AR may endorse controllable attributions for poor performance as well as enhance SC

adjustment in the RC group (high acceptance/low adjustment). Given the abovementioned rationale, two hypotheses emerged:

Hypothesis 1

Compared to the Stress Reduction (SR) treatment, Attributional Retraining (AR) will foster more learning-related positive affects and better academic achievement for the RC students:

1a) *positive* affect: H1 at RC, AR > SR;

1b) *negative* affect: H1 at RC, AR < SR;

1c) post-treatment *test scores*: H1 at RC, AR > SR;

1d) final *course grades*: H1 at RC, AR > SR.

These predictions are based on evidence that AR is positively linked to positive learning-related affects, performance, and negatively linked to negative learning-related affects for *vulnerable* individuals (Haynes, et al., 2009; Perry et al., 2010; Perry et al., 2005).

Hypothesis 2

Compared to the SR treatment, AR will *not* differ in terms of learning-related affects and academic achievement for the Fit-Focused (FF-SC) students:

2a) *positive* affect: H2 at FF-SC, AR = SR;

2b) *negative* affect: H2 at FF-SC: AR = SR;

2c) post-treatment *test scores*: H2 at FF-SC, AR = SR;

2d) final *course grades*: H2 at FF-SC, AR = SR.

For both hypotheses, AR was not predicted to reduce negative affect because, presumably, the SR treatment also lowers negative affect.

Method

Participants

The sample was drawn from the Manitoba Motivation and Academic Achievement (MAACH) program of research which contains psychosocial measures and institutional indicators for 20 cohorts of introductory psychology students (1992-2012, excluding 2002; $N >$ 20, 248). Each cohort comprises data obtained from both first and second semesters. The main goal of the MAACH program is to investigate longitudinal effects of a multitude of psychosocial variables (e.g., perceived control, self-esteem, motivation, etc.), treatment interventions (e.g., AR), and institutional variables on students' cognitions, emotions, motivation, and achievement.

The present study uses the 2011-2012 dataset which has 1,958 university students (approximately 60% female, the majority between 17-20 years old) recruited from multiple sections of a first-year, two semester introductory psychology course with a blended learning format. The blended learning format enabled students to experience both a mix of face-to-face classroom and computer-based online learning methods.

Because a goal of this study is to investigate the impact of AR on students with secondary control, it is necessary to ensure that primary control was not playing a role in AR's impact on achievement and psychosocial outcomes. Thus, students scoring one standard deviation above the median for PC were removed from the study. Furthermore, only students who scored one quarter standard deviation above the median for acceptance SC beliefs were assessed to allow for examination of the RC and Fit-Focused groups (both groups are characterized by high acceptance beliefs). The selection criterion (quarter of a standard deviation) was employed to ensure that this study retained a reasonable sample size with considerable statistical power. These two selection procedures (for PC and acceptance SC) allow for the analyses of a unique group (low control with high acceptance). After performing the PC and acceptance selection procedures, the remaining sample had 144 participants.

Procedure: The MAACH Data Collection

The 2011-12 MAACH data collection involved four stages (see Figure 1 for procedure timeline). Early in October (Time 1) students in their first semester completed a questionnaire in-class as part of a course assignment. The one-hour questionnaire consisted of a battery of self-report questions and each session averaged 200 participants. Following the Time 1 questionnaire, students at Time 2 were randomly assigned to two experimental groups (AR = 67.8%, SR = 32.2%). In March (Time 3), students returned to complete a second in-class questionnaire that was very similar to the questionnaire they completed at Time 1. Finally, in May (Time 4), consenting students' Introductory Psychology test scores and final grades were gathered from their instructors.

Independent Variables

Fit-Focused secondary control (SC) beliefs (Acceptance and Adjustment; Time 1). **S**tudents' acceptance and adjustment secondary control (SC) beliefs were based on Perry et al.'s (2012) Fit-Focused SC scales. The Fit-Focused SC scale beliefs were formed from 15 statements concerning students' experiences, both academic and personal, during their transition from high school to university (see Appendix A). Ten statements were rated on five-point scales ranging from 1 (*strongly disagree)* to 5 (*strongly agree*) and five statements were rated on seven-point scales ranging from 1 (*strongly disagree)* to 7 (*strongly agree*).

Employing Perry et al.'s (2012) SC scales, four scales were identified using Principal Component Analysis (PCA) explaining 57.7% of the variance. Two of the scales, *external forces* and *temporal immediacy* (e.g., "way nature works"; "take one day at a time"; Cronbach's α = .71), formed the higher-order latent construct **acceptance SC**, and the remaining two scales, *meaning-making* and *positive reappraisal* (e.g., "to understand my life as a whole"; "helps me learn about myself"; "try to benefit from it"; Cronbach's α = .80), formed the higher-order latent construct **adjustment SC**. The correlation between the acceptance and adjustment scales,

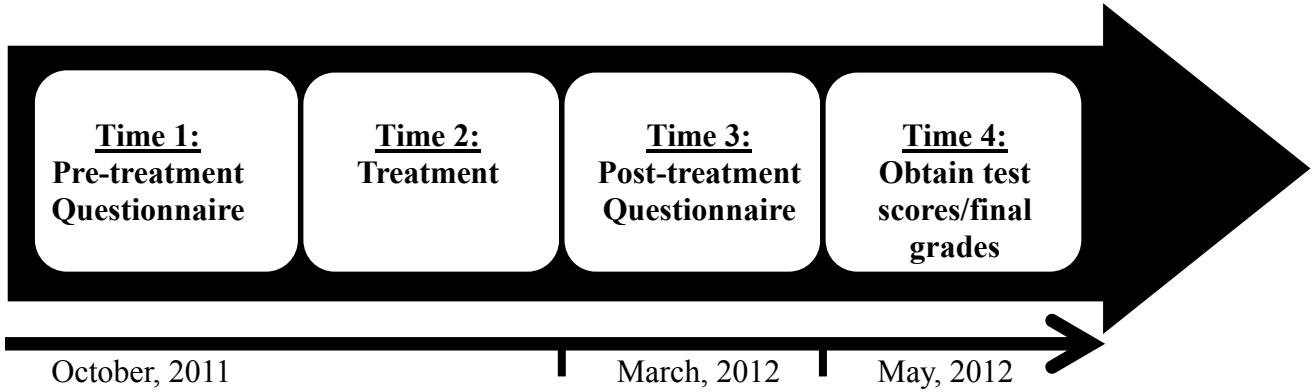

Figure 1. Timeline for the 2011-2012 treatment administrations.

$r(1749) = .360$, $p < .001$, indicates they overlap, but are reasonably separate constructs which supports Morling and Evered's theory (2006). The four groups formed based on PCA analysis, the variance explained, and the acceptance and reliability replicate Perry et al. (2012) findings. Table 1 provides a summary of the main variables in the study. See Table 2 for PCA analyses using Oblique Rotation for SC constructs.

The acceptance SC scale was used as a selection variable to obtain a sample with high acceptance beliefs (see subsequent "Selection Variables" section). The adjustment SC variable was dichotomized into two groups by using an extreme split procedure to select students scoring one quarter of a standard deviation above and below the median for adjustment. Dichotomous indicators that undergo extreme group analyses have been empirically justified as performing as well or even somewhat better than continuous variables (see DeCoster, Iselin, & Gallucci, 2009). Therefore, students selected as being high on acceptance, who score at least one quarter of a standard deviation above the median on adjustment (i.e., high acceptance/high adjustment), comprised the Fit-Focused SC group. Likewise, high acceptance students scoring at least one quarter of a standard deviation below the median for adjustment (i.e., high acceptance/low adjustment) were used to make up the RC group.

Selection Variables

Acceptance SC (October). At Time 1, the 6 items in the questionnaire made up the acceptance scale (Perry et al., 2012, in progress). As previously mentioned, in addition to the primary academic control (PC) variable, acceptance SC was used as a selecting variable to retain only those students who were one quarter of a standard deviation (+ 1SD) above the median.

Primary academic control (October). Also at Time 1, an 8-item scale that examines primary (academic) control (PC) beliefs was used (see Appendix B). The PC scale has been found to have suitable psychometric properties (Cronbach's alpha = .78 and .80, Perry et al.,

Table 1

Summary of the Variables

Measures	No. of items	Anchors		*Ms*	*SDs*	Actual ranges
Independent Variables						
1. Adjustment SC[a]	9	1 = *strongly disagree* 5 = *strongly agree*	α = .80	34.92	8.53	13-59
Selection Variables						
2. Acceptance SC[a]	6	1 = *strongly disagree* 5 = *strongly agree*	α = .70	14.92	3.93	6-27
3. Primary academic control[a]	8	1 = *strongly disagree* 5 = *strongly agree*	α = .70	34.61	3.72	20-40
Covariates						
4. Gender[a]	1	1 = *female* 2 = *male*	–	1.38	.49	1-2
5. High school grade[a]	1	1 = *50% or less* 10 = *91-100%*	–	7.84	1.66	1-10
Treatment Variable						
6. SR vs. AR[b]	1	1 = *SR* 2 = *AR*	–	1.69	.46	–
Manipulation Check Measures						
7. Controllable attributions[c]	2	1 = *not at all* 10 = *very much so*	*r* = .69	14.74	3.81	2-20
8.Stress[c]	2	1 = *never* 5 = *very often*	*r* = .54	7.81	1.53	2-10
Dependent Variables						
9. Positive affect[c]	3	1 = *not at all* 10 = *very much so*	α = .85	18.19	5.96	3-30
10. Negative affect[c]	2	1 = *not at all* 10 = *very much so*	*r* = .73	5.58	3.67	2-20
11. Post-treatment test[d]	1	0 – 100	–	64.90	16.13	15-100
12. Final course grade[d]	1	0 – 100	–	68.63	19.90	1.67-99.88

[a]Time 1 measure. [b]Time 2 measure. [c]Time 3 measure. [d]Time 4 measure.

Table 2

Secondary Control Beliefs Principal Components Analysis with Oblique Rotation

Name	Item Wording	Factor 1 Meaning-Making	Factor 2 Positive Re-appraisal	Factor 3 External Forces	Factor 4 Temporal Immediacy	h^2
MM1	I often get a 'deep down feeling' that I know how the rest of my life is going to go, even if I don't know the details.	**.65**	.20	-.02	-.07	**.46**
MM2	Coincidences that I have experienced often seem to have had a kind of strange or mysterious personal meaning for me.	**.80**	-.03	.23	.05	**.70**
MM3	When bad things happen to me, I make an intentional effort to understand how they fit into the rest of my life.	**.68**	.25	-.06	.02	**.53**
MM4	Random events and chance happenings often seem to me to be like 'hints' or 'clues' for me to use to understand both who I am and my life as a whole.	**.80**	.02	.23	.06	**.69**
MM5	Based on my experience, negative events in my life, or events that I would not have chosen for myself, in the end have made me a better person.	**.65**	.18	-.01	.01	**.47**
PR1	Regardless of what my grades are, I try to appreciate how my university experience can make me a "stronger person" overall.	.16	**.81**	.01	.25	**.75**
PR2	No matter how well I do on a test or in a course, I try to see beyond my grades to how my experience at university helps me learn about myself.	.13	**.77**	.01	.28	**.69**
PR3	Whenever I have a bad experience at university I try to see how I can turn it around and benefit from it.	.25	**.73**	.05	-.04	**.60**
PR4	My academic performance and experience has given me a deeper understanding of my life than could be achieved without this experience.	.08	**.59**	.43	-.26	**.60**
EF1	Much of what happens in our lives is a part of the way nature works.	.11	.20	**.66**	.20	**.53**
EF2	I believe that much in life is determined by fate or chance.	.17	-.01	**.75**	.22	**.64**
EF3	I accept that some people are born to be A+ students, while others have less natural ability, and that there is little I can do to change what I was born with.	-.04	-.02	**.61**	.25	**.44**
TI1	I believe it is better to take "one day at a time" rather than to plan ahead.	.07	.07	.25	**.62**	**.46**
TI2	There is no point in thinking about what the future will bring.	-04	.-.02	.21	**.70**	**.54**
TI3	I try not to worry too much about my long term academic career because things can always change unexpectedly.	< -.01	.21	.13	**.70**	**.55**
	Eigenvalue	**3.95**	**2.14**	**1.62**	**.94**	
	% Variance Explained	**26.34%**	**14.27%**	**10.77%**	**6.29%**	

2001; Perry et al., 2005). The scale ranges from 1 (*strongly disagree)* to 5 (*strongly agree*). Students with PC scores 1 standard deviation above the median were removed to eliminate individuals high in PC.

Covariates

Gender (October). Gender was self-reported at Time 1 and treated as a dummy-coded variable (1 = *female*; 2 = *male*; 60% female).

High school grades (October). Students self-reported their high school grades (HSG), and these were used as a proxy measure of the students' pre-existing aptitude and academic potential (1 = 50% or less, 10 = 91-100%). Research reveals HSG self-reporting is associated with university final course grades, r = .40-.54, and GPAs, r = .52 to .54 (e.g., Perry, et al., 2005; Perry, et al., 2001; Perry, et al., 2010).

Treatment Interventions

Attributional Retraining (AR). The AR treatment induction was administered in two experimental sessions (see Table 3).

Experimental session one (Time 1 and 2, October). At Time 1, the first session involved participants filling out a questionnaire examining various psychosocial variables (e.g. perceived academic control) and academic-related variables (e.g., pride). Students then participated in a *causal search activation* procedure where they were asked to reflect on their last test performance and to provide some of the causal attributions they made for their academic performances. This activity was intended to "prime" students in the AR treatment group to actively receive the treatment information for the *AR induction*.

Table 3

Attributional Retraining and Stress Reduction Experimental Sessions

ATTRIBUTIONAL RETRAINING	**STRESS REDUCTION**
Experimental Session 1	
T1 (October): Self-report questionnaire Causal search activation T2 (October): AR video & consolidation	T1 (October): Self-report questionnaire T2 (October): SR video
Experimental Session 2	
T3 (March): Self-report questionnaire T4 (May): Final grades and test scores	T3 (March): Self-report questionnaire T4 (May): Final grades and test scores

Subsequently at Time 2, participants viewed a video presentation (approximately 15 minutes) concerning academic improvement that can be attained by employing controllable attributions for academic failure**.** The video presentation was based on Weiner's attribution theory (1985, 2012) explaining (1) that people are driven to explain the causes of significant outcomes in life (e.g., poor test performance), (2) these attributions are categorized along two dimensions; locus (internal/external) and controllability (controllable/uncontrollable) that can be expressed in a 4-cell attribution matrix, and (3) generally, students who explain causes in the internal-controllable cell perform better. Finally, participants were asked to think deeply about the AR lesson by summarizing the content of the video they had just viewed (Haynes et al., 2009).

Experimental session two (Time 3, March). The participants returned five months later to complete a questionnaire which was nearly identical to the one administered in the first session.

Stress Reduction (SR). Paralleling the AR treatment, the SR induction was administered in two experimental sessions.

Experimental session one (Time 1 and 2, October). In the first session (Time 1), participants filled out the same questionnaire as the students in the AR condition. At Time 2, the participants viewed a video presentation advocating ways of managing stress and emotions regulation. The presentation advocated confronting stress (rather than avoiding it) and offered a number of strategies, such as: reappraising one's negative thoughts to buffer negative emotions (Ellis, 1977, 1985, 1996, 2001), using humour to reduce stress, disclosing/sharing one's thoughts in a diary with or trusted friend, using relaxation techniques, and minimizing vulnerability to stress by taking care of oneself (e.g., diet and exercise).

Experimental session two (Time 3, March). Again, these participants returned five months later to complete a questionnaire that was nearly identical to the one administered in the first session and they participated in the identical *activation* and *consolidation* stages as the students in the AR condition.

Additionally, final grade point averages and introductory psychology test scores were obtained at the end of the second semester (Time 4, May) for all of the consenting participants in both the AR and the SR treatment conditions.

Manipulation Check Measures

Controllable attributions (March). At Time 3, participants' self-reported controllable attributions (effort and strategy, 1 = *not at all*; 10 = *very much so*) for academic performance were examined based on Weiner's Attribution Theory (1985, 2012). The two attribution scales were combined.

Stress (March). At time 3, all 144 participants rated two items measuring their current state of stress using the Cohen, Kamarck, and Mermelstein's (1983) Perceived Stress Scale ("In the last month, how often have you felt nervous and "stressed?" and "In the last month, how often have you found yourself thinking about things that you would have to accomplish").

Dependent Variables

Academic affects (March). Using a 10-point scale (1 = *not at all*; 10 = *very much so*), students were asked to indicate to what extent each of five emotions (angry, happy, helpless, hopeful, and proud) describe how they felt about their academic performance in their Introductory Psychology course (Weiner, 1985). The scales ranged from 1 (not at all) to 10 (very much so). From these 5 items, two sub-scales were formed to reflect positive emotions (happy, hopeful, and proud) and negative emotions (angry and helpless). See Table 1 for a descriptives summary of the dependent variables.

Post-treatment test (May). Students' academic achievement was assessed using the consenting participants' first Introductory Psychology course test scores because it immediately followed the administration of the treatments (percentages; range of values from 0-100%). The test scores were obtained at the end of the second term from the course instructors.

Final course grade (May). Students' final course grades for their Introductory Psychology course (cumulative percentage; range of values from 0-100%) were obtained from course instructors at the conclusion of the second term.

Results

Manipulation checks. Two manipulation checks were performed to test the validity of the treatments at Time 3 (Semester 2). One-way Analyses of Variance (ANOVAs) assessed the differences between the two treatment conditions for the relevant dependent outcomes: AR for increasing attributions; and SR for lowering anxiety/stress. These ANOVAs were subsequently followed up by a priori *t*-tests contrasting one treatment condition with the other treatment: for attributions, AR > SR; and for stress, SR < AR.

One-tailed *t*-tests were used because the hypotheses were directional: (1) AR was expected to encourage the endorsement of controllable attributions (effort and strategy) relative to the SR treatment (i.e., less controllable attributions made for those in the SR treatment group); and (2) the SR treatment was expected to reduce ratings on the anxiety/stress measure relative to the AR treatment (i.e., less stress reduced for the AR treatment group).

For the causal attribution manipulation check, a one-way ANOVA indicated that the two treatment groups differed significantly on the controllable attributions, $F(1, 679) = 26.75$, $p <$

.001. As expected, the AR group reported more controllable attributions than the SR group (*Ms* =15.00 vs. 13.39), $t(413) = 4.81$[3], $p < .001$ (see Figure 2).

For the SR manipulation check, a one-way ANOVA also indicated that the two treatment groups differed significantly on reducing academic related stress, $F(1, 684) = 8.59$, $p = .004$. As expected, the SR treatment group reported significantly less stress than the AR treatment group (*Ms* = 7.42 vs. 7.81), $t(427) = 2.74$, $p = .006$ (see Figure 3). Thus, these manipulation checks help to verify that the treatments are having the intended impact on the two groups of participants.

Correlations. Zero-order correlations between all the variables were conducted and generally confirm previous research, theoretical and conceptual assumptions derived from previous research, and current hypotheses (see Table 4). For example, with the exception of stress and negative affect, all of the Time 3 and 4 variables were correlated with high school grades, which is important in relation to validity of past research findings (Perry et al., 2005; Perry et al., 2010). High school grades were also positively correlated to controllable attributions, positive learning-related affect, post-treatment test scores and final course grades. In addition, negative and positive learning related affect were negatively correlated, and both the post-treatment and the final grades were positively correlated.

Several relationships confirmed conceptual/theoretical considerations. In line with control theory (Perry et al., 2005; Perry et al., 2010; Rothbaum et al., 1982), primary control was positively linked to high school grades, controllable attributions, positive learning-related affect, achievement grades, and negatively to negative learning-related affect. Furthermore, acceptance SC was correlated positively with adjustment and negatively with PC, which makes theoretical sense considering both acceptance and adjustment constructs encompass a non-active (i.e., internal) form of control whereas PC encompasses a more active (i.e., external) form. And as

[3]The *t*-value (two-tailed) and degrees of freedom reported for both manipulation checks do not assume equal variances since the SR and AR conditions do not have equal cell sizes.

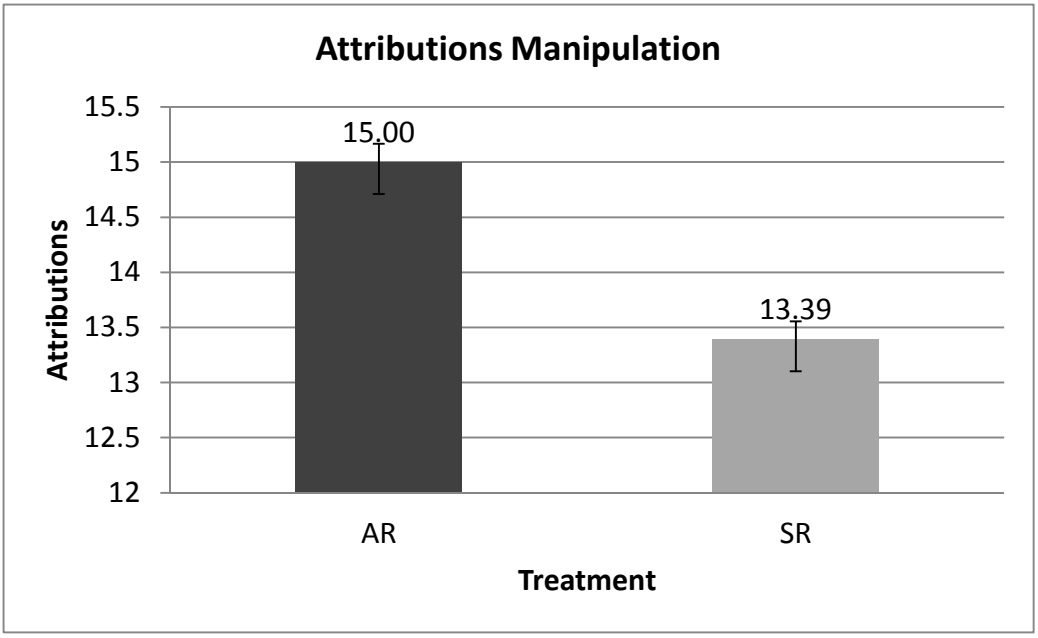

Figure 2. Attributions manipulation (AR vs. SR). AR = Attributional Retraining; SR = Stress Reduction. Standard errors are represented in the figure by the bars attached to each column.

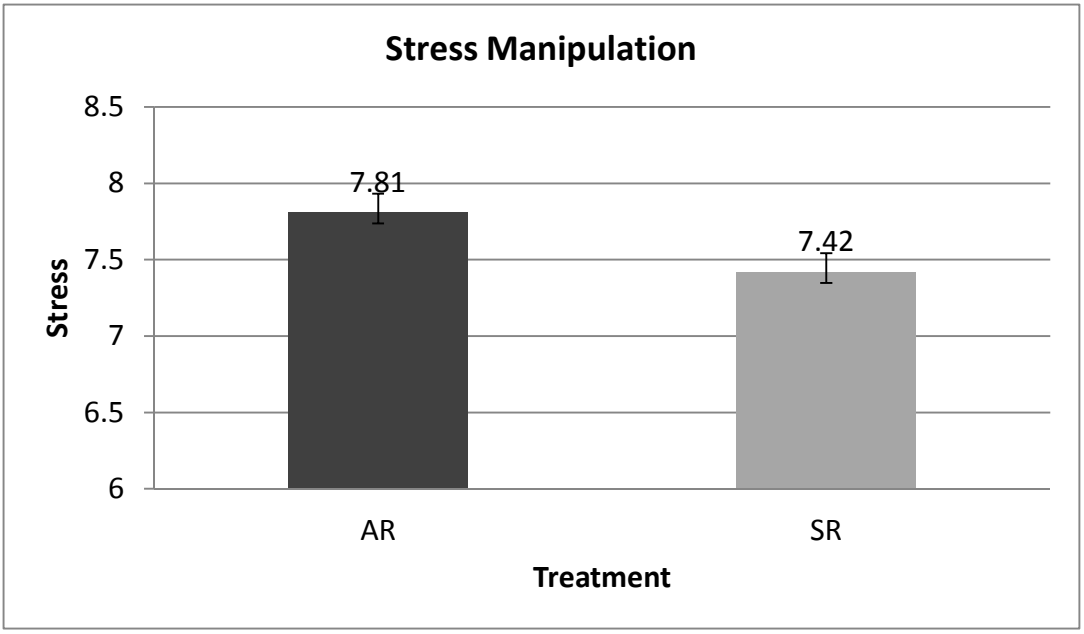

Figure 3. Stress manipulation (AR vs. SR). AR = Attributional Retraining; SR = Stress Reduction. Standard errors are represented in the figure by the bars attached to each column.

Table 4

Zero-Order Correlations

	1	2	3	4	5	6	7	8	9	10	11	12
1. Adjustment[a]	–											
2. Acceptance[a]	.20*	–										
3. Primary academic control[a]	.14*	-.33*	–									
4. Gender[a]	-.04	-.03	.03	–								
5. High school grade[a]	.09	-.16*	.30*	-.16*	–							
6. Treatment: SR vs. AR[b]	.01	.06	.02	.10	-.01	–						
7. Controllable attributions[c]	.07	-.14*	.01*	.09	.13*	.19*	–					
8. Stress[c]	-.01	-.05	-.10	-.30*	.06	.09	.05	–				
9. Positive affect[c]	.10	-.19*	.27*	.08	.21*	.06	.32*	-.04	–			
10. Negative affect[c]	-.05	.23*	-.37*	-.01	-.01	-.05	-.09	.10	-.33*	–		
11. Post-treatment test[d]	-.04	-.17*	.26*	.13*	.42*	.12*	.26*	-.04	.39*	-.16*	–	
12. Final course grade[d]	.01	-.15*	.28*	.01	.46*	-.08	.20*	.02	.41*	-.23*	.80*	–

Note. Correlations were calculated using pairwise deletion (n = 281). AR = Attributional Retraining; SR = Stress Reduction. [a]Time 1. [b]Time 2. [c]Time 3. [d]Time 4. *p < .01 (two-tailed tests).

expected, positive learning-related affect was positively correlated with both post-treatment test scores and final grades, whereas negative learning-related affect was negatively correlated with both post-treatment test scores and final grades.

In accordance with the hypotheses, acceptance and adjustment had anticipated associations with the outcome variables. For instance, since acceptance can be maladaptive, it is not surprising that it correlated negatively with high school grades, positive affect, post treatment test scores, final grades, and positively with negative affect.

The two-level treatment variable (SR, AR) was positively correlated with controllable attributions, and post-treatment test scores. However it was not significantly correlated with positive, negative affect or final course grades. These correlations support the hypotheses since it was hypothesized that AR promotes more controllable attributions for students and a subsequent change in academic achievement. Nevertheless, because AR is hypothesized to affect at-risk individuals (e.g., those with limited PC beliefs) more than other students, the correlation with final grades is low.

Finally, there are a few interesting findings for understanding the participants in the study. For example, the negative relationship between high school grades and gender indicates that females had higher school grades and stress than males. As a result, both high school grade and gender were controlled for in the following analyses.

Preliminary Analysis

To ensure the subjects were experiencing low control conditions, scores that fell below 1 SD above the median on the PC scale were retained for the study. This selection criterion was used to identify and remove individuals who feel they can strongly influence their environment. As mentioned in the earlier section, individuals were also selected based on high acceptance SC beliefs (e.g., scoring one quarter of a standard deviation above the median). The emphasis here

was to ensure the students in both groups where high on acceptance. In other words, students who were helpless and have relinquished control (high acceptance/low adjustment) and students who have low control and high secondary control (high acceptance/high adjustment) who are Fit-Focused, according to Morling and Evered (2006) were retained. Finally, since dichotomizing continuous variables is controversial (MacCallum, Zhang, Preacher, & Rucker, 2002; Royston, Altman, & Sauerbrei, 2006), both analysis of variance and regression analyses were used to examine the effect on academic affect and achievement.[4]

Main Analyses

An Adjustment (low, high) x Treatment (AR, SR) 2 x 2 factorial design was conducted to test the study hypotheses. In addition, high school grades and gender were included to control for differences among participants. Table 5 presents the means, standard deviations, and ranges of the outcome variables for each condition (AR and SR) by group (low adjustment, high adjustment).

[4]Haye's (2012) PROCESS macro for SPSS (Model 3) tested for the 3-way interaction (treatment by acceptance SC by adjustment SC) conditional effects on students' academic affects, post-treatment test scores and final course grades. Again, students with low-moderate PC were selected and both gender and high school grade were controlled for. Bootstrapping was based on 95% bias corrected confidence intervals (Hayes, 2012; Preacher & Hayes, 2008). AR's conditional effects were tested when adjustment was low (-1 SD) and acceptance was high (+1 SD; RC group) and when both adjustment and acceptance were high (+1 SD; Fit-Focused group).

For RC students, the analyses revealed a significant conditional AR effect (compared to the SR treatment) for positive affect, $b = 3.83$, $t(361) = 2.69$, $p = .004$; post-treatment tests, $b = 9.07$, $t(422) = 2.89$, $p = .002$; final course grades, $b = 7.69$, $t(469) = 2.25$, $p = .013$; but not for negative affect $b = -2.23$, $t(357) = -1.33$, $p = .093$ (reported regression coefficients are unstandardized). As expected, the Fit-Focused students did not experience significant AR effects (compared to the SR treatment) for either positive or negative affect, or final course grades. However, conditional effects revealed AR improved both groups' post-treatment test scores relative to SR, including the Fit-Focused individuals, $b = 6.17$, $t(422) = 2.36$, $p = .009$. These findings demonstrate the powerful and immediate benefit of the AR treatment intervention. Effects remained even when gender and high school grade were removed as covariates.

The conditional regression approach was selected instead of a test of the omnibus AR x Acceptance SC x Adjustment SC interaction because a significant omnibus test is statistically unfounded and not required when the major research interest is in conditional direct effects (Maxwell & Delaney, 2004).

Table 5

Means and Standard Deviations by Condition and Group

	Relinquished Control Group		Fit-Focused Control Group	
Measure	AR	SR	AR	SR
Dependent Variables				
Positive affect[a]				
M (*SD*)	16.88 (6.40)	12.93 (5.09)	16.80 (5.95)	18.13 (6.77)
Adj. M (SE)	16.61 (1.03)	13.00 (1.54)	16.81 (.88)	18.66 (1.50)
N	33	14	41	15
Negative affect[a]				
M (*SD*)	6.85 (4.43)	8.07 (2.76)	6.83 (4.24)	4.67 (2.87)
Adj. M (SE)	6.73 (.71)	8.10 (1.03)	6.89 (.64)	4.74 (1.03)
N	34	15	40	15
Post-treatment test[b]				
M (*SD*)	67.64 (16.01)	58.41 (14.36)	63.58 (17.29)	59.79 (15.95)
Adj. M (SE)	67.26 (2.47)	58.77 (3.12)	63.28 (2.06)	60.67 (2.99)
N	36	22	51	24
Final course grade[b]				
M (*SD*)	70.13 (17.21)	64.52 (20.74)	67.67 (16.17)	71.60 (15.03)
Adj. M (SE)	70.17 (2.40)	64.88 (3.26)	67.09 (2.15)	72.49 (3.19)
N	44	23	54	24

Note. Adj. M = covariate adjusted mean.
[a]Time 3 measure. [b]Time 4 measure.

Univariate Analyses

Rationale for analyses. A series of 2 x 2 Analyses of Covariance (ANCOVA) were used to test the hypotheses (Table 6). Because RC and Fit-Focused (FF) individuals are the main interest groups, four a priori simple main effect *t*-tests were used to detect differences between these groups. For Hypothesis 1, simple main effect *t*-tests compared AR to the SR treatment separately for the RC individuals; and for Hypothesis 2, simple main effect *t*-tests compared AR to SR for the FF-SC individuals. These simple main effect *t*-tests were preferred over tests of the Treatment x Adjustment SC interactions because these tests do not reveal which groups differ.

Hypothesis 1 tests examined the simple main effect of Factor A (AR and SR) across one level of Factor B (low adjustment). Specifically, RC individuals who were administered AR were compared to their RC peers in the SR condition. One-tailed directional tests were used for testing these simple main effects because AR was predicted to promote more effort/strategy attributions, positive affect, and higher post treatment test scores and final grades. Hypothesis 2 tests the treatment effects across high adjustment FF-SC individuals. Supplementary analyses assess the simple main effect of Factor B (low and high adjustment) across one level of Factor A (AR or SR). For example, the FF-SC group was compared to the RC group in the AR condition. The supplementary analyses are found at the end of the results section.

Academic-related affect. For positive learning-related affect, a 2 x 2 ANCOVA revealed a high school grade main effect, $F(1, 97) = 10.12$, $p = .002$, a gender main effect, $F(1, 97) = 4.63$, $p = .034$, and an AR by adjustment interaction effect, $F(1, 97) = 4.53$, $p = .036$. An Adjustment main effect was also found, $F(1, 97) = 5.24$, $p = .024$; however, no AR main effect was detected. In addition, simple main effect *t*-tests revealed that for RC individuals only, AR recipients reported higher positive affect than their SR peers ($Ms = 16.61$ vs. 13.00), $t(97) = 1.94$, $p = .028$. This

Table 6

F-Table of Omnibus Effects for the Univariate Analyses

	Error		HSG		Gender		AR		ADJUSTMENT		AR x ADJUSTMENT	
Variable	*MSE*	*Df*	*MS*	*F*	*MS*	*F*	*MS*	*F*	*MS*	*F*	*MS*	*F*
Positive affect	33.31	97	337.15	10.12*	154.16	4.63†	15.92	.48	174.43	5.24†	150.85	4.53†
Negative affect	15.90	98	1.57	.10	11.47	.72	3.20	.20	53.20	3.35	63.72	4.01†
Post-treatment test	213.30	127	6372.50	29.88*	1085.68	5.09†	908.76	4.26†	32.03	.15	251.40	1.18
Final course grade	243.05	139	7343.25	30.21*	308.05	1.27	.09	.00	161.14	.66	875.19	3.60

Note. †$p < .05$. *$p < .01$ (two-tailed tests).

supports Hypothesis 1. See Figure 4 for the RC and FF-SC simple main effects.

For negative affect, a 2 x 2 ANCOVA revealed no high school grade, gender, or AR main effects, but a marginal Adjustment main effect, $F(1, 98) = 3.35$, $p = .070$, and an AR x adjustment interaction effect, $F(1, 98) = 4.01$, $p = .048$. Not surprisingly, simple main effect *t*-tests were not significant for the RC students in the AR versus SR conditions. See Figure 5 for the RC and FF-SC simple main effects.

Post-treatment test scores. A 2 x 2 ANCOVA revealed a high school grade main effect, $F(1, 127) = 29.88$, $p < .001$, a gender main effect, $F(1, 127) = 5.09$, $p = .026$, an AR main effect, $F(1, 127) = 4.26$, $p = .041$, but no Adjustment main effect or AR by Adjustment interaction effect for post-treatment test scores. Individuals in the AR condition outperformed those in the SR condition (*M*s = 65.27 vs. 59.72). Simple main effect *t*-tests showed that for RC individuals only, AR recipients achieved higher post-treatment test scores than their SR peers (*Ms* = 67.26 vs. 58.77), $t(127) = 2.13$, $p = .018$. See Figure 6 for the RC and FF-SC simple main effects.

Final course grades. In a similar pattern of findings, a 2 x 2 ANCOVA revealed a high school grade main effect, $F(1, 139) = 30.21$, $p < .001$, but no AR by Adjustment interaction, AR main effect, or Adjustment main effect for final course grades. Simple main effect *t*-tests revealed that only for the RC individuals, AR recipients outperformed their SR peers (*Ms* = 70.17 vs. 64.88), $t(139) = 1.27$, $p = .098$, in terms of final course grades. Although this finding does not meet the set level of $p < .05$, the differences between the two groups support the general pattern revealed in the previous analyses (e.g., positive affect, post treatment test scores), suggesting it is a consistent and meaningful difference. Further, a 5-6% increase in final grades is equivalent to a full letter grade change, and the significance is more than likely reduced by the restricted sample size (hence the higher standard error). Unexpectedly, FF-SC individuals who

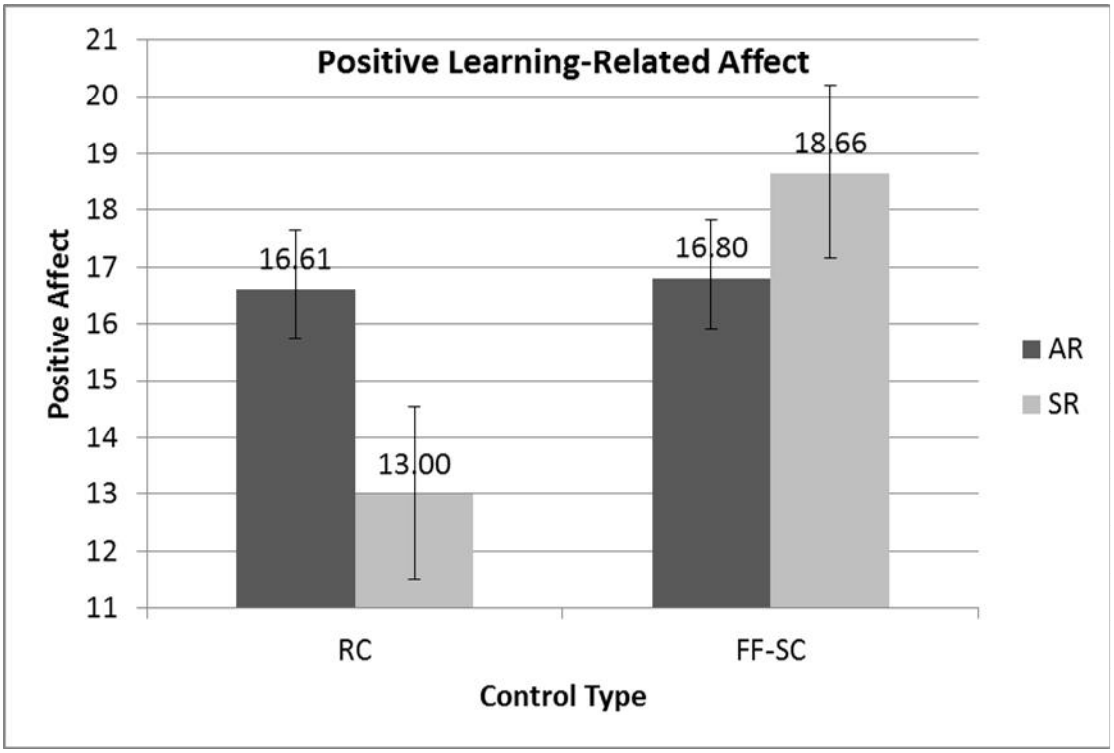

Figure 4. Simple main effect of condition on positive learning-related affect. RC = relinquished control group; FF-SC = Fit-Focused Secondary Control group; AR = Attributional Retraining; SR = Stress Reduction. Standard errors are represented in the figure by the bars attached to each column.

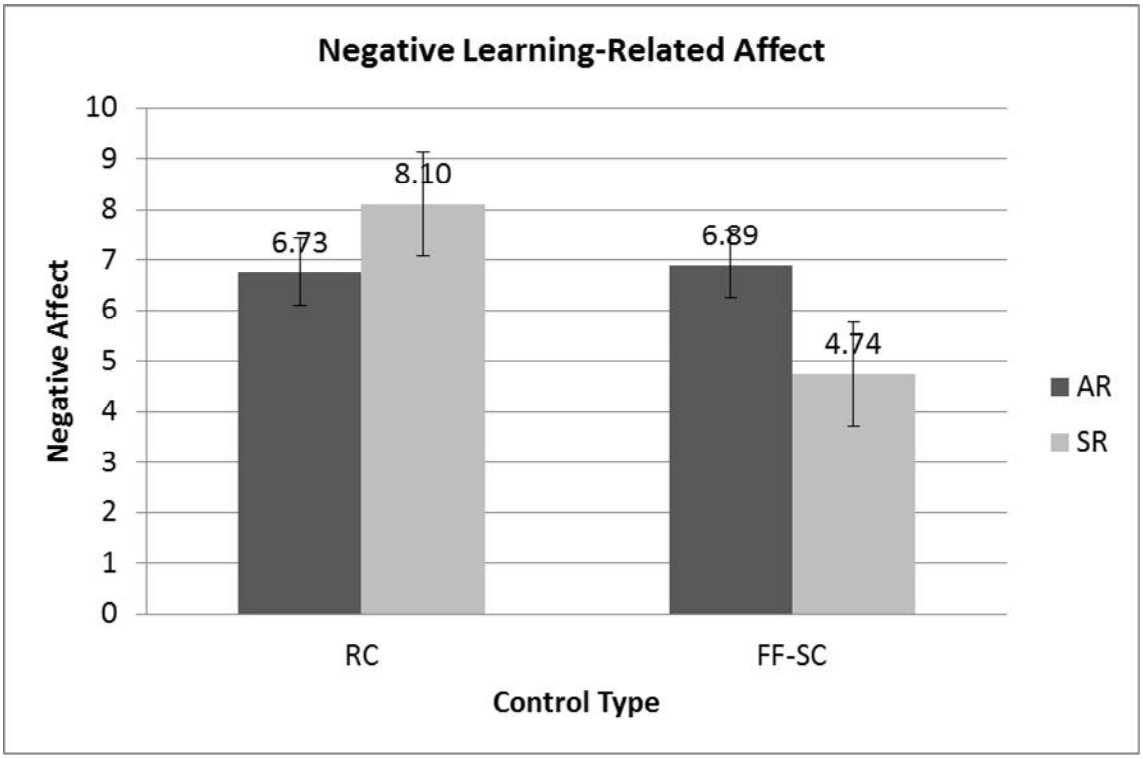

Figure 5. Simple main effect of condition on negative learning-related affect. RC = relinquished control group; FF-SC = Fit-Focused Secondary Control group; AR = Attributional Retraining; SR = Stress Reduction. Standard errors are represented in the figure by the bars attached to each column.

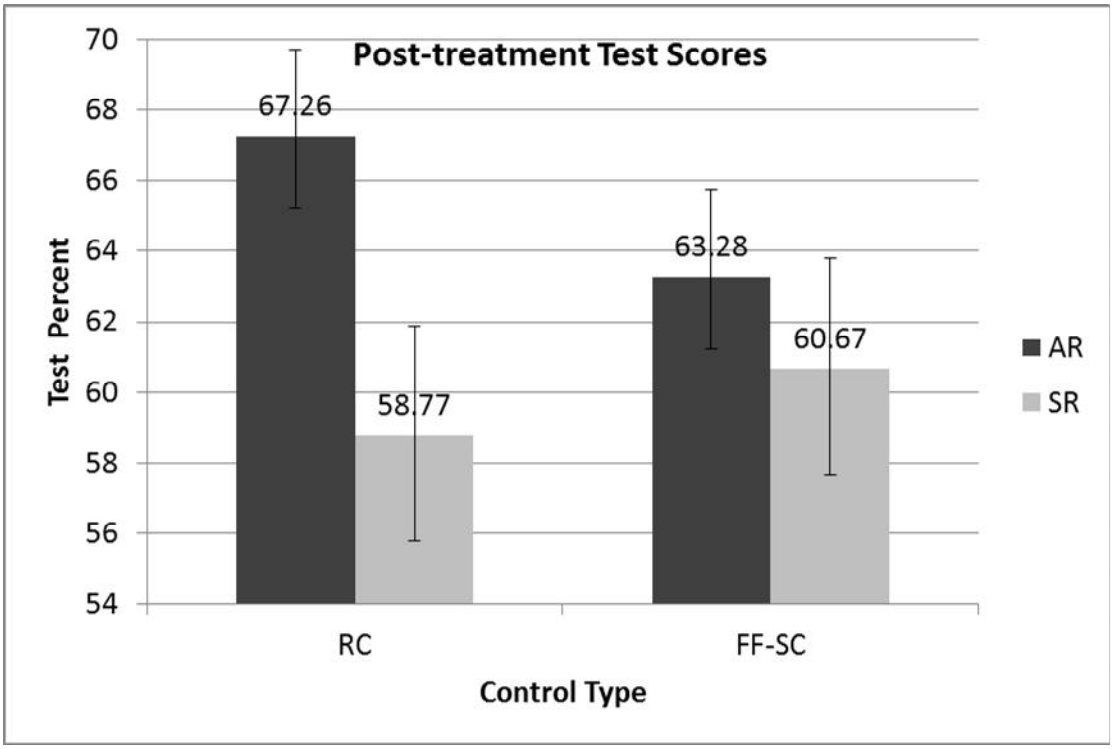

Figure 6. Simple main effect of condition on post-treatment test scores. RC = relinquished control group; FF-SC = Fit-Focused Secondary Control group; AR = Attributional Retraining; SR = Stress Reduction. Standard errors are represented in the figure by the bars attached to each column.

received AR were outperformed by their peers in the SR condition (*Ms* = 67.09 vs. 71.60), $t(139) = 1.43$, $p = .078$, but again the effects were in the expected direction but not significant. See Figure 7 for the RC and FF-SC simple main effects.

Supplementary Analyses

Additional hypotheses tested whether the separate treatments influenced individuals depending on whether they were relinquished control or were Fit-Focused.

Hypothesis 3.

For RC students (vs. FF-SC), AR was expected to foster the *same or better* learning-related positive affect, post-treatment test scores, final course grades, and the *same or lower* learning-related negative affect. Findings supporting Hypothesis 3 were demonstrated in Perry and Struthers (1994), Menec et al. (1994), and Hall et al. (2006).

3a) *positive* affect: H3 at AR, RC >= FF-SC;

3b) *negative* affect: H3 at AR, RC <= FF-SC;

3c) post-treatment *test scores*: H3 at AR**,** RC >= FF-SC;

3d) final *course grades*: H3 at AR, RC >= FF-SC.

Hypothesis 4.

For RC students (vs. FF-SC), SR was expected to foster the *same or lower* learning-related positive affect, post-treatment scores, final course grades, and the *same or higher* learning-related negative affect. This hypothesis is new since SR effects have not previously been examined (hence two-tailed tests were used).

4a) *positive* affect: H4 at SR, RC <= FF-SC;

4b) *negative* affect: H4 at SR, RC >= FF-SC;

4c) post-treatment *test scores*: H4 at SR, RC <= FF-SC;

4d) final *course grades*: H4 at SR, RC <= FF-SC.

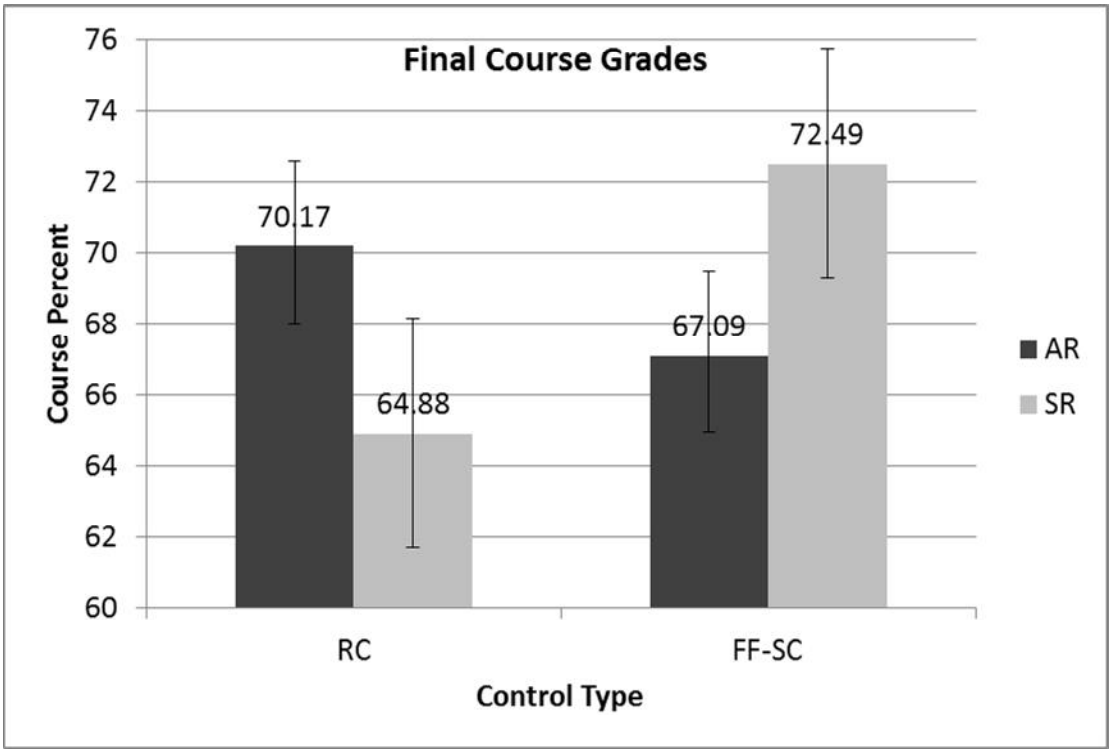

Figure 7. Simple main effect of condition on final course grades. RC = relinquished control group; FF-SC = Fit-Focused Secondary Control group; AR = Attributional Retraining; SR = Stress Reduction. Standard errors are represented in the figure by the error bars attached to each column.

In other words, Fit-Focused SC individuals (Morling & Evered, 2006) were expected to outperform the low-control individuals (the RC group) in the SR treatment because SR does not focus on modifying students' control perceptions. The SR treatment has not been shown to benefit at-risk individuals (similar to AR), and thus the RC group should reveal more maladaptive affective and achievement outcomes compared to the FF-SC group.

As predicted for students in the AR condition (Hypothesis 3), the RC group did *not* differ from the FF-SC group in terms of learning-related positive affect, $t(97) = .14$, $p = .888$, negative affect, $t(98) = .17$, $p = .867$, post-treatment test scores, $t(127) = 1.23$, $p = .222$, or final grades, $t(139) = .94$, $p = .347$. In addition, for students in the SR condition (Hypothesis 4), the RC group fostered significantly lower learning-related positive affect, $t(97) = 2.63$, $p = .010$, significantly higher negative affect, $t(105) = 2.30$, $p = .024$, and lower final grades, $t(139) = 1.67$, $p = .097$ that were not significant. However, the RC students in the SR condition did not achieve higher post-treatment test scores than their FF-SC counterparts, $t(127) = .44$, $p = .660$ (both scores were very low).

Discussion

Poor academic emotion regulation and performance that results in low control achievement settings (e.g., transitioning from high school to a post-secondary institution) is particularly detrimental for students who lack Fit-Focused (FF) secondary control. Individuals at risk of disengagement are those who accept negative academic outcomes, but cannot adjust the self (e.g., by way of adjusting one's beliefs, attributions for failure, etc.), and consequently they may be helped by AR (Perry et al., 2012). The present longitudinal study addressed two central questions: (1) were students characterized by relinquished control (high acceptance/low adjustment) positively impacted by AR compared to their peers who did not receive AR (i.e., students receiving SR)? And (2) did AR have a null effect on FF-SC individuals? Accompanying

these questions, the present study investigated whether RC students were, in fact, worse off if they did *not* receive AR (e.g., the RC individuals who received the SR treatment) compared with their FF-SC counterparts (high acceptance/high adjustment)? Ultimately, the aim of the study was to determine if the cognitive treatment (AR) was superior to the affective treatment (SR) and if it would help RC students more than FF-SC students.

Attributional Retraining versus Stress Reduction

The RC individuals in each treatment group were examined to determine if AR was helping them over the alternative treatment (SR) by increasing their positive learning-related affects and their academic performances. And this was found to be the case.

Affect. AR produced an obvious emotional gain for the RC group. Evidently, these individuals tended to report more positive learning-related affect (e.g., happiness, pride, hope) relative to their peers who were administered the SR treatment. However, these AR recipients did not report lower negative learning-related affect, but this is not surprising since AR was competing against an intervention that is specifically geared at lowering negative affect. However, the trend was in the direction of lowering negative affect. The success of AR on academic affect has theoretical significance because it supports and replicates past AR research and its positive impact on achievement emotions for at-risk individuals (Haynes et al., 2009; Hamm, 2011).

Achievement. Undeniably, AR had a sizeable impact on RC individuals' academic achievement in comparison with students in the SR treatment. RC individuals in the AR condition scored significantly higher than their RC peers in the SR condition on a post-treatment psychology course test. In fact, these AR recipients outscored their no-AR peers by more than 9%, which is a pronounced difference, representing approximately 1 ½ letter grades. Furthermore, the effects remained seven months later. RC individuals who received AR achieved

better final course grades at the end of second term compared to the SR treatment group, nearly 6% or one letter grade in practical terms. These findings align with past AR research underpinning AR's influence to retrain individuals' attributions (Hall et al., 2006; Hamm, Perry, Chipperfield, Parker, Maruyama, & Weiner, 2014; Haynes et al., 2006;) and in turn induce behavioural changes, such as facilitating better scholastic performance (Menec et al., 1994; Noel et al., 1987; Perry et al., 1990, 2010), preventing school drop-out, and removing maladaptive behaviour (Haynes et al., 2011; Perry et al., 2010, 2014).

Typically, FF-SC individuals did not benefit from AR in the same way the RC individuals did (e.g., for positive affect and academic achievement). The FF-SC group who received SR appeared to benefit long-term in terms of final grades. Past AR research has *not* considered investigating student groups based on Morling & Evered's (2006) adjustment and acceptance SC beliefs, nor has it considered comparing AR to an alternative affective treatment (SR). Hence, the present study is noteworthy because it implements a more theoretically based treatment-treatment comparison versus a simple no-treatment-treatment comparison (Perry et al., 2014).

Treatment Effects for Fit-Focused and RC Individuals

When comparing the effects of AR on FF-SC and RC individuals, no differences were shown for students' positive learning-related affect, negative learning-related affect, or in their post-treatment test scores or final grades. A potential reason for this is AR helped the at-risk group (RC) to benefit in a way similar to the FF-SC group. Other past studies have paralleled these results where AR benefitted more at-risk (e.g., external locus) students but did not benefit low-risk (e.g., internal locus) students on a post-lecture and homework test (Perry et al. 1989, 1994).

As anticipated, when comparing the effects of the SR treatment on FF-SC and RC individuals, the RC group did not perform as well as the FF-SC. The RC individuals reported less positive learning-related affect, more negative learning-related affect, and lower final grades than the FF-SC individuals. This may have resulted because lack of control is likely a strong risk factor for students with high acceptance/low adjustment beliefs and the SR treatment is not a control-focused intervention. Also, the FF-SC group who have high adjustment and acceptance beliefs should be better off in terms of academic affect and performance.

FF-SC students seem to benefit from SR, but only in the long run. Presumably, the FF-SC students with higher adjustment beliefs should be performing better than those characterized by relinquished control (low adjustment). It is a surprising finding that may suggest the SR treatment is not immediately beneficial for students who do not possess high PC beliefs (although FF-SC students who received SR had higher final grades than RC students by the end of second semester). Previous stress reduction treatments have been shown to promote academic achievement for university students (Lumley & Provenzano, 2003; Pennebaker & Francis, 1996) yet these studies did not focus on the types of control beliefs the students held. Future research could look to investigate whether SR produces higher academic achievement for students with higher PC beliefs.

For the most part, FF-SC individuals seem to deal with academic failure somewhat differently than RC individuals. This is possible because these individuals may acknowledge negative events, but are more capable of cognitively acclimatizing to them. It is possible these individuals are already making adaptive attributions to help them adjust and continue achievement striving. Because FF-SC individuals who received AR did not benefit (nor were they hindered) compared to their RC peers, this may be a result of AR's lack of influence over

FF-SC individuals who are already using more adaptive attributions (e.g., seeing the silver lining).

Implications

This study provides empirical support for Morling and Evered's (2006) FF-SC model. First, in conducting Principal Components Analysis, the present study replicated Perry et al.'s (2012) SC scales for acceptance and adjustment and that these constructs, although correlated, are distinct. These are encouraging results which support the Fit-Focused model of acceptance and adjustment. Second, the study shows that individuals who endorse acceptance SC alone are worse off than those with adjustment and acceptance together. In terms of learning-related affect and long-term achievement (i.e., final course grades), the RC students who did not receive AR were at a disadvantage compared to their FF-SC peers. Since the most vulnerable group of students (RC) was most positively impacted by AR, this finding aligns with past AR research that highlights the beneficial impact of the treatment on at-risk students versus students who are at lower-risk of failure (Menec et al., 1994; Haynes et al., 2006; Perry et al., 1993, 2010, 2014). Future research would do well to investigate whether AR enhances RC individuals' cognitive adjustment beliefs by modifying their explanatory thinking and thus leading them to better academic results. These findings would further illuminate the importance of both acceptance and adjustment beliefs in low-control achievement settings based on Morling and Evered's FF-SC model.

Past research examining individuals dealing with the first year transition has not focused on those with low adjustment SC (who are arguably the most in need of help). But many first-year university students find themselves struggling to keep up with courses that deliver fast-pace material. If these students accept their inability to understand the coursework and accept the

failure that comes with it, without some form of adjustment, their academic futures are potentially headed down a dangerous path.

However, these students may be able to sustain some control by accepting that they are having difficulties understanding the material and adjusting to the demands. The evidence suggests students who gain academic control by adjusting, and potentially seeking PC when the opportunity arises, do better than those who do not gain control. This option is much more optimal than accepting the problem, dwelling on their failure (which may harm their goal striving), and giving up on passing the course. Fortunately, our research suggests the AR treatment does, in fact, facilitate academic adaptation for RC students.

Is AR the Better Treatment?

This study suggests that AR is a superior treatment for RC students relative to the SR treatment. AR generated sizable benefits for RC students by increasing their positive learning-related affect, reducing their negative learning-related affect, and augmenting their test scores and final course grades. The study provides valuable empirical evidence to support the development and implementation of AR treatments in educational institutions. This is important because university retention remains an important issue, specifically when online/blended learning courses are used that require increased self-regulation and control, further burdening low-control students (Perry, 2003, Perry et al., 2014). AR has been shown in many studies to promote both achievement and persistence (e.g., motivation, affect, higher GPAs) for at-risk students, which reduces voluntary withdrawals and dropout rates.

AR shares some elements of other psychosocial interventions that have shown promise for improving academic performance. For example, Wilson (2006) notes the exceptional achievement results produced by interventions that "drew on social psychological theories to change people's self and social perceptions (i.e., people's explanations for their poor

performance, their views of the malleability of their own intelligence, or their sense of social connectedness)" (p. 125). Here, the treated individuals performed better academically than the untreated individuals, which like AR, is common for many of these brief and low-cost psychosocial interventions (see Cohen, Garcia, Purdue-Vaughns, Apfel, & Brzustoski, 2009; Walton, 2014; Yeager & Walton, 2011).

Strengths, Limitations, and Future Directions

Our study has several important strengths and a few limitations to consider. First, the study was based on the theoretical frameworks derived from perceived control theory (Perry, 1991) and attribution theory (Weiner, 1985; 2012), which are both substantiated by decades of empirical evidence. Second, a novel measure (Perry et al., 2012) was employed to examine SC in an achievement setting based on Morling and Evered's (2006) FF-SC construct. In fact, the study examined both RC and FF-SC students. Also, an array of cognitive, affective, and performance measures were used that were theoretically relevant and have been utilized in many other AR studies (Hall et al., 2006; Haynes et al., 2006; Menec et al., 1994; Perry et al., 1993, 2010, 2014). Third, the study involved a longitudinal testing procedure that took place over two semesters permitting measures to be tested and validated over time. AR's effects on learning-related affects, and actual achievement performance could therefore be measured seven months later. Finally, the AR treatment, which was *cognitively* focused, was compared to the SR treatment which, was *affect* focused. Our findings suggest that AR's effects prevailed over and beyond the SR treatment, and were most prominently for academic performances and positive learning-related affects).

One limitation of the study involved the dichotomizing of a continuous variable (adjustment SC), which consequently reduced the statistical power. A less complex design (e.g., regression analysis) would retain more of the sample. As shown, the results that emerged in the

regression analyses did parallel the ANOVA results. Also, DeCoster and colleagues (2009) suggest studies that examine variables using an extreme group (dichotomized) approach can produce findings as good as and better than continuous indicators.

In addition, the study examined individuals reporting low to moderate PC and excluded students with high PC beliefs. Future research could restrict the sample to only students with low PC beliefs, perhaps even those who did not choose to pursue post-secondary schooling. By studying very low PC individuals, the following question could be explored: Can people who are *completely* withdrawn and have relinquished all control be motivated by AR treatments?

There are several ways the current study could be expanded. Future research could explore the mechanisms that underpin AR's effectiveness for RC individuals lacking FF-SC. A path model sequence: AR (AR, No-AR) x Primary Control (low, high) x Secondary Control (low, high) → Attributions → Cognitions → Emotions → Motivation → Academic performance grounded in motivation theory (Weiner 1985; 2006; Morling & Evered, 2006) would be one way to explore such mechanisms. A study based on this model could test whether AR assists RC individuals by encouraging them to make more adaptive explanations for their failure, which in turn would likely promote increased expectancies of future success, a more positive emotional profile, enhanced motivation, and ultimately improved academic performances.

In Hall's (2006) dissertation, the higher order process of Rothbaum et al.'s (1982) primary and secondary control theory was explored, revealing that students tended to engage PC after success experiences and switch to SC after failure experiences. As a result, individuals who were better able to recognize when to shift from PC to SC were most successful in terms of improving subsequent motivation, emotions, health, and academic performance (Hall, 2006). Although this study addresses AR's facilitation of increasing students' controllable attributions, it does not address the adaptive cognitive shift from PC to SC or vice versa. Consequently,

further research could identify the cognitive control processes that result in adaptive or maladaptive achievement functioning for students.

The study could also examine other contexts where dealing with failure is a common phenomenon. For example, in competitive sport settings, there is usually only one winning team or one winning athlete. Inevitably, this means there are many losses (i.e., failure experiences) that occur. In such contexts where achieving success is an important and primary goal, studying how athletes fall into performance slumps (Ball, 2013) and drop off teams as a result of failure, could be very informative to this theoretical discussion.

Conclusion

In sum, the findings of this study reveal that RC individuals who may be at risk of giving up and possibly withdrawing from university are *not* beyond help. In fact, the cognitive treatment of AR effectively boosts learning-related hope, pride, and happiness, lowers learning-related anger and helplessness, and promotes stronger academic achievement relative to the affective treatment of SR. Going forward, AR continues to offer greater promise for assisting students struggling with various risk profiles (e.g., relinquished control, competitive environments), even when employing PC beliefs is not adaptive.

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Appendix A

Secondary Control beliefs

Not at all true	A little true	Moderately true	Largely true	Completely true
1	2	3	4	5

Acceptance

1. I believe it is better to take "one day at a time" rather than to plan ahead.
2. Much of what happens in our lives is a part of the way nature works.
3. There is no point in thinking about what the future will bring.
4. I believe that much in life is determined by fate or chance.
5. I accept that some people are born to be A+ students, while others have less natural ability, and that there is little I can do to change what I was born with.
6. I try not to worry too much about my long term academic career because things can always change unexpectedly.

Adjustment

1. Regardless of what my grades are, I try to appreciate how my university experience can make me a "stronger person" overall.
2. No matter how well I do on a test or in a course, I try to see beyond my grades to how my experience at university helps me learn about myself.
3. Whenever I have a bad experience at university I try to see how I can turn it around and benefit from it.
4. My academic performance and experience has given me a deeper understanding of my life than could be achieved without this experience.

Not at all like me						Very much like me
1	2	3	4	5	6	7

5. I often get a 'deep down feeling' that I know how the rest of my life is going to go, even if I don't know the details.

6. Coincidences that I have experienced often seem to have had a kind of strange or mysterious personal meaning for me.

7. When bad things happen to me, I make an intentional effort to understand how they fit into the rest of my life.

8. Random events and chance happenings often seem to me to be like ‘hints’ or ‘clues’ for me to use to understand both who I am and my life as a whole.

9. Based on my experience, negative events in my life, or events that I would not have chosen for myself, in the end have made me a better person.

Appendix B

Primary Academic Control

Not at all true	A little true	Moderately true	Largely true	Completely true
1	2	3	4	5

1. I have a great deal of control over my academic performance.

2. The more effort I put into my courses, the better I do in them.

3. No matter what I do, I can't seem to do well in my courses.

4. I see myself as largely responsible for my academic performance.

5. How well I do in my courses is often the "luck of the draw".

6. There is little I can do about my academic performance.

7. When I do poorly in a course, it's usually because I haven't given it my best effort.

8. My grades are basically determined by things beyond my control and there is little I can do to change that.