The Importance of Understanding the Academic Emotions of High School Students At-risk for Academic Failure

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Abstract

Emotions are ubiquitous in academic settings. However, research on academic emotions is scarce in at-risk student populations. To extend current research, this study aimed to explore the roles that academic self-concept and value have on academic emotions in high school students who were at risk for academic failure. Using *The Control-Value Theory of Academic Emotions* as a theoretical framework, the relationships between self-concept, task value, and four academic emotions (enjoyment, boredom, anxiety, and anger) were analyzed. It was expected that self-concept and value would predict academic emotions in this population; enjoyment would be predicted by high self-concept and high value, anxiety and anger by low self-concept and high value, and boredom by low value. These hypotheses were analyzed using multiple regression analyses, with emotions as the dependent variables, age, gender, achievement, and maternal education as the covariates, and academic self-concept and task value, as well as a multiplicative interaction effect, as the independent variables. Results indicated that extrinsic value positively predicted enjoyment and anxiety, and self-concept was a negative predictor of anxiety and a positive predictor of boredom. Outcomes of the current research not only inform theory, but also aid in the development of theory-driven interventions.

Resume

Les émotions sont omniprésentes dans les milieux universitaires. Toutefois, les recherches académiques sur les émotions son rare parmi des populations étudiantes à risque. Pour élargir les recherches en cours, cette étude vise à explorer l'impact que le concept-de-soi scolaire et la valeur, ont sur les émotions académiques des élèves de l'école secondaire qui sont à risque d'échec scolaire. L'utilisation la Théorie du contrôle-qualité des émotions académiques comme une base théorique, la relation entre le concept de soi, la valeur des tâches, et des quatre émotions (joie académiques, l'ennui, l'anxiété et la colère) ont été analysées. Il était prévu que le concept de soi et la valeur prédirait des émotions académiques dans cette population; la jouissance serait prédite par un concept de soi ainsi qu'une valeur élevés, l'anxiété et la colère par un faible concept de soi et une valeur élevés, et l'ennui par aucune valeur. Ces hypothèses ont été analysées à l'aide d'analyses de régression multiple, avec émotions désignées comme variables dépendantes, l'âge, le sexe, la réalisation et l'éducation par la mère comme les covariables et le concept de soi académique et la valeur travail comme variables indépendantes. Les résultats indiquent que la valeur extrinsèque prédit la jouissance et l'anxiété favorablement et le concept de soi était un facteur prédictif négatif de l'anxiété et un prédicteur favorable de l'ennui. Les résultats de la recherche actuelle ne feraient pas seulement à informer la théorie, mais aussi a contribuer au développement de la théorie des interventions menées.

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Table of Contents

List of Tables

List of Figures

List of Appendices

Introduction

Academic emotion is the term used to describe students emotions during learning, achievement, and classroom instruction (Pekrun, Goetz, Titz, & Perry, 2002). Emotions that students experience in scholastic contexts affect their motivation, persistence, and engagement in classwork, and ultimately relates to their academic achievement (Ainley & Ainley, 2011; Meyer & Turner, 2002; Olafson & Ferraro, 2001; Patrick, Skinner, & Connell, 1993; Pekrun, 2006). Academic achievement also relates to students educational and career pursuits (Pekrun, 2006). Therefore, understanding the interplay between students' cognitions, emotions, and achievement outcomes in various student populations is crucial for educators and policy makers, as such insight can help design programs aimed to improve the academic achievement of students (Durik, Vida & Eccles, 2006; Maehr, 2001).

The Control-Value Theory of Academic Emotions is a theoretical framework that looks at how motivational and competency related beliefs affect the emotions that students experience in achievement settings (Pekrun, 1992, 2006). According to this theory, emotions are the result of the interplay of various social-cognitive and motivational factors (Pekrun, 1992). The theory postulates that "achievement emotions are induced when the individual feels in control of, or out of control of achievement activities and outcomes are subjectively important – implying that appraisals of control and value are the proximal determinants of these emotions" (Pekrun, 2011, p. 32). According to the theory, emotions relate to achievement by affecting the cognitive strategies and behaviours students engage in, such as studying and paying attention to class content (Linnenbrink-Garcia & Pekrun, 2011; Pekrun, 2011; Reschly & Carolina, 2008).

Several researchers have investigated this theory (Ainley, Corrigan, & Richardson, 2005; Frenzel & Goetz, 2007; Goetz, Frenzel, Stoeger, & Hall, 2009; Pekrun, Frenzel, Goetz, & Perry,

2007; Turner et al., 2002). The majority of studies conducted with this model, however, have only investigated these variables in typical student populations (i.e., those with average cognitive ability), with the exception of one study that looked at the emotional experiences of students with cognitive impairments (Goetz, Preckel, Pekrun, & Hall, 2007). In this study, Goetz et al. (2007) cognitive ability, as measured by abstract reasoning ability, distinguished the emotions that students experienced during testing situations. Students with high abstract reasoning experienced more enjoyment, whereas low abstract reasoning was related to anxiety, and boredom was found in students with average abstract reasoning abilities (Goetz et al., 2007).

There has been little inquiry, however, into the association between cognitions, emotions, and achievement outcomes in other vulnerable student populations, such as students who attend inner-city high schools in low socioeconomic neighbourhoods. In these schools, students are exposed to many factors that place them at risk for academic failure, such as low income, limited access to resources, single-parent households, and violent neighbourhoods (Lanza, Rhoades, Nix, & Greenberg, 2010). This is evident by the fact that many inner city schools have high attrition rates and low achievement levels (Ou & Reynolds, 2008). As well, students in these schools tend to have less motivation and lower perceptions of competency compared to students who attend schools in high income neighbourhoods (Boardman & Robert, 2012).

Considering the relationship between cognitions, emotions, and achievement, insight into how students' beliefs their competency and value relate to emotional experiences in inner-city high school students can aid in the design of more theory-driven interventions to improve the academic performance of these students. The current study aims to contribute to such knowledge by investigating the cognitive antecedents (self-concept and value) of various emotions in this student population.

Literature Review

The Control-Value Theory of Academic Emotion is a theoretical model that looks at how competency and motivational beliefs arouse various emotions that students experience in achievement settings (Pekrun, 1992, 2006; Pekrun & Stephens, 2010). This theory is based on tenets of expectancy-value (Eccles & Wigfield, 2002), appraisal (Roseman, 1996; Scherer, Schorr, & Johnstone, 2001), and attribution theories (Weiner, 1985, 2008). It suggests that emotions follow from cognitive appraisals of the learning or performance situation (i.e., expectancy for failure and success, and value) and are affected by the context in which they occur (during an activity that the student enjoys or finds challenging). Emotions relate to achievement, furthermore, by affecting the learning and cognitive strategies students use, such as elaboration and effort (Linnenbrink-Garcia & Pekrun, 2011).

As evident in Figure 1, the model assumes that reciprocal relationships exist between all variables and further assumes a prototypic directional relationship in which motivation predicts emotional experiences. For example, students who find a particular class enjoyable will often find it interesting and useful (Goetz, Hall, Frenzel, & Pekrun, 2006). The emotions students experience affect the effort and learning strategies that they use (Pekrun, 2007). For example, Pekrun et al. (2002) found in his study that enjoyment results in a more holistic and creative approach to thinking, while anxiety limits attention and memory. These learning strategies, in turn, relate to achievement outcomes (Pekrun, 2000). For example, Pintrich and DeGroot (1990) found in a sample of 7th graders that elaboration, memorization, and rehearsal were related to better grades on essays, tests, and quizzes.

The context in which emotions occur is also important. Emotions are socially constructed and thus context determines how students think and value their learning (Pekrun, 2000). Through

emotional contagion and modelling, emotional experiences are exchanged between teachers, parents, peers, and students (Pekrun, 2011; Roseman & Evdokas, 2004; Scherer, 2009). For example, Frenzel, Goetz, Ludke, Pekrun, and Sutton (2010) found that teachers who are enthusiastic about school have students who display similar enthusiasm. Thus, emotions are affected not only by students cognitions and motivations, but also by the context in which they occur (Pekrun, 2000).

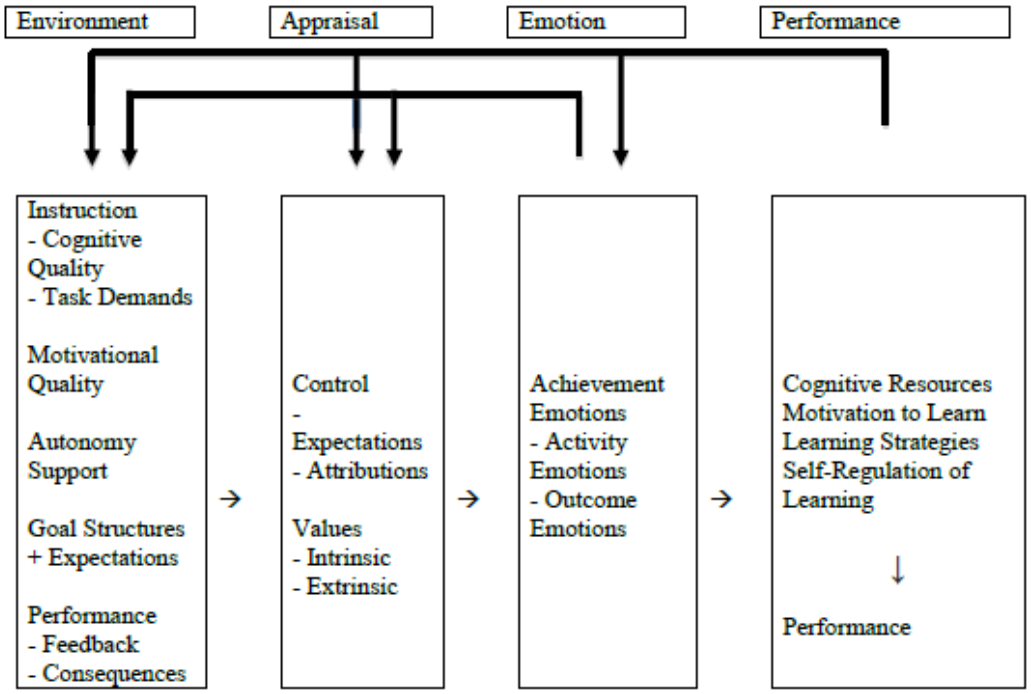

Figure 1. Control-Value Theory of Academic Emotions. Adapted from "Achievement Emotions: A Control-Value Approach," by R. Pekrun and E.J Stephens, 2010, *Social and Personality Psychology Compas, 4,* p. 244.

According to this theory, emotions provide a link between cognitions and achievement. Emotions occurs as a result of competency and motivational processes and are affected by contextual factors, such as teacher and parent relationships. The following sections will elaborate more on emotions, and the cognitive and contextual determinants of academic emotions.

Academic Emotions

Academic emotions was a term coined by Pekrun (1992) to refer to emotions that occur in educational contexts. Pekrun used a dyanmic approach to conceptualize emotional experiences (Op't Eynde & Turner, 2006). According to such a definition, **e**motions occur as a result of the interactions between various psychological (motivational, affective, cognitive) and physiological processes that take place before, during, or after activities (Lazarus, 1991). For example, emotions that occur during an activity relate to ongoing achievement tasks that can be either enjoyable or boring. Prospective emotions relate to the feelings one has in anticipation of future accomplishments (e.g., hope for success or fear of failure). Finally, emotions that occur following the completion of an activity, such as a test, relate retrospectively to the outcome (i.e., anxiety, shame, or pride; Olthof et al., 2000; Patrick et al., 1993).

According to Pekrun, emotions are either pleasant or unpleasant and are either stimulating or deactivating (Pekrun, 2002, 2006). Enjoyment and anger, which are activating emotions, for example, stimulate the individual to either approach the situation (i.e., engagement) or avoid it (Ortony & Turner, 1990; Pekrun et al., 2002). Boredom as a deactivating emotion, on the other hand, reduces stimulation and thus causes the student to disengage from the learning task (Carver & Harmon-Jones, 2009; Elliot & McGregor, 1999). For example, Pekrun et al. (2010) found in his studies of boredom that students who were bored tended to refrain from engaging in classwork, compared to students who were less bored.

Positive activating emotions help foster academic achievement. According to studies conducted by Frederickon (2001, 2004) and Buff, Reusser, Rakoczy, and Pauli (2011), educational enjoyment increases motivation and concentration, as well as inspires students to choose careers that they find enjoyable (Durik et al., 2006). The influence of negative emotions

on erudition is more equivocal, as it depends on the motivation of the learner (Carver & Harmon-Jones, 2009; Pekrun et al., 2002; Turner & Schallert, 2001). Anger, shame, and anxiety have been found to reduce motivation and focus, yet, in the presence of extrinsic motivation, can result in adaptive learning behaviour (Carver & Harmon-Jones, 2009; Olthof et al., 2000). For example, Lang and Lang (2010) found in their research on test anxiety that anxiety generally impedes students' achievement (i.e., reduces attention and interest), however in the presence of a desire to avoid failure, can result in the student feeling driven to complete the task.

Emotions are complex processes that occur because of the harmonized interplay of contextual, cognitive, and emotional factors. This causes emotions to differ based on valence, intensity, and focus (Ortony & Turner, 1990; Pekrun & Stephens, 2010). Considering the diverse range of emotions that students experience towards their scholastic endeavours, it is critical that emotions are investigated in academic contexts. Unfortunately, only until recently has education research begun to look at students' affective experiences.

The Importance of Studying Academic Emotions

Inquiry into academic emotions is not a novel phenomenon. Previous research demonstrated the link between emotions and various cognitive and behavioural outcomes across various achievement related domains such as in sports and in school (Pekrun et al., 2011). However, in all of these studies and theories, emotions were often secondary to cognitions in predicting achievement, and thus not of major interest for educators and researchers (Linnenbrink-Garcia & Pekrun, 2011; Schutz & Decuir, 2010). In recent years however, emotions have become of primary importance for educators and researchers. This is evident by the large number of empirical studies published on the topic of academic emotions (Pekrun et al., 2002). Several factors have contributed to this surge in interest; some of these include research

that has found emotions to be present in classrooms, high-stakes testing, and the rise of positive psychology.

Presence of emotions in classrooms. A study from Pekrun et al. (2002) was one of the first in educational research to study a diverse range of emotions within educational settings. They referred to emotions that occurred in education settings as "academic emotions." Through both quantitative and qualitative research, Pekrun and his team were able to identify various emotions that students reported towards their learning, classroom instruction, and achievement. For example, across all learning environments, anxiety was the most reported emotion, due to the stress of wanting to perform at their highest potential, followed by enjoyment, hope, pride, anger, and boredom. Thus, contrary to previous studies, Pekrun's (2002) study highlighted the presence of emotions in various learning environments.

Since the Pekrun et al. (2002) study, other empirical studies have emerged that have found emotions to arise in various learning environments. For example, Dettmers et al. (2011) found that students report academic-related emotions while doing homework at home. Linnenbrink-Garcia, Rogat, and Koskey (2011) looked at emotions that are aroused during classroom activities. In her study, students who were more disengaged and exerted less effort during group activities were more tired and nervous compared to those that were invested in the group activity. Other studies have looked at academic emotions that emerge in various subjects such as in math, science, Latin, and sports (Ainley et al., 2005; Op't Eynde & Corte, 2006; Goetz, Frenzel, Hall, & Lu, 2009). Goetz, Pekrun, et al. (2006) found in a study of 200 elementary school children, that school children who enjoyed music and sports more than math, were more anxious in Latin instruction and math and sports, and were bored in all school subjects but sports. Studies have also evaluated differences in emotions across gender and age.

For example, Frenzel, Pekrun, and Goetz (2007) found that girls reported lower enjoyment and feelings of control towards mathematics compared to boys. Thus, emotions are experienced across a variety of academic contexts and student populations.

High-stakes testing. Maehr (2001) states in his paper entitled " Goal Theory is Not Dead- Not yet, Anyways" that over the years, society has increasingly stressed academic achievement as being crucial in determining the personal, social, economic, and professional identity of an individual. Maehr (2001) suggests that in recent years the pressure for achievement has become more important than ever before. According to Berliner and Nicols (2007), in America this is especially accentuated by the increase in high-stakes testing that was introduced by the *No Child Left Behind Act* (Berliner & Nichols, 2007; Zins, Bloodworth, Weissberg, & Walberg, 2004). In Canada, a similar educational reform was introduced that increased standardized testing and accountability of schools concerning their students' achievement (Canadian Council on Living, 2009). In Quebec, for example, schools are obligated to ensure that students meet specific academic and socio-emotional competencies and objectives each school year.

Considering, that emotions are present in learning environments and are linked to achievement, educators and policy-makers are now interested in how emotions relate to achievement outcomes (Schutz & DeCuir, 2002). Such research has important implications in the development and implementation of programs and policies that aim to improve the achievement of students (Berliner & Nichols, 2007; Fredrickson, 2006; Pekrun, 2007; Reschly, Huebner, Appelton, & Antaramian, 2008; Schutz et al., 2006; Zins et al., 2004). Such interest is made obvious by the surge of books, papers, and research dedicated to the study of academic emotions that have emerged in the past decade (Pekrun & Stephens, 2010).

Positive Psychology. In the last decade, positive psychology has brought positive emotions to the forefront of many motivational and cognitive theoretical frameworks (Hoy & Tarter, 2011). According to the tenets of positive psychology, positive emotions are determinants of well- being, social interactions, and achievement (Fredrickson, 2001; Lewis, Huebner, Reschly, & Valois, 2009; Ong, Bergeman, Bisconti, & Wallace, 2006). Positive emotions are related to the use of elaboration, rehearsal, attention, and effort (Frederickton, 2001; Pekrun et al., 2002; Valiente, Swanson, & Eisenberg, 2011). Positive emotions also motivate students to enroll in particular courses that help lead to careers that they find stimulating and enjoyable (Harackiewicz, Rozek, Hulleman, & Hyde, 2012). For example, Jacobs, Finken, Griffen, and Wright (1998) found in a sample case study of 12th grade girls, that girls who reported more interest and ability in science were more inclined to pursue a science-related career, compared with girls who were less interested and competent in this subject.

Summary. The recent interest in studying emotions by scholars is evident by the extensive amount of scientific inquiry of emotions in the last few years (Nett et al., 2010; Pekrun, Goetz, Frenzel, Barchfeld, & Perry, 2011; Schweinle, Turner, & Meyer, 2008). Research has looked at emotions that occur in various school subjects (Goetz, Pekrun, et al., 2006), and across various classroom environments such as in virtual education (Noteborn, Bohle Carbonell, Dailey-Hebert, & Gijselaers, 2012) and in students who are in the military (Artino, 2009). Understanding the antecedents and outcomes of emotional experiences and using this information to create optimal learning environments for both students and teachers has become important for educators. Emotions are present in education contexts and can either promote or impair achievement (Berliner & Nichols, 2007; Linnenbrink, 2006; Zeidner, 2007).

Cognitive Antecedents of Academic Emotions

Academic emotions vary in students based on their personality, cognitive ability, interest in the task, previous experiences, and the classroom environment (refer to Figure 1; Pekrun, 2006). Among all of these variables, beliefs about one's capability and value are the two most significant predictors of emotions (Pekrun, 1992). Students will experience emotions depending on how much control they perceive to have over an academic activity and the value of that activity (Pekrun, 2006).

Contextual and subjective appraisals are defined as factors in the differential arousal of various emotions that students experience in academic settings (Atkison, 1956; Dweck, 1984; Frijda et al., 1989; Pekrun, 1992). The reason for this is that the manner in which an individual cognitively gauges a situation, based on the situation's value (interest, intrinsic/extrinsic value) and how much they can control the outcome of the situation, will elicit specific affective reactions (Daniels et al., 2009; Linnenbrink, 2006; Schutz & Decuir, 2010). These affective reactions (created by the specific combination of physiological, motivational, psychological subcomponents of emotional experience) will determine the subsequent manner in which the individual will behave (Scherer, 2009). For example, in a school environment, cognitive appraisals typically pertain to how valuable and interesting the subject matter is and how much control (based on perceived capabilities) the student believes they have over their scholastic outcomes (Forsyth, Story, Kelley, & McMillan, 2008; Patrick et al., 1993; Roseman & Evdokas, 2004). An emotion is demonstrated based on how students evaluate the amount of control they have over their learning outcomes and how motivated they are to invest effort in the task (Pekrun et al., 2011; Roseman & Evdokas, 2004). Based on these cognitive evaluations, students engage

in various meta-cognitive strategies such as elaboration, attention, creativity, and persistence (Ashby et al., 1999; Blair, 2002; Pekrun et al., 2002; Pintrich & DeGroot, 1990).

In various studies that dealt with emotions in academic settings, control and value appraisals have been found to either additively or multiplicatively predict emotional experiences (Goetz, Frenzel, Stoeger, et al., 2009). Studies have found that independently, control and value appraisals precede specific emotional experiences, such as high control and value independently predict greater enjoyment (Frenzel & Goetz, 2007; Pekrun et al., 2010). However, studies such as the one conducted by Goetz et al. (2009), found that the combined effect of both control and value enhanced enjoyment and pride. Thus, emotional experiences can be aroused by perceptions of competency and value, either additively or multiplicatively.

Cognitive perceptions. According to The Control-Value Theory of Academic Emotions, students have two types of cognitive perceptions, "action-control expectancies" and "action-outcome expectancies" (Pekrun, 2006). Action control refers to the belief that one has the potential to succeed in a learning environment. Self-concept and self-efficacy are used to operationalize this construct (Eccles & Wigfield; 1992; Scherer, Schorr, & Johnstone, 2001; Skinner, 1996). On the other hand, action-outcome expectancies refer to the presumption that with effort and hard work, an individual will be able to succeed and avoid failure (Boekaerts, 1993; Dweck, 1986; Pekrun, 1992; Weiner, 2008).

The current study will look only at the action control with respect to perceived academic competence, more specifically, known as the students' academic self-concept (Pekrun, 2006). Self-concept is the perception of one's ability to succeed in a situation (Covington, 2012; Marsh, 1990). These beliefs develop as a result of one's experiences and interactions within their environment that reinforce their self-appraisals (Covington, 2012). In the academic setting,

academic self-concept refers to a student's perceived capacity to control and influence their learning and environment (Archambault, Eccles, & Vida, 2010; Guay, Boivin, & Larose, 2004; Marsh, Ellis, Parada, Richards, & Heubeck, 2005; Wigfield & Eccles, 2002).

Self-Concept. Self-concept is the perception of one's ability to succeed in a situation (Covington, 2012; Marsh, 1990). These beliefs develop as a result of one's experiences and interactions within their environment that reinforce their self-appraisals (Covington, 2012). In the academic setting, academic self-concept refers to a student's perceived capacity to control and influence their learning and environment (Archambault, Eccles, & Vida, 2010; Guay, Boivin, & Larose, 2004; Marsh, Ellis, Parada, Richards, & Heubeck, 2005; Wigfield & Eccles, 2002). Research has found that self-concept and emotions have stronger relations for math and physics courses when compared with linguistic and subjectively natured courses (Goetz et al., 2007). Furthermore, the greater a student's academic self-concept, the greater the positive relationship between enjoyment and academic achievement (Goetz et al., 2011; Noteborn, Bohle Carbonell, Dailey-Hebert, & Gijselaers, 2012; Pekrun et al., 2011, 2002). Conversely, when a negative self-concept is coupled with low expectations of achievement success, students' report feelings of anxiety and hopelessness (Noteborn et al., 2012; Pekrun et al., 2002, 2011).

Value appraisals. The subjective value of an event pertains to the overall value that an activity has for an individual. This value or importance motivates them to engage in the pursuit of a particular action. This motivation can be either intrinsic or extrinsic in nature (Ryan & Deci, 2000; Hidi & Harackiewicz, 2000; Pekrun et al., 2002; Schiefele, 1991). Intrinsic value is the direct result of the joy that engaging in the task itself brings (Hidi & Harackiewicz, 2000). For example, Ainley et al. found in a series of studies, that students who were interested in science were more productive and creative in solving science problems compared to students with less

interest in the discipline (Ainley, 2006; Ainley et al., 2005; Hidi, Berndorff, & Ainley, 2002). Extrinsic value is demonstrated when a task is done solely to fulfill an external goal or reward (Anderman & Wolters, 2006). Pintrich and DeGroot (1990) in their study concluded that students reported more motivation to exert effort on a task when it was perceived as both enjoyable and useful.

Eccles and Wigfield (1995, 2002) describe "task value" as consisting of attainment value, intrinsic value, utility value, and cost. Engaging in a specific task because it brings one inherent enjoyment or interest reflects the intrinsic value of the task (Cszikszentimahlyi, 1988; Deci & Ryan, 2000). Attainment value refers to how significant the student feels the task is which is brought on or informed by his or her own personal values towards achievement (Feather, 1988). Utility is how beneficial a task is in allowing an individual to attain a long- or short-term goals or because of external incentives (Eccles & Wigfield, 1995). Utility value is closely related to extrinsic motivation as proposed by Deci and Ryan (2000). Finally, cost refers to the aversive consequences of performing a task, such as effort, failure, or the inability to participate in a more desirable activity.

Most studies using these values only considered attainment value, intrinsic value, and utility as these sources of motivation entice action, while cost refers to avoidance (Eccles & Wigfield, 2002; Simpkins, Fredricks, & Eccles, 2012; Turner & Schallert, 2001). Studies looking at subjective- task value and school performance have found motivation (intrinsic and extrinsic) to relate to how driven students are to complete their learning tasks (i.e., how much effort and work they are willing to invest). As well, motivation has been found to relate to how likely students are to attend classes and, more importantly, whether they are committed to their educational pursuits (Durik et al., 2006).

Although both intrinsic and extrinsic motivation relate to achievement, there are some differences in how they relate to emotions. Ainley and Ainley (2011) found in their study of interest and engagement in science that students who more interested in science found it more enjoyable and be more inclined to engage in it, versus students who do not find science interesting. The latter were more inclined to avoid participation. Extrinsic value, in contrast to intrinsic value, relates to outcome emotions such as anxiety and hope; students who believe they will fail may persevere if they believe the activity is beneficial (Harackiewicz et al., 2012; Ouano, 2011). Thus, value relates to both positive and negative emotional experiences (Pekrun, 2007). Such is true when analyzing enjoyment, anger, and anxiety for example. Boredom occurs when the student does not value the task and has no interest in engaging in it (Daschmann, Goetz, & Stupnisky, 2011).

Linking Control and Value Appraisals to Emotions

Emotions are idiosyncratic experiences that occur because of both motivational and cognitive processes (Kleinginna & Kleinginna, 1981). According to Pekrun et al. (2002), control and value beliefs precede emotional experiences (Frijda et al., 1989; Roseman & Evdokas, 2004; Scherer, 2009). Success in school, for example, is considered more important if it is not only valued, but is something that the individual feels they have the skills to be successful in (Frenzel & Pekrun, 2007; Pekrun, 2006). Particular emotions occur based on how students gauge their competency and value (Goetz et al., 2011; Jacobs et al., 2011). For example, if an individual feels competent to succeed in a situation and finds the task interesting, the student will experience joy. Secondly, if the activity is perceived to be beyond the student's perceived aptitude (low perceived control), but the student finds the task useful or important, anger or anxiety will be experienced. Finally, if the activity does not have any value to the individual, he

or she will experience boredom (Pekrun, 2006; Pekrun & Stephens, 2010). Thus, according to Pekrun, emotions are elicited when students value achievement (except for boredom) but have differential beliefs about their capacity for success. For example, students who experience more anger and anxiety have lower perceptions of control, efficacy, motivation, and used less efficient learning strategies, compared with students who find school (Pekrun et al. 2011).

Other research has also corroborated the relationship between cognitions and emotions (Daniels et al., 2008; Hijzen et al., 2007; Izard, Stark, Trentacosta, & Schultz, 2009; Linnenbrink, 2006). Two examples are Weiner's attribution theory and Boekaert's learning theory. Weiner's (1985, 2008) attribution theory of academic emotions, includes various emotions such as pride, guilt, and shame. This model suggests that emotions are related to how a student interprets and understands their successes and failures. For example, students who attribute their successes to their own aptitude will experience pride, while students who attribute their failure to bad luck will experience hope. In Boekaerts' Learning Theory (1993), the emotions arise based on the match between a student's perceived mastery over the demands of their environment. For example, students who adapt to their learning environment have more realistic expectations of their ability to succeed, and experience more favourable emotions, compared to those students who have unrealistic or distorted expectations of perceptions of control (Boekaerts, 1993).

The Environment and Emotions

Another important dimension of the theory are the contextual factors that influence students' perceptions of competency and value (Pekrun, 2000). For example, certain features of an environment provide feedback regarding how likely they are to succeed in a given task, as well as how interesting the task is (Linnenbrink & Pintrich, 2003). This inadvertently influences

their emotional experiences and willingness to perform in that environment. There are distal and proximal social, cultural, and contextual determinants of academic emotions (refer to Pekrun, 2000 for a more detailed description). These contextual determinants are related to academic cognitions and emotions (refer to Figure 1).

Proximal contextual determinants include, for example, the classroom and school environment, specifically the student-teacher relationship and the opportunities provided at school. Some of these situational variables include the cognitive and motivational quality of the classroom setting, which research has found includes the enthusiasm of teachers and fellow students, as well as the cognitive quality of the classroom material. Turner et al. (2003) found that students who had teachers that were more passionate about the subject they taught were also more enthused about learning the course material compared to those students in classes with teachers that were not as interested in the content. Other determinants include the support for autonomy that teachers provide to their students. Tsai et al. (2008) found in their study of classroom environments that students who reported having teachers that promoted independence to complete their coursework felt that they were more in control of their academic success, compared with students who were not given the same freedom. Other proximal determinants include the students' values towards achievement, feedback and consequences of, and social relatedness (Pekrun, 2006).

Beyond proximal determinants, the theory also speculates that distal factors such as social economic factors, the education system, and cultural values can influence the cognitive appraisals and emotions of students (Pekrun, 2006). These factors have not been investigated as thoroughly as other contextual influences, with the exception of studies that compared the

control, value, and emotions between Chinese, and Canadian and American university students (Frenzel, Thrash, Pekrun, & Goetz, 2007; Pekrun et al., 2011).

In addition to cultural and social factors, the home environment is particularly an important social context where students' self-perceptions, beliefs, and motivations to succeed are nurtured, yet this context has seldom been explored by education researchers with respect to emotions. Considering that research has found low-income, parental education, and neighborhood to affect students motivation and academic success, inquiry into factors in the home environment that place students at risk for academic failure is important for educators to investigate, particularly to aid in the development of intervention programs (Taylor, Clayton, & Rowley, 2004).

The Role of the Home Environment on Academic Emotions

According to the social-constructivist theory of academic emotions, emotions are subjective experiences that vary for each individual and are also embedded in various socio-historical contexts that influence the intensity and frequency of the emotion (Eccles & Wigfield, 1995; Op't Eynde et al., 2011; Frome & Eccles, 1998; Pekrun, 1992; Taylor, Clayton, & Rowley, 2004). According to Pekrun's theory (1992, 2000), such social factors include teacher expectations, classroom environment, peers, and to an extent parental expectations. Previous research using The Control-Value Theory of Academic Emotions has focused mostly on investigating teachers, peers, and parents values and attitudes towards the school setting (Davis-Kean, 2005; Frenzel et al., 2009; Frome & Eccles, 1998; Harackiewicz, Rozek, Hulleman, & Hyde, 2012). However, there has been limited research applying this theory to how the home environment also places students at risk for underachievement and dropping out by influencing their academic self-efficacy, task-value, and academic emotions. Only two studies in the

Academic Emotions literature have considered the effect that parental expectations of success and perceived value have on students' academic emotions (Frenzel, Goetz, Pekrun, & Watt, 2010; Goetz, Pekrun, et al., 2006).

In a study of students' emotions during Latin instruction, Goetz, Pekrun, et al. (2006) found that parental expectations relate directly to the emotions that students reported during Latin instruction. These researchers found moderate correlations between parental expectations for success and value of Latin instruction with enjoyment, boredom, anger, and anxiety. More specifically, they found that students' academic-related cognitions mediated the relationship between parental influence on achievement (value for success in Latin instruction) and academic emotions. Students who had parents with realistic and positive expectations, were more motivated and thus experienced more positive emotions towards studying (Goetz, Pekrun, et al., 2006). Meanwhile, in a sample of Grade 5 to 9 students, Frenzel et al. (2010) found that interest in math was directly associated with parental expectations, particularly in students who had reported that their parents endorsed more favourable views of success in math. No other studies have investigated how the home environment affects the academic emotions of students; particularly what factors can undermine emotional experiences by influencing students' perceptions of competency and value.

Contextual risk. Inquiry into the home environment is important because of the powerful social role that parents have in their child's social-emotional development (Eccles & Wigfield, 2002; Gutman, Sameroff, & Eccles, 2002). Many risk factors in the home environment have deleterious effects on the scholastic achievement of students; some of these risks include maternal education, occupational prestige, income, family structure, neighbourhood and cultural background (Taylor et al., 2004). All of these variables have been known to negatively relate to

many childhood outcomes, including mental and physical health, educational and vocational pursuits, and psychosocial well-being (Boardman & Robert, 2012; Boxer, Goldstein, Delorenzo, Savoy, & Mercado, 2011; Frome & Eccles, 1998).

For example, Acharya and Joshi (2009) found that parents with a high school or post-secondary educational background, particularly mothers, had more positive values towards achievement compared with mothers with a lower education. More specifically, research has found that maternal educational and income, influences a student's self-efficacy and achievement through quality of the home environment (Acharya & Joshi, 2009). Factors such as parenting style, discipline, involvement, and encouragement have been found to relate positively to the education level of the mother (Brody, Flor, & Gibson, 2012; Taylor et al., 2004). David-Kean (2005) found in a sample of elementary school-children that parental education was positively related to parental warmth and praise, as well to both math and verbal achievement. Brody and Flor (1998) found in a sample of school-age children that maternal education was positively related to the parents' school involvement. Other studies have found that mothers with higher education levels also participate more in school-related activities such as field trips (Boxer, Goldstein, DeLorenzo, Savoy, & Mercado, 2011; Evans, Kim, Ting, Tesher, & Shannis, 2007; Lanza, Rhoades, Nix, & Greenberg, 2010; Roberts, 2002).

Academic risk and school context. Investigating the link between factors that place students at-risk for academic failure is important because these factors affect self-concept and values in students (Boxer, Goldstein, DeLorenzo, Savoy, & Mercado, 2011; Cleveland, Gibbons, Gerrard, Pomery, & Brody, 2005). The effects on cognitive appraisals, in turn, affect their emotions and achievement. Considering that students in inner-city schools are exposed to several risk factors, such as low income, resources, and poor parenting, it is important for researchers to

understand how these adversities affect the thought processes emotions, and achievements of these students (Brody et al., 2012; Evans, Kim, Ting, Tesher, & Shannis, 2007; Leventhal & Brooks-Gunn, 2000). Boardman and Roberts (2000) found in their study that students who go to schools that are located in low socio-economic neighbourhoods tend to have lower self-concepts compared to students who attend schools in middle or high socio-economic neighbourhoods. These researchers attributed this link to the institutional discrimination that these students face which is reinforced by the limited resources available to them (i.e., schools, community centre), and lack of supportive adults in their lives. The lack of support reinforces negative perceptions of worth and ability and translates into a lower system of values.

Most research concerning inner-city school students has not looked at how cognitive and motivational factors relate to students emotional experiences. Rather, most studies emphasize perceptions of competency and academic achievement (Alexander, Entwisle, & Horsey, 2011; Becker & Luthar, 2010; Evans, Kim, Ting, Tesher, & Shannis, 2007). For example, Ou and Reynolds (2008) found in a sample of 1286 youth that at age 20, educational attainment of success was predicted by maternal education, school attendance, grade retention, and perceptions of competency. Students with mothers with a high school or lower level of education had low perception of competency, low school attendance, and were less likely to finish high school (Ou & Reynolds, 2008). Considering that perceptions of competency and value determine students' emotions; it becomes important for research to investigate how the cognitions of at-risk students affect their emotions and subsequent achievement outcomes. Such research has potential implications for the creation of interventions.

Objectives and Rationale

The current study extends academic emotions research by looking at how appraisals of competency and value relate to the emotional experiences of inner-city high school students. Research has shown that students' cognitions relate to their affective experiences and achievement (Pekrun et al., 2011). Most of this research, however, has been conducted with typical student populations and not in vulnerable student samples, where students have low perceptions of competency, motivation, and achievement. Inquiry into how the cognitive and motivational beliefs of these at-risk students manifest and relate to their emotions will help educators and policy-makers create intervention programs that foster optimal learning environments by encouraging competency, motivation, and adaptive emotions.

Using the Control-Value Theory of Academic Emotions as an organizing framework in this study, emotions were defined as occurring as result of the unique and combined effects of motivational and competency based beliefs; perceptions of competency and value predict academic emotions (Pekrun, 2006). Self-concept measured students perceptions of their capability to succeed in academic contexts (Marsh, Parada, & Ayotte, 2004). Extrinsic and intrinsic value were used to measure motivation in this study. Attainment (the value of achievement) and utility (usefulness of a task) value scales were used to measure extrinsic value, while interest was used to evaluate intrinsic value (Wigfield & Eccles, 2002).

Self-concept and intrinsic or extrinsic value were used to predict four academic emotions: enjoyment, boredom, anger, and anxiety. The reasons these emotions were selected are two-fold. First, the most commonly experienced emotions towards learning and achievement were selected. According to research by Pekrun et al. (2002), university and high school students reported the most anxiety and enjoyment, followed by anger and boredom. Second, emotions of

interest were those that varied with respect to intensity, focus, and activation. Enjoyment is the pleasure a student feels toward some aspect of learning. This emotion is regarded as positive and activating since it results in engagement. Boredom, on the other hand, refers to mundane activities such as going to class. This emotion is negative, deactivating, and reduces students' motivation to participate in learning activities, such as classwork or homework. Anxiety and anger are considered negative activating emotions that are related to achievement outcomes and occur because of fear or aversion towards an outcome (i.e., fear of failure). The present study looked at these four emotions in order to evaluate the diverse academic emotions of students.

In the current study, risk was operationalized as the contextual factors that relate to underachievement and dropout in student populations, neighbourhood, high attrition rate, achievement, and maternal education. In the research all of these variables relate to students motivation and achievement (Evans et al., 2007; Quilliams & Beran, 2009; Scheel, Madabhushi, & Backhaus, 2009) . The schools selected to participate were located in low-income neighbourhoods, and as well, they had high attrition rates. Maternal education and achievement were measured in this study.

Hypotheses

The study hypotheses were as follows:

1) It was hypothesized that value would predict emotions. More specifically that high value (interest, value, usefulness) would relate positively to enjoyment, anger, anxiety and anxiety, while low levels of value would relate positively to boredom.
2) It was hypothesized that self-concept would predict emotions. More specifically, students with high self-concept would report more enjoyment, while students with a low self-

concept would report more anxiety and anger. Students who were more bored would have lower self-concepts.

3) It was hypothesized that there would be an interaction between self-concept and value; students who reported high self-concept and value would report more enjoyment, while students with low self-concept, but high value, would report more anxiety and anger. Boredom would be predicted by low levels of both self-concept and value.

Method

Participants

Participants in this study were inner city high school students considered at risk for academic failure. Forty- three participants were recruited from two samples: twenty-three from the CN Adopt-an-Alouette program and twenty from an inner-city high school in Montreal. Participants were between 12-19 years old, with an overall mean age of 16.00 (*SD* = 1.63). The sample was comprised of mostly male participants (70.50%). On average, students were from grades 7-11, with a mean grade level of 10.00 (*SD* = 1.16). Students reported having GPAs between 60-80% in the previous academic year, and an average GPA of 73.95% (*SD*= 7.14). Descriptive results revealed that 74.40% lived in a single-parent household, 68.40% had a mother with a CEGEP or higher education level, 53.50% had a mother with a full-time job, 62.80% reported that their mother was born in Canada, 79.10% spoke English, and all reported that they were born in Canada.

CN Adopt-an-Alouette program. The CN Adopt-an-Alouette program is a joint program between CN railways, McGill University, and the Montreal Alouettes, that aims to improve the academic and non-academic skills of at-risk high schools through mentorship and

tutoring workshops. Schools and community centres that are asked to participate in the program are considered at-risk because of low overall academic performance and high attrition rates. Participants for the current study were recruited from the program that took place from September 2011 to April 2012.

Several schools and one community centre in the Montreal area were asked by program coordinators to participate in the program; however only four schools and one community centre agreed to participate. Of the participating institutions, two of the high schools and the community centre agreed to participate in the present study. Because the current research was part of CN Adopt-an-Alouette program, no consent from the school or board was required for the current study. The only approvals necessitated were from prospective participants and their caregivers.

Participant Recruitment

For the current research, participants from the CN Adopt-an-Alouette program were recruited from December 2011 through February 2012, while participants from the inner-city high school were recruited from March 2012 through April 2012. Within each school, students were asked directly by the researcher (and research assistants) to participate. The researcher informed these students that partaking in the study was voluntary and would have no bearing on the student's academic performance or involvement in the CN Adopt-an-Alouette program (if applicable). Participants were notified that compensation for participation would consist of a restaurant gift certificate. Once the researcher provided a verbal overview of the study, participants were given assent forms to sign. Participants under the age of 14 were given consent forms to have their parents sign, and were asked to return the signed forms the following week (refer to Appendix A). Each week the researcher collected all of the signed forms at each school and community centre.

The other sample of students investigated in the current study was recruited from an inner-city high school. This particular school had a largely at-risk student population, characterized by its high dropout rate and low overall school performance. After receiving approval from the McGill University Research Ethics Board committee, the school principal was solicited directly by the researcher to agree to participant recruitment. In this case, the principal's consent was sufficient to begin research at the school since, according to the English Montreal School Board's policies, research studies do not have to go through a school board ethics committee and, rather, only requires the principal to grant permission.

Measures

Demographic information. Participants completed a demographic questionnaire consisting of questions about the participants age, gender, marital status of their parents, highest educational level of each of their parents, number of adults living in their home, each parents' occupation, language spoken at home, country they and each of their parents were born in, and their GPA from the previous academic year (refer to Appendix B). This questionnaire included the background variables (i.e., maternal education, achievement, age, and gender) and was completed before participants completed the other three self-report measures (described below). The researcher did not have access to participants' report cards and thus the GPA, as reported by students, was used to control for the effects of achievement.

Academic self-concept. The academic self-concept subscale from the Self-description Questionnaire II (SDQ II) was used to assess how students perceived their ability to succeed in academic settings (Marsh, 1992; refer to Appendix C). The SDQ II has a total of 102 items and 11 subscales that look at several self-concepts (e.g., physical ability, physical appearance, opposite sex, honesty/trustworthiness, parent relationships, emotional stability, self-esteem, verbal, math, and school; Marsh, 1992).

The academic self-concept scale of the SDQ II is a 10-item scale that is used to assess students' overall views about their personal capability to perform and excel in school. This scale looks specifically at how students assess their competency across all school subjects (e.g., "I get bad marks in most school subjects"; Marsh, 1992). Participants answered questions using 1 (*strongly disagree)* to *5* (*strongly agree)* rating scale. High scores on this scale indicated a high self-appraisal of academic confidence.

Previous studies have found this scale to have acceptable reliability (α = .80-.90; Marsh & Parada, 2004). Because in Montreal high school students go to CEGEP before university, some of the items required modification. Thus, questions such as "I'm too stupid to get into a good university" were changed to "I'm too stupid to get into a good CEGEP." Internal reliability for the present study and was found to be acceptable (α = .75). On average, participants reported high levels of self-concept (refer to Table 2). To avoid any overlap between items on the self-concept and emotions scale, related items between the SDQ II and AEQ were removed (as in the Goetz et al., 2006 study of self-concept and academic emotions).

Achievement emotions. The Academic Emotions Questionnaire (AEQ) was used to measure students emotions (refer to Appendix C). The AEQ is a multidimensional self-report questionnaire that measures emotions that occur before, during, and after learning, studying, and writing tests (Pekrun, Goetz, & Perry, 2005). This instrument has been found to have high validity and reliability in both high school and college/university settings in Canada, Germany, and China (Frenzel et al., 2007). This study looked specifically at four learning emotions: enjoyment, anger, boredom, and anxiety. Forty-one questions measured these four emotions: 10 items for enjoyment, 11 items for boredom, 11 items for anxiety, and 9 items for anger.

Based on the four selected academic emotions, students answered the questions based on how relevant each of these academic emotions were to how they felt at the time towards their learning environment (e.g., "I enjoy being in class"). Participants answered questions using a 5-point likert scale from 1 (*strongly disagree)* to 5 (*strongly agree*) (Pekrun et al., 2005). High scores on each scale indicated that the participant experienced each emotion at a greater frequency and intensity.

Research has found that boredom, enjoyment, anxiety, and anger have good internal-reliability (enjoyment, $\alpha = .78$ across 10 items; anger, $\alpha = .86$ across 9 items; anxiety, $\alpha = .84$ across 11 items; boredom, $\alpha = .92$ across 11 items; Pekrun et al., 2002). To ensure that these scales had adequate internal reliability in the present study, Cronbach's Alpha was computed for each emotion measure. Initially, reliability tests revealed relatively weak ($\alpha < .70$) consistency scores with original AEQ items (41 items): enjoyment $\alpha = .69$, boredom $\alpha = .64$, anxiety $\alpha = .65$ and anger $\alpha = .69$. To improve the reliability of each subscale, items that had negative or zero correlation with the other items were removed. The new reliability scores were as follows: when four items were removed, reliability on the enjoyment subscale rose to .70 from .69; when five items were removed, internal reliability rose from .64 to .71 for boredom; when three items were removed from the anxiety subscale, reliability rose from .65 to .68, and finally on the anger subscale, when four items were removed, Cronbach's Alpha rose from .69 to .74 (refer to Table 2). Each emotion was recoded using the items that resulted in the highest reliability level. Descriptive statistics were run on these final composite variables. On average, participants reported experiencing average levels of boredom, anger, and slightly lower levels of anxiety and enjoyment (refer to Table 1).

Task value. The Task Perceptions scale by Eccles and Wigfield was used to measure intrinsic and extrinsic task-value for the current study (Wigfield, 1994; Wigfield & Eccles, 1995, 2000; refer to Appendix C). According to Eccles and Wigfield attainment value, intrinsic value, and utility value reflect overall task value (Eccles & Wigfield, 1992). Although over the years several adaptations of the task perception scale were created (Wigfield, 1994; Wigfield & Eccles, 1995, 2000), for the present study the perceived task value subscale of the Children's and Adolescent's self and task perceptions scale for mathematics was used (Eccles & Wigfield, 1995). Although this version of the task perceptions scale was designed specifically to assess beliefs towards mathematics, it was included in this study because it is the only known version of this scale designed and validated on a high school student sample. Because the scale was intended to evaluate value towards mathematics and the current study looked at overall value towards school, the wording of many of the items on the scale had to be changed. For example, a question such as "In general I find working on math assignments to be boring" was changed to "In general I find working on school assignments to be boring." Aside from some of the question modifications, the overall structure of the task perceptions scale remained the same.

The Task Perceptions subscale is a seven-item scale that looks at the incentive value of academic engagement that is based on the nature of the task, as well as the larger objectives and motivations of the individual (Eccles & Wigfield, 2000). These dimensions of value are measured on three subscales: intrinsic value, attainment value, and usefulness of school-related assignments. On each subscale, participants answered questions using a seven-point likert scale that asked them questions regarding their intrinsic interest (e.g., "In general I find working on school assignments to be enjoyable or boring"), attainment value (e.g., "How important is it for

you to get good grades?"), and perceived usefulness (e.g., "How useful is what you learn at school for when you graduate and go to work?") related to school activities.

Each of the value dimensions has been found in the literature to have good internal and external reliability: intrinsic value (α = .76), attainment value (α = .70), and extrinsic utility (α = .62; Wigfield & Eccles, 1995). In the current study, internal reliabilities were also calculated to ensure internal consistency of items in the present sample. On average, Cronbach's Alphas were found to be generally acceptable for all three value scales (intrinsic α = .67, attainment α = .73, utility α = .73). Looking at Table 2, it is evident that students reported relatively high levels of each of the value scales, particularly attainment value. Overall, students reported school to be important and useful and not as interesting.

Table 1

Descriptive Statistics

Variable					
	Items	α	*M*	*SD*	Observed Range
Self-concept	10	.75	4.26	0.87	2.70-5.60
Enjoyment	6	.70	2.77	0.58	1.67-3.83
Boredom	6	.71	3.38	0.54	2.50-4.67
Anger	5	.74	3.01	0.65	1.80-4.60
Anxiety	9	.68	2.83	0.49	1.89-3.78
Intrinsic value	2	.67	3.21	1.30	1.00-6.00
Attainment value	3	.73	5.33	2.33	2.33-7.00
Utility value	2	.73	4.67	1.34	1.00-7.00

Procedure

Data for this study was collected by the researchers and research assistants between February to April 2012. After students and their parents signed the consent forms, questionnaires

were administered to students by the researchers and research assistants. The total time needed to complete the questionnaire was roughly 30 minutes. Participants who were a part of the CN Adopt-an-Alouette program were given questionnaires at the beginning of a scheduled program session at their school/community centre. At the inner-city high school, questionnaires were given out during school hours by the researcher, with the help of the school guidance counsellor.

Results

The statistical assumptions of regression analyses (normality, linearity, multicollinearity, and independence of errors) were verified (Tabachnick & Fidell, 2007). Missing cases were deleted using the listwise option in each regression analysis, resulting in a final sample size of 35 participants. Seven participants were not included in the regression because they were missing data: two individuals were missing data for gender, enjoyment, boredom, intrinsic, self-concept, attainment, and utility, five did not indicate their mother's education or their GPA, and three were missing anxiety and anger scores (refer to Table 2). No univariate or multivariate outliers were found upon examination of the boxplots for each variable and Mahalanobis distance for each case. Histograms of studentized residuals suggested that assumptions of normality and linearity were satisfied for each variable. Skewness and kurtosis statistics for each variable were verified. All of the study variables, with the exception of maternal education, were normally distributed. To adjust for this, the maternal education variable was regrouped: participants who reported that their mother's highest education level was high school or lower were classified as "low," and those who reported that their mother had an education level that was CEGEP or higher (i.e., university, post-doctoral education) were classified as "high." Once this change was made, maternal education in its dichotomized form had a more even distribution. Evaluation of the correlations (refer to Table 2) suggests that there were no issues with multicollinearity among the predictor variables, since there were no correlations between variables higher than .70

(Tabachnick & Fidell, 2007). Independence of errors was tested for in each analysis and no significant violations were found.

Correlational Analyses

Correlational analyses for all the study variables and emotions were conducted. Referring to Table 3, a strong positive correlation of r = .438 was found between utility value and enjoyment, indicating that students who reported learning to be useful also found it more enjoyable. Enjoyment was also significantly related to boredom (r = -.636) and anger (r = -.390), indicating that students who reported more enjoyment were less bored and less angry. Boredom was also found to relate significantly to anxiety (r = -.328) and intrinsic value (r = -.361), indicating that students who were more bored were less anxious, and found school less interesting. A significant negative relationship was also found between self-concept and anger (r = -.352), indicating that student who reported being more angry had lower perceptions of competency. Anger was also found to relate positively to anxiety (r = .328), indicating that students who were more angry were also more anxious. Anxiety was found to relate negatively to self-concept (r = -.419) and positively to utility value (r = .397). These results suggest that students who were more anxious had low perceptions of competency yet found school more useful than students with lower anxiety did.

Testing the Control-Value Theory

Multiple regressions were used to determine which of the study variables accounted for the most variation in the affective experiences reported by students. In each analysis, the same study variables were entered into the regression equation in the same order, with the exception of the value variable, which differed in each regression analysis: age, gender, maternal education, achievement, value (utility, intrinsic, or attainment), self-concept, interaction between value and self-concept. Maternal education, age, gender, and achievement were included as controls. An

interaction term was created by mean centering the value and self-concept variables and multiplying them in order to account for the effect that value had on the relationship between self-concept and each emotion. For each dependent variable (four academic emotions: enjoyment, boredom, anxiety, and anger), three regression analyses were performed (one for each value measure). The variables were entered in the same order for each analysis; covariates first (age, gender, achievement, maternal education) and independent variables second (self-concept, value, interaction term). Results of all the analyses can be found in Tables 3 through 6.

Table 3

Correlations Between Study Variables

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Age	-										
2. Gender	.371*	-									
3. Achievement	-.122	-.004	-								
4. Maternal education	.068	-.029	.115	-							
5. Self-concept	.338*	.254	-.162	-.208	-						
6. Intrinsic	-.249	.154	-.227	-.232	.183	-					
7. Attainment	.069	.272	-.138	-.011	.480**	.366*	-				
8.Utility	-.168	-.162	.065	.031	-.153	.272	.318*	-			
9.Enjoyment	-.226	-.072	-.131	-.147	-.005	.302	.180	.432**	-		
10. Boredom	.248	-.099	-.045	.223	.159	-.361*	-.100	-.270	-.636**	-	
11.Anxiety	-.159	.068	-.087	.007	-.419*	.054	.069	.397*	.231	-.438**	-
12.Anger	-.057	-.133	-.041	.187	-.352*	-.276	-.177	-.006	-.390*	.274	.328*

Note. *$p < .05$ **$p < .01$; maternal education (1= high, 2= low); gender (0= male, 1= female)

Enjoyment. The results of the three regression analyses performed with enjoyment as the dependent variable are summarized in Table 4. Regression showed only utility value to have a significant effect on enjoyment, $\beta = .559$, $p < .05$, indicating that individuals who reported higher levels of usefulness of achievement also reported higher enjoyment, presumably due to

achievement fulfilling other goals such as career aspirations. Regression 2 showed only the interaction between self-concept and intrinsic value to predict enjoyment, β = - .062, $p < .05$. As indicated in Figure 2, simple slopes analyses (values plotted at 1 SD above and below the mean for value/self-concept) showed that students who reported more enjoyment also reported more intrinsic value, and particularly those with high intrinsic value but low self-concepts ($M = 21.87$). Finally, Regression 3 found no significant results using attainment value as a predictor.

Table 3

Relationship between Self-concept and Value for Enjoyment

	B	*SE*	β	R^2	Δ*F*
Regression 1				.304	1.684
Gender	.386	1.402	.049		
Age	-.305	.384	-.143		
Achievement	-.080	.083	-.164		
Maternal education	-1.441	1.236	-.195		
Self-concept	-.0003	.075	-.008		
Utility value	.559	.231	.440*		
Self-concept x Utility	-.014	.027	-.090		
Regression 2				.251	1.289
Gender	.507	1.549	.064		
Age	-.048	.446	-.022		
Achievement	-.034	.086	-.068		
Maternal education	-.438	1.333	-.059		

Self-concept	-.139	.095	-.332		
Intrinsic value	.407	.275	.303		
Self-concept x Intrinsic	-.062	.030	-.441*		
Regression 3				.175	.820
Gender	-.807	1.663	-.102		
Age	-.311	.425	-.146		
Achievement	-.036	.089	-.073		
Maternal education	-1.635	1.390	-.221		
Self-concept	-.080	.097	-.192		
Attainment value	.316	.258	.308		
Self-concept x Attainment	-.011	.025	-.089		

Note. *$p < .05$

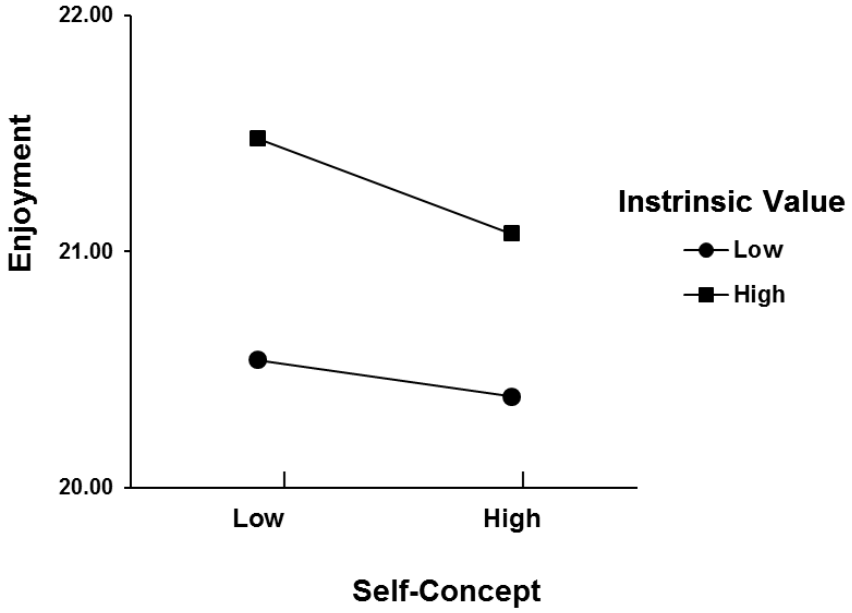

Figure 2. Interaction Effects on Enjoyment

Boredom. The results of the three regression analyses performed using boredom as the dependent variable are summarized in Table 5. Regression 1 using utility value as a predictor showed no significant results. Regression 2 with intrinsic value as a predictor found the model was found to be significant, $F(6, 31) = 2.435$, $p < .05$, with a multiple correlation coefficient of .57 indicating that 32% of the variance in boredom was accounted for by the study variables. More specifically, self-concept had the greatest effect on boredom, $\beta = .182$, $p < .05$, indicating that students who reported higher self-concepts reported being more bored. Regression 3 having attainment value as a predictor showed no significant results.

Table 4

Relationship between Self-concept and Value for Boredom

	B	*SE*	β	R^2	Δ*F*
Regression 1				.242	1.235
Gender	-1.869	1.412	-.245		
Age	.368	.387	.179		
Achievement	.002	.084	.005		
Maternal education	1.913	1.245	.268		
Self-concept	.043	.076	.106		
Utility value	-.394	.233	-.299		
Self-concept x Utility	-.006	.027	-.042		

Regression 2				.326	1.864
Gender	-2.043	1.419	268		
Age	.007	.408	.004		
Achievement	-.033	.079	-.070		
Maternal education	.986	1.221	.138		
Self-concept	.182	.087	.450*		
Intrinsic value	-.502	.252	-.388		
Self-concept x Intrinsic	.053	.028	.391		
Regression 3				.197	.948
Gender	-.996	1.585	-.130		
Age	.366	.405	.178		
Achievement	-.008	.085	-.018		
Maternal Education	2.214	1.325	.310		
Self-concept	.110	.092	.271		
Attainment value	-.270	.246	-.272		
Self-concept x Attainment	-.010	.024	-.083		

Note. $*p < .05$

Anger. The results of the three regression analyses performed using anger as the dependent variable are summarized in Table 6. The results of these regression analyses indicate that the combination of the five study variables in each regression analysis did not significantly relate to reported levels of anger.

Table 5

Relationship between Self-concept and Value for Anger

	B	*SE*	β	R^2	Δ*F*
Regression 1				.267	1.405
Gender	-1.166	1.383	-.153		
Age	.029	.379	.014		
Achievement	-.011	.082	-.024		
Maternal education	.986	1.219	.139		
Self-concept	-.124	.074	-.307		
Utility value	-.075	.228	-.057		
Self-concept x Utility	.045	.027	.305		
Regression 2				.261	1.364
Gender	.518	1.479	.068		
Age	-.083	.425	-.041		
Achievement	-.076	.082	-.161		
Maternal education	.883	1.272	.124		
Self-concept	-.168	.091	-.416		
Intrinsic value	-.313	.263	-.243		

Self-concept x Intrinsic	-.031	.029	-.232		
Regression 3				.218	1.076
Gender	-.219	1.557	-.029		
Age	.085	.398	.041		
Achievement	-.034	.083	-.071		
Maternal education	1.036	1.302	.146		
Self-concept	-.148	.091	-.368		
Attainment value	-.044	.242	-.044		
Self-concept x Attainment	-.028	.024	-.226		

*Note. *p< .05*

Anxiety. The results of the three regression analyses performed using anxiety as the dependent variable are summarized in Table 7. The results of these regression analyses indicate that the linear arrangement of the five study variables in each regression analysis were significantly related to reported levels of anxiety. In Regression 1, the linear combination of all study measures significantly predicted anxiety, $F(7, 27) = 2.421$, $p < .05$. The sample multiple correlation was .621, indicating that 39% of the variance in anxiety scores in the sample was accounted for by the study variables. More specifically, self-concept ($\beta = -.449$, $p < .05$) and utility value ($\beta = .364$, $p < .05$) had the greatest effects on anxiety scores. This result first indicates that the more useful participants perceived education-related activities to be, the more anxiety they reported. Secondly, this result shows self-concept to have a negative but stronger relationship with anxiety indicating that, the more competent participants felt in their ability to excel in school-related activities, the less anxious they felt.

In Regression 2, the linear combination of all study variables was significantly related to anxiety, $F(7, 27) = 3.890$, $p < .05$. The sample multiple correlation was .709, indicating that 50% of the variance in anxiety scores in the sample was accounted for by the study variables. More specifically, gender ($\beta = 4.363$, $p < .05$), self-concept ($\beta = -.445$, $p < .05$) and the interaction between self-concept and intrinsic value ($\beta = -.110$, $p < .05$) had the greatest effects on anxiety scores. With respect to the effect of gender on anxiety, results showed females to report more anxiety relative to males (females $M = 26.00$, $SD = 5.40$; males $M = 25.33$, $SD = 4.02$).

In regards to the interaction between intrinsic value and self-concept, a graph outlining subsequent simple slopes analyses (1 SD above/below mean), as shown in Figure 3, indicated that the effect of intrinsic value on anxiety was most apparent at low levels of self-concept. Students who had a high self-concept and low intrinsic value were least anxious ($M = 29.70$) compared with students who had low self-concept but high intrinsic value ($M = 30.46$). Thus, for students with a low self-concept, greater interest appeared to be deleterious and result in more anxiety.

Table 6

Relationship between Self-concept and Value for Anxiety

	B	*SE*	β	R^2	Δ*F*
Regression 1				.386	2.421*
Gender	2.888	1.644	.293		
Age	-.169	.451	-.063		
Achievement	-.111	.097	-.181		
Maternal education	-.510	1.450	-.055		
Self-concept	-.235	.088	-.449*		

Utility value	.619	.271	.364*		
Self-concept x Utility	.006	.032	.030		
Regression 2				.502	3.890*
Gender	4.363	1.576	.442*		
Age	.100	.453	.038		
Achievement	-.096	.088	-.157		
Maternal education	.746	1.357	.081		
Self-concept	-.445	.097	-.850*		
Intrinsic value	.271	.280	.162		
Self-concept x Intrinsic	-.110	.031	-.624*		
Regression 3				.370	2.261
Gender	1.462	1.815	.148		
Age	-.101	.464	-.038		
Achievement	-.074	.097	-.120		
Maternal education	-.965	1.518	-.105		
Self-concept	-.364	.106	-.695*		
Attainment value	.499	.282	.389		
Self-concept x Attainment	-.010	.028	-.062		

Note. *$p < .05$

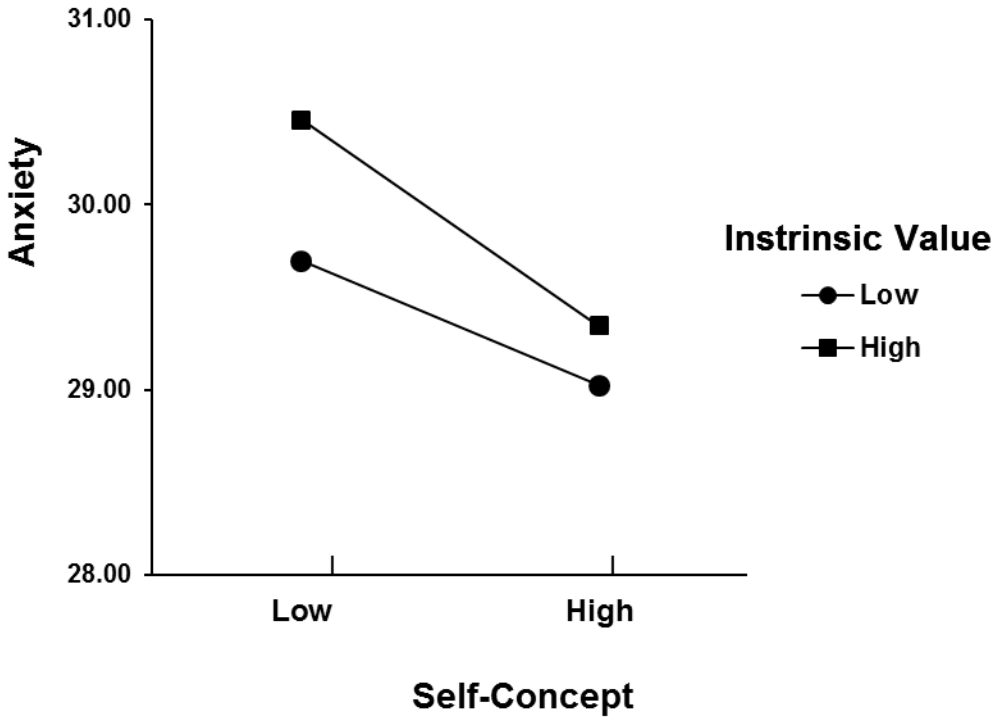

Figure 3. Interaction Effects on Anxiety

In Regression 3, a significant relationship between anxiety and self-concept was found (β = -0.72, $p < .05$) indicating that after controlling for attainment value, self-concept was still significantly related to anxiety. More specifically, students who were more anxious had lower self-concepts.

Summary of Results

Regression and correlational analyses revealed significant relationships between the study variables. Each emotion had different predictors that significantly accounted for its variability and was correlated with other emotion and motivation measures. These results will be discussed and interpreted in the next section with the goal of answering the proposed research questions. The next section will also discuss the methodological limitations of the current study

and how future inquiry can reconcile these disparities. Finally, implications for future research, particularly in the realm of school psychology, will be further elaborated on.

Discussion

In this study, academic-related cognitions and emotions were analyzed in a sample of inner-city high school students. The current study aimed to understand the relationship between students' cognitions and emotions (Pekrun, 1992). Unlike former studies, the current study looked at the relationship between control and value in an at-risk student population. The results for each emotion with respect to each hypothesis will be discussed in the following paragraphs.

Enjoyment

Hypothesis 1: Value and enjoyment. The hypothesis that enjoyment would be related to value was supported in this study. The current study found significant effects of utility value on enjoyment. The relationship between utility value and enjoyment was unexpected. Most emotions research has found strong associations between enjoyment and intrinsic value, since both of these constructs measure how interesting or enjoyable a task is (Ainley et al., 2002; Hidi & Harackiewicz, 2000; Jacobs & Bleeker, 2004). Achievement emotions such as anxiety, relief, shame, and pride are often related more too utility value (Noteborn et al., 2012). In contrast, enjoyment is more strongly related to intrinsic value (Frenzel et al., 2007). In the present study, however, utility value as a predictor of enjoyment makes sense, as each emotion in this study was measured across various points in time (before, during, and after). Therefore, the enjoyment measure tapped into various temporal elements of enjoyment (prospective, retrospective).

According to Klein et al. (2005), relief is a retrospective judgement of enjoyment that measures enjoyment after a learning outcome has occurred. Thus, similar to other achievement emotions, it is more strongly linked to extrinsic value than intrinsic value. Considering that this

study looked at prospective and retrospective enjoyment, the relationship between enjoyment (or retrospective enjoyment) and utility makes sense; students who find school more useful will experience relief or enjoyment after an activity and will be more motivated to engage in it in future occasions (Pekrun, 1992, 2007).

The relationship between utility value and enjoyment can also be explained by the fact that in this sample, students reported lower levels of intrinsic value compared to both attainment and utility value. Thus, aside from the possibility that relief was tapped into, it is also probable that utility value was related to enjoyment because students did not find school interesting; rather they found it more important with respect to its usefulness. Considering that both extrinsic and intrinsic value relate to enjoyment, particularly when this emotion is measured prospectively and retrospectively, it is not surprising that utility value was related to enjoyment (Pekrun et al., 2011; Pintrich & DeGroot, 1990). Studies such as one conducted by Harackiewicz et al. (2012) have also found that when intrinsic value is low, and students do not finding learning interesting, positive emotions and engagement can be elicited by extrinsic motivation. Harackiewicz et al. (2012) found in their study that when students were told about the usefulness of taking science and math related courses by their parents (courses reported by students to not be intrinsically motivating) they were more likely to enrol in these courses in the subsequent semester.

Hypothesis 2: Self-concept and enjoyment. The second hypothesis stated that high self-concept would relate to enjoyment was not supported by either regression or correlation analyses. This finding is contrary to empirical research that has found high self-concept to relate positively to enjoyment (Goetz, Frenzel, Hall, & Pekrun, 2008; Goetz et al., 2009). It is suspected that some of the methodological limitations of this study (i.e., small sample, lack of

domain-specific measure of study variables) caused this non-significant finding (as discussed in the next section).

Hypothesis 3: Interaction effects on enjoyment. Support was found for the interaction effects of intrinsic value and self-concept on enjoyment, although not the interaction initially predicted; high self-concept and high value did not predict the most enjoyment. According to Figure 2, students who reported high intrinsic value overall, irrespective of their self-concept levels, reported the most enjoyment. However, enjoyment was the highest in students who had low self-concepts but had a high interest in learning. This interaction suggests that regardless of self-concept, high value related to high levels of enjoyment, particularly in students with lower self-concepts. Consequently, having interest prevented the potential deleterious effects that low-competency could pose for students, such as disengagement and other emotions such as anxiety, that often occur in situations that are not interesting (Carver & Harmon-Jones, 2009; Daschmann, Goetz, & Stupnisky, 2011; Hidi et al., 2002; Jacobs & Bleeker, 2004). Considering that enjoyment was negatively correlated in this study with both anger and boredom, which occur when a student has low perceptions of competency, suggests that interest is what resulted in students experiencing enjoyment over the other emotions.

Understanding the relationship between motivation and positive emotions, such as enjoyment, is important for both theory and intervention research that aims to foster engagement and achievement in students. Scholars such as Ainley, Hidi, and Harackiewicz have found in their empirical research that positive emotions relate positively to extrinsic and intrinsic interest, which in turn relate positively to the use effective cognitive strategies related to achievement, such as effort, persistence, creativity, and problem solving (Ainley et al., 2002; Frenzel, Goetz, Pekrun, & Watt, 2010; Hidi & Harackiewicz, 2000; Hidi et al., 2002). Thus, by evaluating the

cognitive antecedents of positive emotions, educators can create classrooms that enrich the learning experiences of students by improving the interest and positive experiences of students (refer to Brophy, 2008 for a more thorough review of how promoting value results in more positive emotions and achievement in students; Brophy, 2008).

Boredom

Hypothesis 1: Value and boredom. The results from this study support the first hypothesis that boredom occurs in low-value situations. Correlation analysis found that boredom had a strong negative correlation with intrinsic value, suggesting that students who were bored did not find school engaging. This finding has been supported by empirical studies, such as one conducted by Pekrun et al. (2010) that looked at the cognitive and motivational antecedents of boredom in both qualitative and quantitative studies conducted on university students in North America and Germany. Across all these studies it was found that boredom was negatively related to value (Daschmann et al., 2011; Goetz et al., 2011; Larson & Richards, 2012).

Hypothesis 2: Self-concept and boredom. In regards to the second hypothesis, contrary to what was expected, boredom was predicted by high self-concept and not low self-concept. According to The Control-Value Theory of Academic Emotions, boredom is related to high and low perceptions of competency (Pekrun, 2007). Boredom occurs when a student has little interest in a task, and has either very high or very low perceptions of competency. Furthermore, what determines whether a student will feel competent or not, lies in the demands of the situation and whether or not the student feels apt to succeed amidst situational limitations (Pekrun, 1992). Most research on boredom, however, has found this emotion to relate to low-control situations, where task demands are high, making the student feel unable to control their outcomes (Daschmann et al., 2011; Nett, Goetz, & Hall, 2010; Pekrun et al., 2010). On the other hand,

Larson and Richards (1991) with a sample of 5th and 9th graders, showed that boredom was higher in students who had higher grades and perceived the learning environment to not be challenging.

In this study, students reported elevated levels of self-competency and thus said that they felt they had the necessary skills to succeed in their learning environment. It is possible that students were overconfident in their capabilities, which could be due to the low perceived challenge of the learning environment. This allowed students to feel competent without needing exceptional skills. Considering that the questionnaires for the study did not evaluate the study variables in a specific class, it is also possible that under such a pretense students did not find their overall learning environment challenging. This rationale may explain why self-concept was high in this study and also predicted boredom (Daschmann, Goetz, & Stupnisky, 2011; Larson & Richards, 2012; Nett, Goetz, & Daniels, 2010; Pekrun, Goetz, Daniels, Stupnisky, & Perry, 2010). It is also worth noting that students in this sample were not as at-risk as expected (this will elaborated in more detail in the next section), as is evident by the high reports of self-concept, overall GPA, and maternal education in this sample. Thus, it is possible that students in this sample believed that they were more able to academically succeed because they had the necessary cognitive skills to do so (Larson & Richards, 1991).

Hypothesis 3: Interaction effects. The third hypothesis was supported in this study, namely that no interaction effects between value and self-concept were found for boredom. It is apparent that boredom is expected to arise in low value situations, and according to the Control-Value Theory, can occur in either high or low control situations (Pekrun, 1992; Pekrun et al., 2007). Thus, these variables should not interact in predicting boredom levels.

Relationship between boredom and anxiety. The significant negative correlation between boredom and anxiety is also worth mentioning. First, it should be noted that these variables have been negatively correlated in other studies as well (Goetz, Frenzel, Hall, et al., 2009). For example, in their study of emotions in university students, Pekrun et al. (2011) found boredom and anxiety to have a correlation of -.58 in their study. Research, however, has seldom investigated the origins of this relation. This is particularly important because while both anxiety and boredom are negative emotions, they differ conceptually in activation and focus; boredom is disengaging, while anxiety is a prospective and activating emotion (Pekrun et al., 2011). Thus, the fact that more boredom relates to low anxiety alludes to the possible protective factor that boredom has in students who are anxiety prone.

The relationship between boredom and anxiety should be further explored because the knowledge of this link has important implications for the creation of value-related strategies that aim to improve both boredom and anxiety in students. If scholars can understand the reasons why boredom and anxiety relate by investigating the antecedents and outcomes of these emotions then more effective theory-driven interventions can be designed. Considering that both anxiety and boredom have been found to relate to lower achievement outcomes, such inquiry is critical for educators and policy-makers (Pekrun et al., 2011).

Anger

Hypothesis 1: Value and anger. In this study, no support was found for the relationship between value and anger. This is contrary to studies conducted by Patrick, Turner, and Carver that have found anger to relate significantly to extrinsic value (Carver & Harmon-Jones, 2009; Patrick et al., 1993; Turner & Schallert, 2001). The non-significant results, however, are

attributed to some of the methodological limitations of the present study (discussed in the next section), particularly the small sample size which limited the power to detect effects.

Hypothesis 2: Self-concept and anger. Regression analyses did not support the second hypothesis that predicted that self-concept would negatively relate to anger. A strong negative correlation, however, was found between these two variables suggesting that they are related; students who report more anger have lower self-concepts. For example, Goetz et al. (2006) found in their study of self-concept and emotions that self-concept and anger were negatively correlated. Thus, this relationship suggests that while self-concept was not found to predict anger, their strong negative correlation suggests that these variables are related and should be investigated further by scholars. This is particularly recommended because present methodological limitations (i.e., small sample size) may have prevented significant effects from being detected.

Hypothesis 3: Interaction effects on anger. No support was found for the possible interaction effects of value and self-concept on anger. This is not surprising, however, considering that anger was not predicted by any of the study variables. It is also possible the small sample size made it difficult to detect effects.

Relationship between emotions. Correlational analyses found anger to relate negatively to enjoyment and positively to anxiety, suggesting that students who were angry were more anxious and enjoyed school to a lesser degree. The relationship between anger and these emotions has been found in other studies (Frenzel et al., 2007; Pekrun, 2006, 2011). For example Pekrun et al. (2011) found that anger related positively to with anxiety (r = .61) and a negatively with enjoyment (r = -.40) in a sample of university students.

When the results were analyzed together, none of the study variables were found to significantly predict anger. However, the correlations found between anger and self-concept, enjoyment, and anxiety suggest that anger has strong relationships with these variables that should be further investigated in vulnerable student populations. This is particularly important considering the little attention that anger has received in educational psychology, particularly in at-risk student populations, where students often report high expectancies for failure (Forsyth, Story, Kelley, & McMillan, 2008; Turner et al., 2002). The strong link between anger and enjoyment and anxiety indicates that this emotion has a central role in the manifestation of these emotions, while the strong negative correlation between anger and self-concept indicates that competency and anger are significantly related to each other. Such information is imperative for scholars and educators who design theory-driven interventions that aim to improve a student's well-being and learning, particularly in vulnerable student populations where negative emotions and cognitive beliefs may be more prevalent.

Anxiety

Hypotheses: Value, self-concept, and anxiety. In regard to anxiety, correlation and regression analyses, found support for all three of the study hypotheses: Anxiety was negatively predicted by self-concept and positively by utility value, and an interaction effect between intrinsic value and self-concept was found. More specifically, students that reported more anxiety similarly reported lower perceptions of academic competency. They were more motivated to engage in activities because of the usefulness of the task. The results show that students who were more anxious did not believe they had the capability to excel in school or control their achievement outcomes, yet they were motivated to pursue academic activities because of the "extrinsic motivation to invest effort to avoid impending failures" (Pekrun, 2001,

p.15611). Pekrun et al. (2002) found that anxious students value achievement and success, yet do not feel that they have the competency or skills to succeed, this dissonance elicits feelings of anxiety. These findings have been corroborated by other studies in the emotions literature (Pekrun et al., 2004; Stöber & Pekrun, 2004). For example, Wolters, Yu, and Pintrich (1996) found in their study anxiety in math 7th and 8th graders that extrinsic value and anxiety had a positive relationship (r = .26) and that anxiety and self-concept had a negative relationship (r = -.44).

Although, support for the interaction effects of value and self-concept on anxiety was found, the direction of the interaction was opposite to what was expected: at low self-concept levels, high intrinsic value resulted in more anxiety. In the literature, high anxiety has been found to relate to low intrinsic value and self-concept (Elliot & McGregor, 1999; Pekrun et al., 2004; Stöber & Pekrun, 2004). However, in this study, low self-concept and high value resulted in high anxiety. Considering the strong relationship between self-concept and anxiety, confirmed by both correlation and regression analyses in this study, it seems that the interaction between self-concept and intrinsic value resulted in this dubious finding. It was expected that in conditions of low competency, interest in the task would reduce anxiety, as has been found in studies by Ainley, Linnenbrink, Hidi, and Harackiewicz (Ainley et al., 2002; Hidi & Harackiewicz, 2000; Linnenbrink, 2006) and supported by interest and motivational theories (Pintrich & DeGroot, 1990; Ryan & Deci, 2000). This was not found in the current study, suggesting that some of the methodological limitations of the study (i.e., small sample size and lack of domain-specific measures) may have distorted these findings by limiting power to detect significant effects.

Gender and anxiety. In Regression 3, gender was found to be a significant predictor of anxiety when in a regression model with utility value and self-concept. In this sample, females

reported more anxiety than males. Gender differences in anxiety have been previously reported in studies conducted by Frenzel et al. (2007), for example, who showed that girls tend to report more anxiety compared to boys, particularly in math. However, since the majority of the sample in this study was male (70.5%), gender differences are not very robust as they emerged in a distribution with little power.

Control variables. None of the background variables (age, gender, achievement, and maternal education) were found to predict or relate to any of the emotions, with the exception of gender, as expected in a sample of at-risk high school students. For example, Becker and Luther (2010) found that students in inner-city schools have lower self-concepts and less motivation, which relate to low GPA. Sampling bias and small sample size (discussed in the next section) are likely reasons for why no relationships were found.

Methodological Limitations and Future Research

Although significant results were found in in this study, limitations must be noted as they limit the generalizability and interpretation of the results. These include the small sample size, self-report and sampling bias, and lack of domain specificity of the study variables. These will be discussed in the following sections.

Small sample size. The small sample size of the current study is a major limitation (final $N = 35$). Part of the reason for the small sample size was that the CN-Adopt-an-Alouette program, which is where the first group of participants were recruited from, had a low program turnout. Additionally, there was a low response rate in the high school from which the second group of participants was recruited. The overall sample in this study was thus quite small. Increasing the sample size would increase power to detect effects and allow for more robust

statistical analyses to be performed, such as Structural Equation Modelling, as well the ability to test all the value types simultaneously rather than separately.

Sampling bias. The sample was collected from two different student populations, one was from the CN-Adopt-an-Alouette program and the other was a high school in an at-risk neighbourhood in Montreal. Participants who were recruited from the CN-Adopt-An-Alouette program were expected to be students at-risk for academic failure, since the program itself was designed to provide vulnerable student populations with mentorship and tutoring. Students in participating schools were either mandated to attend or volunteered. Thus, there was a myriad of students who participated in the program the current study, many of whom were not at-risk for academic failure. This was made evident by the high parental education, average high grade point average, as well as the higher than anticipated self-concept levels reported by many of the students. Thus, it is evident that although the schools that were included in the program were considered at-risk because of high attrition and low academic performance, students who participated in the program were not necessarily the most vulnerable students, thus limiting the generalizability of the results to at-risk students at large. Future research should consider not only using a larger sample size, but also recruiting participants from various inner-city schools in Montreal.

Self-report bias. With any self-report measure, there is always a risk that participants' answers will be distorted (Mortel, 2008). In this study, it is possible that students' responses were impartial and the result of social desirability. This explains why students reported high levels of value, and moderate levels of enjoyment, anxiety, boredom, anger, and an average GPA. Since GPA, for example, could not be verified by report cards, there is a high probability that students may have exaggerated their marks. Future research should look into using both qualitative and

quantitative methods of data collection to ensure a more accurate depiction of the study variables. Report cards should be used as well, to supplement students' reports of their GPA whenever available.

Domain specificity of study variables. Each of the present study variables (academic emotions, self-concept, and task value) have been found in education research to be vary based context (Frenzel et al., 2006; Goetz et al., 2009). This means that these variables manifest differentially within and between various school subjects. This study did not consider this characteristic of the study variables. This made it difficult to control for nuances, such as a student's interest in a class and the demands of the task, that affect how these variables manifest in particular learning environments and contexts.

The decision to include general measures of the study variables rather than domain-specific was done to increase parsimony. With this increased parsimony, however, comes the limitation that the results in this study cannot be generalized to actual classroom settings where emotions are differentially experienced based on context. Future studies should look at how emotions in at-risk student populations manifest differentially across different subject domains by using domain specific versions of all the questionnaires in this study, which have already been empirically validated (e.g., AEQ-M; Frenzel et al., 2007).

Summary. Although significant results were found in this study, it is difficult to generalize these results to other at-risk student populations or say with confidence that there is a definite relationship between all of the study variables. This is due to the notably low sample size and methodological limitations in the present study. Nonetheless, the significant relationships between appraisals of perceived competence and value, and students' emotions, provide evidence in support of the Control-Value Theory of Academic Emotions in at-risk student

populations. Future studies should build on the methodology of this study by using larger sample sizes, use domain specific versions of questionnaires, and sample students from different at-risk schools. Ensuring this will help educators gain insight into the cognitions and emotions of at-risk student populations. Such knowledge can help create more data-driven interventions. The next section will elaborate more on what the educational implications of such research pursuits are for students, parents, and teachers.

Educational Implications

Results from this study highlight the need for future research to investigate the emotional experiences of students from various student populations. The hope is that links between cognitive appraisals of competency and interest, emotions, and achievement can aid in the creation of intervention programs that can help students who are at-risk for academic failure achieve their optimal scholastic potential. Some of the ways that educators can use the information is to create theory driven programs that target students' thoughts and emotions, as well as foster supportive learning environments. In regards to changing the control and value beliefs of students, attributional retraining interventions such as the one proposed by Perry et al. (2001) teach students to gain control over their learning by changing their attributions regarding failure and success. For example, Perry, Hechter, Menec, and Weinberg (1993) found that when college students were taught how to take responsibility for their outcomes, their academic achievement improved. On the other hand, Ainey (2011), Brophy (2008), Hidi and Harackiewitz (2000) advocate improving students' engagement in learning activities by making them more interested in the learning material. For example, Hidi and Harackiewicz (2000) discuss in their paper that this can be achieved by teachers demonstrating the usefulness of specific learning material in subjects with low interest (i.e., math and science).

In regards to fostering positive emotions in classrooms, two interventions (ECOLE and FEASP) were designed to improve students' emotional experiences in school by changing the quality of instruction delivered by teachers (Astleitner, 2001; Glaser-Zikuda et al., 2005). Considering that emotions are also the product of the classroom environment (quality of instruction and teacher-student relationships), these interventions encourage classroom instruction to promote student well-being and encourage independent and autonomous student learning (Astleitner, 2001). Using the ECOLE instruction for example, Glaser-Zikuda et al. (2005) found that improving classroom instruction (i.e., teaching authentic topics, focus on autonomous learning), encouraging teacher enthusiasm, and helping students to restructure their competency beliefs and expectations for failure, improved the academic performance of students across various subjects. It also increased students' perceptions of competency and reduced anxiety.

Although research has found support for interventions and programs that promote positive emotions and cognitions in students, these programs have not been tested in diverse student populations. This is particularly important for students in at-risk populations where the development and implementation of theory-driven intervention has the potential to improve the academic achievement of these students. Educators and researchers should strive to design and implement more theory-driven intervention incorporating research using such models as stipulated by The Control-Value Theory of Academic Emotions.

Conclusion

Results of this study corroborate the utility of The Control-Value Theory of Academic Emotions, and illustrate its efficacy in understanding the relationship between how students think and feel about school. Although the current sample was not as at-risk as initially anticipated, the

results from this study support the intricate and reciprocal relationships that exist between thoughts of competency and interest, and emotions. Future research should extend the current methodology (i.e., increase sample size, use domain specific measure, sample more at-risk students) to acquire better representation of the thoughts and emotions of students in vulnerable student populations. This will not only inform educational practice and research, but also help to ensure the creation of intervention programs geared toward improving the academic achievement of at-risk students.

References

Acharya, N., & Joshi, S. (2009). Influence of parents' education on achievement motivation of adolescents. *Indian Journal Social Science Researches*, *6*(1), 72-79.

Ainley, M., & Ainley, J. (2011). Student engagement with science in early adolescence: The contribution of enjoyment to students' continuing interest in learning about science. *Contemporary Educational Psychology*, *36*(1), 4-12. doi:10.1016/j.cedpsych.2010.08.001

Ainley, M., Corrigan, M., & Richardson, N. (2005). Students, tasks and emotions: Identifying the contribution of emotions to students' reading of popular culture and popular science texts. *Learning and Instruction*, *15*(5), 433–447. doi:10.1016/j.learninstruc.2005.07.011

Ainley, M., Hidi, S., & Berndorff, D. (2002). Interest, learning, and the psychological processes that mediate their relationship. *Journal of Educational Psychology*, *94*(3), 545–561. doi:10.1037/0022-0663.94.3.545

Alexander, K. L., Entwisle, D. R., & Horsey, C. S. (2011). From first grade forward : Early foundations of high school dropout. *Sociology of Education*, *70*(2), 87–107.

Alivernini, F., & Lucidi, F. (2011). Relationship between social context, self-efficacy, motivation, academic achievement, and intention to drop out of high school: A longitudinal study. *The Journal of Educational Research*, *104*(4), 241-252. doi:10.1080/00220671003728062

Anderman, E., & Wolters, C. A. (2006). Goals, values, and affect: Influences on student motivation. In P.A. Alexander & P.H Winne (Eds.), *Handbook of Educational Psychology*, (pp. 369-389). Mahwah, NJ: Lawrence Erlbaum Associates Publishers.

Archambault, I., Eccles, J. S., & Vida, M. N. (2010). Ability self-concepts and subjective value in literacy: Joint trajectories from grades 1 through 12. *Journal of Educational Psychology*,

102(4), 804-816. doi:10.1037/a0021075

Artino, A. R. (2009). Think, feel, act: Motivational and emotional influences on military students' online academic success. *Journal of Computing in Higher Education, 21*(2), 146–166. doi:10.1007/s12528-009-9020-9

Ashby, F. G., Isen, M., & Turken, U. (1999). A neuropsychological theory of positive affect and its influence on cognition. *Psychological Review*, *106*(3), 529–50.

Astleitner, H. (2001). Designing emotionally sound instruction - An empirical validation of the FEASP-Approach. *Journal of Instructional Psychology, 28*(5), 209–219.

Atkinson, J. (1957). Motivational determinants of risk-taking behavior. *Psychological Review*, *64*, 359-372.

Berliner, B. D. C., & Nichols, S. L. (2007). High-stakes testing is putting the nation at risk. In Berliner, D. C. & S. L. Nicols, *Collateral Damage: How High-Stakes Testing Corrupts America's High Schools (*pp. 1-7). Harvard Press.

Blair, C. (2002). School readiness: Integrating cognition and emotion in a neurobiological conceptualization of children's functioning at school entry. *American Psychologist, 57*(2), 111–127. doi:10.1037//0003-066X.57.2.111

Boardman, J. D., & Robert, S. A. (2000). Neighborhood socioeconomic status and perceptions of self-efficacy. *Sociological Perspectives*, *43*(1), 117-136.

Boekaerts, M. (1993). Being concerned with well-being and with learning. *Educational Psychologist, 28*(*2*), 149–167.

Boxer, P., Goldstein, S. E., DeLorenzo, T., Savoy, S., & Mercado, I. (2011). Educational aspiration-expectation discrepancies: relation to socioeconomic and academic risk-related factors. *Journal of Adolescence*, *34*(4), 609-17. doi:10.1016/j.adolescence.2010.10.002

Brody, G. H., Flor, D. L., & Gibson, N. M. (2012). Linking maternal efficacy beliefs, developmental goals, parenting practices, and child competence in rural single-parent African American families. *Child Development*, *70*(5), 1197-208.

Brophy, J. (2008). Developing students' appreciation for what is taught in school. *Educational Psychologist*, *43*(3), 132-141. doi:10.1080/00461520701756511

Buff, A., Reusser, K., Rakoczy, K., & Pauli, C. (2011). Activating positive affective experiences in the classroom: "Nice to have" or something more? *Learning and Instruction*, *21*(3), 452-466. doi:10.1016/j.learninstruc.2010.07.008

Canadian Council on Living. (2009). *Changing our schools: Implementing successful education reform*. Retrieved from Canadian Council on Living Website: http://resources.ccl-cca.ca/item/10249

Carroll, A., Durkin, K., Hattie, J., & Houghton, S. (1997). Goal setting among adolescents: A comparison of delinquent, at-risk, and not-at-risk youth. *Journal of Educational Psychology*, *89*(3), 441-450. doi:10.1037//0022-0663.89.3.441

Carver, C. S., & Harmon-Jones, E. (2009). Anger is an approach-related affect: Evidence and implications. *Psychological Bulletin*, *135*(2), 183–204. doi:10.1037/a0013965

Cleveland, M. J., Gibbons, F. X., Gerrard, M., Pomery, E., & Brody, G. H. (2005). The impact of parenting on risk cognitions and risk behavior: A study of mediation and moderation in a panel of African American adolescents. *Child Development, 76*(4), 900-916. doi:10.1111/j.1467-8624.2005.00885.x

Covington, M. V. (2012). The self-worth theory of achievement motivation: Findings and implications. *The Elementary School Journal, 85*(1), 4-20.

Crosnoe, R., Mistry, R. S., Elder, G. H. (2002). Economic disadvantage, family dynamics, and

adolescent enrolment in higher education. *Journal of Marriage and Family*, *64*(3), 690-702.

Csikszentmihalyi, M., & Csikszentmihalyi, I. S. (1988). *Optimal experience: Psychological studies of flow in consciousness*. Cambridge, UK: Cambridge University Press.

Daniels, L. M., Stupnisky, R. H., Pekrun, R., Haynes, T. L., Perry, R. P., & Newall, N. E. (2009). A longitudinal analysis of achievement goals: From affective antecedents to emotional effects and achievement outcomes. *Journal of Educational Psychology*, *101*(4), 948-963. doi:10.1037/a0016096

Daschmann, E. C., Goetz, T., & Stupnisky, R. H. (2011). Testing the predictors of boredom at school: Development and validation of the precursors to boredom scales. *British Journal of Educational Psychology*, *81*(3), 421-440. doi:10.1348/000709910X526038

Davis-Kean, P. E. (2005). The influence of parent education and family income on child achievement: The indirect role of parental expectations and the home environment. *Journal of Family Psychology, 19*(2), 294-304. doi:10.1037/0893-3200.19.2.294

Deci, E. L., Koestner, R., & Ryan, R. M. (1999). A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin, 125*(6), 627–68.

Dettmers, S., Trautwein, U., Ludtke, O., Goetz, T., Frenzel, A. C., & Pekrun, R. (2011). Students' emotions during homework in mathematics: Testing a theoretical model of antecedents and achievement outcomes. *Contemporary Educational Psychology*, 36(*1*), 25-35. doi:10.1016/j.cedpsych.2010.10.001

Durik, A. M., Vida, M., & Eccles, J. S. (2006). Task values and ability beliefs as predictors of high school literacy choices: A developmental analysis. *Journal of Educational*

Psychology, *98*(*2*), 382-393. doi:10.1037/0022-0663.98.2.382

Dweck, C. (1986). Motivational processes affecting learning. *American Psychologist*, *41*(10), 1040–1048.

Eccles, J. S, Midgley, C., Wigfield, A., Buchanan, C. M., Reuman, D. A., Flanagan, C., & Mac Iver, D. (1993). Development during adolescence: The impact of stage-environment fit on young adolescents' experience in schools and in families. *American Psychologist*, *48*(2), 90-101.doi:10.1037/0003-066X.48.2.90

Eccles, J. S., & Wigfield, A. (2002). Motivational beliefs, values, and goals. *Annual Review of Psychology*, *53*, 109–32. doi:10.1146/annurev.psych.53.100901.135153

Eccles, J. S., & Wigfield, A. (1995). In the mind of the actor: The structure of adolescents' achievement task values and expectancy-related beliefs. *Personality and Social Psychology Bulletin*, *21*(3), 215-225. doi:10.1177/0146167295213003

Eccles, J. S., & Wigfield, A. (2002). Motivational beliefs, values, and goals. *Annual Review of Psychology*, *53*, 109-32. doi:10.1146/annurev.psych.53.100901.135153

Eccles, J. S., Wigfield, A., Constance, A., Miller, C., Reuman, D. A., & Yee, D. (1989). Self-concept, domain values, and self- esteem: Relations and changes at early adolescence. *Journal of Personality*, *57*(2)*,* 283-310.doi:10.1111/j.1467-6494.1989.tb00484.x

Efklides, A., & Petkaki, C. (2005). Effects of mood on students' metacognitive experiences. *Learning and Instruction, 15*(5), 415–431. doi:10.1016/j.learninstruc.2005.07.010

Elliot, J., & McGregor, H. (1999). Test anxiety and the hierarchical model of approach and avoidance achievement motivation. *Journal of Personality and Social Psychology*, *76*(4), 628–44.

Evans, G. W. (2004). The environment of childhood poverty. *The American Psychologist*, *59*(2),

77-92. doi:10.1037/0003-066X.59.2.77

Evans, G. W., Kim, P., Ting, A. H., Tesher, H. B., & Shannis, D. (2007). Cumulative risk, maternal responsiveness, and allostatic load among young adolescents. *Developmental Psychology*, *43*(*2*), 341-351. doi:10.1037/0012-1649.43.2.341

Feather, N. T. (1988). Values, valences, and course enrollment: Testing the role of personal values within an expectancy-valence framework. *Journal of Educational Psychology, 80*(3), 381–391. doi:10.1037//0022-0663.80.3.381

Fergusson, D., Horwood, L., & Boden, J. (2008). The transmission of social inequality: Examination of the linkages between family socioeconomic status in childhood and educational achievement in young adulthood. *Research in Social Stratification and Mobility*, *26*(3), 277-295. doi:10.1016/j.rssm.2008.05.001

Forsyth, D. R., Story, P. A., Kelley, K. N., & McMillan, J. H. (2008). What causes failure and success? Students' perceptions of their academic outcomes. *Social Psychology of Education*, *12*(*2*), 157-174. doi:10.1007/s11218-008-9078-7

Fredrickson, B. L. (1998). What good are positive emotions? *Review of General Psychology, 2*(3), 300–319. doi:10.1037/1089-2680.2.3.300

Fredrickson, B. L. (2001). The role of positive emotions in positive psychology. *American Psychologist, 56*(3), 218-226. doi:10.1037/0003-066X.56.3.218

Fredrickson, B. L. (2006). Unpacking positive emotions: Investigating the seeds of human flourishing. *The Journal of Positive Psychology*, *1*(2), 57-59. doi:10.1080/17439760500510981

Frenzel, A. C., & Goetz, T. (2007). Girls and mathematics - A " hopeless " issue ? A control-value approach to gender differences in emotions towards mathematics. *European Journal*

of Psychology of Education, *22*(4), 497-514. doi:10.1007/BF03173468

Frenzel, A. C., Goetz, T., Pekrun, R., & Watt, H. M. G. (2010). Development of mathematics interest in adolescence: Influences of gender, family, and school context. *Journal of Research on Adolescence*, *20*(2), 507-537. doi:10.1111/j.1532-7795.2010.00645.x

Frenzel, A. C., Hall, N. C., Goetz, T., & Pekrun, R. (2006). The domain specificity of academic emotional experiences. *The Journal of Experimental Education*, *75*(1), 5-29.

Frenzel, A., Pekrun, R., & Goetz, T. (2007). Perceived learning environment and students' emotional experiences: A multilevel analysis of mathematics classrooms. *Learning and Instruction*, *17*, 478-493. doi:10.1016/j.learninstruc.2007.09.001

Frijda, N. H., Kuipers, P., & ter Schure, E. (1989). Relations among emotion, appraisal, and emotional action readiness. *Journal of Personality and Social Psychology*, *57*(2), 212-228. doi:10.1037//0022-3514.57.2.212

Frome, P. M., & Eccles, J. S. (1998). Parents' influence on children's achievement-related perceptions. *Journal of Personality and Social Psychology*, *74*(2), 435-452.

Glaser-Zikuda, M., Fub, S., Laukenmann, M., Metz, K., & Randler, C. (2005). Promoting students' emotions and achievement - Instructional design and evaluation of the ECOLE-approach. *Learning and Instruction*, *15*(5), 481-495. doi:10.1016/j.learninstruc.2005.07.013

Goetz, T., Cronjaeger, H., Frenzel, A. C., Ludtke, O., & Hall, N. C. (2010). Academic self-concept and emotion relations: Domain specificity and age effects. *Contemporary Educational Psychology*, *35*(1), 44-58. doi:10.1016/j.cedpsych.2009.10.001

Goetz, T., Frenzel, A. C., Stoeger, H., & Hall, N. C. (2009). Antecedents of everyday positive emotions: An experience sampling analysis. *Motivation and Emotion*, *34*(1), 49-62. doi:10.1007/s11031-009-9152-2

Goetz, T., Hall, N. C., Frenzel, A. C., & Pekrun, R. (2006). A hierarchical conceptualization of enjoyment in students. *Learning and Instruction, 16*(4), 323-338. doi:10.1016/j.learninstruc.2006.07.004

Goetz, T., Nett, U. E., Martiny, S. E., Hall, N. C., Pekrun, R., Dettmers, S., & Trautwein, U. (2011). Students' emotions during homework: Structures, self-concept antecedents, and achievement outcomes. *Learning and Individual Differences*, *22*(2), 225-234.doi:10.1016/j.lindif.2011.04.006

Goetz, T., Pekrun, R., Hall, N., & Haag, L. (2006). Academic emotions from a social-cognitive perspective: Antecedents and domain specificity of students' affect in the context of Latin instruction. *The British Journal of Educational Psychology*, *76*(2)*,* 289-308. doi:10.1348/000709905X42860

Goetz, T., Preckel, F., Pekrun, R., & Hall, N. C. (2007). Emotional experiences during test taking: Does cognitive ability make a difference? *Learning and Individual Differences*, *17*(1), 3-16. doi:10.1016/j.lindif.2006.12.002

Gottfried, A. E. (1990). Academic intrinsic motivation in young elementary school children. *Journal of Educational Psychology, 82*(3), 525–538. doi:10.1037//0022-0663.82.3.525

Govaerts, S., & Grégoire, J. (2008a). Development and Construct Validation of an Academic Emotions Scale. *International Journal of Testing*, *8*(1), 34-54. doi:10.1080/15305050701808649

Green, J., Martin, A. J., & Marsh, H. W. (2007). Motivation and engagement in English, mathematics and science high school subjects: Towards an understanding of multidimensional domain specificity. *Learning and Individual Differences, 17*(3), 269–279. doi:10.1016/j.lindif.2006.12.003

Guay, F., Boivin, M., & Larose, S. (2004). Academic self-concept and educational attainment level: A ten-year longitudinal study. *Psychology Press*, *3*(1)*,* 1-17. doi:10.1080/13576500342000040

Guay, F., Chanal, J., Ratelle, C. F., Marsh, H. W., Larose, S., & Boivin, M. (2010). Intrinsic, identified, and controlled types of motivation for school subjects in young elementary school children. *The British Journal of Educational Psychology*, *80*(4), 711-35. doi:10.1348/000709910X499084

Gutman, L. M., Sameroff, A. J., & Eccles, J. S. (2002). The academic achievement of African American students during early adolescence: An examination of multiple risk, promotive, and protective factors. *American Journal of Community Psychology*, *30*(3), 367-99. doi: 10.1023/A:1015389103911

Harackiewicz, J. M., Rozek, C. S., Hulleman, C. S., & Hyde, J. S. (2012). Helping parents to motivate adolescents in mathematics and science: An experimental test of a utility-value intervention. *Psychological Science*, *10*(5). doi:10.1177/0956797611435530

Hembree, R. (1988). Correlates, causes, effects, and treatment of test anxiety. *Review of Educational Research*, *58*, 47–77.

Hidi, S., Berndorff, D., & Ainley, M. (2002). Children's argument writing, interest and self-efficacy: An intervention study. *Learning and Instruction*, *12*(4), 429–446. doi:10.1016/S0959-4752(01)00009-3

Hidi, S., & Harackiewicz, J. M. (2000). Motivating the academically unmotivated: A critical issue for the 21st century. *Review of Educational Research*, *70*(2), 151–179. doi:10.3102/00346543070002151

Hijzen, D., Boekaerts, M., & Vedder, P. (2007). Exploring the links between students'

engagement in cooperative learning, their goal preferences and appraisals of instructional conditions in the classroom. *Learning and Instruction*, *17*(6), 673–687. doi:10.1016/j.learninstruc.2007.09.020

Hill, N. E., Castellino, D. R., Lansford, J. E., Nowlin, P., Dodge, K. A, Bates, J. E., & Pettit, G. S. (2004). Parent academic involvement as related to school behavior, achievement, and aspirations: Demographic variations across adolescence. *Child Development*, *75*(5), 1491-509. doi:10.1111/j.1467-8624.2004.00753.x

House, J. D. (1993). The relationship between academic self-concept and school withdrawal. *The Journal of Social Psychology*, *133*(1), 125-7. doi:10.1080/00224545.1993.9712129

Hoy, W. K., & Tarter, C. J. (2011). Positive psychology and educational administration: An optimistic research agenda. *Educational Administration Quarterly*, *47*(3), 427–445. doi:10.1177/0013161X10396930

Immordino-Yang, M., McColl, A., Damasio, H., & Damasio, A. (2009). Neural correlates of admiration and compassion. *Proceedings of the National Academic of Sciences, 106*(19), 8021–8026.

Izard, C., Stark, K., Trentacosta, C., & Schultz, D. (2009). Beyond emotion regulation: Emotion utilization and adapative functioning. *Child Development Perspectives*, *2*(3), 156–163. doi:10.1111/j.1750-8606.2008.00058.x.Beyond

Jacobs, J. E., & Bleeker, M. M. (2004). Girls' and boys' developing interests in math and science: Do parents matter? *New Directions for Child and Adolescent Development*, *2004*(106), 5–21. doi:10.1002/cd.113

Jacobs, J. E., Finken, L. L., Griffin, N. L., & Wright, J. D. (2012). The career plans of science-talented rural adolescent girls. *American Educational Research Journal*, *35*(4), 681–704.

Jacobs, J. E., Lanza, S., Osgood, D. W., Eccles, J. S., & Wigfield, A. (2002). Changes in children's self-competence and values: Gender and domain differences across grades one through twelve. *Child Development*, *73*(2), 509-527.

Jodl, K. M., Michael, A., Malanchuk, O., Eccles, J. S., & Sameroff, A. (2001). Parents' roles in shaping early adolescents' occupational aspirations. *Child Development*, *72*(4), 1247-65. doi: 10.1111/1467-8624.00345

Kleine, M., Goetz, T., Pekrun, R. H., & Hall, N. C. (2005). The structure of students' emotions experienced during a mathematical achievement test. *International Reviews on Mathematics Education*, *37*, 221-225.

Kleinginna, P. R., & Kleinginna, A. M. (1981). A categorized list of emotion definitions, with suggestions for a consensual definition. *Motivation and Emotion*, *5*(4), 344-379. doi: 10.1007/BF00992553

Lang, J. W. B., & Lang, J. (2010). Priming competence diminishes the link between cognitive test anxiety and test performance: Implications for the interpretation of test scores. *Psychological Science, 21,* 811-819.

Lanza, S. T., Rhoades, B. L., Nix, R. L., & Greenberg, M. T. (2010). Modeling the interplay of multilevel risk factors for future academic and behavior problems: A person-centered approach. *Development and Psychopathology*, *22*(2), 313-35. doi:10.1017/S0954579410000088

Larson, R. W., & Richards, M. H. (2012). Boredom in the middle school years: Blaming schools versus blaming students boredom blaming students in schools the middle versus blaming years. *American Journal of Education*, *99*(4), 418–443.

Lazarus, R. S. (1991). Progress on a cognitive-motivational-relational theory of emotion. The

American Psychologist, *46*(8), 819–34.

Leventhal, T., & Brooks-Gunn, J. (2000). The neighborhoods they live in: The effects of neighborhood residence on child and adolescent outcomes. *Psychological Bulletin*, *126*(2), 309–337. doi:10.1037//0033-2909.126.2.309

Lewis, A. D., Huebner, E. S., Malone, P. S., & Valois, R. F. (2011). Life satisfaction and student engagement in adolescents. *Journal of Youth and Adolescence*, *40*(3), 249-62. doi:10.1007/s10964-010-9517-6

Linnenbrink, E. A. (2006). Emotion research in education: Theoretical and methodological perspectives on the integration of affect, motivation, and cognition. *Educational Psychology Review*, *18*(4), 307-314. doi:10.1007/s10648-006-9028-x

Linnenbrink, E. A., & Pintrich, P. R. (2002). Motivation as an enabler for academic success. *School Psychology Review, 31*(3), 313-327.

Linnenbrink, E. A., & Pintrich, P. R. (2003). The role of self-efficacy beliefs in student engagement and learning in the classroom. *Reading and Writing Quarterly, 19*(2), 37–41.

Linnenbrink-Garcia, E. A., & Pekrun, R. (2011). Students' emotions and academic engagement: Introduction to the special issue. *Contemporary Educational Psychology*, *36*(1), 1-3. doi:10.1016/j.cedpsych.2010.11.004

Linnenbrink-Garcia, E. A., Rogat, T. K., & Koskey, K. L. K. (2011). Affect and engagement during small group instruction. *Contemporary Educational Psychology*, *36*(1), 13–24. doi:10.1016/j.cedpsych.2010.09.001

Lipnevich, A. A., MacCann, C., Bertling, J. P., Naemi, B., & Roberts, R. D. (2012). Emotional reactions toward school situations: Relationships with academic outcomes. *Journal of Psychoeducational Assessment, 30*(4), 387–401. doi:10.1177/0734282912449445

Maehr, M. L. (2001). Goal theory is not dead — not yet, anyway: A reflection on the special issue. *Educational Psychology Review, 13*(2), 177-185. doi: 10.1023/A:1009065404123

Marsh, H. W. (1990). The structure of academic self-concept: The Marsh/Shavelson model. *Journal of Educational Psychology*, *82*(4), 623-636. doi:10.1037//0022-0663.82.4.623

Marsh, H. W. (1992). *Self-description Questionnaire (SDQ) II: A theoretical and empirical basis for the measurement of multiple dimensions of adolescent self-concept*. Penrith, New South Wales, Australia: University of Western Sydney, SELF Research Centre.

Marsh, H. W., & Craven, R. G. (2006). Reciprocal effects of self-concept and performance from a multi-dimensional perspective: Beyond seductive pleasure and unidimensional perspectives. *Perspectives on Psychological Science*, *1*(2), 133-163. doi: 10.1111/j.1745-6916.2006.00010

Marsh, H. W., & Yeung, A. S. (2012). The distinctiveness of affects in specific school subjects: An application of confirmatory factor analysis with the National Educational Longitudinal Study of 1988. *American Educational Research Journal*, *33*(3), 665–689.

Meyer, D. K., & Turner, J. C. (2002). Discovering emotion in classroom motivation research. *Educational Psychologist*, *37*(2), 107–114. doi:10.1207/S15326985EP3702_5

Meyer, D. K., & Turner, J. C. (2006). Re-conceptualizing emotion and motivation to learn in classroom contexts. *Educational Psychology Review*, *18*(4), 377-390. doi:10.1007/s10648-006- 9032-1

Milne, A., & Plourde, L. A. (1997). Factors of a low-SES household: What aids academic achievement? *Journal of Instructional Psychology*, *33*(3), 183-193.

Miserandino, M. (1996). Children who do well in school: Individual differences in perceived

competence and autonomy in above-average children. *Journal of Educational Psychology, 88*(2), 203–214. doi:10.1037//0022-0663.88.2.203

Nett, U. E., Goetz, T., & Daniels, L. M. (2010). What to do when feeling bored? Students' strategies for coping with boredom. *Learning and Individual Differences*, *20*(6), 626-638. doi:10.1016/j.lindif.2010.09.004

Nett, U. E., Goetz, T., & Hall, N. C. (2010). Coping with boredom in school: An experience sampling perspective. *Contemporary Educational Psychology*, *36*, 49–59.

Nicholls, J. G., McKenzie, M., & Shufro, J. (1994). Schoolwork, homework, life's work: The experience of students with and without learning disabilities. *Journal of Learning Disabilities*, *27*(9), 562-569. doi: 10.1177/002221949402700903

Noble, K. G., Farah, M. J., & McCandliss, B. D. (2006). Socioeconomic background modulates cognition-achievement relationships in reading. *Cognitive Development*, *21*(3), 349-368. doi:10.1016/j.cogdev.2006.01.007

Noteborn, G., Bohle Carbonell, K., Dailey-Hebert, A., & Gijselaers, W. (2012). The role of emotions and task significance in virtual education. *The Internet and Higher Education*, *15*(3), 176–183. doi:10.1016/j.iheduc.2012.03.002

Olafson, K. M., & Ferraro, F. R. (2001). Effects of emotional state on lexical decision performance. *Brain and Cognition, 45*(1), 15–20. doi:10.1006/brcg.2000.1248

Olthof, T., Schouten, A., Kuiper, H., Stegge, H., & Jennekens-Schinkel, A. (2000). Shame and guilt in children: Differential situational antecedents and experiential correlates. *British Journal of Developmental Psychology*, *18*(1), 51–64. doi:10.1348/026151000165562

Op't Eynde, P., & De Corte, E. (2006). "Accepting emotional complexity": A socio-constructivist perspective on the role of emotions in the mathematics classroom.

Educational Studies in Mathematics, *63*(2), 193-207. doi:10.1007/s10649-006-9034-4

Ortony, A, & Turner, T. J. (1990). What's basic about basic emotions? *Psychological Review*, *97*(3), 315–31.

Ouano, J. A. (2011). Motivational antecedents of academic emotions in Filipino college students, *The Asia-Pacific Education Researcher*, *20,* 127–132.

Patrick, B. C., Skinner, E., & Connell, J. P. (1993). What motivates children's behavior and emotion? Joint effects of perceived control and autonomy in the academic domain. *Journal of Personality and Social Psychology*, *65*(4), 781–791. doi:10.1037//0022-3514.65.4.781

Pekrun, R. (2001). Test anxiety and academic achievement. In N. Smelser & P. Baltes (Eds.), *International encyclopedia of the social and behavioral science* (pp. 15610-15614). Oxford, UK: Elsevier.

Pekrun, R. (1992). The impact of emotions on learning and achievement: Towards a theory of cognitive motivational mediators. *Applied Psychology: An International Review*, *41*(4), 359-376. doi:10.1111/j.1464-0597.1992.tb00712.x

Pekrun, R. (2000). A social-cognitive, control-value theory of achievement emotions. *Advances in Psychology*, *131*, 143-163. doi:10,1016/S0166-4115(00)80010-2

Pekrun, R. (2006). The control-value theory of achievement emotions: Assumptions, corollaries, and implications for educational research and practice. *Educational Psychology Review*, *18*(4), 315-341. doi:10.1007/s10648-006-9029-9

Pekrun, R, Goetz, T., Daniels, L. M., Stupnisky, R. H., & Perry, R. P. (2010). Boredom in achievement settings: Exploring control–value antecedents and performance outcomes of a neglected emotion. *Journal of Educational Psychology*, *102*(3), 531-549. doi:10.1037/a0019243

Pekrun, R., Goetz, T., Frenzel, A. C., Barchfeld, P., & Perry, R. P. (2011). Measuring emotions in students' learning and performance: The achievement emotions questionnaire (AEQ). *Contemporary Educational Psychology*, *36*(1), 36-48.doi:10.1016/j.cedpsych.2010.10.002

Pekrun, R., Goetz, T., & Perry, P. (2005). *Achievement emotions questionnaire (AEQ). User's manual*. Department of Psychology. University of Munich, Munich, Germany.

Pekrun, R., Goetz, T., Titz, W., & Perry, R. P. (2002). Academic emotions in students' self-regulated learning and achievement: A program of qualitative and quantitative research. *Psychology*, *37*(2), 91-105. doi:10.1207/S15326985EP3702_4

Pekrun, R., & Stephens, E. J. (2010). Achievement emotions: A control-value approach. *Social and Personality Psychology Compass*, *4*(4), 238-255. doi:10.1111/j.1751-9004.2010.00259.x

Perry, R. P., Hladkyj, S., Pekrun, R. H., & Pelletier, S. T. (2001). Academic control and action control in the achievement of college students: A longitudinal field study. *Journal of Educational Psychology*, *93*(4), 776–789. doi:10.1037//OO22-0663.93.4.776

Pierson, L. H., & Connell, J. P. (1992). Effect of grade retention on self-system processes, school engagement, and academic performance. *Journal of Educational Psychology, 84*(3), 300–307. doi:10.1037//0022-0663.84.3.300

Pintrich, P. R., & DeGroot, E. V. (1990). Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychology*, *82*(1), 33-40. doi:10.1037//0022-0663.82.1.33

Pomerantz, E. M., Wang, Q., & Ng, F. F. Y. (2005). Mothers' affect in the homework context: The importance of staying positive. *Developmental Psychology*, *41*(1), 414-27. doi:10.1037/0012-1649.41.2.414

Quilliams, L., & Beran, T. (2009). Children at risk for academic failure: A model of individual and family factors. *Exceptionality Education International*, *19*(2), 63-76.

Reschly, A. M. Y. L., & Carolina, S. (2008). Engagement as flourishing: The contribution of positive emotions and coping to adolescents' engagement at school and with learning. *Psychology in the Schools*, *45*(5), 419-431. doi:10.1002/pits

Roseman, I. J. (2001). A model of appraisal in the emotion system: Integrating theory, research, and applications. In K. R. Scherer, A. Schorr, & T. Johnstone (Eds.), *Appraisal processes in emotion: Theory, methods, research* (pp. 68-91). New York: Oxford University Press.

Roseman, I. J., Antoniou, A. A., & Jose, P. E. (1996). Appraisal determinants of emotions: Constructing a more accurate and comprehensive theory. *Cognition and Emotion*, *10*, 241-277.

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *The American Psychologist*, *55*(1), 68–78. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/11392867

Scheel, M. J., Madabhushi, S., & Backhaus, A. (2009). The academic motivation of at-risk students in a counseling prevention program. *The Counseling Psychologist*, *37*(8), 1147-1178. doi:10.1177/0011000009338495

Scherer, K. R. (2009). The dynamic architecture of emotion: Evidence for the component process model. *Cognition & Emotion*, *23*(7), 1307-1351. doi:10.1080/02699930902928969

Schiefele, U. (1991). Interest, learning, and motivation. *Educational Psychologist*, *26*(3), 299–323.

Schutz, P. A., & DeCuir, J. T. (2002). Inquiry on emotions in education. *Educational Psychologist*, *37*(2), 125-134. doi:10.1207/S15326985EP3702_7

Schutz, P. A., Hong, J. Y., Cross, D. I., & Osbon, J. N. (2006). Reflections on investigating emotion in educational activity settings. *Educational Psychology Review*, *18*(4), 343-360. doi:10.1007/s10648-006-9030-3

Schutz, P. A., & Lanehart, S. L. (2002). Introduction: Emotions in education. *Educational Psychologist*, *37*, 67–68.

Schweinle, A., Turner, J. C., & Meyer, D. K. (2008).Understanding young adolescents' optimal experiences in academic settings. *Journal of Experimental Education*, *77*(2), 37-41. doi:10.3200/JEXE.77.2.125-146

Sirin, S. R. (2005). Socioeconomic status and academic achievement: A meta-analytic review of research. *Review of Educational Research*, *75*(3), 417-453. doi:10.3102/00346543075003417

Skinner, E., Wellborn, J. G., & Connell, J. P. (1990a). What it takes to do well in school and whether I've got it: A process model of perceived control and children's engagement and achievement in school. *Journal of Educational Psychology*, *82*(1), 22–32. doi:10.1037/0022-0663.82.1.22

Steptoe, A., Wardle, J., & Marmot, M. (2005). Positive affect and health-related neuroendocrine, cardiovascular, and inflammatory processes. *Proceedings of the National Academy of Sciences of the United States of America, 102*(18), 6508–12. doi:10.1073/pnas.0409174102

Stöber, J., & Pekrun, R. (2004). Advances in test anxiety research. *Anxiety, Stress & Coping*, *17*(3), 205-211. doi:10.1080/1061580412331303225

Swalander, L., & Taube, K. (2007). Influences of family based prerequisites, reading attitude, and self-regulation on reading ability. *Contemporary Educational Psychology*, *32*(2), 206-230. doi:10.1016/j.cedpsych.2006.01.002

Tababnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Boston, MA: Pearson Education Inc.

Taylor, L. C., Clayton, J. D., & Rowley, S. J. (2004). Academic socialization: Understanding parental influences on children's school-related development in the early years. *Review of General Psychology*, *8*(3), 163-178. doi:10.1037/1089-2680.8.3.163

Tsai, Y. M., Kunter, M., Lüdtke, O., Trautwein, U., & Ryan, R. M. (2008). What makes lessons interesting? The role of situational and individual factors in three school subjects. *Journal of Educational Psychology, 100*(2), 460–472. doi:10.1037/0022-0663.100.2.460

Turner, J. E., Husman, J., & Schallert, D. L. (2002). The importance of students' goals in their emotional experience of academic failure: Investigating the precursors and consequences of shame. *Educational Psychologist*, *37*(2), 79–89. doi:10.1207/S15326985EP3702_3

Turner, J. C., Midgley, C., Meyer, D. K., Gheen, M., Anderman, E. M., Kang, Y., & Patrick, H. (2002). The classroom environment and students' reports of avoidance strategies in mathematics: A multimethod study. *Journal of Educational Psychology*, *94*(1), 88-106. doi:10.1037//0022-0663.94.1.88

Turner, J. E., & Schallert, D. L. (2001). Expectancy-value relationships of shame reactions and shame resiliency. *Journal of Educational Psychology*, *93*(2), 320–329. doi:10.1037//0022-0663.93.2.320

Valiente, C., Lemery-Chalfant, K., & Swanson, J. (2010). Prediction of kindergartners' academic achievement from their effortful control and emotionality: Evidence for direct and moderated relations. *Journal of Educational Psychology*, *102*(3), 550–560. doi:10.1037/a0018992

Weiner, B. (1985). An attributional theory of achievement motivation and emotion. *Psychological Review, 92*(4), 548-73. doi: 10.1037/0033-295X.92.4.548

Weiner, B. (2008). Reflections on the history of attribution theory and research. *Social Psychology*, *39*(3), 151–156. doi:10.1027/1864-9335.39.3.151

Zeidner, M. (2007). Test anxiety in educational contexts: What I have learned so far. In P. A. Schutz & R. Pekrun (Eds.), *Emotion in education* (pp. 165–184). San Diego: Academic Press.

Zimmerman, B. (2000). Self-efficacy: An essential motive to learn. *Contemporary Educational Psychology*, *25*(1), 82–91. doi:10.1006/ceps.1999.1016

Zins, J., Bloodworth, M., Weissberg, R., & Walberg, H. (2004). The Scientific Base Linking Social and Emotional Learning to School Success. In J. Zins, R. Weissberg, M. Wang, & H. Walberg (Eds.), *Building academic success on social and emotional learning: What does research say?* (pp. 3–22). New York, NY: Teachers College Press.

Appendix A

INFORMATION AND CONSENT FORM

Institution: Faculty of Education, McGill University

Title of Project: The Importance of Understanding the Academic Emotions Of High School Students at Risk for Academic Failure

Project leader: Daniella Goldberg, Masters of Art Candidate

Other Investigators: Steven Shaw, Ph.D. & Nathan Hall, Ph.D.

Dear Parent or Guardian,

We are currently conducting a research project on the effects of perceived academic self-concept on academic emotions in high school students. Please review the following information regarding the nature of this study and what will be required of your child. Keep in mind that participation in this study is completely voluntary and you or your child can withdraw their participation at any time.

Why this Research is Important

The knowledge gained from this research will help to better understand how students feel and think about school. This is particularly important since thoughts and feelings about school are related to academic achievement and dropout rates. Thus, we hope that that information obtained from this study will aid in the creation and implementation of intervention programs in high schools, which will help to improve academic achievement and reduce dropout rates.

What to Expect

Upon your written consent, your child will be given three questionnaires to complete that will ask them questions regarding how they feel and think about school. These questionnaires will be administered by the primary investigator (Daniella Goldberg) to your child during class times. It should take about 30 minutes to complete these questionnaires. There is minimal risk associated with completing these questionnaires and your child does not have to complete any questionnaires or questions he or she at any point does not feel comfortable answering.

To thank your child for their participation, their name will be added to a draw to win *a $10 gift card from Tim Horton's.* This draw will only include students from your child's school or community organization who have also agreed to participate in this study.

Information about your child's grades and attendance will also be requested. This information will only be used by the principal investigator (Daniella Goldberg) for research purposes and analyzed in an anonymous manner. You do not have to agree to have this information used and your child can still participate in the research and answer questions without this information.

Confidentiality
The questionnaires will be administered and collected only by the principal investigator (Daniella Goldberg) during school time. To ensure privacy and confidentiality, your child will be assigned a file number, and all materials collected will be labeled with only this case number. A list of the participant's names with their assigned file numbers will be kept separately from the collected materials and stored in a locked cabinet at our research unit on the McGill University campus. Only the principal investigator (Daniella Goldberg) and the primary research supervisor (Dr. Steven Shaw) can have access to this information. If and when the data is included in future academic presentations and publications, no mention of your child's identity will be made and only group results (i.e., group means) will be reported. As well, there will be no mention of your child's school or location of research in any future reports or presentations. Information regarding the results of this study will be made available to you, upon your request (you can select this option in the consent form).

Interested in Participating
If you are interested in your child participating in this study, please complete the attached consent form and give it to your child to return to their teacher. As well, should you have any more questions or concerns regarding this study or your child's participation, please feel free to contact one of the research team members by using the information indicated below. If you have any questions or concerns regarding your child's rights and welfare as a participant in this study, please contact the McGill Ethics Officer at 514-398-6831 or Lynda.mcneil@mcgill.ca.

We thank you kindly for considering this request and hope that we can have your participation in this important and exciting study.

Sincerely,
Daniella Goldberg
Masters of Art Degree Candidate in School/Applied Child Psychology
McGill University
Montreal, Quebec

Contacts:

Daniella Goldberg, Masters of Art Candidate
Tel: (514) 557-0210
e-mail: daniella.goldberg@mail.mcgill.ca

Dr. Steven R. Shaw, Ph.D., NCSP
Tel: (514) 398-4913
email: steven.shaw@mail.mcgill.ca

Declaration of the Parent:

I, _____, have read the above description. I have been fully informed about the procedures, advantages and disadvantages of the study. I freely and voluntarily consent for my child, _____, to participate in this study.

_____
Name of Participant Signature of Parent Date

_____

Name of Research Signature of Researcher Date

☐ Please check this box if you would like to be contacted about the results of this study.
Email: _____

INFORMATION AND ASSENT FORM

Institution: Faculty of Education, McGill University

Title of Project: The Importance of Understanding the Academic Emotions Of High School Students at Risk for Academic Failure

Project leader: Daniella Goldberg, Masters of Art candidate

Other Investigators: Steven Shaw, Ph.D., & Nathan Hall, Ph.D.

Dear Participant,

We are currently conducting a research project on the effects of perceived academic self-concept on academic emotions in high school students. Keep in mind that whether or not you participate in this study is completely voluntary and will have no effect on your academic performance. As well, you can withdraw from this study at any time.

Also to thank you for participating in the study, your name will be entered into a draw to win a *$10 gift certificate from Tim Horton's*. This draw will only include students who are in the same school or organization as you, who have also agreed to participate in this study.

Why this Research is Important

The knowledge gained from this research will help better understand how students feel and think about school. This is important to understand as not only can we evaluate the effectiveness of the program based on this knowledge, but we can also better understand what types of techniques are most effective in making such changes. Such information is important as how students feel and think about school is related to academic achievement and dropout rates. Thus, results obtained in this study can help in developing and providing intervention programs in high schools, which will help to improve academic achievement and reduce dropout rates.

What to Expect

If you agree to participate you will be given a consent form to complete and you will be given a consent form to give to your parents. Once your parents read and sign this form, you will need to return it to your teacher. After this has been done, you will be given three questionnaires to complete that will ask you questions regarding how you feel and think about school. These questionnaires will be administered to you by the primary investigator of this project (Daniella Goldberg) during school. It should take about 30 minutes to complete these questionnaires and they will be collected and stored in a safe location by the primary investigator (Daniella Goldberg). There is minimal risk associated with completing these questionnaires and you do not have to complete any questionnaires or questions which you feel uncomfortable answering.

As well, the primary investigator (Daniella Goldberg) can have access to other information about you. Most of this information will include your demographic information (such as age and gender), your academic achievements. This information will only be used by the principal investigator (Daniella Goldberg) for research purposes. If you have any concerns regarding the use of this information please contact the principle investigator (Daniella Goldberg).

Confidentiality
To ensure privacy and confidentiality, you will be assigned a file number, and all materials collected will be labeled with only your case number. A list of all participants' names with their assigned file numbers will be kept separately from the collected materials and stored in a locked cabinet at our research unit on the McGill University campus. Only the principal investigator (Daniella Goldberg) and the primary research supervisor (Dr. Steven Shaw) can have access to this information. As well, the primary investigator (Daniella Goldberg) will be administering and collecting the questionnaires after you have completed them. When the data is included in future academic presentations and publications, no mention of your identity will be made and only group results will be reported. The school and location of the research will also not be mentioned in any future reports.

Interested in Participating
If you are interested in participating in this study, please complete the attached consent form and return it to your teacher as soon as possible. If you have any further questions or concerns regarding this study or your participation, please feel free to contact one of the research team members using the information indicated below. If you have any questions or concerns regarding your rights and welfare as a participant in this study, please contact the McGill Ethics Officer at 514-398-6831 or Lynda.mcneil@mcgill.ca.

We thank you kindly for considering this request and hope that we can have your participation in this important and exciting study.

Sincerely,
Daniella Goldberg
Masters of Art Degree Candidate in School/Applied Child Psychology
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E-mail: daniella.goldberg@mail.mcgill.ca

Dr. Steven R. Shaw, Ph.D., NCSP
Tel: (514) 398-4913
email: steven.shaw@mail.mcgill.ca

Declaration of the Participant:

I, _____, have read the above description. I have been fully informed about the procedures, advantages of the study. I freely and voluntarily consent to participate in this study.

_____
Name of Participant Signature of Participant Date

_____
Date of Birth of participant (Month/Day/Year)

_____
Name of Researcher Signature of Researcher Date

INFORMATION AND CONSENT FORM

Institution: Faculty of Education, McGill University

Title of Project: The Effect of Perceived Academic Self-Concept on Academic Emotions in High School Students at Risk for Academic Failure

Project leader: Daniella Goldberg, Masters of Art Candidate

Other Investigators: Steven Shaw, Ph.D. & Nathan Hall, Ph.D.

Dear Parent or Guardian,

We are currently conducting a research project on the effects of perceived academic self-concept on academic emotions in high school students. As your child is participating in the CN-Adopt-an-Alouette program, we would like to see whether your child's thoughts and feelings towards school will change after participating in this program. Please review the following information regarding the nature of this study and what will be required of your child. Keep in mind that participation in this study is completely voluntary and you or your child can withdraw their participation at any time. As well, whether or not your child participates in this study will have no effect on your child's academic performance or their involvement in the CN-Adopt-an-Alouette program.

Why this Research is Important

The knowledge gained from this research will help to better understand how participation in the CN-Adopt-an-Alouette program changes how students feel and think about school. This is important to understand as not only can we evaluate the effectiveness of the program based on this knowledge, but also we can better understand what types of techniques are most effective in bringing forth such changes (what techniques or tools implemented in this program improve students' thoughts and feelings towards school). This is particularly important since thoughts and feelings about school are related to academic achievement and dropout rates. Thus, we hope that that information obtained from this study will aid in the creation and implementation of intervention programs in high schools, which will help to improve academic achievement and reduce dropout rates.

What to Expect

Upon your written consent, your child will be given three questionnaires to complete that will ask them questions regarding how they feel and think about school. These questionnaires will be administered by the primary investigator (Daniella Goldberg) to your child during one scheduled CN-Adopt-an-Alouette program session. It should take about 30 minutes to complete these questionnaires. There is minimal risk associated with completing these questionnaires and your child does not have to complete any questionnaires or questions he or she at any point does not feel comfortable answering.

To thank your child for their participation, their name will be added to a draw to win a gift card from a location of their choice. This draw will only include students from your child's school or community organization who have also agreed to participate in this study.

The primary investigator (Daniella Goldberg) will have access to other information about your child that is being collected by the CN-Adopt-an-Alouette program. Most of this information will include demographic information, your child's academic achievements, as well as information that is being collected by CN-Adopt-an-Alouette program for evaluation purposes (participant satisfaction and coach satisfaction). This information will only be used by the principal investigator (Daniella Goldberg) for research purposes and analyzed in an anonymous manner. If you have any concerns regarding the use of this information, please contact the principle investigator (Daniella Goldberg).

Confidentiality

The questionnaires will be administered and collected only by the principal investigator (Daniella Goldberg) during your child's CN-Adopt-an-Alouette sessions. To ensure privacy and confidentiality, your child will be assigned a file number, and all materials collected will be labeled with only this case number. A list of the participant's names with their assigned file numbers will be kept separately from the collected materials and stored in a locked cabinet at our research unit on the McGill University campus. Only the principal investigator (Daniella Goldberg) and the primary research supervisor (Dr. Steven Shaw) will have access to this information. If and when the data is included in future academic presentations and publications, no mention of your child's identity will be made and only group results (i.e., group means) will be reported. As well, there will be no mention of your child's school or location of research in any future reports or presentations. Information regarding your child's general performance will be made available to you, upon your request (you can select this option in the consent form).

Interested in Participating

If you are interested in your child participating in this study, please complete the attached consent form and give it to your child to return to his/her coach or liaison at the CN-Adopt-an-Alouette program. As well, should you have any more questions or concerns regarding this study or your child's participation, please feel free to contact one of the research team members by using the information indicated below. If you have any questions or concerns regarding your child's rights and welfare as a participant in this study, please contact the McGill Ethics Officer at 514-398-6831 or Lynda.mcneil@mcgill.ca.

We thank you kindly for considering this request and hope that we can have your participation in this important and exciting study.

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Dr. Steven R. Shaw, Ph.D., NCSP
Tel: (514) 398-4913
email: steven.shaw@mail.mcgill.ca

Declaration of the Parent:

I, _____, have read the above description. I have been fully informed about the procedures, advantages and disadvantages of the study. I freely and voluntarily consent for my child, _____, to participate in this study.

_____

Name of Participant Signature of Parent Date

☐ Please check this box if you would like to be contacted about the results of this study.

*Please make sure that your child returns this form to next CN-Adopt-an-Alouette Program Session

INFORMATION AND CONSENT FORM

Institution: Faculty of Education, McGill University

Title of Project: The Effect of Perceived Academic Self-Concept on Academic Emotions in High School Students at Risk for Academic Failure

Project leader: Daniella Goldberg, Masters of Art candidate

Other Investigators: Steven Shaw, Ph.D., & Nathan Hall, Ph.D.

Dear Participant,

We are currently conducting a research project on the effects of perceived academic self-concept on academic emotions in high school students. Since you are participating in the CN-Adopt-an-Alouette program, we would like to see whether or not your thoughts and feelings towards school will change after participating in this program. Please review the following information regarding the nature of this study and what will be required of you. Keep in mind that whether or not you participate in this study is completely voluntary and will have no effect on your academic performance or involvement in the CN-Adopt-an-Alouette program. As well, you can withdraw from this study at any time.

Also to thank you for participating in the study, your name will be entered into a draw to win a gift certificate from a location of your choice. This draw will only include students who are in the same school or organization as you, who have also agreed to participate in this study.

Why this Research is Important

The knowledge gained from this research will help better understand how participation in the CN-Adopt-an-Alouette program changes how students feel and think about school. This is important to understand as not only can we evaluate the effectiveness of the program based on this knowledge, but we can also better understand what types of techniques are most effective in making such changes. Such information is important as how students feel and think about school is related to academic achievement and dropout rates. Thus, results obtained in this study can help in developing and providing intervention programs in high schools, which will help to improve academic achievement and reduce dropout rates.

What to Expect

If you agree to participate you will be given a consent form to complete and you will be given a consent form to give to your parents. Once your parents read and sign this form, you will need to return it to your CN-Adopt-an-Alouette coach during your next program session. After this has been done, you will be given three questionnaires to complete that will ask you questions regarding how you feel and think about school. These questionnaires will be administered to you by the primary investigator of this project (Daniella Goldberg) during one of your CN-Adopt-an-Alouette sessions. It should take about 30 minutes to complete these questionnaires and they will be collected and stored in a safe location by the primary investigator (Daniella Goldberg). There is minimal risk associated with completing these questionnaires and you do not have to complete any questionnaires or questions which you feel uncomfortable answering.

As well, the primary investigator (Daniella Goldberg) will have access to other information about you that is being collected by the CN-Adopt-an-Alouette program. Most of this information will include your demographic information (such as age and gender), your academic achievements, as well as information pertaining to the evaluation of CN-Adopt-an-Alouette program (participant satisfaction and coach satisfaction). This information will only be used by the principal investigator (Daniella Goldberg) for research purposes. If you have any concerns regarding the use of this information please contact the principle investigator (Daniella Goldberg).

Confidentiality
To ensure privacy and confidentiality, you will be assigned a file number, and all materials collected will be labeled with only your case number. A list of all participants' names with their assigned file numbers will be kept separately from the collected materials and stored in a locked cabinet at our research unit on the McGill University campus. Only the principal investigator (Daniella Goldberg) and the primary research supervisor (Dr. Steven Shaw) will have access to this information. As well, the primary investigator (Daniella Goldberg) will be administering and collecting the questionnaires after you have completed them. When the data is included in future academic presentations and publications, no mention of your identity will be made and only group results will be reported. The school and location of the research will also not be mentioned in any future reports.

Interested in Participating
If you are interested in participating in this study, please complete the attached consent form and return it to your coach or liaison at the CN-Adopt-an-Alouette program during your first program session. If you have any further questions or concerns regarding this study or your participation, please feel free to contact one of the research team members using the information indicated below. If you have any questions or concerns regarding your rights and welfare as a participant in this study, please contact the McGill Ethics Officer at 514-398-6831 or Lynda.mcneil@mcgill.ca.

We thank you kindly for considering this request and hope that we can have your participation in this important and exciting study.

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Dr. Steven R. Shaw, Ph.D., NCSP
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Declaration of the Participant:

I, _____, have read the above description. I have been fully informed about the procedures, advantages of the study. I freely and voluntarily consent to participate in this study.

_____

Name of Participant Signature of Participant Date

_____

Name of Researcher Signature of Researcher Date

Appendix B

1. **Initials: _____**
2. **School: _____**
3. **Grade: _____**
4. **Gender: _____**
5. **Age: _____**
6. **What is your parents' current marital status?**

Married	Common Law	Single	Legally Separated	Divorced	Widowed
○	○	○	○	○	○

7. Which of the following best describes your living situation
    a. I live with both parents
    b. I live with one parent (my mother or father)
    c. I split time between living with my father and my mother
    d. I live with other relatives (grandparents, aunts, uncles, etc.)
    e. Other
        i. Specify the situation _____

8. How many people live at home with you?
Adults _____
Children _____

9. **What is the highest level of education of each of your parents? Please Check ONE.**

	Mother	**Father**
Some High School		
Completed High School		
Some college, CEGEP, or technical school		
Some University		
Bachelors degree		
Masters degree		
Degree in Medicine (M.D.), Dentistry (D.D.S., D.M.D.), Veterinary Medicine (D.V.M.), Optometry (O.D.) or Law (LL.B.)		
Earned Doctorate (e.g. Ph.D., D.Sc., Ed.D.).		
Other (Specify)		

What is parents' current <u>employment status</u>?

	Mother	**Father**
Full time	○	○
Part time	○	○
Unemployed	○	○
Retired	○	○
Student	○	○

Homemaker	○	○	
Company paid sick leave	○	○	
Government disability	○	○	
Other	○	○	please specify: _____

10. **How do you consider your financial situation at home compared with other students at your school**
    a. I think I have more than other people at school
    b. I think I have the same as other people at my school
    c. I think I have less than other people at my school.

11. **What is your <u>primary</u> language?**
English _____
French _____
Other _____

What language do you <u>primarily</u> speak in the home?

What other languages do you speak?

_____

12. **Were you born in Canada?**
    a. **Yes**
    b. **No**
       i. **Specify country: _____**

       ii. **At what age did you come to Canada? ____**

13. **Were your parents born in Canada?**

	Mother	**Father**
Yes		
No		
If no, specify country		

14. **How would you best describe your ethnic or cultural heritage?**

Check	
	White/Caucasian
	Chinese
	South Asian (e.g., East Indian, Pakistani, Punjabi, Sri Lankan)
	Black (e.g., African, Haitian, Jamaican, Somali)
	Native/Aboriginal People (North American Indian, Métis or Inuit/Eskimo)
	Arab/West Asian (e.g., Armenian, Egyptian, Iranian, Lebanese, Moroccan)

	Filipino
	South East Asian (e.g., Cambodian, Indonesian, Laotian, Vietnamese)
	Latin-American
	Japanese
	Korean
	Other (please specify) _____

15. **Do you currently have a part-time job outside of school?**
    a. **Yes**
       i. **Specify _____**
    b. **No**

16. **What was your approximate average grade in the last school year? _____ (out of 100)? ____**

17. **Have you ever been held back or failed a grade?**
    a. **Yes**
    b. **No**

18. **Have you ever had been arrested?**
    a. **Yes**
    b. **No**

Appendix C
Questionnaire

Please indicate how many hours a week you spend on studying and doing your homework:
_____ hours/week

The following questions ask how much you value your schoolwork. Please check off a box that **BEST** describes how much you value school. Please check off only **ONE** box.

1. In general, I find working on school assignments to be:

1	2	3	4	5	6	7
Very Boring			Somewhat Boring and Somewhat Interesting			Very Interesting

2. How much do you like doing school assignments?

1	2	3	4	5	6	7
Really Don't like			Somewhat like & Somewhat don't			Really Like

3. Is the amount of effort it will take to do well in your high school courses worthwhile for you?

1	2	3	4	5	6	7
Not very worthwhile			Somewhat Not worthwhile & Somewhat worthwhile			Very worthwhile

4. I feel that for me, being good at completing school assignments is:

1	2	3	4	5	6	7
Not at all Important			Somewhat Unimportant & Somewhat Important			Very Important

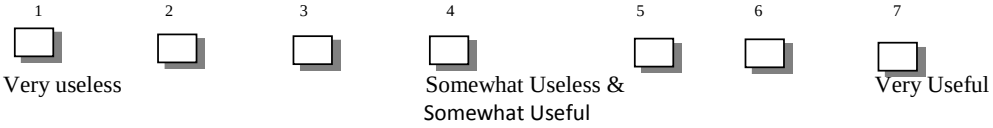
5. How important is it for you to get good grades in school?

1	2	3	4	5	6	7
Not at all Important			Somewhat Unimportant & Somewhat Important			Very Important

6. How useful is what you learn at school for what you want to do after you graduate and go to work?

1	2	3	4	5	6	7
Very useless			Somewhat Useless & Somewhat Useful			Very Useful

1. How useful is what you learn in school for your daily life outside of school?



Studying for your courses at high school can induce different feelings. This part of the questionnaire refers to emotions you may experience when studying.

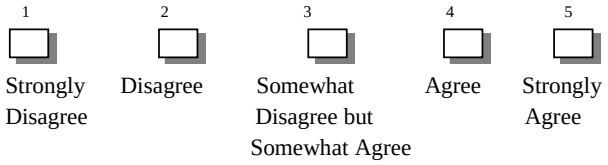
Before answering the questions on the following pages, please recall some typical situations involving studying that you have experienced during the course of your studies.

Read each item carefully and please select the **BEST** answer.

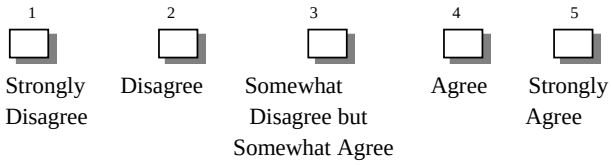
Before Studying

The following questions pertain to feelings you may experience **BEFORE** studying.
Please indicate how you feel, typically, **BEFORE** you begin to study. Please check off only **ONE** box.

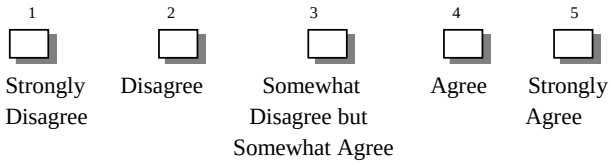
1. I get so nervous that I don't even want to begin to study



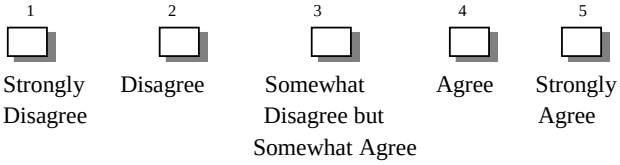
2. I look forward to studying



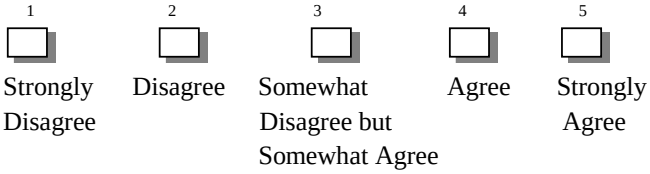
3. Because I'm bored, I have no desire to learn



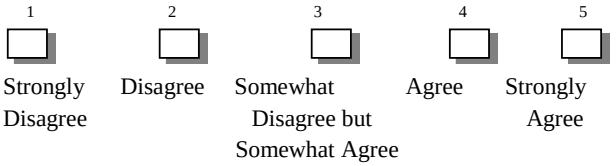
1. Because I get so upset over the amount of material, I don't even want to begin studying



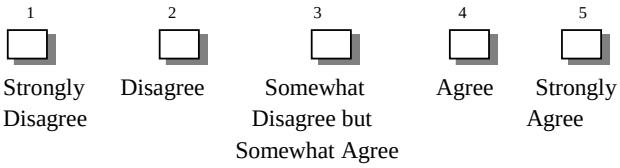
2. When I have to study I start to feel queasy



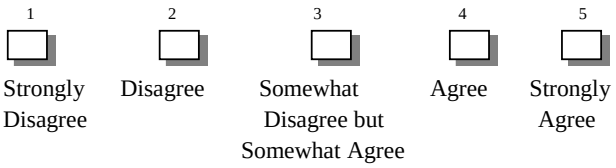
3. I would rather put off this boring work till tomorrow



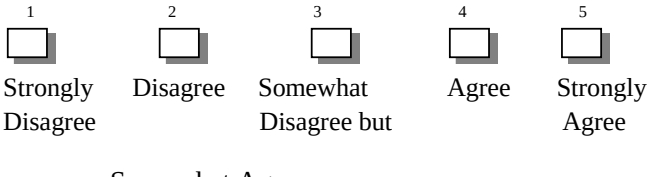
4. I get angry when I have to study



5. When I look at the books I still have to read, I get anxious



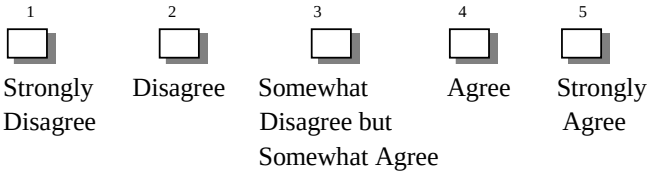
6. I'm annoyed that I have to study so much



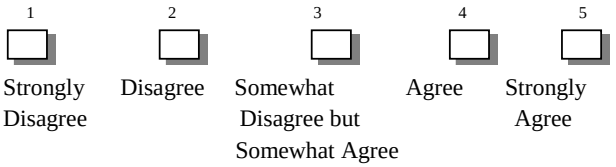
During Studying

The following questions pertain to feelings you may experience **WHILE** studying.
Please indicate how you typically feel **WHILE** studying. Please check off only **ONE** box.

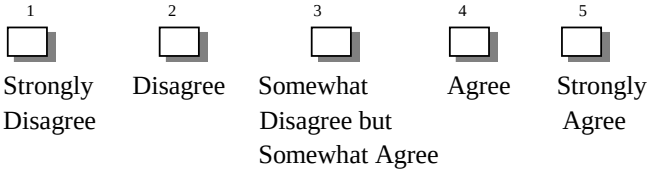
1. I worry whether I'm able to cope with all my work



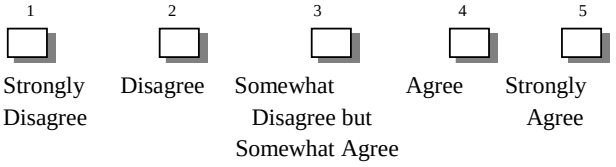
2. I study more than required because I enjoy it



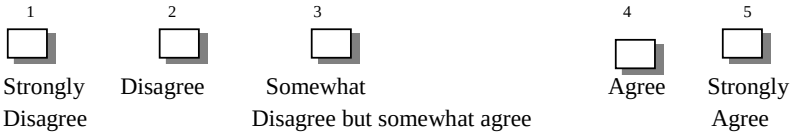
3. The material bores me



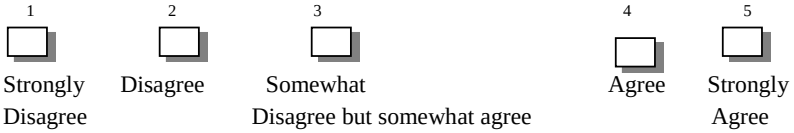
4. I get so angry I feel like throwing the textbook out of the window



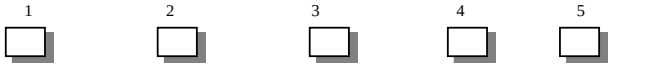
5. While studying I feel like distracting myself in order to reduce my anxiety



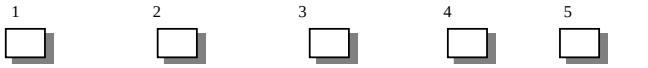
6. When my studies are going well, it gives me a rush



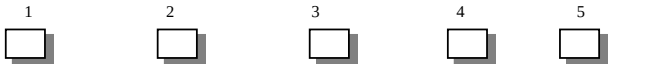
1. The material bores me so much I feel depleted



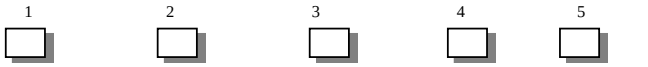
2. When I sit at my desk for a long time, my irritation makes me restless



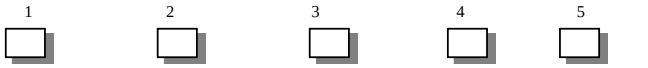
3. As time runs out my heart begins to race



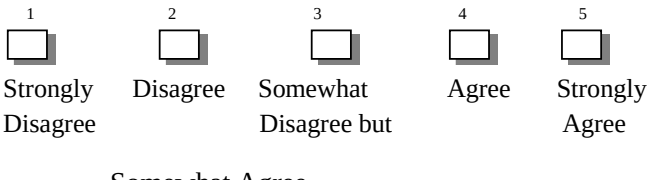
4. I enjoy the challenge of learning the material I study



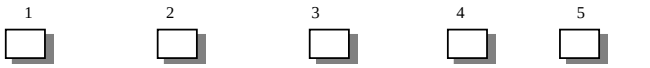
5. I find my mind wondering when I study



6. Studying makes me irritated

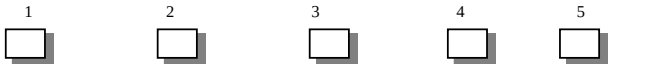


1. I get tense and nervous while studying

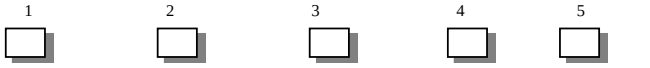


2. I enjoy dealing with the course material

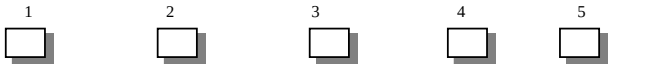
3. While studying this boring material, I spend my time thinking of how time stands still



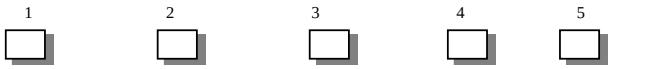
4. I get angry while studying



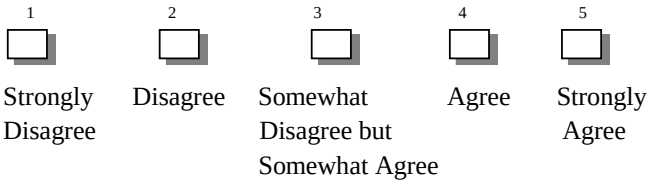
5. Subjects I don't fully understand, scare me



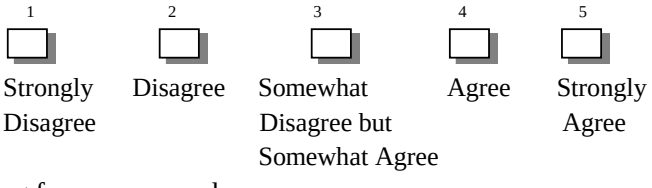
6. I get physically excited when my studies are going well



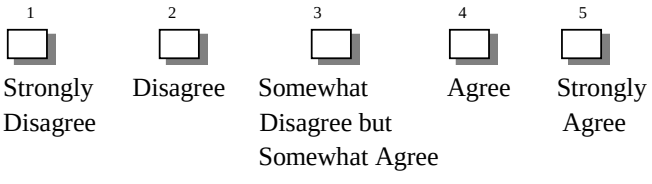
1. While studying I seem to drift off because it's so boring



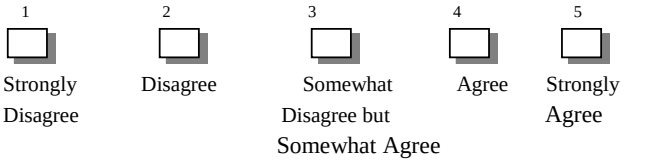
2. I get annoyed about having to study



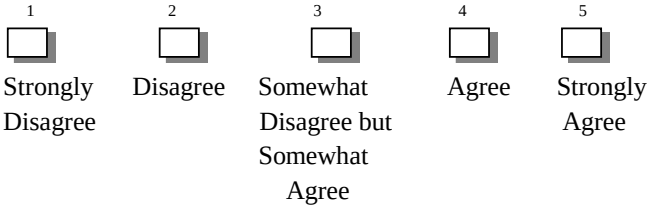
3. Studying for my courses bores me



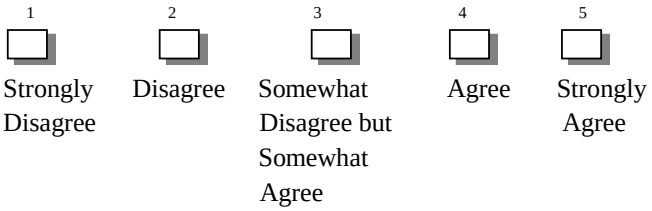
4. I enjoy acquiring new knowledge



5. Studying is dull and monotonous

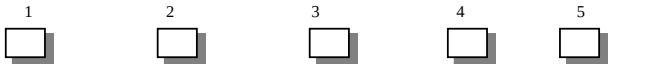


6. The material I study is so boring that I find myself daydreaming



1. Because I'm bored I get tired sitting at my desk

2. Worrying about not completing the material makes me sweat

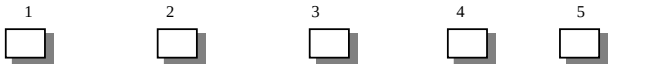


After Studying

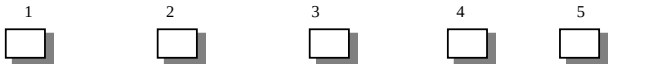
The following questions pertain to feelings you may experience **AFTER** studying.
Please indicate how you typically feel **AFTER** having studied. Please check off only **ONE** box.

3. I worry whether I have properly understood the material

4. I am happy about the progress I made that I am motivated to continue studying



5. After extended studying, I'm so angry that I get tense



1. When I can't keep up with my studies it makes me fearful

1	2	3	4	5
Strongly Disagree	Disagree	Somewhat Disagree but Somewhat Agree	Agree	Strongly Agree

2. Reflecting on my progress in coursework makes me happy

1	2	3	4	5
Strongly Disagree	Disagree	Somewhat Disagree but Somewhat Agree	Agree	Strongly Agree

3. Certain subjects are so enjoyable that I am motivated to do extra readings about them

1	2	3	4	5
Strongly Disagree	Disagree	Somewhat Disagree but Somewhat Agree	Agree	Strongly Agree

The next set of questions are statements that may or may not be accurate descriptions of you.

Please use the following 5-point response scale to indicate how true (or false) each item is as a description of you.

Please check off **one** option, that **BEST** describes you.

1. People come to me for help in most school subjects

1	2	3	4	5	6
False	Mostly False	More False Than True	More True Than False	Mostly True	True

2. I am too stupid at school to get into a CEGEP or University

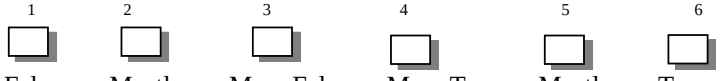
1	2	3	4	5	6
False	Mostly False	More False Than True	More True Than False	Mostly True	True

1. If I work really hard I could be one of the best students in my grade

2. I get bad marks in most school subjects

3. I learn things quickly in most school subjects

4. I am stupid at most school subjects



5. I do well in tests in most school subjects

6. I have trouble with most school subjects

7. I am good at most school subjects

8. Most school subjects are just too hard for me