ACADEMIC SELF-CONCEPT, ACADEMIC MOTIVATION, ACADEMIC ENGAGEMENT, AND ACADEMIC ACHIEVEMENT: A MIXED METHODS STUDY OF INDIAN ADOLESCENTS IN CANADA AND INDIA

by

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ABSTRACT

This study, employing sequential explanatory mixed methods research design, examined: 1) the academic self-concept, academic motivation, and academic achievement of Indian immigrant adolescents in Canada in comparison to their peers in India; 2) the mediational role of academic motivation in the association between academic self-concept and academic achievement among Indian immigrant adolescents and Indian adolescents; and 3) the perspectives, beliefs, and recommendations of Indian immigrant adolescents and Indian adolescents in regard to classroom environments/instructional practices affecting their academic engagement and achievement. Surveys were administered among secondary students in Canada (N = 355) and India (N = 363) to assess their academic self-concepts, academic motivation, and academic achievement. Eight focus group interviews were conducted, four each in Canada and India, to glean the perceptions and views of Indian immigrant and Indian adolescents. Descriptive discriminant analysis (DDA) revealed that the Indian immigrant adolescents in Canada did not differ markedly from their counterparts in India. When non-standardized GPA scores were used, English and overall school GPAs and verbal self-concept were associated with group separation in DDA. When standardized GPA scores were used, however, verbal self-concept alone was associated with group separation in DDA. Mediation analyses indicated the mediational role of intrinsic motivation in the association between academic self-concept and academic achievement among Indian immigrant and Indian adolescents. Extrinsic motivation as well mediated the relations between academic self-concept and academic achievement for the Indian immigrant adolescents in Canada. Focus group discussions suggested that the Indian immigrant and Indian adolescents were primarily extrinsically motivated toward school and academics. Further, both the
Indian immigrant and Indian adolescents perceived their classroom teachers as controlling rather than autonomy-supportive. Implications of the findings for educational practice and future research are discussed.
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CHAPTER 1: INTRODUCTION

In the past two decades, unprecedented waves of immigration have changed the demographic composition of Canada’s population (Statistics Canada, 2010). According to the 2006 Census, one in five of the recent immigrants to Canada was aged 14 and under (approximately 223,200 children), while about 167,600 recent immigrants were aged 15 to 24 (Statistics Canada, 2007). Further, according to Statistics Canada (2010), China and India alone are the place of birth of more than 29% of all immigrants to Canada. In 2009 alone, the vast majority of immigrant students and their families came from China (12%) and India (10%) (Citizenship and Immigration Canada, 2010), and it is projected that, among all the visible minority groups in Canada, South Asians and Chinese will still be the largest visible minority groups in 2031 (Statistics Canada, 2010).

The Indian community in Canada is highly concentrated in Ontario (58%) and British Columbia (26%), with the majority of Indian immigrants living in or near Toronto or Vancouver (68%; Statistics Canada, 2007). In 2001, 23% of the Indian community were children under the age of 15 years, while 16% of the Indian community were aged 15 to 24 years (Statistics Canada, 2007). The massive waves of immigration have exacerbated gaps in academic achievement among children of varied racial and ethnic backgrounds in Canada (e.g., Anisef, Brown, Phythian, Sweet, & Walters, 2008; Areeppattamannil & Freeman, 2008; Gunderson, 2007).

Although variations in children’s cognitive abilities and skills may explain gaps in academic achievement among children of varied racial and ethnic backgrounds (Hansen, Liu, & Kučera, 2010), such abilities and skills may not fully explain their academic achievement (Graham & Hudley, 2005; Pintrich, 2003a;
Schunk & Zimmerman, 2007), suggesting that there are other pertinent factors at play in determining children’s academic achievement. It is in this context that the noncognitive correlates of academic achievement, such as academic self-concept and academic motivation, have been found to play a pivotal role in children’s school achievement (see Areepattamannil & Freeman, 2008; Areepattamannil, Freeman, & Klinger, 2011a; Areepattamannil, Freeman, & Klinger, 2011b; Becker, McElvany, & Kortenbruck, 2010; Lee, McInerney, Liem, & Ortiga, 2010). Nonetheless, contemporary theories of academic self-concept and academic motivation are primarily the offspring of Western theorizing and research. Hence most of the research pertaining to academic self-concept and academic motivation involves predominantly Western, particularly American, participants (Klassen, 2004; Klassen & Usher, 2010; Tan, McInerney, Liem, & Tan, 2008).

Because “modern education needs cross-cultural psychology” (Triandis, 2001a, p. 1), it is of critical importance to broaden the purview of self-concept and motivation theories and research to account for the experiences of culturally diverse groups (Murdock, 2009; McInerney & Van Etten, 2005). However, concurring with Klassen (2004), McInerney (2007) posits that “when motivational and learning theories are transported to new cultural and social settings to understand and manage individual and group behaviour, there might be a mismatch” (p. 369). Therefore, more empirical research, examining the effects of academic self-concept and academic motivation on learning outcomes for school children across cultures, is warranted. As Gilman, Huebner, and Furlong (2009) remark:

If the ultimate goal of schools is to educate young people to become responsible and critically thinking citizens who can succeed in life, understanding factors that stimulate them to become active agents in their own learning is critical. (p. 1)
Although there is a growing body of research devoted to the study of academic self-concept, academic motivation, and academic achievement of school children across East Asian cultures (e.g., Liem & Nie, 2008; Marsh, Hau, & Kong, 2002; Zhou & Salili, 2008), no study to date has examined the interrelationships among academic self-concept, academic motivation, and academic achievement for adolescents in South Asia, particularly for Indian adolescents in India in comparison to their Indian immigrant counterparts in Canada. Further, there has been no research to date to explore the impact of classroom learning environments/instructional practices on academic engagement and academic achievement of Indian immigrant adolescents in Canada and Indian adolescents in India. The Indian adolescents belong to a moderately collectivist culture, India, and the Indian immigrant adolescents have been living in a highly individualist culture, Canada, for a while. As Hofstede, Hofstede, and Minkov (2010) state:

The purpose of education is perceived differently between the individualist and the collectivist societies. In the former, it aims at preparing the individual for a place in a society of other individuals. The purpose of learning is less to know how to do than to know how to learn. In a collectivist society, there is a stress on adaptation to the skills and virtues necessary to be an acceptable group member. Learning is more often seen as a onetime process, reserved for young people, who have to learn how to do things in order to participate in society. (pp. 118–119)

Therefore, examining the academic trajectories of Indian immigrant adolescents in Canada in comparison to their counterparts in India may help us to better understand the impact of travel and relocation from one culture to another culture on Indian immigrant adolescents’ academic engagement and achievement.
Purpose of the Study

Given the dearth of research surrounding the academic trajectories of Indian immigrant adolescents in Canada and Indian adolescents in India, the purpose of the present study was two-fold: first, to examine the relationships among academic self-concept, academic motivation, and academic achievement for Indian immigrant adolescents in Canada in comparison to their peers in India; and second, to explore the perspectives, beliefs, and recommendations of Indian immigrant adolescents in Canada and Indian adolescents in India in regard to instructional practices and classroom environments that may affect their academic engagement and academic achievement. The following three research questions addressed the purpose of the study:

1. To what extent do Indian immigrant adolescents in Canada differ from their counterparts in India in terms of their self-reported academic self-concept, academic motivation, and academic achievement?

2. To what extent does academic motivation mediate the relationship between academic self-concept and academic achievement for Indian immigrant and Indian adolescents?

3. What are the perspectives, beliefs, and recommendations of Indian immigrant adolescents in Canada and Indian adolescents in India in regard to instructional practices and classroom environments that they believe affect their academic engagement and academic achievement?
Definition of Key Terms

This section defines the key terms that are frequently used throughout the dissertation.

Academic Self-Concept

Bracken (2009) defines academic self-concept as “how a person feels about himself or herself within a school or academic setting, or in relation to a student’s academic progress” (p. 92). Academic self-concept is hierarchically organized, and multifaceted in nature (Marsh & Shavelson, 1985). Math self-concept, verbal self-concept, and school self-concept constitute academic self-concept in the current study.

Academic Motivation

According to Pintrich and Zusho (2002), academic motivation refers to internal processes that instigate and sustain activities aimed at achieving specific academic goals. Self-determination theorists posit that academic motivation is multidimensional in nature, and is comprised of three global types of motivation: intrinsic motivation, extrinsic motivation, and amotivation (Deci & Ryan, 2002).

Collectivist Cultures

“In collectivist cultures people are interdependent within their in-groups, give priority to the goals of their in-groups, shape their behaviour primarily on the basis of in-group norms, and behave in a communal way” (Triandis, 2001a, p. 909). China, Hong Kong, Singapore, and Taiwan are highly collectivist cultures, while India and Israel are moderately collectivist cultures (Hofstede, 2001; Hofstede, Hofstede, & Minkov, 2010).
Indian Adolescents

The term Indian adolescents refers to adolescent students who have been permanently residing in India since birth, and are citizens of India.

Indian Immigrant Adolescents

The term Indian immigrant adolescents refers to adolescent students who are, or have been, landed immigrants in Canada. In other words, they are individuals who have been granted the right to permanently live in Canada by Citizenship and Immigration Canada. In the present study, the Indian immigrant adolescents in Canada were identified on the basis of their place of birth—India.

Individualist Cultures

In individualist cultures “people are autonomous and independent from their in-groups; they give priority to their personal goals over the goals of their in-groups, and they behave primarily on the basis of their attitudes rather than the norms of their in-groups” (Triandis, 2001b, p. 909). The United States, Australia, Britain, and Canada are highly individualist cultures (Hofstede, 2001; Hofstede, Hofstede, & Minkov, 2010).

Rationale

The schooling of youth today is largely out of sync with the realities of a global world. Precisely at a time when more is asked of formal education than ever before and when youth the world over need more cultural sophistication, better communication and collaboration skills, and higher-order cognitive skills for critical thinking, as well as the metacognitive abilities for reflecting on their own learning so as to become lifelong learners, most schools around the world risk anachronism and redundancy. (Suárez-Orozco & Sattin, 2007, p. 2)

The twentieth-century ‘factory model of education’ has led to a steady decline in students’ engagement with schooling (Skinner, Furrer, Marchand, & Kindermann,
2008; Suárez-Orozco & Sattin, 2007). Moreover, there has been an erosion of interest, enthusiasm, and intrinsic motivation for learning in school among students of all ages, with notable losses occurring during the transitions to middle school and high school (Skinner et al., 2008). Further, Wigfield, Eccles, Schiefele, Roeser, and Davis-Kean (2006) document that there has been a severe decline in academic engagement among boys in general and among children belonging to ethnic/racial and poor socio-economic backgrounds in particular.

Therefore, a considerable body of literature has emerged in recent years pointing to the significant role of academic engagement and academic success (see Fredricks, Blumenfeld, & Parks, 2004; Griffiths, Sharkey, & Furlong, 2009; Skinner et al., 2008; Suárez-Orozco, Suárez-Orozco, & Todorova, 2008). These studies suggest that academic engagement may not only predict students’ academic learning, school grades, and standardized achievement test scores in the short term (e.g., Finn & Rock, 1997; Jimerson, Campos, & Greif, 2003) but also predict students’ patterns of school attendance, retention, graduation, and academic resilience in the long term (see Connell, Spencer, & Aber, 1994; Sinclair, Christenson, Lehr, & Anderson, 2003; Skinner, Zimmer-Gembeck, & Connell, 1998).

Indeed, the extent to which adolescents succeed in school and academics has important implications for their ultimate educational and occupational success (Bouchey, Shoulberg, Jodl, & Eccles, 2010). Academic achievement is considered to be an important indicator of adolescent adjustment for a number of reasons. First, students with higher levels of achievement during adolescence are more likely to complete high school and to attend and complete college than their peers with lower levels of achievement (Schnepf, 2006). Second, high school test scores predict later
success in the job market in terms of higher wages (Joppke & Morawska, 2003).

Finally, lower levels of education and skills are associated with lower levels of economic success, including a greater likelihood of living in poverty and receiving government assistance (Eurydice, 2004). In short, adolescents’ academic achievement is important because it promotes their later success in life. Therefore, it is critical to understand the academic achievement of adolescents, and the factors influencing their academic achievement.

Several factors may affect the academic achievement of adolescents, including cultural familiarity with the educational system (e.g., Deyhle & Swisher, 1997), linguistic proficiency (e.g., Lansford, Deater-Deckard, & Bornstein, 2007), socioeconomic resources (e.g., Fuligni & Fuligni, 2007), parental involvement in education (e.g., Fuligni, 1997; Jeynes, 2010), parental expectations and aspirations for their children’s education (e.g., Jeynes, 2010; Taylor & Krahn, 2005), parental autonomy support (e.g., Soenens & Vansteenkiste, 2005; Wong, 2008), family obligation (Fuligni, 2001), academic self-concept (e.g., Areepattamannil & Freeman, 2008; Areepattamannil et al., 2011a, 2011b; Cokley & Patel, 2007), academic motivation (e.g., Areepattamannil & Freeman, 2008; Areepattamannil et al., 2011b; Fuligni, 2001), and teacher autonomy support (see Reeve, Ryan, Deci, & Jang, 2007, for a review). Of these variables influencing achievement, the latter three seem to have the most potential of direct influence by the regular classroom teacher. Hence Filak and Sheldon (2008) argue:

The primary goal of good teaching should be to enhance intrinsic and internalized motivation (or at least, to avoid undermining it). Good teaching should also help transmute external and introjected motivations into identified motivations. (p. 714)
However, educators tend to stress the socioeconomic factors affecting adolescents’ academic achievement to the exclusion of the psychological factors also at play in the lives of adolescents (e.g., Fuligni & Fuligni, 2007). Hence educational initiatives in Canada and India often emphasize the distal factors (i.e., socioeconomic factors) at the expense of psychological factors, which are proximal (e.g., Caro, McDonald, & Willms, 2009; Huisman, Rani, & Smits, 2010). However, research in social psychology suggests that achievement gaps may be a product of a more general cognitive process (Steele, Spencer, & Aronson, 2002). As a result, achievement gaps may be more amenable to intervention than previously thought (Good, Aronson, & Inzlicht, 2003).

Specifically, this kind of research has suggested that individuals may suffer negative performance outcomes (lower standardized test scores and less engagement with academics) because they are burdened by the prospect of confirming cultural stereotypes impugning their intellectual and academic abilities (Good et al., 2003). In contrast, other studies suggest that introducing a positive stereotype about a social group in a particular domain may increase the quality of task performance exhibited by group members (e.g., Chang & Demyan, 2007). Therefore, it is imperative to examine the impact of psychological factors on the academic achievement of adolescents.

In sum, insofar as students who are engaged in school are more likely to be successful academically (see Winne & Nesbit, 2010, for a review), and are more likely to avoid the pitfalls of adolescence (Fletcher, Bonell, Sorhaindo, & Strange, 2009), it is critical to examine the impact of adolescents’ academic self-concept and academic motivation, and the influence of classroom learning environments or
instructional practices on the academic engagement of adolescents and their subsequent academic achievement. Unfortunately, in sharp contrast to the large volume of quantitative research exploring the influences of academic self-concept, academic motivation, and classroom learning environments/instructional practices on academic achievement of school children, there is scant mixed methods research examining the psychology of academic engagement and achievement for adolescents across cultures.

Undoubtedly, no single strategy is likely to explain the nuanced interplay of factors at work in adolescents’ school experiences. “Qualitative and quantitative approaches together may lead to a closer approximation of truth than would be possible using only one of these methodologies” (Suárez-Orozco, 2001, p. 586). Hence more theoretically and methodologically diverse research is needed to construct a more sophisticated understanding of the motivational psychology for Indian immigrant and Indian adolescents in the Canadian and Indian school settings. A better and deeper understanding of the influences of academic self-concept, academic motivation, and classroom learning environments/instructional practices on academic engagement and achievement of Indian immigrant adolescents in Canada and Indian adolescents in India has the potential to shed light on these adolescents’ learning processes, which, in turn, may help educators in Canada and India to develop more effective instructional practices to nurture the inner motivational resources of these adolescents.
Overview of the Dissertation

This dissertation is structured in six chapters. Chapter 1 introduces the dissertation, describes its purpose and rationale, and defines the key terms used in the study. Chapter 2 examines the research pertaining to academic self-concept, academic motivation, and academic achievement of school children, and the research surrounding the impact of classroom learning environments/instructional practices on school children’s academic engagement and academic achievement. Chapter 3 explicates the research methodology employed in the study, including samples, data collection procedures, and research measures. Chapter 4 presents the quantitative findings of the study, while Chapter 5 describes the qualitative findings of the study. The dissertation concludes with Chapter 6, which provides an in-depth discussion of both quantitative and qualitative findings in terms of the research questions of the study; presents a discussion of overarching ideas; describes the implications of the findings for educational practice; and explores the limitations of the study and implications for future research.
CHAPTER 2: LITERATURE REVIEW

This chapter reviews the previous literature on the relationships among academic self-concept, academic motivation, classroom learning environments/instructional practices, academic engagement, and academic achievement. The first section examines the academic self-concept research, and the relationships between academic self-concept and academic achievement. The second section explores the academic motivation research based on Self-Determination Theory, and the relationships between academic motivation and academic achievement. The final section describes the classroom learning environments research employing a Self-Determination Theory perspective, and the impacts of classroom learning environments/instructional practices on students’ academic engagement and academic achievement.

Academic Self-Concept

Self-concept is defined as the “person’s perceptions of him- or herself. These perceptions are formed through experience with and interpretations of one’s environment. They are influenced by evaluations by significant others, reinforcements, and attributions for one’s own behaviour” (Marsh & Shavelson, 1985, p. 107). Academic self-concept, on the other hand, refers to mental representations of one’s abilities within school or academic settings, or in relation to one’s academic progress (Bracken, 2009; Brunner et al., 2010).

Although James (1890/1963) and Rogers (1951, 1977) provided rich beginnings to self-concept research (see Marsh, 1990a, 2007b), self-concept theory, research, and measurement were slow to develop because of the unprecedented
popularity and predominance of behaviourism in the mid-1900s (see Perry & Marsh, 2000). Further, most of the early self-concept researchers conceived self-concept as a unidimensional construct (e.g., Coopersmith, 1967; Piers & Harris, 1964), with much of the early self-concept research lacking cogent theoretical models, quality measurement instruments, robust methodology, and consistency in reported findings (Marsh & Retali, 2010).

Dismayed with the theoretical and methodological deficiencies in self-concept research, Shavelson, Hubner, and Stanton (1976) presented their seminal work on self-concept based upon an extensive review of the theoretical and empirical self-concept literature of the time. They attempted to validate the construct interpretation of test scores by reviewing five self-concept inventories that were then widely used: the Michigan State Self-Concept of Ability Scale (Brookover, LePere, Hamachek, Thomas, & Erikson, 1965), the Self-Esteem Inventory (Coopersmith, 1967), the How I See Myself Scale (Gordon, 1968), the Piers-Harris Children’s Self-Concept Scale (Piers & Harris, 1964), and the Sears Self-Concept Inventory (Sears, 1963). The Shavelson et al. model of self-concept not only resulted in the resurgence of self-concept research but also provided a theoretical and methodological blueprint for the development and validation of several self-concept instruments (March, 2007a, 2007b). The self research centre, under the direction of Marsh, has been on the forefront in spearheading theoretically grounded and methodologically rigorous research on self-concept. Hence the present study heavily relies on the empirical works of Marsh and his colleagues.
The Shavelson, Hubner, and Stanton Model

Shavelson et al. (1976) posited that self-concept be formally defined by identifying seven critical features of the construct. According to Shavelson et al. (1976), self-concept is: organized or structured, multifaceted, hierarchically arranged, stable at the apex of the model, increasingly multifaceted with age, descriptive and evaluative, and differentiable from other constructs. Self-concept is organized or structured in such a way as to indicate the focal areas of one’s experience, such as school, family, or social experiences. Shavelson et al. divided general self-concept into academic and non-academic self-concepts. They subdivided academic self-concept into particular school subjects: English, history, math, and science. The non-academic self-concept was subdivided into social, emotional, and physical self-concepts. The authors further subdivided social self-concept into relations with peers and with significant others, and physical self-concept into physical ability and physical appearance (see Marsh & Hattie, 1996).

According to Shavelson et al. (1976), the general self-concept at the apex of the hierarchy is stable. However, as one moves down the hierarchy, individual experiences become more situation-specific. As a result, at the bottom of the hierarchy, these experiences are less stable. Shavelson and colleagues postulated that the multidimensionality of self-concept would increase with age. Hence self-concept is developmental in nature. Young children may begin with very global, undifferentiated self-concepts. As children mature and begin to develop the ability to categorize their experiences, they also begin to place value on different aspects of self and of their world (Gordon, 1968). A child’s sense of self becomes increasingly more specific as experience and the ability to differentiate parts of his or her life increases.
Shavelson et al. (1976) hypothesized that self-concept has both a descriptive aspect (e.g., “I am very happy.”) and an evaluative aspect (e.g., “I do very well in school.”). The evaluations can be made against an absolute standard, or ideal, or against a relative standard, or from the perception of an evaluation by an important person in the individual’s life. The importance that an individual places on various evaluations grows out of his or her past experiences. These evaluations take place in relation to individual experience and contribute to the perceptions of self along the various facets of self-concept. Finally, Shavelson et al. (1976) posited that self-concept is differentiable from other theoretically related psychological and behavioural constructs. Specifically, Shavelson and colleagues argued that support for the multidimensionality of self-concept would require: (a) the multiple facets of self-concept are differentiable from other theoretically related constructs (between-network self-concept relations); and (b) the multiple facets of self-concept are differentiable from each other (within-network self-concept relations).

Thus Shavelson et al. (1976) postulated a hierarchically organized, multidimensional model of self-concept, with general self-concept at the apex of the hierarchy. Because the emphasis of the Shavelson et al. model was on addressing within-construct issues by hypothesizing the structure of self-concept as multidimensional rather than on the number of specific facets, the facets proposed by Shavelson et al. were only considered a possible representation of the hierarchical model (Craven & Yeung, 2008). Even though the advent of the Shavelson et al. (1976) model of self-concept resulted in the renaissance of self-concept research, and the Self Description Questionnaire (SDQ) research supported the Shavelson et al. model (Marsh & Retali, 2010), continued multidimensional research pointed out some
of the major shortcomings of the model. First, their proposed hierarchy of self-concept was found to be weak (Marsh & Craven, 1997). Second, the specific components of self-concept were highly differentiated (Marsh & O’Mara, 2008a). Finally, the Shavelson et al. (1976) model failed to acknowledge that at least two separate second-order academic factors—math/academic and verbal/academic self-concepts—were required to explain self-concepts in specific school subjects rather than a single higher-order academic self-concept (see Craven & Yeung, 2008; Marsh & O’Mara, 2008a). As Marsh, Martin, and DeBus (2001) note:

The strong hierarchical structure posited by Shavelson and colleagues required math and English self-concepts to be substantially correlated so that they could be incorporated into a single higher-order academic self-concept, but the small correlations actually observed implied that any hierarchical structure must be much weaker than anticipated. (p. 150)

These deficiencies in the Shavelson et al. (1976) model led to the revision of the model, generating the Marsh/Shavelson model of academic self-concept (Marsh, 1990b; Marsh & Shavelson, 1985).

**The Marsh/Shavelson Model**

The conspicuous absence of a multidimensional self-concept measurement instrument hindered Shavelson and colleagues from testing their model of self-concept (Craven & Yeung, 2008). Hence Marsh (1992a, 1992b, 1992c), based on the Shavelson et al. (1976) model, developed the Self Description Questionnaire (SDQ) instruments to measure different areas of self-concept: SDQ-I for primary school students, SDQ-II for adolescent high school students, and SDQ-III for late adolescents and young adults. The SDQ instruments are “theoretically based, multidimensional in nature, have sound psychometric characteristics, evenly weighted subdomains, and some have national normative samples” (Bracken, 2009, p. 92).
The Marsh/Shavelson model maintained the multidimensional and hierarchical nature of the Shavelson et al. model of self-concept. However, unlike the Shavelson et al. model, the Marsh/Shavelson model (Marsh, 1990b; Marsh & Shavelson, 1985) placed less importance on the domain-general academic self-concept. The Marsh/Shavelson model distinguished between general math and general verbal self-concepts, and the domain-general academic self-concept was considered subordinate to general math and general verbal self-concepts (Brunner, Lüdtke, & Trautwein, 2008; Brunner et al., 2010). Moreover, contrary to the Shavelson et al. (1976) model, Marsh and colleagues found that math and verbal self-concepts were nearly uncorrelated (Marsh, 1990c; Marsh, Byrne, & Shavelson, 1988). Therefore, Marsh (1986, 2007a) developed the internal/external frame of reference (I/E) model to explain the near-zero correlation between math and verbal self-concepts.

**The Internal/External Frame of Reference (I/E) Model**

According to the I/E model, academic self-concepts in particular school subjects are formed in relation to two different, but connected, frames of reference or comparison processes: the external (normative) frame of reference and the internal frame of reference (Marsh & O’Mara, 2008a; Möller, Pohlmann, Köller, & Marsh, 2009; Perry & Marsh, 2000). Within the external frame of reference, students compare their accomplishments in specific school subjects with the accomplishments of their peers. In contrast, within the internal frame of reference, students compare their own accomplishments in one particular school subject with their accomplishments in other school subjects (Möller et al., 2009). The I/E model further posits that the external comparison process leads to a positive correlation between math and verbal self-concepts; the internal comparison process leads to a negative
correlation between math and verbal self-concepts; and the combination of the external and internal comparison processes results in a near-zero correlation between math and verbal self-concepts, depending on the relative importance of each comparison process (Marsh et al., 2001).

On the one hand, the external comparison process hypothesized that good math skills would lead to higher math self-concepts, and good verbal skills would lead to higher verbal self-concepts. On the other hand, the internal comparison process postulated that good math skills would lead to lower verbal self-concepts, and good verbal skills would lead to lower math self-concepts (see Marsh, 1986, 1990d; Marsh & Hau, 2004). A recent meta-analysis of 69 data sets supported the I/E model’s prediction that math and verbal self-concepts would be nearly uncorrelated, and that math and verbal achievements would be highly correlated (see Möller et al., 2009).

Marsh proposed a frame of reference model called the big-fish-little-pond effect (BFLPE; Marsh, 1984, 1987; Marsh & Parker, 1984) to further explicate the external frame of reference effects in educational settings. According to the BFLPE model:

Students compare their own academic ability with the academic abilities of their peers and use this social comparison impression as one basis for forming their own academic self-concept. A negative BFLPE occurs when equally able students have lower academic self-concepts when they compare themselves to more able students, and higher academic self-concepts when they compare themselves with less able students. (Marsh, 2007a, p. 48)

Thus the BFLPE model predicts that attending high-ability or academically selective schools has a negative effect on students’ academic self-concepts (Seaton, Marsh, & Craven, 2010). Although a myriad of studies have provided empirical support for the BFLPE model (e.g., Craven, Marsh, & Print, 2000; Marsh, Trautwein, Lüdtke, Baumert, & Köller, 2007; Seaton et al., 2009, 2010), it has been criticized on
account of (a) excessive emphasis on one aspect of social comparison, and (b) exclusion of other intervening factors. Dai and Rinn (2008) critically examined the BFLPE in terms of its conceptualization, methodology, and practical implications. The authors pointed out one of the most problematic aspects of the BFLPE paradigm—the BFLPE reflects only part of a much larger picture of how individuals make social comparisons in academic settings. Because the contexts that produce the BFLPE are underspecified in BFLPE research, the BFLPE paradigm fails to identify situational circumstances, distal and proximal predictors of the BFLPE, and related mediators and moderators. Furthermore, Marsh and colleagues inadequately address the issues surrounding causality in the research design of BFLPE.

In summary, the academic self-concept research has advanced tremendously over the past three decades. That academic self-concept is hierarchical and multidimensional in nature is well documented in the research literature. The I/E model and the BFLPE model provide insights into the formation and development of academic self-concepts in school children. Furthermore, the Marsh/Shavelson model of academic self-concept and the multidimensional perspective of academic self-concept suggest that academic achievement is related to academic self-concept (see Marsh & Retali, 2010). Therefore, it is critical to examine the relations between academic self-concept and academic achievement.

**Academic Self-Concept and Academic Achievement**

According to Marsh and Köller (2003), the major research question in the study of academic self-concept is: whether academic self-concept causes academic achievement or academic achievement causes academic self-concept. In the
voluminous literature on self-concept, there are three major theoretical models regarding the causal ordering between academic self-concept and academic achievement: the self-enhancement model (see Calsyn & Kenny, 1977), the skill development model (see Calsyn & Kenny, 1977), and the reciprocal effects model (see Marsh, 1990c).

The self-enhancement model posits that the primary causal path is from academic self-concept to academic achievement (Calsyn & Kenny, 1977; Green, Nelson, Martin, & Marsh, 2006; Valentine & Dubois, 2005). Therefore, according to the self-enhancement model, effective self-concept enhancement interventions designed to improve self-perceptions by eliminating self-defeating thoughts and other negative behaviours might help to improve academic achievement (Freund & Rich, 2005; Guay, Ratelle, Roy, & Litalien, 2010b; Marsh & Scalas, 2011). In contrast, according to the skill development model, the predominant causal path is from academic achievement to academic self-concept (Calsyn & Kenny, 1977; Green et al., 2006). Hence the focus of the skill development model is “on academic skill improvement, on the assumption that such intervention will result in greater academic achievement and thus improved self-perception” (Freund & Rich, 2005, p. 551).

Several research studies have examined the relations between academic self-concept and academic achievement utilizing the self-enhancement and skill development models (see Baumeister, Campbell, Krueger, & Vohs, 2003, 2005; Pinxten, de Fraine, van Damme, & D’Haenens, 2010; Valentine & Dubois, 2005). However, neither the self-enhancement model nor the skill development model has found adequate empirical support (Pinxten et al., 2010).
Marsh and colleagues criticized both the self-enhancement and skill development models as too simplistic, methodologically unsound, and inconsistent with self-concept theory (see Marsh, 1990c; Marsh & Scalas, 2011). Hence Marsh (1990c) proposed an integration of these two theoretical models—the reciprocal effects model of academic self-concept. The reciprocal effects model postulates that academic self-concept and academic achievement are reciprocally related and mutually reinforcing (Marsh & Craven, 2005). Hence improved academic self-concepts would lead to better academic achievement, and improved academic achievement would lead to better academic self-concepts (Marsh & Craven, 2005).

Thus Marsh and Martin (2011) suggest:

If teachers enhance students’ academic self-concepts without improving achievement, then the gains in self-concept are likely to be short-lived. However, if teachers improve students’ academic achievement without also fostering students’ self-beliefs in their academic capabilities, then the achievement gains are also unlikely to be long lasting. If teachers focus on either one of these constructs to the exclusion of the other, then both are likely to suffer. Hence, according to the reciprocal effects model, teachers should strive to improve simultaneously both academic self-concept and achievement. (p. 72)

Tremendous advances in theoretical models and instrumentation have immensely helped self-concept researchers to rigorously examine the association between academic self-concept and academic achievement. As a result, a substantial body of research has demonstrated theoretical, methodological, and empirical support for the reciprocal effects model (see Marsh & Craven, 2006 and Marsh & Martin, 2011, for reviews). Empirical support for the reciprocal effects model would require statistically significant paths leading from prior self-concept to subsequent achievement, and statistically significant paths leading from prior achievement to subsequent self-concept (Marsh & Martin, 2011). Empirical studies that found support
for the reciprocal effects model utilized sound and diverse methodological designs, including longitudinal panel designs (e.g., Guay, Marsh, & Boivin, 2003; Marsh, 1990c; Marsh & O’Mara, 2008b) and meta-analytic designs (e.g., Valentine & DuBois, 2005; Valentine, DuBois, & Cooper, 2004).

In their meta-analysis of 55 longitudinal studies, Valentine and colleagues (Valentine & DuBois, 2005; Valentine, DuBois, & Cooper, 2004) examined the relations between academic self-beliefs and academic achievement. After controlling for the effects of prior achievement, they found a highly significant positive effect of prior academic self-beliefs on subsequent achievement. The findings of meta-analysis provided empirical support for predictions based on the reciprocal effects model of academic self-concept over those derived from the other two models—self-enhancement and skill development models.

Recently, Marsh and O’Mara (2008b) longitudinally examined the reciprocal effects among academic self-concept, self-esteem, academic achievement, and post-secondary educational attainment using five waves of data from the Youth in Transition (YIT) database, a nationally representative database of 10th grade boys in U.S. public high schools. Consistent with the predictions from the reciprocal effects model, the study found positive reciprocal effects between academic self-concept and academic achievement. While the relations among self-esteem, academic achievement, and post-secondary educational attainment were found to be weak and inconsistent, the results of the study revealed positive reciprocal effects between academic self-concept and post-secondary educational attainment.

Although an abundance of literature has demonstrated the robustness of the reciprocal effects model, support for the model has been based largely on responses
by students from Western countries, particularly English-speaking students in Australia and the United States (see Marsh & Martin, 2011). Only a small body of empirical research has examined the cross-cultural/national generalizability of the reciprocal effects model. The relationship between academic self-concept and academic achievement was found to be reciprocal and mutually reinforcing among students in highly individualist cultures such as Canada (e.g., Guay et al., 2003) and Germany (e.g., Marsh & Köller, 2003; Marsh, Köller, & Baumert, 2001; Marsh, Trautwein, Lüdtke, Köller, & Baumert, 2005), and among students in highly collectivist cultures such as China (e.g., Yeung & Lee, 1999) and Hong Kong (e.g., Marsh, Hau, & Kong, 2002). However, there has been no research to date that examined the relations between academic self-concept and academic achievement for school children in a moderately collectivist culture—India.

Guay et al. (2003), employing a multicohort–multioccasion research design, evaluated the developmental hypotheses about the causal ordering of academic self-concept and academic achievement for 385 French-speaking elementary school children in a highly individualist culture, Canada. The findings of the study indicated the effect of academic achievement on academic self-concept and the effect of academic self-concept on academic achievement, thereby supporting the reciprocal effects model of academic self-concept. Likewise, Marsh et al. (2005), using longitudinal data from two nationally representative samples of 7th grade students in another individualist country—Germany, investigated the reciprocal effects among academic self-concept, interest, grades, and standardized test scores. They found that the effect of prior self-concept on subsequent math interest, school grades, and
standardized test scores was significant. However, prior math interest had a trivial effect on subsequent math self-concept.

Employing a longitudinal multilevel modelling approach, Marsh et al. (2002) evaluated the causal ordering models for 7,802 students from 56 high schools in a highly collectivist culture, Hong Kong. Even after controlling for the effects of prior self-concept, the study found significant positive effects of prior academic achievement on subsequent academic self-concept for adolescent students in Hong Kong. Moreover, prior academic self-concept was positively related to subsequent academic achievement, after controlling for the effects of prior academic achievement.

Notwithstanding the strong theoretical, methodological, and empirical support that the reciprocal effects model has received in the last two decades, Baumeister, Campbell, Krueger, and Vohs (2003, 2005) challenged the value of positive self-beliefs in educational settings in general and the reciprocal effects model in particular. Specifically, Baumeister et al. (2003) claimed:

The modest correlations between self-esteem and school performance do not indicate that high self-esteem leads to good performance. Instead, high self-esteem is partly the result of good school performance. Efforts to boost the self-esteem of pupils have not been shown to improve academic performance and may sometimes be counterproductive. (p. 1)

Baumeister et al. (2005) argued that inferences about causal relations between self-esteem and academic performance could only be established empirically when the subjects are examined at two different times. Nonetheless, studies that examined subjects at two different times found that self-esteem was only weakly predictive of academic achievement, and academic achievement was only trivially correlated with self-esteem (see Baumeister et al., 2005). Therefore, Baumeister and colleagues
contended that raising students’ self-esteem might not benefit them to improve their academic performance. The authors further postulated that artificially boosting students’ self-esteem might lower their subsequent academic performance.

Thus, although Marsh and colleagues’ research on academic self-concept is theoretically grounded and methodologically rigorous, their theoretical models and research methodologies are not without flaws. Marsh and colleagues solely conduct quantitative studies pertaining to the academic self-concepts of school children. They seem to neglect the potential of mixed methods research designs in better understanding the formation and development of academic self-concepts in school children, and the relations between academic self-concept and academic achievement for school children.

Furthermore, the hitherto developed theoretical models of academic self-concept including the reciprocal effects model do not explicitly take into consideration the effects of other pertinent factors in explaining the relations between academic self-concept and academic achievement. Academic self-concept research is also considered an important component of academic motivation research (Cokley, 2003, 2007). Moreover, Byrne (1984, 1996) posits that academic self-concept has motivational properties that might affect subsequent academic achievement. In other words, high academic self-concept may play a motivational role, which, in turn, may lead to increased academic achievement (Byrne 1984, 1996). Therefore, Green et al. (2006) argue that it is critically important to develop an all encompassing framework to examine the combined and unique effects of both self-concept and motivation on each other and subsequent academic achievement.
**Academic Motivation**

There are numerous and varied definitions of motivation; as a result, there is much disagreement among researchers over the precise nature of motivation (Pintrich & Schunk, 1996). Broadly speaking, the term motivation is often used to describe “what gets people going, keeps them going, and helps them finish tasks” (Pintrich, 2003b, p. 104). Although motivation theorists initially propounded theories of motivation with a view to describing human behaviour in general, studies on motivation have largely come to address behaviours in specific settings and contexts (Schunk, Pintrich, & Meece, 2008) with motivation theories being used in educational settings and contexts to explain students’ academic performance in school, academic engagement and persistence, help seeking behaviours, and activity choice (Meece, Anderman, & Anderman, 2006).

Academic motivation, according to Pintrich and Zusho (2002), refers to internal processes that instigate and sustain activities aimed at achieving specific academic goals. Even though researchers have used diverse motivational approaches, such as attribution theory (Weiner, 1979), expectancy-value theory (Eccles, 2005; Eccles & Wigfield, 2002; Wigfield & Eccles, 1992, 2000), achievement goal theory (Maehr & Zusho, 2009; Pintrich & Schunk, 1996), and self-efficacy theory (Schunk & Pajares, 2009) to examine the relationship between academic motivation and academic achievement, one perspective that appears particularly promising and pertinent for the study of the association between academic motivation and academic achievement is Deci and Ryan’s (1985, 1991, 2000) motivational approach—Self-Determination Theory (SDT). Indeed, this theoretical perspective on motivation has generated a considerable amount of research in the field of education, and has been
used extensively to better understand educational outcomes (see Niemiec & Ryan, 2009; Ryan & Deci, 2009; Ryan & Weinstein, 2009). The self-determination theory research lab, under the direction of Deci and Ryan at the University of Rochester, has been instrumental in leading the research on SDT. Hence the present study primarily relies on the empirical works of Deci, Ryan, and their colleagues.

**Self-Determination Theory (SDT)**

SDT is an approach to human motivation, personality, social development, and overall psychological functioning (Deci & Ryan, 2008a; Ryan & Deci, 2000a). More specifically, SDT is a “macro-theory of human motivation, emotion, and development that takes interest in factors that either facilitate or forestall the assimilative and growth-oriented processes in people” (Niemiec & Ryan, 2009, p. 134). SDT consists of five inter-related mini-theories (see Deci & Ryan, 2002): cognitive evaluation theory, organismic integration theory, causality orientations theory, goal contents theory, and basic needs theory. Because these five mini-theories played critical roles in the formulation and development of SDT, any discussion of SDT would be deemed incomplete without a description of these five mini-theories.

Cognitive evaluation theory explains the effects of extrinsic factors or social contextual events (e.g., competition, deadlines, evaluations, imposed goals, praise, rewards) on intrinsic motivation, behaviour, and experience (Deci, 1975; Deci & Ryan, 1985). It is most useful for studying behaviour for which people exhibit some interest or motivation (Ryan & Deci, 2000a). Organismic integration theory proposes that externally regulated behaviours can be transformed to self-regulated behaviours (Deci & Ryan, 2002). It addresses the concept of internalization especially with respect to the development of extrinsic motivation (Deci & Ryan, 2002).
Causality orientations theory, formulated to address individual differences in
global (personality-level) motivational orientations, describes how people incorporate
social influences into their motivational styles (Deci & Ryan, 1985, 2002). Goal
contents theory explains the impact of intrinsic and extrinsic goals on human
motivation and wellness (Kasser & Ryan, 1996). Finally, basic needs theory specifies
a set of universal basic psychological needs that are essential nutriments for human
beings’ optimal development and functioning—psychological and physical health and
social wellness (Deci & Ryan, 2002).

SDT delineates three types of basic psychological needs (Deci & Ryan, 2000):
the need for competence (White, 1959), the need for relatedness (Baumeister &
Leary, 1995), and the need for autonomy (deCharms, 1968). The need for
competence, a facilitator of intrinsic motivation, is the need to experience satisfaction
in improving one’s abilities (Deci & Ryan, 1985, 2000). The need for relatedness,
another facilitator of intrinsic motivation, is the need to feel related to significant
others (Deci & Ryan, 1985, 2000). Finally, yet another facilitator of intrinsic
motivation, the need for autonomy is the need to engage in self-directed behaviour
(Deci & Ryan, 1985, 2000). Autonomy implies that individuals experience choice in
the initiation, maintenance, and regulation of their behaviours (Deci & Ryan, 1985,
2000). All in all, the satisfaction of these three psychological needs is hypothesized as
being indispensable for the facilitation of self-determined motivation.

Central to SDT is the distinction between autonomous motivation and
controlled motivation (Deci & Ryan, 2008a). Autonomous motivation involves acting
with a full sense of volition and choice; it encompasses both intrinsic motivation and
well-internalized (i.e., integrated) extrinsic motivation (Deci & Ryan, 1985, 2000).
Controlled motivation, in contrast, involves acting with a sense of pressure or demand and includes regulation by external contingencies (i.e., external regulation) and by contingencies that have been partially internalized (i.e., introjected regulation; Deci & Ryan, 1985, 2000). Only autonomously motivated behaviours are considered fully self-determined because these motivations are either innate to the active organism—that is, are part of the inherent, core self—or have been fully assimilated with the core self through the process of organismic integration (Deci & Ryan, 2002). There are different types of autonomous and controlling forms of motivation (see Figure 1).

<table>
<thead>
<tr>
<th>Amotivation</th>
<th>Extrinsic Motivation</th>
<th>Intrinsic Motivation</th>
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<tr>
<td>Lack of Regulation</td>
<td>External Regulation</td>
<td>Identified Regulation</td>
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<tr>
<td>Lack of motivation</td>
<td>Controlled Motivation</td>
<td>Autonomous Motivation</td>
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*Figure 1.* The self-determination continuum. Adapted from Deci & Ryan, 2002; Ryan & Deci, 2009.

**Types of motivation.** Historically, motivation theorists and their motivation theories have treated motivation primarily as a unidimensional concept (Deci & Ryan, 2008b). Furthermore, several contemporary theories of motivation unduly emphasize the overall amount of motivation, and fail to differentiate the types of motivation (Deci & Ryan, 2008a, 2008b). Motivation, according to SDT, is multidimensional in nature (Deci & Ryan, 2000). As Levesque, Copeland, Pattie, and Deci (2011) state:

> Distinctions between the different types of motivation allow researchers to explain a considerable range of human behaviours and experiences. Understanding these various forms of motivation also enables researchers and practitioners to identify antecedents that will foster these different types of motivations and the consequences that may follow these motivated behaviours. (p. 17)
The multidimensional motivation orientation, according to SDT, encompasses three global types of motivation: intrinsic motivation, extrinsic motivation, and amotivation (Deci & Ryan, 1985, 2000, 2008a). Of these, intrinsic motivation and extrinsic motivation are the two primary types of motivated academic behaviour (Cokley, 2003). Deci and Ryan (2002) posit that “intrinsically motivated behaviours are those whose motivation is based in the inherent satisfactions of the behaviours per se, rather than in contingencies or reinforcements that are operationally separable from those activities” (p. 10). Hence when people are intrinsically motivated, they engage in activities freely for the inherent satisfaction and enjoyment that they derive from the participation itself (Deci & Ryan, 2002). Thus intrinsic motivation is the most self-determined form of academic motivation (Vallerand & Ratelle, 2002).

Initially, motivation theorists argued that intrinsic motivation was unidimensional in nature (Vallerand & Ratelle, 2002). Later, Vallerand and his colleagues (Vallerand, Blais, Briere, & Pelletier, 1989; Vallerand et al., 1992, 1993) proposed a tripartite taxonomy of intrinsic motivation: intrinsic motivation to know, intrinsic motivation to accomplish things, and intrinsic motivation to experience stimulation. Intrinsic motivation to know refers to the desire to perform an activity for the enjoyment one receives while exploring, understanding, and learning new things (e.g., “I go to school for the pleasure that I experience in broadening my knowledge about subjects which appeal to me”; Vallerand, 1997). Intrinsic motivation to accomplish things, on the other hand, refers to the desire to perform an activity for the pleasure and satisfaction that one receives from accomplishing or creating new things or from surpassing oneself (e.g., “I go to school for the satisfaction I feel when I am in the process of accomplishing difficult academic activities”; Vallerand et al., 1989,
Finally, individuals who participate in an activity for the pleasure and satisfaction derived while experiencing pleasurable intellectual or physical sensations are intrinsically motivated to experience stimulation (e.g., “I go to school for the ‘high’ feeling that I experience while reading about various interesting subjects”; Vallerand et al., 1989, 1992, 1993).

Extrinsic motivation, in contrast, “refers to a broad array of behaviours having in common the fact that activities are engaged in not for reasons inherent in them, but for instrumental reasons” (Vallerand & Ratelle, 2002, p. 42). Because extrinsic motivation is a multidimensional construct, SDT postulates that extrinsically motivated behaviours are characterized by four types of extrinsic behavioural regulation: external regulation, introjected regulation, identified regulation, and integrated regulation (Deci & Ryan, 2002). Moreover, SDT maintains that these four types of extrinsic behavioural regulation can be situated along a self-determination continuum, with external regulation representing a complete lack of self-determined motivation and integrated regulation representing the most self-determined form of extrinsic motivation (Ryan & Deci, 2009).

Extrinsic motivation-external regulation, commonly referred to as extrinsic motivation, refers to behaviour that is determined through means external to the individual (Deci & Ryan, 2002). In other words, rewards, pressures, obligations, and constraints regulate these behaviours (e.g., “I go to school in order to have a better salary later on”; Vallerand et al., 1992). Levesque et al. (2011) note that externally regulated behaviours are only performed in the presence of specific external contingencies, and individuals may not remain engaged in an activity, or may
eventually quit or abandon the activity, or may not be able to persist when the task becomes more difficult in the absence of specific external contingencies.

Next along the autonomy continuum is the construct of extrinsic motivation-introjected regulation. These behaviours are controlled in part by the environment but also by internal reward/punishment contingencies (e.g., ego enhancement, guilt, shame, or obligation; “I go to school because I want to show myself that I can succeed in my studies”; Vallerand et al., 1992). Unlike external regulation, introjected regulation encompasses a moderately low degree of self-determination because the pressures associated with introjected regulation are internal as opposed to external regulation (Levesque et al., 2011). Further along the self-determination continuum, extrinsic motivation-identified regulation refers to behaviours that are performed by choice because the individual judges them to be important (e.g., “I go to school because eventually it will enable me to enter the job market in a field that I like”; Vallerand et al., 1992). Therefore, unlike introjected regulation, identified regulation encompasses a moderately high degree of self-determination. Hence identified regulation is a relatively autonomous form of extrinsic motivation.

Integrated regulation, the most developmentally advanced form of extrinsic motivation, refers to behaviours that are fully integrated into one’s self-schema (e.g., study for an exam; Deci & Ryan, 2002). In other words, when students’ behaviours are regulated though integration, they are fully accepted, valued, integrated, and in harmony or coherence with other aspects of the students’ values and identity (Deci & Ryan, 2000; Levesque et al., 2011). Although integrated forms of extrinsic motivation, like intrinsic motivation, are characterized by a sense of autonomy and freedom, they are still considered as extrinsic motivation “because behaviour
motivated by integrated regulation is done for its presumed instrumental value with respect to some outcome that is separate from the behaviour” (Ryan & Deci, 2000b, p. 62).

The final concept posited by SDT—amotivation—has the lowest level of autonomy on the self-determination continuum. Amotivated behaviours—lack of either intrinsic or extrinsic motivation—are nonmotivated behaviours (e.g., “I don't know why I go to school; I can't understand what I am doing in school”; Vallerand et al., 1992; Vallerand & Reid, 1990). Thus when students are amotivated, they may not perceive contingencies between outcomes and their own actions (Vallerand et al., 1992).

In summary, while intrinsic motivation and well-internalized forms of extrinsic motivation are considered autonomous, poorly internalized forms of extrinsic motivation are considered controlled (Deci & Ryan, 1985). Therefore, intrinsic, integrated, and identified regulations are considered as high-quality student motivation, whereas external and introjected regulations are considered as poor quality student motivation (Guay, Chanal, et al., 2010; Guay, Ratelle, & Chanal, 2008). However, intrinsic motivation and extrinsic motivation are not incompatible and can coexist in different degrees (Covington & Mueller, 2001). Nonetheless, autonomous forms of intrinsic and extrinsic motivation, unlike controlled forms of extrinsic motivation, are related to more positive academic and psychological outcomes (Reeve, Deci, & Jang, 2007). Hence it is important to examine the relations between academic motivation and academic achievement.
Academic Motivation and Academic Achievement

Although a substantial body of research has examined the relations between academic motivation and academic achievement, only a few studies have explored the relations between academic motivation and academic achievement for school children from the stance of SDT. Fortier, Vallerand, and Guay (1995), for example, tested a structural motivational model of school performance based on the integration of SDT and Cognitive Evaluation Theory (CET) for 263 French-speaking secondary students in Canada. The results of the study provided support for their proposed motivational model of school performance. Specifically, adolescents’ perceived academic competence and perceived academic self-determination positively influenced their autonomous academic motivation, which, in turn, had a positive effect on adolescents’ academic achievement.

Similarly, Miserandino (1996) assessed the effects of perceived competence and autonomous motivation on academic engagement and academic achievement for 77 elementary school children in the United States. Those children who had higher perceived competence and autonomous motivation were more engaged in school and academics than their counterparts who had lower perceived competence and autonomous motivation. Moreover, even after controlling for the effects of prior standardized achievement scores, both perceived competence and autonomous motivation predicted academic achievement for elementary school children.

In two studies using a prospective design, Guay and Vallerand (1997) examined the relations among perceived competence, autonomy, and self-determined school motivation, and the effect of self-determined school motivation on academic achievement for 9th and 10th grade French-speaking students in Canada. Results from
both the studies supported the motivational model of academic achievement based on SDT. Adolescents’ perceived competence and autonomy positively influenced their self-determined school motivation. Further, adolescents’ self-determined school motivation predicted their academic achievement even after controlling for prior achievement. Employing a person-centered approach, Ratelle, Guay, Vallerand, Larose, and Senécal (2007) explored adolescent students’ profiles regarding autonomous, controlled, and amotivated types of motivation, and tested whether or not profile groups differed on academic outcomes. Students characterized by high levels of autonomous motivation and low levels of controlled motivation displayed better academic outcomes than students characterized by low levels of autonomous motivation and high levels of controlled motivation.

The findings of these studies suggest that students tend to learn better when they are autonomously or intrinsically motivated. However, these studies were conducted in individualist cultures—Canada and the United States, and the research participants were primarily White students. Hence critics of SDT have challenged the cross-cultural/national generalizability of SDT (see Cross & Gore, 2003; Iyengar & Lepper, 1999; Markus, Kitayama, & Heiman, 1996; Murphy-Berman & Berman, 2003). In particular, critics of SDT posit that SDT constructs such as autonomy and autonomy-support are the products of individualist cultures, but are not important in collectivist cultures (see Markus et al., 1996). However, the proponents of SDT propound the universal role of motivational autonomy in human functioning and academic learning (see Chirkov, 2009).

To contest the claims of the critics of SDT, a few studies have investigated the cross-cultural/national generalizability of SDT in the context of students’ academic
learning. For example, Vansteenkiste, Simons, Lens, Soenens, and Matos (2005) found among early adolescents in China that greater autonomous academic motivation was associated with more adaptive learning attitudes, greater academic success, and higher personal well-being, whereas greater controlled motivation was associated with maladaptive learning attitudes, higher drop-out rates, and ill-being. More recently, Jang, Reeve, Ryan, and Kim (2009) found similar results among adolescents in South Korea—high levels of autonomy, competence, and relatedness were associated with enhanced school outcomes, while low levels of autonomy and competence were correlated with poor student outcomes. However, no study to date has examined the relations between academic motivation and academic achievement using an SDT perspective for adolescent students in India. Hence it is of critical importance to examine the generalizability of SDT in the context of students’ learning in a moderately collectivist culture like India. Further, SDT researchers often employ quantitative methods to explore the importance of SDT in education; thus they seem to ignore the importance and potential of mixed methods designs in better understanding school children’s academic trajectories using an SDT perspective.

Studies that used other motivational perspectives, such as achievement motivation, achievement goal, and academic intrinsic motivation, have also found that intrinsically motivated students tend to have higher academic achievement (e.g., Gottfried, Marcoulides, Gottfried, Oliver, & Guerin, 2007), higher intellectual performance (e.g., Gottfried & Gottfried, 1996, 2004), less academic anxiety (e.g., Gottfried, 1982, 1985, 1990), and mastery-oriented coping with failure (e.g., Dweck, 1975). Similarly, intrinsically motivated students tend to have enhanced deep or conceptual learning (e.g., Ames & Archer, 1988), greater creativity (e.g., Eisenberger
& Shanock, 2003; Moneta & Siu, 2002), enhanced cognitive flexibility and engagement (e.g., McGraw & McCullers, 1979; Walker, Greene, & Mansell, 2006), enhanced subjective or psychological well-being (e.g., Burton, Lydon, D’Alessandro, & Koestner, 2006), and less extrinsic motivation (e.g., Gottfried, Gottfried, Cook, & Morris, 2005). Numerous studies have documented the effects of extrinsic motivation on learning outcomes as well. Students who are extrinsically motivated are more likely to have lower academic achievement (e.g., Becker et al., 2010; Lepper, Corpus, & Iyengar, 2005; Wolters, Yu, & Pintrich, 1996), and to engage in surface learning (e.g., Biggs, 1991).

Although a growing body of research has examined specifically the relations between academic self-concept and academic achievement, and the relations between academic motivation and academic achievement for school children, there is sparse research on the relations among academic self-concept, academic motivation, and academic achievement. In particular, there is a dearth of research on the mediating role of academic motivation in the relation between academic self-concept and academic achievement for school children. Because students’ academic self-concepts and academic motivation may affect their economic success, long-term health, and well-being (Organization for Economic Cooperation and Development [OECD], 2003), it is imperative to examine the relations among academic self-concept, academic motivation, and academic achievement for school children.

Recently, Guay, Ratelle, et al. (2010) tested the relationships among academic self-concept, autonomous academic motivation, and academic achievement for 925 French-speaking adolescent students in Canada using a longitudinal design. Specifically, Guay and colleagues attempted to determine whether or not autonomous
academic motivation would mediate the relation between academic self-concept and academic achievement, and academic self-concept would mediate the relation between autonomous academic motivation and academic achievement. They also tested the additive effects of both autonomous academic motivation and academic self-concept on academic achievement. In line with SDT, autonomous academic motivation mediated the relation between academic self-concept and academic achievement. Nonetheless, the study found little support for the other two hypotheses.

However, both academic self-concept and academic motivation can be greatly influenced by various other aspects of the social environments that students may encounter in schools and homes, such as structures, rewards, controls, and supports (Ryan & Deci, 2009). Insofar as children spend much of their time in schools, the classroom learning environment—one of the social environments that students encounter in schools—may affect students’ academic self-concept, academic motivation, and academic achievement (Church, Elliot, & Gable, 2001; see Meece et al., 2006, for a review). Therefore, it is crucial to examine the impact of classroom learning environments on students’ academic engagement and academic achievement.

### Classroom Learning Environments

Recently, there has been a significant increase in research examining the effects of classroom learning environments on children’s social (e.g., Brown, Jones, LaRusso, & Aber, 2010), cognitive (e.g., Chien et al., 2010), and academic (e.g., Mashburn et al., 2008; Pianta, Belsky, Vandergrift, Houts, & Morrison, 2008) development. Hamre and Pianta (2010) argue that the most critical ingredients of any classroom environment are the interactions among adults and students because:
This view of classroom environments provides a broad, holistic view of the classroom environment that includes all types of interactions—those that are social, organizational, and instructional in nature. As such, this view of classroom environments is inclusive of research focused on more discrete aspects of classrooms such as quality or effective teaching, learning environments, and student-teacher and peer relationships. (p. 27)

Although there are various theories for assessing the influence of classroom learning environments on student motivation and learning (Meece et al., 2006), SDT is considered an important theoretical framework for evaluating the effects of classroom learning environments on a range of learning outcomes (see Jang, Reeve, & Deci, 2010; Niemiec & Ryan, 2009; Pelletier & Sharp, 2009; Reeve & Assor, 2011). SDT postulates that a teacher’s motivating style during instruction would lie along a bipolar continuum, ranging from a highly controlling motivating style to a highly autonomy-supportive motivating style (Deci, Schwartz, Sheinman, & Ryan, 1981).

According to Reeve and Assor (2011), any entity is controlling when it pressures people to change their naturally occurring ways of thinking, feeling, and behaving without considering and respecting their concerns or perspectives. In the context of classroom instruction, a teacher acts in a controlling way when he or she thinks about student motivation and engagement exclusively from his or her own perspective, and pressures students to think, feel, or behave in a specific way (Reeve, 2009). Thus controlling motivational strategies during classroom instruction may induce in students an external perceived locus of causality rather than an internal perceived locus of causality.

There may be varied reasons for adopting a controlling motivating style toward students during classroom instruction. Reeve (2009) states that there are seven major reasons why teachers adopt a controlling motivating style toward their students during classroom instruction: teachers occupy an inherently powerful social role;
teachers harbour the dual burdens of responsibility and accountability; teachers are aware that controlling is culturally valued; teachers sometimes equate control with structure; teachers react to student passivity during learning activities; teachers tend to endorse the maximal-operant principle of motivation; and teachers may harbour control-oriented personality dispositions. Thus teachers who are authoritarian and highly conservative tend to have controlled motivations, and they may relate to students in controlling ways because they see utility in controlling motivational strategies (Reeve & Assor, 2011). Similarly, Pelletier, Séguin-Lévesque, and Legault (2002) found among 254 Francophone teachers in Canada that pressures from above (from school administrators, colleagues, departmental chairs, school boards, and parents) and pressures from below (from students) compelled teachers to adopt a controlling motivating style during instruction because such pressures undermined teachers’ self-determined motivation toward teaching.

Studies conducted in both individualist and collectivist cultures demonstrate that controlling teacher behaviours may adversely affect students’ academic motivation and academic engagement. For example, Assor, Kaplan, Kanat-Maymon, and Roth (2005) found that directly controlling teacher behaviours, such as giving frequent directives, interfering with children’s preferred pace of learning, and not allowing critical and independent opinions, aroused anger and anxiety among 319 early adolescents in a moderately collectivist culture—Israel. Moreover, directly controlling teacher behaviours negatively affected students’ motivational orientations and engagement styles. Specifically, students’ emotions—anger and anxiety—acted as partial mediators of the harmful effects of directly controlling teacher behaviours on the students’ academic motivation and academic engagement. Recently, Reeve and
Tseng (2011) assessed 82 late adolescents’ salivary cortisol reactivity to teachers’ motivating styles in a highly collectivist culture—the United States. The authors assessed these late adolescents’ salivary cortisol before, during, and after a learning activity. They found that students exposed to a controlling teacher exhibited biological stress, whereas students exposed to an autonomy-supportive teacher exhibited biological calm during and after the activity.

In addition, SDT posits that students often thrive in autonomy-supportive classroom settings. Autonomy support is neither high permissiveness nor the removal of structure (Reeve & Halusic, 2009). According to Su and Reeve (2010):

Autonomy support refers to what one person says and does to enhance another’s internal perceived locus of causality, volition, and perceived choice during action. It refers to the interpersonal sentiment and behaviour one person provides to identify, nurture, and develop the other’s inner motivational resources—such as the need for autonomy, intrinsic motivation, personal interests, intrinsic goals, and self-endorsed values. (p. 2)

Thus an autonomy-supportive motivating style comprises five categories of instructional behaviour (Jang et al., 2010; Reeve, 2009, 2011; Reeve & Assor, 2011; Reeve & Jang, 2006): nurturing students’ inner motivational resources; providing explanatory rationales; relying on non-controlling and informational language; displaying patience to allow for self-paced learning and personal development to occur; and acknowledging the students’ perspectives and feelings.

Among students’ inner motivational resources are their interests, preferences, psychological needs, and intrinsic motivation (Reeve, Deci, & Ryan, 2004). According to an autonomy-supportive approach to instruction, all students possess these inner motivational resources to engage constructively and proactively in learning, irrespective of their abilities and socio-economic backgrounds (Reeve et al., 2007). Hence autonomy-supportive teachers tend to build their classroom instruction
around students’ interests, preferences, curiosities, goals, choices, and challenges; and provide them with opportunities to take initiative during learning with a view to nurturing their students’ inner motivational resources (Jang et al., 2010). A recent meta-analysis of 41 studies indicated that providing students with such opportunities enhanced their intrinsic motivation, effort, task performance, and perceived competence (see Patall, Cooper, & Robinson, 2008).

Moreover, unlike controlling teachers, autonomy-supportive teachers often provide explanatory rationales to support students’ motivation, volitional engagement, and learning in uninteresting, but important, learning activities (Jang, 2008). Providing explanatory rationales means “communicating to students the usefulness of an activity or course of action, a personal utility that is sometimes (and perhaps often) hidden from students’ awareness or personal experience” (Reeve, 2011, p. 97). Therefore, when autonomy-supportive teachers rely on non-controlling and informational language, they communicate classroom requirements and address problems through non-evaluative, flexible, and highly informational messages (Jang et al., 2010; Reeve, 2011).

Further, when teachers adopt an autonomy-supportive motivating style, they allow students the time and space they need for self-paced learning and personal development to occur (Reeve, 2009, 2011; Reeve & Assor, 2011). Reeve and Assor (2011) contend that:

Learning and personal development take time, as a student who is trying to make sense of a learning activity or to understand and resolve a personal issue needs both time and opportunity to explore and manipulate materials and ideas, make plans, formulate and test hypotheses, evaluate evidence and feedback, adjust problem-solving strategies, monitor the progress they are making, revise their work, re-evaluate their goals, and so forth. (p. 127)
Finally, autonomy-supportive teachers often acknowledge and accept students’ perspectives, and their expressions of negative affect (Jang et al., 2010; Reeve, 2009, 2011). However, acknowledging and accepting students’ feelings and perspectives does not mean permissiveness on the part of autonomy-supportive teachers; rather it means soliciting and/or encouraging students’ opinions or perspectives (Assor et al., 2005).

Despite the critical role that teacher autonomy support may play in children’s school engagement and achievement, only a small body of research has specifically assessed the impact of teacher autonomy support on school children’s academic engagement and achievement. For example, Jang et al. (2010) investigated the influence of teacher autonomy support on collective classroom engagement and individual self-reported engagement for 1,584 adolescents in the United States. Trained observers rated classroom teachers’ instructional styles and adolescents’ behavioural engagement in 133 public secondary schools. Correlational analyses revealed that teacher-provided autonomy support was strongly and positively associated with adolescents’ classroom engagement. Further, the hierarchical linear modelling analyses showed that teacher autonomy support uniquely predicted both measures of adolescents’ engagement—collective classroom engagement and individual self-reported engagement.

Reeve, Jang, Carrell, Barch, and Jeon (2004) found similar results among adolescents in the United States—the more teachers used autonomy support during classroom instruction, the more engaged were their students. In another study, Sierens, Vansteenkiste, Goossens, Soenens, and Dochy (2009) found that teacher-provided autonomy support contributed constructively to Belgian adolescents’ greater
capacity for self-regulated learning. Similarly, Chirkov and Ryan (2001) found that teacher autonomy support affected academic self-regulation of adolescents in the United States. Furthermore, teacher autonomy support was associated with adolescents’ integrated and/or intrinsic motivation in school and identification with school-related goals.

However, support for the positive effects of teacher autonomy support has been mainly derived from studies conducted in individualist cultures, with the research participants predominantly North American school children. Additionally, such studies examining the impact of teachers’ autonomy-supportive motivating styles on student engagement and achievement primarily employed quantitative techniques instead of mixed methods research designs. As well, only a smaller number of studies have investigated the relations among teacher autonomy support, academic motivation, academic self-concept, and academic achievement for school children in highly and moderately collectivist cultures. To date, however, no study has examined the impact of teacher autonomy support on academic motivation, academic self-concept, and academic achievement for adolescent students in India.

In one cross-cultural study, Jia et al. (2009) explored 1,415 urban adolescents’ perceptions regarding teacher support, student support, and opportunities for autonomy in the classroom; and the influence of these perceptions on their psychological and academic adjustment in China \( (N = 706) \) and the United States \( (N = 709) \). The study found that urban adolescents’ perceptions of teacher support, student support, and support for autonomy in the classroom were higher in China than in the United States. Moreover, teacher and student support were positively associated with self-esteem and academic achievement for urban adolescents in China and the United
States. Nonetheless, support for autonomy in the classroom was not associated with self-esteem and academic achievement for urban adolescents in China. However, Zhou, Ma, and Deci (2009) found that teacher autonomy support was positively related to autonomous motivation, and autonomous motivation was positively associated with perceptions of academic interest, academic competence, and choice in the course for 195 rural early adolescents in China. In contrast, controlled motivation was negatively associated with rural early adolescents’ perceptions of academic interest and choice.

Similarly, Jang et al. (2009) found support for the positive effects of teacher autonomy support on intrinsic motivation, academic engagement, and academic achievement for adolescents in South Korea. Jang and colleagues conducted a series of four studies in an attempt to validate the generalizability of SDT across collectivist cultures. All three psychological needs—autonomy, competence, and relatedness—were salient within South Korean adolescents’ highly satisfying learning experiences, while low autonomy and low competence were salient within these adolescents’ highly unsatisfying learning experiences. Adolescents’ perceived teacher autonomy support was associated with high levels of all three psychological needs, such that the psychological needs collectively explained substantial variance in all indicators of productive and satisfying learning experiences—high intrinsic motivation, high engagement, and high achievement. Further, the overall basic needs theory model predicted South Korean adolescents’ psychological need satisfaction and positive school functioning even after controlling for a number of cultural and parental influences, including the collectivistic value orientation. The Hardre et al. (2006) study also highlighted the importance of teacher autonomy support in promoting
academic engagement among 6,539 adolescents from 14 public secondary schools in another highly collectivist culture—Taiwan.

Aside from these studies, a few studies have examined the influence of teacher autonomy support on children’s school engagement and learning in moderately collectivist cultures such as Israel and Russia. For example, Roth, Assor, Kanat-Maymon, and Kaplan (2007) found that teachers’ autonomous motivation for teaching was positively related to students’ perceptions of teachers as autonomy-supportive, and to students’ autonomous motivation for learning among 1,255 early adolescents in Israel. In other words, teachers’ autonomous motivation for teaching promoted students’ autonomous motivation for learning by enhancing students’ experience of their teachers as autonomy-supportive. Furthermore, Chirkov and Ryan (2001) found that teacher autonomy support was associated with academic self-regulation and intrinsic motivation among 120 adolescents in Russia. Although Russian adolescents perceived their classroom teachers as controlling, students’ perceived teacher autonomy support positively predicted their academic self-motivation and well-being.

In short, a teacher’s motivating style toward students during classroom instruction is an important educational construct because students are likely to function more positively when classroom teachers adopt an autonomy-supportive motivating style during instruction rather than a controlling motivating style that pressures students toward a specific way of thinking, feeling, or behaving. Hence teachers have a crucial role to play in determining the value of the classroom learning environment for enhancing their students’ motivation, learning, and development.
Conclusion

Psychological constructs, such as academic self-concept, academic motivation, and teacher autonomy support, are important non-cognitive correlates of academic achievement. A large number of studies have documented the impact of academic self-concept and academic motivation on academic achievement. Although self-concept and motivation researchers have been constantly striving to develop robust and cogent methodological and theoretical models to explain the nuanced relations between academic self-concept and academic achievement, and between academic motivation and academic achievement, little research has explored the relations among academic self-concept, academic motivation, and academic achievement.

Moreover, there is sparse research on the mediating role of academic motivation in the relation between academic self-concept and academic achievement. However, other pertinent socio-economic, cultural, and psychological factors may also impact the academic self-concept, academic motivation, academic engagement, and academic achievement of school children. Because children, on average, spend at least 15,000 hours in school classrooms from the age of 4 or 5 until they leave high school (Hamre & Pianta, 2010), social environments, such as classroom learning environments, may greatly influence their academic self-concept, academic motivation, academic engagement, and academic achievement. Therefore, in addition to academic self-concept and academic motivation, it is imperative to examine the effects of classroom learning environments, such as autonomy support in the classroom, on children’s school engagement and performance.
CHAPTER 3: METHODOLOGY

The purpose of the present study was: 1) to examine the relationships among academic self-concept, academic motivation, and academic achievement for Indian immigrant adolescents in Canada in comparison to their peers in India; and 2) to explore the perspectives, beliefs, and recommendations of Indian immigrant adolescents in Canada and Indian adolescents in India in regard to classroom environments/instructional practices affecting their academic engagement and academic achievement. The very purpose of the study necessitated the use of a mixed methods research design. Creswell and Plano Clark (2007) define mixed methods research as follows:

Mixed methods research is a research design with philosophical assumptions as well as methods of inquiry. As a methodology, it involves philosophical assumptions that guide the direction of the collection and analysis of data and the mixture of qualitative and quantitative approaches in many phases in the research process. As a method, it focuses on collecting, analyzing, and mixing both quantitative and qualitative data in a single study or series of studies. Its central premise is that the use of quantitative and qualitative approaches in combination provides a better understanding of research problems than either approach alone. (p. 5)

The present study used pragmatism as its philosophical basis, which is considered as the best paradigm for justifying the use of mixed methods research (see Morgan, 2007; Tashakkori & Teddlie, 1998; Teddlie & Tashakkori, 2009). According to Tashakkori and Teddlie (2003), pragmatism is “a deconstructive paradigm that debunks concepts such as ‘truth’ or ‘reality’ and focuses on ‘what works’ as the truth regarding the research questions under investigation” (p. 713). Hence pragmatism rejects the either/or choice between constructivism and postpositivism (Teddlie & Tashakkori, 2009), and “advocates the use of mixed methods in research, and
acknowledges that the values of the researcher play a large role in interpretation of results” (Tashakkori & Teddlie, 2003, p. 713).

Mixed methods research methodology has been a subject of heated debate for a considerable period of time. Tashakkori and Teddlie (2003) identified six major issues and controversies surrounding the use of mixed methods research designs in social and behavioural sciences: the nomenclature and basic definitions used in mixed methods, utility of mixed methods, paradigmatic foundations for mixed methods, design issues in mixed methods, issues in drawing inferences in mixed methods, and the logistics of conducting mixed methods.

Despite these issues and controversies, researchers have identified many reasons for conducting a mixed methods research study. Mixed methods research designs provide triangulation (convergence), complementarity (overlapping or different views), and development (extension of findings from first method) beyond what is available from single method designs (Tashakkori & Teddlie, 2010; Teddlie & Tashakkori, 2009). Further, linking qualitative with quantitative data allows for enhanced validity, interpretation, clarification, and illustration of key findings (Miles & Huberman, 1994). Therefore, the present study employed a mixed methods research design—sequential explanatory mixed methods design—to address the research questions (see Creswell & Plano Clark, 2007; Tashakkori & Teddlie, 2010).

Figure 2. The follow-up explanations model. Adapted from Creswell, 2009; Creswell & Plano Clark, 2007. “QUAN” and “QUAL” stand for quantitative and qualitative, respectively.
There are two variants of the sequential explanatory mixed methods design: the follow-up explanations model and the participant selection model (Creswell & Plano Clark, 2007). The present study employed the follow-up explanations model (see Figure 2). This mixed methods research design consists of two distinct interactive phases: quantitative followed by qualitative (Creswell, Plano Clark, Gutmann, & Hanson, 2003). Creswell and Plano Clark (2010) describe the follow-up explanations model as follows:

This design starts with the collection and analysis of quantitative data, which has the priority for addressing the study’s questions. This first phase is followed by the subsequent collection and analysis of qualitative data. The second, qualitative phase of the study is designed so that it follows from the results of the first, quantitative phase. The researcher interprets how the qualitative results help to explain the initial quantitative results. (p. 71)

In the follow-up explanations model, therefore, the primary emphasis is on the quantitative methods (Creswell & Plano Clark, 2007; Plano Clark, Creswell, Green, & Shope, 2008). Ivankova, Creswell, and Stick (2006) state the rationale for the follow-up explanations model, “the quantitative data and their subsequent analysis provide a general understanding of the research problem. The qualitative data and their analysis refine and explain those statistical results by exploring participants’ views in more depth” (p. 5). Hesse-Biber and Leavy (2010) postulate that such a research design may effectively and holistically combine quantitative and qualitative data. Moreover, “allowing quantitative methods to respond to qualitative conclusions, or vice versa, makes the link between purpose, questions, and methods stronger, and thereby increases validity” (Crain-Dorough, 2009, p. 197).
Data Collection

The study required two phases of data collection—quantitative data collection (i.e., surveys) followed sequentially by qualitative data collection (i.e., focus groups).

Quantitative Data Collection

Participants. Separate samples were drawn from secondary students in Canada and India. Participants in the Canadian sample comprised of 355 Indian immigrant adolescents from secondary schools in Ontario—Brampton, Hamilton, and Mississauga (male = 179; female = 176), who immigrated to Canada from Kerala, one of the states in India. Participants in the Indian sample consisted of 363 adolescents (male = 192; female = 171) from English medium secondary schools in Kerala, India, which had similar infrastructural facilities to the schools in Ontario. These schools in Kerala served students from a predominantly middle to upper-middle class socio-economic status as did the schools in Ontario. The age of the participants in the Canadian sample ranged from 16 to 19 years, with a mean age of 16.88 years (SD = .89). The age of the participants in the Indian sample ranged from 13 to 18 years, with a mean age of 16.04 years (SD = 1.16). The questionnaire itself only gave the options 16, 17, 18, and 18+, but some respondents wrote in their ages.

Procedures. After obtaining clearance from the university research ethics board, I contacted the Indian community centres/associations across Ontario. I explained the study to the concerned authorities of Indian community centres/associations, and they agreed to help me in collecting data from Indian adolescents. The letter of information (see Appendix A), the letter of consent (see Appendix B), and the survey questionnaires (see Appendices C, D, and E) were handed out to the Indian immigrant adolescents through the Indian community
centres/associations. Students whose parents agreed for them to participate and who themselves agreed to participate in the study completed the research measures. I collected the sealed envelopes containing the completed research measures from the Indian community centres/associations.

In India, I contacted the principals of five secondary English medium schools in Kerala, India. Of these, three secondary schools agreed to participate in the study. Because the students attending these three schools were more or less similar in terms of their socio-demographic characteristics and academic abilities, clustering effects might not arise (Begg & Parides, 2003; Spybrook, 2008). Furthermore, the number of clusters in the present study was inadequate to conduct a cluster randomized trial—“the power in cluster randomized trials is dominated by the number of clusters, not the number of subjects within a cluster” (Spybrook, 2008, p. 279).

Upon approval by the principals and regular classroom teachers, I went to individual classrooms and explained the study to prospective research participants using my recruitment script (see Appendix F). A hard copy of the recruitment script was also handed out to the students. Interested participants were given letters of information and consent forms. Students whose parents agreed for them to participate and who themselves agreed to participate in the study completed the research measures in the classroom setting. Students who elected not to participate in the study were taken by teachers to other areas and were assigned work.

**Measures**

**Demographic questionnaire.** The demographic questionnaire asked respondents to report their age, gender, country of origin, and current grades in school. Academic achievement was measured by three questions on self-reported
grade point average (English, math, and overall GPA). The three academic subtests (English, math, and school) of the Self Description Questionnaire-II (Marsh, 1992) used in the present study had several items measuring math self-concept, verbal self-concept, and school self-concept. Hence I made the decision to include three items based on English, math, and overall GPA in the demographic questionnaire. Participants were asked to report their GPAs on a 5-point scale, ranging from 5 = A (Mostly 90s) to 1 = F (Mostly 50s).

**Self Description Questionnaire-II.** Academic self-concept was measured using items drawn from the Self Description Questionnaire-II (SDQ-II; Marsh, 1992). The SDQ-II was developed for junior high and high school students in Grades 7–10; however, it is appropriate for students in Grades 7–12. The SDQ-II contains 102 items to measure self-concept in adolescents using 11 subscales. The three academic subscales are mathematics, verbal, and general school; the seven non-academic subscales are physical ability, physical appearance, opposite-sex relations, same-sex relations, parent relations, honesty-trustworthiness, and emotional stability. The SDQ-II also contains one general self-concept subscale. All 102 items are measured on a 6-point Likert-type scale, ranging from 1 = false to 6 = true. Half of the items for each subscale are negatively worded, and these items are intended to reduce positive response bias.

For the purposes of the present study, 30 items, consisting of three academic subscales, were drawn from SDQ-II: mathematics (10 items), verbal (10 items), and general school (10 items). I made this decision because I was primarily interested in Indian immigrant and Indian adolescents’ academic self-concepts. All negatively worded items were reverse scored. Marsh (1992) reported measures of internal
consistency for SDQ-II scores for a sample of 5,494 students in Grades 7–12. Internal consistency ranged from .83 to .91 for scores on all 11 subscales (Marsh, 1992).

Although SDQ-II is a well-validated measure of self-concept (see Aarepattamannil & Freeman, 2008; Byrne, 1996; Leach, Henson, Odom, & Cagle, 2006; Marsh, Plucker, & Stocking, 2001), confirmatory factor analyses (CFAs) were performed on the whole sample (see Appendix G), the Indian immigrant sample, and the Indian sample to test the fit of the three-factor structure. The models were tested using LISREL 8.80 (Jöreskog & Sörbom, 2007). Because of its sensitivity to model misspecification, the models tested in the study were estimated using maximum likelihood estimation (MLE; see Brown, 2006; Olsson, Foss, Troye, & Howell, 2000). All models were identified by fixing the variance of the latent variables to unity (see Thompson, 2004).

Model fit was assessed by a number of fit indices. The classic goodness-of-fit index is the minimum fit function $\chi^2$ (Brown, 2006). “Since chi-square is $N - 1$ times the minimum value of the fit function, chi-square tends to be large in large samples if the model does not hold” (Jöreskog & Sörbom, 1993, p. 122). Thus chi-square is not an ideal overall fit index, and chi-square may be statistically significant when the sample size is large (Hu & Bentler, 1995; Oishi, 2007). Because chi-square is extremely sensitive to sample size, researchers have proposed a number of goodness-of-fit measures to eliminate or reduce its dependence on sample size. Hence, in the present study, chi-square was supplemented with additional absolute and comparative fit indices, such as the standardized root mean square residual (SRMR), the root mean square error of approximation (RMSEA; Steiger & Lind, 1980), the comparative fit index (CFI; Bentler, 1990), and the Tucker-Lewis index (TLI; Tucker & Lewis,
These absolute and comparative fit indices were selected on the basis of their favourable performance in Monte Carlo or simulation research (see Brown, 2006; Thompson, 2004).

In addition to a statistically nonsignificant $\chi^2$ value, the following guidelines based on the findings of simulation studies were used in the evaluation of model fit (see Hu & Bentler, 1999): (1) The SRMR value is close to .08 or below; (2) The RMSEA value is close to .06 or below; and (3) The CFI and the TLI values are close to .95 or greater. The CFA performed on the whole sample indicated an acceptable fit for the three-factor model of academic self-concept ($\chi^2 = 1415.11$, $df = 402$, $p < .001$; SRMR = .05; RMSEA = .06; CFI = .95; TLI = .95). Factor loadings for the observed variables were all statistically significant ($p < .05$) and had modest to strong loadings, suggesting that the observed variables reliably measured the latent constructs under study. Similarly, the CFAs performed on the Indian immigrant and the Indian samples revealed the adequate fit of the three-factor model. Cronbach’s alphas were calculated to assess the internal consistency of the academic self-concept subscales for the whole sample: math self-concept ($\alpha = .91$), verbal self-concept ($\alpha = .83$), and school self-concept ($\alpha = .83$). Reliabilities were more or less similar across the Indian immigrant and the Indian adolescent groups.

**Academic Motivation Scale–High school version.** Academic motivation was measured with the Academic Motivation Scale–high school version (AMS; Vallerand et al., 1992). The AMS is the English translation of the Echelle de Motivation en Education (Vallerand et al., 1992, 1993). Based on SDT, this 28-item instrument is divided into seven subscales, reflecting one subscale of amotivation, three ordered subscales of extrinsic motivation (external, introjected, and identified regulation), and
three distinct, unordered subscales of intrinsic motivation (intrinsic motivation to know, to accomplish things, and to experience stimulation). The items were rated on a scale ranging from 1 = does not correspond at all to 7 = corresponds exactly. Each subscale consisted of four items; thus subscale scores could range from 4 to 28. A high score on a subscale indicates high endorsement of that particular motivation.

Several empirical studies investigating issues related to motivation have used both the French (e.g., Guay et al., 2003) and English (e.g., Areeppattamannil & Freeman, 2008; Cokley, 2000) versions of the AMS scale. Furthermore, numerous studies have explored the measurement properties of the AMS (Barkoukis, Tsorbatzoudis, Grouios, & Sideridis, 2008; Cokley, 2000; Cokley, Bernard, Cunningham, & Mocioke, 2001; Fairchild, Horst, Finney, & Barron, 2005; Grouzet, Otis, & Pelletier, 2006; Nunez, Martin-Albo, & Navarro, 2004; Vallerand et al., 1992, 1993). Vallerand et al. (1992, 1993) conducted CFAs instead of exploratory factor analyses (EFAs) during the initial stages of scale development. When there is minimal research with regard to the structure of the construct or measure of interest, the use of CFA may result in gross misfit of the model to the data (Bandalos & Finney, 2010). Further, Brown (2006) posits that “EFA is typically used earlier in the process of scale development and construct validation, whereas CFA is used in later phases after the underlying structure has been established on prior empirical (EFA) and theoretical grounds” (p. 14). Using LISREL, Vallerand at al. (1992, 1993) entered all the 28 items into a CFA to validate and confirm the seven-factor structure of the AMS. The authors found that the seven factors corresponded to the seven subscales, and were made up of the four corresponding items. They used Cronbach’s coefficient α to assess the internal consistency of the seven subscales. Vallerand et al. (1992) reported
that Cronbach’s coefficient $\alpha$ for the subscales ranged from .83 to .86, with the exception of the identified subscale of extrinsic motivation, which had an internal consistency of .62. In addition, internal consistency for the subscales ranged from .60 to .86 with another English-speaking sample (Vallerand et al., 1993). However, Areepattamannil (2006) did not find adequate support for the seven-factor structure of the AMS. Moreover, internal consistency values—Cronbach’s coefficient alphas—were higher when two factors were considered—motivation and amotivation (Areepattamannil, 2006).

Vallerand and his colleagues hypothesized that a simplex pattern would be revealed among the ordered subscales of the AMS as one moved along the motivation continuum. This continuum represents an ‘index of relative autonomy’ as perceived by the individual (Deci, Vallerand, Pelletier, & Ryan, 1991). Examination of correlations of the subscales and correlations between the subscales and motivational antecedents and consequences provided support for construct validity (Vallerand et al., 1993; Cokley et al., 2001). Although Areepattamannil and Freeman (2008), Cokley (2000), and Fairchild et al. (2005) found limited support for the simplex structure of the AMS, Cokley et al. (2001), consistent with Vallerand et al.’s (1992) findings, found support for the seven-factor structure of the AMS. Whereas Cokley et al.’s (2001) findings provided only partial support for the construct validity of scores from the AMS, Areepattamannil and Freeman (2008) and Fairchild et al. (2005) reported adequate model fit for the seven-factor model and adequate reliability for the seven subscales ($0.77 \leq \alpha \leq 0.90$). Recently, Barkoukis et al. (2008) reproduced the seven factor structure proposed by Vallerand et al. (1992). Moreover, Barkoukis and
his colleagues found sufficient evidence to support the reliability and the construct and concurrent validity of the AMS.

The AMS is the only available published scale that employs an SDT perspective, the theory that underpins the current research. However, given the inconsistencies surrounding the reliability and factorial, construct, and concurrent validity of the AMS, researchers recommend further investigation of the properties of scores from the AMS with more diverse samples (e.g., Fairchild et al., 2005). Therefore, CFAs were conducted in the present study to test the fit of the seven-factor structure for the whole sample, the Indian immigrant sample, and the Indian sample. The CFA performed on the whole sample indicated that the seven-factor model did not fit the data well ($\chi^2 = 2918.80, df = 336, p < .001$; SRMR = .17; RMSEA = .11; CFI = .86; TLI = .85). Each of these fit indices implies poor fit. Similarly, the CFAs performed on the Indian immigrant and the Indian samples also revealed that the seven-factor model did not fit the data well. Therefore, EFAs using maximum likelihood (ML) with oblique rotation were conducted to examine the factor structure and the psychometric properties of the AMS items (see Appendix H). If data are relatively normally distributed, ML is considered as the best method of factor extraction (see Fabrigar, Wegener, MacCallum, & Strahan, 1999).

The latent root criterion (eigenvalue > 1; Kaiser, 1960), the scree test (Cattell, 1966), and parallel analysis (Horn, 1965; Turner, 1998) were used to extract meaningful factors that accounted for the maximum amount of common variance (see Fabrigar et al., 1999). Items with factor loadings less than .30 were eliminated (see Pedhazur & Schmelkin, 1991). Results supported three extracted factors that accounted for approximately 48% of the total common variance in participants’
responses. The first factor (intrinsic motivation, $\alpha = .90$) accounted for approximately 27% of the variance in participants’ responses. The second factor (extrinsic motivation, $\alpha = .85$) accounted for approximately 12% of the variance in responses. The third factor (amotivation, $\alpha = .76$) accounted for approximately 9% of the total variance. Reliabilities were more or less similar across the Indian immigrant and the Indian adolescent groups.

**Qualitative Data Collection**

**Participants.** Separate focus group samples were drawn from secondary students in Canada and India, who volunteered to participate in the focus groups through the quantitative surveys. A total of eight focus group interviews were conducted: four focus group sessions with Indian immigrant adolescents in Canada (20 participants; male = 11, female = 9), and four focus group sessions with Indian adolescents in India (32 participants; male = 17, female = 15). Each focus group in Canada comprised of five participants, while focus groups in India consisted of 7 to 9 participants (see Table 1). Every focus group session lasted for approximately two hours.

Recommendations in the literature pertaining to the optimum size of a focus group vary: 4–6 participants (Greenbaum, 1998); 5–8 participants (Krueger & Casey, 2009); 6–9 participants (Krueger, 2000); 6–10 participants (Langford, Schoenfeld, & Izzo, 2002; Morgan, 1997); 6–12 participants (Bernard, 1995; Johnson & Christensen, 2004); and 8–12 participants (Baumgartner, Strong, & Hensley, 2002). Merton, Fiske, and Kendall (1990) state that a focus group should not be so large “as to be unwieldy or to preclude adequate participation by most members nor should it be so small that it fails to provide substantially greater coverage than that of an interview with one
individual” (p. 137). Any less than four is not considered a focus group and greater than 12 is considered too many to allow full participation and interaction (see Krueger & Casey, 2009; Patton, 2002).

Table 1

**Number of Focus Group Participants by Gender in Canada and India**

<table>
<thead>
<tr>
<th></th>
<th>Indian Immigrant Adolescents</th>
<th>Indian Adolescents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Focus Group #1</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Focus Group #2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Focus Group #3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Focus Group #4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>11</td>
<td>9</td>
</tr>
</tbody>
</table>

The application of focus groups is supported in the literature with several advantages being outlined: it encourages interaction among participants, enhances the quality of the data, and elicits the student perspective (Barbour, 2005; Patton, 2002). Furthermore, mixed methods research using focus groups has been recommended as a way of providing a more complete picture of the cultural and motivational functioning of culturally complex groups (Calderon, Baker, & Wolf, 2000; Matsumoto, 1999; Yoshikawa, Weisner, Kalil, & Way, 2008). Focus groups have also been suggested as an especially appropriate methodology with children and adolescent research participants, who may be reluctant to engage in conversation in individual interviews (Hoppe & Wells, 1995; Jamieson et al., 2002).
Procedures. An invitation letter to participate in a focus group interview was attached to the survey questionnaire (see Appendix I). The students who were interested to participate in the focus group interview specified their contact details in the letter of invitation. I contacted each interested participant in Canada and India via email/telephone. The interested participants were given letters of information and consent forms (see Appendices J and K) with similar consent conditions as in the quantitative phase. Students whose parents agreed for them to participate and who themselves agreed to participate in the focus group interview attended the audiotaped focus group interviews at predetermined locations. An interview guide (see Appendix L; adapted from an interview guide developed by Schmakel, 2008), designed to gather in-depth perspectives, beliefs, and interpretations from the students themselves regarding academic self-concept, academic motivation, academic achievement, and classroom learning environments, was used for the focus group interview sessions. One interviewer led the focus group sessions, and one note-taker was present. Light refreshments and soft drinks and coffee were made available. Each focus group participant in the Canadian sample was entered into a draw for a chance to win a $25 gift card of their choice (one gift card per focus group session). As well, each focus group participant in the Indian sample was entered into a draw for a chance to win a 1000 Indian Rupees gift card of their choice (one gift card per focus group session).

Data Analysis

Because the study started with the surveys of participants, the first phase of data analysis began with the analysis of quantitative data (see Creswell & Plano
Clark, 2007). The second phase focused on the analysis of qualitative data gathered through follow-up focus group interviews.

**Quantitative Data Analysis**

Quantitative data were analyzed using IBM SPSS Statistics 19. Prior to embarking on preliminary analyses, data were screened for missing data and data entry errors. Furthermore, the questionnaires used in the study had a mixture of positively and inversely keyed items. Hence responses to the negatively worded items were reverse scored. The data were also screened for normality, linearity, and homogeneity of variance.

**Handling missing data.** Thirteen participants (eight Indian immigrant and five Indian adolescents) were dropped from the total sample as they did not respond to the majority of the items on at least one of the two questionnaires measuring academic self-concept and academic motivation (AMS & SDQ II, respectively), which resulted in N = 718. Approximately 19% of the 718 cases had one or more missing data values. To handle missing data, multiple imputation (MI; Little & Rubin, 2002; Rubin, 1987) was performed using IBM SPSS Statistics 19. Based on the results of numerous simulation studies, Fichman and Cummings (2003) determined that “using an MI solution can provide more valid estimates of statistical quantities than are provided by current practices” (p. 283). Five independent imputed data sets were created (see Schafer, 1997). Statistical analyses were conducted separately for each imputed data set, and the parameter estimates across the analyses were averaged to produce a single set of results (see Schafer & Olsen, 1998).

**Preliminary analyses.** The preliminary statistical analyses began with the computation of descriptive statistics, which included computing measures of central
tendency and variability, and graphing scatter plots and frequency distributions. This step was carried out not only to determine whether or not there were outliers among the data but also to ensure that the skew and kurtosis of the data distributions were not unreasonable. In other words, preliminary analyses considered whether or not the sample behaved, that is, whether or not the descriptive statistics \( (M, SD) \) and reliability (\( \alpha \) coefficient) for the measures were comparable to those reported by other researchers. In addition to descriptive statistics, bivariate correlations between independent and dependent variables in the study were computed for the entire sample. Bivariate correlations between independent and dependent variables were also computed for Indian immigrant and Indian adolescents separately.

**Main analyses.** The main statistical analyses addressed the first two research questions of the study:

*Research question # 1: To what extent do Indian immigrant adolescents in Canada differ from their counterparts in India in terms of their self-reported academic self-concept, academic motivation, and academic achievement?*

Descriptive discriminant analysis (DDA) was conducted to assess whether or not the three predictors—academic self-concept, academic motivation, and academic achievement—could distinguish the Indian immigrant adolescents in Canada from the Indian adolescents in India. The grouping variable consisted of four groups: Indian immigrant male, Indian immigrant female, Indian male, and Indian female adolescents. DDA is part of the general linear model (GLM) and “is conceptually and mathematically analogous to multiple regression” (Sherry, 2006, p. 665). Furthermore, DDA is sufficient to indicate both that group differences exist and
precisely where they exist among the variables (Sherry, 2006; Tabachnick & Fidell, 2007).

Although discriminant analysis and logistic regression can be used to address the same types of research questions (see Spicer, 2005), discriminant analysis is generally preferred to logistic regression when three or more groups are involved (Huberty & Olejnik, 2006). When the dependent variable has only two groups, logistic regression is often preferred to discriminant analysis (Sekaran & Bougie, 2009). In the present study, however, the dependent variable had four groups. Therefore, discriminant analysis was used instead of logistic regression. Moreover, “when the condition of multivariate normality is satisfied, discriminant analysis is the true maximum likelihood estimator, and is more efficient than logistic regression in estimating the parameters of the model” (Menard, 2010, p. 320).

Research question # 2: To what extent does academic motivation mediate the relationship between academic self-concept and academic achievement for Indian immigrant and Indian adolescents?

Tests of mediation were performed to examine whether or not academic motivation would significantly attenuate the relationship between academic self-concept and academic achievement for Indian immigrant adolescents in Canada and Indian adolescents in India. The causal steps strategy for testing mediational hypotheses (Baron & Kenny, 1986) and the Sobel test (Sobel, 1982) for the statistical significance of mediation have been found to be problematic in several respects (see MacKinnon, Lockwood, & Williams, 2004; Preacher & Hayes, 2008; Shrout & Bolger, 2002; Zhao, Lynch, & Chen, 2010).
Baron and Kenny’s (1986) criteria essentially require paths $a$, $b$, and $c$ to be statistically significant and $c'$ to be smaller than $c$ by a nontrivial amount (Preacher & Hayes, 2008; see Figure 1). However, a statistically significant path $c$ is not necessary for mediation to occur (Judd & Kenny, 2010; MacKinnon, 2008; Zhao et al., 2010) because “mediation depends on the extent to which the independent variable affects the mediator (parameter $a$) and the extent to which the mediator affects the dependent variable (parameter $b$)” (MacKinnon, 2008, p. 50). Therefore, the only requirement for mediation is a statistically significant indirect effect ($ab$; Zhao et al., 2010). The Sobel test assumes that the sampling distribution of the mediated or indirect effect is normal; however, the sampling distribution of the indirect effect tends to be asymmetric (see Hayes, 2009).

Hence to establish mediation in the present study, Baron and Kenny’s causal steps approach and the Sobel test were replaced with a nonparametric resampling
procedure—bootstrapping (Preacher & Hayes, 2004, 2008). Bootstrapping empirically generates an approximation of the sampling distribution (Hayes, 2009). In multiple mediation models, sampling distributions of total and indirect effects are empirically generated by selecting a subsample, with replacement, of the full data set and then calculating indirect effects in the repeated subsamples (see Preacher & Hayes, 2004, 2008). Thus the bootstrapping procedure yields point estimates and bias-corrected (BC) confidence intervals for indirect (mediated) and total effects.

Simulation research has shown that bootstrapping is superior to the product of coefficients approach or the Sobel test and the most commonly used Baron and Kenny (1986) causal steps approach in terms of statistical power while maintaining reasonable control over Type I error (e.g., MacKinnon et al., 2004; Williams & MacKinnon, 2008). In the present study, therefore, the bootstrapping method was preferred because it allowed me to enter all three proposed academic motivation mediators into the model simultaneously and to test whether or not an overall indirect effect existed. Moreover, bootstrapping is capable of testing the indirect effect of each mediator variable while controlling for all other variables in the model and to compare the effects of the mediators with one another (see Preacher & Hayes, 2008).

Point estimates (i.e., mediated or indirect effects) and bias-corrected (BC) bootstrap confidence intervals (CIs) based on 5,000 bootstrap samples (see Preacher & Hayes, 2008) were estimated separately for the Indian immigrant and Indian samples. Bias-corrected bootstrap confidence intervals perform best in testing for mediation effects (Cheung & Lau, 2008). A point estimate for an indirect or mediated effect (total or specific) was considered statistically significant if zero was not
included in the 95% bias-corrected confidence intervals (see Preacher & Hayes, 2008; Zhao et al., 2010).

**Qualitative Data Analysis**

The following research question guided the qualitative phase of the study:

*Research question # 3: What are the perspectives, beliefs, and recommendations of Indian immigrant adolescents in Canada and Indian adolescents in India in regard to instructional practices and classroom environments that they believe affect their academic engagement and academic achievement?*

Thematic analysis, a qualitative analytic method, was used to analyze the focus group data (see Boyatzis, 1998; Braun & Clarke, 2006; Roulston, 2001). Thematic analysis is “a process of segmentation, categorization, and relinking of aspects of the data prior to final interpretation” (Grbich, 2007, p. 16). Put another way, thematic analysis is “a method for identifying, analyzing, and reporting patterns (themes) within data” (Braun & Clarke, 2006, p. 79). One of the most important advantages of thematic analysis is its flexibility—thematic analysis can be flexibly employed within different theoretical frameworks because it is not embedded within a particular theoretical tradition (Clarke, Ellis, Peel, & Riggs, 2010). As Braun and Clarke (2006) remarked:

> Thematic analysis can be an essentialist or realist method, which reports experiences, meanings and the reality of participants, or it can be a constructionist method, which examines the ways in which events, realities, meanings, experiences and so on are the effects of a range of discourses operating within society. It can also be a ‘contextualist’ method, sitting between the two poles of essentialism and constructionism, and characterized by theories. Therefore, thematic analysis can be a method that works both to reflect reality and to unpack or unravel the surface of ‘reality’. (p. 81)

For the purpose of the present study, I followed the six steps of thematic analysis outlined by Braun and Clarke (2006). First, the audiotapes of the focus group
sessions were transcribed verbatim. I further checked the transcripts against the tapes for accuracy. The transcriptions were imported into the ATLAS.ti software for qualitative data analysis (Version 6.2; Scientific Software Development, 2010), and this software program was used as a tool to manage and organize the qualitative analyses. After importing the data into ATLAS.ti, I read and re-read the data several times to immerse myself in the data, and to familiarize myself with the depth and breadth of the data. Repeated reading of the transcripts allowed me to explore the data for meanings and patterns, and I noted down an initial list of ideas for coding.

Second, I used open coding to create categories or codes related to the initial ideas I had identified in my data familiarization process. I gave equal attention to each data item during the coding process. The open coding feature of ATLAS.ti allowed me to generate as many initial codes for potential themes and patterns as possible by tagging and naming selections of text within each data item. Boyatzis (1998) posits that “codes are the most basic segment, or element, of the raw data or information that can be assessed in a meaningful way regarding the phenomenon” (p. 63). Thus codes may help to extract meaning and uncover themes or patterns from the data in a systematic way (Monsen & Van Horn, 2008).

Third, I refined the initial codes created during open coding, and started analyzing the refined codes with a view to sorting and collating the different codes into potential themes. Fourth, I reviewed the initial themes thoroughly to refine, combine, or separate the initial themes, and to generate overarching themes. At this stage, special attention was paid on gaining internal homogeneity—the data within each theme should cohere meaningfully together—and external heterogeneity—there should be clear and identifiable distinctions between themes (see Patton, 2002).
Fifth, I examined the validity of the themes with respect to the data set as a whole by moving back and forth between the data extracts for codes and themes. I ensured that the themes accurately represented the meanings evident in the data set by noting and working through similarities and contradictions with and between themes. I further reviewed the final set of themes to ensure that these themes satisfactorily addressed the research question. Finally, I reported findings based on the themes using direct quotations from the data set.
CHAPTER 4: QUANTITATIVE FINDINGS

This chapter presents the quantitative findings of the study based on the following two research questions: 1) To what extent do Indian immigrant adolescents in Canada differ from their counterparts in India in terms of their self-reported academic self-concept, academic motivation, and academic achievement? and 2) To what extent does academic motivation mediate the relationship between academic self-concept and academic achievement for Indian immigrant and Indian adolescents?

Preliminary Results

Descriptive Statistics

The mean, standard deviation, minimum, maximum, skewness, and kurtosis values for all the variables of interest in the present study were computed for the whole sample (see Table 2), and separately for the Indian immigrant and Indian adolescent groups (see Tables 3 and 4). The Indian immigrant adolescents in Canada reported higher mean scores for overall school, math, and English GPAs than their peers in India. The Indian adolescents in India reported higher mean scores for math self-concept than their counterparts in Canada, while the Indian immigrant adolescents in Canada reported higher mean scores for school and verbal self-concepts. Further, the Indian adolescents in India reported higher mean scores for extrinsic motivation and amotivation than their peers in Canada, whereas the Indian immigrant adolescents reported higher mean scores for intrinsic motivation than their counterparts in India. The univariate distributions of each of the variables of interest were also examined. For each variable, histograms, box-plots, and normal-probability
plots were observed. The distributions of data for the variables of interest were relatively normal.

**Correlational Analyses**

Bivariate correlations among all the variables of interest were computed for the whole sample (see Table 2), and separately for the Indian immigrant and Indian adolescent groups (see Tables 3 and 4). For Indian immigrant adolescents, overall school GPA was positively correlated with school and math self-concepts and with intrinsic motivation. Verbal self-concept, extrinsic motivation, and amotivation were not related to overall school GPA for Indian immigrant adolescents. For Indian adolescents, overall school GPA was positively correlated with school, math, and verbal self-concepts and with intrinsic and extrinsic motivation. In contrast, overall school GPA was negatively correlated with amotivation.

**Main Results**

**Descriptive Discriminant Analysis**

To examine the differences between Indian immigrant and Indian adolescents in terms of their self-reported academic achievement, academic self-concepts, and academic motivation, descriptive discriminant analysis (DDA) was conducted. The independent variables were overall school GPA, math GPA, English GPA, school self-concept, math self-concept, verbal self-concept, intrinsic motivation, extrinsic motivation, and amotivation. The four groups were male Indian, female Indian, male Indian immigrant, and female Indian immigrant. Two separate DDAs were conducted: the first using non-standardized GPA scores, and the second employing standardized
Table 2

Descriptive Statistics and Correlations Among the Study Variables (Total Sample, N = 718)

|                          | M    | SD   | Skewness | Kurtosis | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   |
|--------------------------|------|------|----------|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1. Overall school GPA    | 3.95 | .77  | -.85     | 1.36     | —   |     |     |     |     |     |     |     |     |     |
| 2. Math GPA              | 3.95 | .97  | -.93     | .72      | .62* | —   |     |     |     |     |     |     |     |     |
| 3. English GPA           | 3.85 | .82  | -.94     | 1.38     | .62* | .39*| —   |     |     |     |     |     |     |     |
| 4. School self-concept   | 4.92 | .53  | -.36     | -.12     | .46* | .35*| .33*| —   |     |     |     |     |     |     |
| 5. Math self-concept     | 4.07 | 1.28 | -.37     | -.66     | .32* | .59*| .08 | .34*| —   |     |     |     |     |     |
| 6. Verbal self-concept   | 5.00 | .56  | -.46     | 1.24     | .25* | .07 | .52*| .41*| -.03| —   |     |     |     |     |
| 7. Intrinsic motivation   | 4.82 | 1.15 | -.39     | -.19     | .31* | .27*| .15*| .28*| .37*| .16*| —   |     |     |     |
| 8. Extrinsic motivation   | 5.27 | 1.01 | -.77     | .70      | .09* | .04 | .04 | .17*| .08 | .08 | .40*| —   |     |     |
| 9. Amotivation            | 2.31 | 1.36 | .99      | .35      | -.13*| -.06| -.08| -.22*| -.09| -.09| -.04| -.11*| —   |     |

Note. Overall school GPA, Math GPA, English GPA (Minimum = 1, Maximum = 5); School self-concept, Math self-concept, Verbal self-concept (Minimum = 1, Maximum = 6); Intrinsic motivation, Extrinsic motivation, Amotivation (Minimum = 1, Maximum = 7)

*p < .05. **p < .01.
Table 3

*Descriptive Statistics and Correlations Among the Study Variables (Indian Immigrant Sample, N = 355)*

|                  | M     | SD   | Skewness | Kurtosis | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   |
|------------------|-------|------|----------|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1. Overall school GPA | 4.12  | .49  | .10      | 1.51     | —   |     |     |     |     |     |     |     |     |     |
| 2. Math GPA      | 4.01  | .70  | -.01     | -.97     | .52**| —   |     |     |     |     |     |     |     |     |
| 3. English GPA   | 4.08  | .47  | -.08     | 2.85     | .26**| .08 | —   |     |     |     |     |     |     |     |
| 4. School self-concept | 4.99  | .50  | -.16     | -.54     | .35**| .31**| .32**| —   |     |     |     |     |     |     |
| 5. Math self-concept | 4.01  | 1.41 | -.29     | -1.01    | .46**| .72**| .10  | .36**| —   |     |     |     |     |     |
| 6. Verbal self-concept | 5.12  | .52  | .05      | .87      | .10  | -.08| .54**| .44**| -.11**| — |     |     |     |     |
| 7. Intrinsic motivation | 4.97  | 1.39 | -.56     | -.63     | .48**| .44**| .21**| .35**| .47**| .13**| — |     |     |     |
| 8. Extrinsic motivation | 5.20  | 1.09 | -.79     | .67      | .01  | -.02| .03  | .19**| .05  | .02  | .35**| — |     |     |
| 9. Amotivation   | 2.22  | 1.35 | 1.21     | .92      | -.07 | -.03| -.06 | -.18**| -.05 | -.03 | -.07| -.14**| — |     |

*Note.* Overall school GPA, Math GPA, English GPA (Minimum = 1, Maximum = 5); School self-concept, Math self-concept, Verbal self-concept (Minimum = 1, Maximum = 6); Intrinsic motivation, Extrinsic motivation, Amotivation (Minimum = 1, Maximum = 7)

*p < .05. **p < .01.*
Table 4

Descriptive Statistics and Correlations Among the Study Variables (Indian Sample, N = 363)

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>Skewness</th>
<th>Kurtosis</th>
<th>Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Overall school GPA</td>
<td>3.79</td>
<td>.94</td>
<td>-.58</td>
<td>-.04</td>
<td>1</td>
</tr>
<tr>
<td>2. Math GPA</td>
<td>3.89</td>
<td>1.17</td>
<td>-.96</td>
<td>.02</td>
<td>.65**</td>
</tr>
<tr>
<td>3. English GPA</td>
<td>3.63</td>
<td>.98</td>
<td>-.44</td>
<td>-.25</td>
<td>.69** .47**</td>
</tr>
<tr>
<td>4. School self-concept</td>
<td>4.85</td>
<td>.55</td>
<td>-.46</td>
<td>-.02</td>
<td>.51** .37**</td>
</tr>
<tr>
<td>5. Math self-concept</td>
<td>4.12</td>
<td>1.15</td>
<td>-.54</td>
<td>-.27</td>
<td>.31** .56**</td>
</tr>
<tr>
<td>6. Verbal self-concept</td>
<td>4.92</td>
<td>.57</td>
<td>-.83</td>
<td>2.36</td>
<td>.28** .14**</td>
</tr>
<tr>
<td>7. Intrinsic motivation</td>
<td>4.68</td>
<td>.83</td>
<td>-.47</td>
<td>.03</td>
<td>.22** .16**</td>
</tr>
<tr>
<td>8. Extrinsic motivation</td>
<td>5.35</td>
<td>.91</td>
<td>-.64</td>
<td>.27</td>
<td>.18** .09</td>
</tr>
<tr>
<td>9. Amotivation</td>
<td>2.40</td>
<td>1.35</td>
<td>.81</td>
<td>-.01</td>
<td>-.15** -.07</td>
</tr>
</tbody>
</table>

Note. Overall school GPA, Math GPA, English GPA (Minimum = 1, Maximum = 5); School self-concept, Math self-concept, Verbal self-concept (Minimum = 1, Maximum = 6); Intrinsic motivation, Extrinsic motivation, Amotivation (Minimum = 1, Maximum = 7)

*p < .05. **p < .01.
GPA scores. This chapter reports the results based on non-standardized GPA scores. The results based on standardized GPA scores are given in Appendix M.

In DDA, the number of functions is equal to $k$ (groups) – 1 (Sherry, 2006). Therefore, in the present study, there were three functions because four groups were included in analysis. Thus in a four-group DDA, the first test of Functions (1 through 3) calculates the set of coefficients that maximally separates the four centroids—the first discriminant function (see Spicer, 2005). The second test of Functions (2 through 3) calculates another set of coefficients that separates the centroids in a completely different way from the first one, and derives the second discriminant function. The third test of Function, following the same process, derives the third discriminant function. These discriminant functions have decreasing discriminating power, and are uncorrelated with each other (Spicer, 2005).

The full model test of Functions 1 to 3 and the test of Functions 2 to 3 were statistically significant at $p < .001$ (see Table 5). The test of Function 3 was not statistically significant ($p = .22$), and was thus excluded from subsequent analysis. Because statistical significance alone does not indicate practical significance, the effect sizes of the statistically significant discriminant functions were examined. In DDA, effect size is measured by calculating $1 – \text{Wilks’s Lambda}$ (Sherry, 2006). The effect size for the test of Functions 1 to 3 was equal to $1 – .79 = .21$, and for Functions 2 to 3, the effect size was equal to $1 – .93 = .07$. These are small effect sizes (see Huberty & Olejnik, 2006), and indicate that on these two statistically significant discriminant functions, the academic achievement, academic self-concept, and academic motivation variables do not contribute to group separation extremely well. The jackknife quadratic classification procedure (one case at a time deleted) indicated
that 42.3% of the original grouped cases were correctly classified. The Indian immigrant female adolescents were classified with better accuracy (52.3%) than the Indian male (46.9%), Indian female (38.6%), and Indian immigrant male (31.3%) adolescents.

Eigenvalues, the ratio of between-groups to within-groups sum of squares, for each of the two statistically significant discriminant functions were .18 and .06, respectively. These are small eigenvalues and indicate that the statistically significant discriminant functions do not differentiate the four groups very well. However, the first discriminant function is three times better at differentiating between groups than the second discriminant function. The canonical correlation ($R_c$), the correlation between the grouping variable and the composite predictor variable, was .39 on Functions 1 to 3 with an effect size of $R_c^2 = 15.21\%$. The canonical correlation on Functions 2 to 3 was .25 with an effect size of $R_c^2 = 6.25\%$.

In other words, while the correlation between the grouping variable and the composite predictor variable accounted for 15.21% of the variance on the first discriminant function, the correlation between the grouping variable and the composite predictor variable accounted for only 6.25% of the remaining variance on the second discriminant function. These findings also suggest that the two statistically significant discriminant functions do not discriminate between the four groups very well. However, given the statistical significance of the first two discriminant functions, standardized discriminant function coefficients, structure coefficients, and group centroids (see Tables 6 and 7) were examined to determine what variables contributed to the group differences.
Unlike beta coefficients in multiple regression, the standardized discriminant function coefficients cannot be interpreted in rate of change terms, nor do they have associated statistical tests (Spicer, 2005). Because the structure matrix correlations are considered more accurate than the standardized discriminant function coefficients, the structure matrix correlations were used to indicate the relative importance of the predictors. Loadings less than .50 were not interpreted (see Tabachnick & Fidell, 2007). For Function 1, English GPA, overall school GPA, and verbal self-concept were primarily responsible for group differences. For Function 2, amotivation was primarily responsible for group differences. Given that Function 1 accounted for more of the variance in scores, the findings from Function 1 have more explanatory power than the findings from Function 2 (see Huberty & Olejnik, 2006).

Table 5

*Wilks’s Lambda and Canonical Correlation for the Four Groups*

<table>
<thead>
<tr>
<th>Test of Function(s)</th>
<th>Wilks’s λ</th>
<th>χ²</th>
<th>df</th>
<th>P</th>
<th>Rc</th>
<th>Rc²</th>
</tr>
</thead>
<tbody>
<tr>
<td>1—3</td>
<td>.79</td>
<td>170.99</td>
<td>27</td>
<td>.000</td>
<td>.39</td>
<td>15.21%</td>
</tr>
<tr>
<td>2—3</td>
<td>.93</td>
<td>53.79</td>
<td>16</td>
<td>.000</td>
<td>.25</td>
<td>6.25%</td>
</tr>
<tr>
<td>3</td>
<td>.99</td>
<td>9.63</td>
<td>7</td>
<td>.220</td>
<td>.12</td>
<td>1.44%</td>
</tr>
</tbody>
</table>

The group centroids indicate that the first discriminant function maximally separated the Indian immigrant female adolescents from the three other groups (see Table 7). Statistically significant differences were found between the groups in terms of English GPA, F(3, 714) = 21.22, p < .001, partial η² = .08; overall school GPA, F(3, 714) = 13.10, p < .001, partial η² = .05; and verbal self-concept, F(3, 714) = 11.20, p < .001, partial η² = .04.
### Table 6

*Standardized Discriminant Function and Structure Coefficients for the Four Groups*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>rs</th>
<th>rs²</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Function 1</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall school GPA</td>
<td>.39</td>
<td>.53</td>
<td>28.09%</td>
</tr>
<tr>
<td>Math GPA</td>
<td>−.28</td>
<td>.04</td>
<td>00.16%</td>
</tr>
<tr>
<td>English GPA</td>
<td>.42</td>
<td>.65</td>
<td>42.25%</td>
</tr>
<tr>
<td>School self-concept</td>
<td>.14</td>
<td>.34</td>
<td>11.56%</td>
</tr>
<tr>
<td>Math self-concept</td>
<td>−.50</td>
<td>−.23</td>
<td>05.29%</td>
</tr>
<tr>
<td>Verbal self-concept</td>
<td>.12</td>
<td>.51</td>
<td>26.01%</td>
</tr>
<tr>
<td>Intrinsic motivation</td>
<td>.49</td>
<td>.31</td>
<td>09.61%</td>
</tr>
<tr>
<td>Extrinsic motivation</td>
<td>−.36</td>
<td>−.08</td>
<td>00.64%</td>
</tr>
<tr>
<td>Amotivation</td>
<td>−.36</td>
<td>−.36</td>
<td>12.96%</td>
</tr>
<tr>
<td><strong>Function 2</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall school GPA</td>
<td>−.54</td>
<td>.09</td>
<td>00.81%</td>
</tr>
<tr>
<td>Math GPA</td>
<td>.28</td>
<td>.37</td>
<td>13.69%</td>
</tr>
<tr>
<td>English GPA</td>
<td>.85</td>
<td>.46</td>
<td>21.26%</td>
</tr>
<tr>
<td>School self-concept</td>
<td>−.01</td>
<td>−.07</td>
<td>00.49%</td>
</tr>
<tr>
<td>Math self-concept</td>
<td>.19</td>
<td>.27</td>
<td>07.29%</td>
</tr>
<tr>
<td>Verbal self-concept</td>
<td>−.35</td>
<td>−.05</td>
<td>00.25%</td>
</tr>
<tr>
<td>Intrinsic motivation</td>
<td>.26</td>
<td>.09</td>
<td>00.81%</td>
</tr>
<tr>
<td>Extrinsic motivation</td>
<td>−.50</td>
<td>−.44</td>
<td>19.36%</td>
</tr>
<tr>
<td>Amotivation</td>
<td>.48</td>
<td>.50</td>
<td>25.00%</td>
</tr>
</tbody>
</table>
Table 7

*Group Centroids*

<table>
<thead>
<tr>
<th>Group</th>
<th>Function 1</th>
<th>Function 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Male Indian</td>
<td>−.50</td>
<td>.13</td>
</tr>
<tr>
<td>2. Female Indian</td>
<td>−.20</td>
<td>−.40</td>
</tr>
<tr>
<td>3. Male Indian immigrant</td>
<td>.11</td>
<td>.29</td>
</tr>
<tr>
<td>4. Female Indian immigrant</td>
<td>.63</td>
<td>−.06</td>
</tr>
</tbody>
</table>

Table 8

*Means, Standard Deviations, and Bonferroni Multiple Comparisons*

<table>
<thead>
<tr>
<th></th>
<th>Male Indian</th>
<th>Female Indian</th>
<th>Male Indian Immigrant</th>
<th>Female Indian Immigrant</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Overall school GPA</td>
<td>3.71&lt;sup&gt;c&lt;/sup&gt;</td>
<td>.99</td>
<td>3.88&lt;sup&gt;bc&lt;/sup&gt;</td>
<td>.89</td>
</tr>
<tr>
<td>English GPA</td>
<td>3.63&lt;sup&gt;b&lt;/sup&gt;</td>
<td>1.06</td>
<td>3.61&lt;sup&gt;b&lt;/sup&gt;</td>
<td>.94</td>
</tr>
<tr>
<td>Verbal self-concept</td>
<td>4.87&lt;sup&gt;b&lt;/sup&gt;</td>
<td>.57</td>
<td>4.95&lt;sup&gt;b&lt;/sup&gt;</td>
<td>.59</td>
</tr>
</tbody>
</table>

*Note.* Means with different superscripts are significantly different from one another at *p* < .05.

The Indian immigrant female and male adolescents in Canada had statistically significantly higher English GPA than their counterparts in India (see Table 8). Moreover, the Indian immigrant female adolescents had statistically significantly higher verbal self-concept than the other three groups. No statistically significant differences were found among these three groups in terms of their verbal self-concepts. The Indian immigrant female adolescents had statistically significantly higher overall school GPA than the Indian female and male adolescents. Further, the
Indian immigrant male adolescents had statistically significantly higher overall school GPA than their Indian male counterparts. However, no statistically significant differences were found between Indian immigrant female and Indian immigrant male adolescents in Canada, and between Indian female and Indian male adolescents in India in terms of their overall school GPA.

**Mediating Effect of Academic Motivation on the Relationship between Academic Self-Concept and Academic Achievement for Indian Immigrant Adolescents**

Bootstrapped tests of simultaneous multiple indirect effects were conducted to determine the unique ability of each putative mediator to account for the effects of academic self-concepts—school, math, and verbal—on overall school, math, and English GPA for Indian immigrant adolescents (see Tables 9–11). When one of the academic self-concept variables was chosen as the independent variable, the remaining academic self-concept variables were treated as covariates along with gender (see Preacher & Hayes, 2008).

**School self-concept and academic achievement.** The specific indirect effect of school self-concept on overall school, and math GPA through intrinsic motivation was statistically different from zero, indicating that intrinsic motivation is a statistically significant mediator of the relationship between school self-concept and academic achievement (except English GPA) for Indian immigrant adolescents (see Table 9). In addition, the specific indirect effect of school self-concept on overall school and math GPA through extrinsic motivation was statistically different from zero, suggesting that extrinsic motivation was a statistically significant mediator of the relationship between school self-concept and academic achievement (except English GPA) for Indian immigrant adolescents (see Table 9).
Examination of the pairwise contrasts (i.e., tests of the difference between specific indirect effects; see Preacher & Hayes, 2008) of the indirect effects revealed that the specific indirect effect of school self-concept on overall school and math GPA through intrinsic motivation was larger than the specific indirect effect through extrinsic motivation (see Table 9). The specific indirect effect of school self-concept on math GPA through intrinsic motivation was also larger than the specific indirect effect through amotivation. Furthermore, the specific indirect effect of school self-concept on overall school and math GPA through extrinsic motivation was larger than the specific indirect effect through amotivation (see Table 9).

Math self-concept and academic achievement. The specific indirect effect of math self-concept on overall school and math GPA through intrinsic motivation was statistically different from zero, indicating that intrinsic motivation was a statistically significant mediator of the relationship between math self-concept and overall school GPA, and between math self-concept and math GPA for Indian immigrant adolescents (see Table 10). Neither extrinsic motivation nor amotivation was a statistically significant mediator of the relationship between math self-concept and academic achievement for Indian immigrant adolescents. The sum of the specific indirect effects (i.e., total indirect effects) was statistically significant for the relationship between math self-concept and overall school GPA, and for the relationship between math self-concept and math GPA (see Table 10). Pairwise contrasts of the indirect effects suggested that the specific indirect effect of math self-concept on overall school and math GPA through intrinsic motivation was larger than the specific indirect effects through extrinsic motivation and through amotivation (see Table 10).
Verbal self-concept and academic achievement. The specific indirect effect of verbal self-concept on overall school and math GPA through extrinsic motivation was statistically different from zero (see Table 11). The total indirect effects were statistically significant for the relationship between verbal self-concept and overall school GPA, and for the relationship between verbal self-concept and math GPA (see Table 11). Pairwise contrasts of the indirect effects indicated that the specific indirect effect of verbal self-concept on overall school GPA through intrinsic and extrinsic motivation was larger than the specific indirect effect through amotivation (see Table 11). Neither extrinsic motivation nor amotivation contributed to the indirect effect above and beyond extrinsic motivation.

Mediating Effect of Academic Motivation on the Relationship between Academic Self-Concept and Academic Achievement for Indian Adolescents

Bootstrapped tests of simultaneous multiple indirect effects were performed to determine the unique ability of each putative mediator to account for the effects of academic self-concepts—school, math, and verbal—on overall school, math, and English GPA for Indian adolescents (see Tables 12–14).

School self-concept and academic achievement. The specific indirect effect of school self-concept on overall school, math, and English GPA through the three academic motivation variables was not statistically different from zero, indicating that academic motivation was not a statistically significant mediator of the relationship between school self-concept and academic achievement for Indian adolescents. The total indirect effects were not statistically significant in multiple mediation models. Moreover, no statistically significant differences were found while contrasting specific indirect effects within each multiple mediation model (see Table 12). Neither
extrinsic motivation nor amotivation statistically significantly contributed to the overall multiple mediation models.

**Math self-concept and academic achievement.** The specific indirect effect of math self-concept on overall school GPA through intrinsic motivation was statistically different from zero, suggesting that intrinsic motivation was a statistically significant mediator of the relationship between math self-concept and overall school GPA for Indian adolescents (see Table 13). However, the total indirect effect of math self-concept on overall school, math, and English GPA through the three academic motivation variables was not statistically significant. Moreover, neither extrinsic motivation nor amotivation statistically significantly mediated the effect of math self-concept on overall school, math, and English GPA (see Table 13). As well, none of the pairwise contrasts was statistically significant.

**Verbal self-concept and academic achievement.** The specific indirect effect of verbal self-concept on overall school GPA through intrinsic motivation was statistically different from zero, indicating that intrinsic motivation was a statistically significant mediator of the relationship between verbal self-concept and overall school GPA for Indian adolescents (see Table 14). The total indirect effect of verbal self-concept on overall school, math, and English GPA through the three academic motivation variables was not statistically significant. Furthermore, extrinsic motivation and amotivation did not statistically significantly contribute to the overall models (see Table 14). None of the pairwise contrasts was statistically significant as well.

In summary, the descriptive discriminant analysis revealed that the Indian immigrant female and male adolescents in Canada tended to have higher English GPA
than their counterparts in India. Further, the Indian immigrant female adolescents in Canada reported significantly higher verbal self-concept than their peers in Canada and India. The Indian immigrant female adolescents tended to have higher overall school GPA than the Indian female and male adolescents. The Indian immigrant male adolescents also reported significantly higher overall school GPA than their Indian male counterparts. The mediational analyses suggested that both intrinsic and extrinsic motivation mediated some of the relationships between academic self-concepts and academic achievement for the Indian immigrant adolescents in Canada. In contrast, only intrinsic motivation mediated such relationships for the Indian adolescents in India. Amotivation, however, did not mediate the relationships between academic self-concepts and academic achievement for either the Indian immigrant or Indian adolescents.
Table 9

Mediation of the Effect of School Self-Concept on Academic Achievement Through Intrinsic Motivation, Extrinsic Motivation, and Amotivation for Indian Immigrant Adolescents

<table>
<thead>
<tr>
<th>Mediation Effect (SE)</th>
<th>Lower</th>
<th>Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model 1—DV: OGPA</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IM</td>
<td>.0534 (.03)*</td>
<td>.0150</td>
</tr>
<tr>
<td>EM</td>
<td>-.0428 (.02)*</td>
<td>-.0848</td>
</tr>
<tr>
<td>AMOT</td>
<td>.0094 (.01)</td>
<td>-.0125</td>
</tr>
<tr>
<td>Total effect</td>
<td>.0090 (.01)</td>
<td>-.0319</td>
</tr>
<tr>
<td><strong>Contrasts</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IM—EM</td>
<td>.0961 (.03)*</td>
<td>.0427</td>
</tr>
<tr>
<td>IM—AMOT</td>
<td>.0444 (.02)</td>
<td>-.0002</td>
</tr>
<tr>
<td>EM—AMOT</td>
<td>-.0517 (.02)*</td>
<td>-.1033</td>
</tr>
<tr>
<td><strong>Model 2—DV: MGPA</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IM</td>
<td>.0380 (.01)*</td>
<td>.0117</td>
</tr>
<tr>
<td>EM</td>
<td>-.0485 (.02)*</td>
<td>-.0918</td>
</tr>
<tr>
<td>AMOT</td>
<td>.0007 (.01)</td>
<td>-.0226</td>
</tr>
<tr>
<td>Total effect</td>
<td>-.0099 (.02)</td>
<td>-.0567</td>
</tr>
<tr>
<td><strong>Contrasts</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IM—EM</td>
<td>.0865 (.03)*</td>
<td>.0409</td>
</tr>
<tr>
<td>IM—AMOT</td>
<td>.0373 (.02)*</td>
<td>.0014</td>
</tr>
<tr>
<td>EM—AMOT</td>
<td>-.0492 (.02)*</td>
<td>-.1010</td>
</tr>
<tr>
<td><strong>Model 3—DV: EGPA</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IM</td>
<td>.0108 (.01)</td>
<td>-.0016</td>
</tr>
<tr>
<td>EM</td>
<td>-.0008 (.01)</td>
<td>-.0251</td>
</tr>
<tr>
<td>AMOT</td>
<td>-.0069 (.01)</td>
<td>-.0517</td>
</tr>
<tr>
<td>Total effect</td>
<td>.0168 (.02)</td>
<td>-.0147</td>
</tr>
<tr>
<td><strong>Contrasts</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IM—EM</td>
<td>.0116 (.02)</td>
<td>-.0152</td>
</tr>
<tr>
<td>IM—AMOT</td>
<td>.0039 (.01)</td>
<td>-.0266</td>
</tr>
<tr>
<td>EM—AMOT</td>
<td>-.0077 (.02)</td>
<td>-.0494</td>
</tr>
</tbody>
</table>

*Note. BC = Bias-corrected, IM = Intrinsic motivation, EM = Extrinsic motivation, AMOT = Amotivation, OGPA = Overall school GPA, MGPA = Math GPA, EGPA = English GPA. Confidence intervals containing zero are interpreted as being not significant at the .05 level.

*p < .05.
Table 10

**Mediation of the Effect of Math Self-Concept on Academic Achievement Through Intrinsic Motivation, Extrinsic Motivation, and Amotivation for Indian Immigrant Adolescents**

<table>
<thead>
<tr>
<th>Mediation Effect (SE)</th>
<th>Lower</th>
<th>Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model 1—DV: OGPA</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mediators</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IM</td>
<td>.0564 (.01)*</td>
<td>.0398</td>
</tr>
<tr>
<td>EM</td>
<td>.0030 (.00)</td>
<td>−.0032</td>
</tr>
<tr>
<td>AMOT</td>
<td>−.0002 (.00)</td>
<td>−.0044</td>
</tr>
<tr>
<td>Total effect</td>
<td>.0592 (.01)*</td>
<td>.0407</td>
</tr>
<tr>
<td>Contrasts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IM—EM</td>
<td>.0534 (.01)*</td>
<td>.0359</td>
</tr>
<tr>
<td>IM—AMOT</td>
<td>.0566 (.01)*</td>
<td>.0396</td>
</tr>
<tr>
<td>EM—AMOT</td>
<td>.0032 (.00)</td>
<td>−.0036</td>
</tr>
<tr>
<td><strong>Model 2—DV: MGPA</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mediators</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IM</td>
<td>.0401 (.01)*</td>
<td>.0209</td>
</tr>
<tr>
<td>EM</td>
<td>.0034 (.00)</td>
<td>−.0039</td>
</tr>
<tr>
<td>AMOT</td>
<td>.0000 (.00)</td>
<td>−.0028</td>
</tr>
<tr>
<td>Total effect</td>
<td>.0435 (.01)*</td>
<td>.0229</td>
</tr>
<tr>
<td>Contrasts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IM—EM</td>
<td>.0367 (.01)*</td>
<td>.0156</td>
</tr>
<tr>
<td>IM—AMOT</td>
<td>.0401 (.01)*</td>
<td>.0211</td>
</tr>
<tr>
<td>EM—AMOT</td>
<td>.0034 (.00)</td>
<td>−.0039</td>
</tr>
<tr>
<td><strong>Model 3—DV: EGPA</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mediators</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IM</td>
<td>.0114 (.01)</td>
<td>−.0048</td>
</tr>
<tr>
<td>EM</td>
<td>.0001 (.00)</td>
<td>−.0019</td>
</tr>
<tr>
<td>AMOT</td>
<td>−.0001 (.00)</td>
<td>−.0051</td>
</tr>
<tr>
<td>Total effect</td>
<td>.0113 (.01)</td>
<td>−.0053</td>
</tr>
<tr>
<td>Contrasts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IM—EM</td>
<td>.0113 (.01)</td>
<td>−.0046</td>
</tr>
<tr>
<td>IM—AMOT</td>
<td>.0115 (.01)</td>
<td>−.0050</td>
</tr>
<tr>
<td>EM—AMOT</td>
<td>.0002 (.00)</td>
<td>−.0029</td>
</tr>
</tbody>
</table>

*Note.* BC = Bias-corrected, IM = Intrinsic motivation, EM = Extrinsic motivation, AMOT = Amotivation, OGPA = Overall school GPA, MGPA = Math GPA, EGPA = English GPA. Confidence intervals containing zero are interpreted as being not significant at the .05 level.

*p < .05.
Table 11

*Mediation of the Effect of Verbal Self-Concept on Academic Achievement Through Intrinsic Motivation, Extrinsic Motivation, and Amotivation for Indian Immigrant Adolescents*

<table>
<thead>
<tr>
<th>Model</th>
<th>DV</th>
<th>Mediators</th>
<th>Mediation Effect (SE)</th>
<th>Lower</th>
<th>Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>BC 95% CI</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model 1—DV: OGPA</td>
<td></td>
<td>IM</td>
<td>.0316 (.02)</td>
<td>−.0011</td>
<td>.0704</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EM</td>
<td>.0208 (.01)*</td>
<td>.0019</td>
<td>.0529</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AMOT</td>
<td>−.0043 (.01)</td>
<td>−.0235</td>
<td>.0042</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total effect</td>
<td>.0481 (.02)*</td>
<td>.0129</td>
<td>.0905</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Contrasts</td>
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<td>.0019</td>
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<td>AMOT</td>
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<td>Contrasts</td>
<td>IM—EM</td>
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<td>−.0503</td>
</tr>
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<td>IM—AMOT</td>
<td>.0228 (.02)</td>
<td>−.0028</td>
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<td></td>
<td>EM—AMOT</td>
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<td>Model 3—DV: EGPA</td>
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<td></td>
<td>EM</td>
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<td>−.0104</td>
<td>.0147</td>
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<td>AMOT</td>
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<td>−.0246</td>
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<td></td>
<td>EM—AMOT</td>
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<td>−.0118</td>
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</table>

Note. BC = Bias-corrected, IM = Intrinsic motivation, EM = Extrinsic motivation, AMOT = Amotivation, OGPA = Overall school GPA, MGPA = Math GPA, EGPA = English GPA. Confidence intervals containing zero are interpreted as being not significant at the .05 level.

*p < .05.
Table 12

Mediation of the Effect of School Self-Concept on Academic Achievement Through Intrinsic Motivation, Extrinsic Motivation, and Amotivation for Indian Adolescents

<table>
<thead>
<tr>
<th>Model 1—DV: OGPA</th>
<th>Mediation Effect (SE)</th>
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<td>-.0005 (.01)</td>
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<td>.0177</td>
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<td>IM—AMOT</td>
<td>.0096 (.02)</td>
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<tr>
<td>EM—AMOT</td>
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<table>
<thead>
<tr>
<th>Model 2—DV: MGPA</th>
<th>Mediation Effect (SE)</th>
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<td></td>
<td></td>
</tr>
<tr>
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<td>.0547</td>
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<td>EM</td>
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<td></td>
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<td>EM—AMOT</td>
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<td>.0560</td>
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<table>
<thead>
<tr>
<th>Model 3—DV: EGPA</th>
<th>Mediation Effect (SE)</th>
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<tr>
<td>Mediators</td>
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</tr>
<tr>
<td>IM</td>
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</tr>
<tr>
<td>EM</td>
<td>-.0001 (.01)</td>
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<td>.0207</td>
</tr>
<tr>
<td>AMOT</td>
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<td>Contrasts</td>
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<tr>
<td>IM—EM</td>
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<td>.0231</td>
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<tr>
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<td>EM—AMOT</td>
<td>-.0045 (.03)</td>
<td>-.0475</td>
<td>.0331</td>
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</table>

Note. BC = Bias-corrected, IM = Intrinsic motivation, EM = Extrinsic motivation, AMOT = Amotivation, OGPA = Overall school GPA, MGPA = Math GPA, EGPA = English GPA. Confidence intervals containing zero are interpreted as being not significant at the .05 level.

*p < .05.
Table 13

*Mediation of the Effect of Math Self-Concept on Academic Achievement Through Intrinsic Motivation, Extrinsic Motivation, and Amotivation for Indian Adolescents*

<table>
<thead>
<tr>
<th>BC 95% CI</th>
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<tr>
<td>Model 1—DV: OGPA</td>
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<tr>
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<tr>
<td></td>
<td>EM</td>
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<tr>
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<td>AMOT</td>
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<tr>
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<td>Total effect</td>
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<tr>
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<td>IM—AMOT</td>
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<td>EM—AMOT</td>
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<tr>
<td>Mediators</td>
<td>IM</td>
<td>.0102 (.01)</td>
<td>–.0045</td>
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<td>EM</td>
<td>–.0039 (.01)</td>
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<td>AMOT</td>
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<tr>
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<td>IM—AMOT</td>
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<td>Model 3—DV: EGPA</td>
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<td></td>
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<td>EM</td>
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<tr>
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<td>EM—AMOT</td>
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</tbody>
</table>

*Note. BC = Bias-corrected, IM = Intrinsic motivation, EM = Extrinsic motivation, AMOT = Amotivation, OGPA = Overall school GPA, MGPA = Math GPA, EGPA = English GPA. Confidence intervals containing zero are interpreted as being not significant at the .05 level.*

*p < .05.
Table 14

*Mediation of the Effect of Verbal Self-Concept on Academic Achievement Through Intrinsic Motivation, Extrinsic Motivation, and Amotivation for Indian Adolescents*

<table>
<thead>
<tr>
<th>Model 1—DV: OGPA</th>
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</tr>
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<table>
<thead>
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</tr>
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<td>EM</td>
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<td>AMOT</td>
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<td>.0279</td>
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</table>

*Note. BC = Bias-corrected, IM = Intrinsic motivation, EM = Extrinsic motivation, AMOT = Amotivation, OGPA = Overall school GPA, MGPA = Math GPA, EGPA = English GPA. Confidence intervals containing zero are interpreted as being not significant at the .05 level.*

*p < .05.
CHAPTER 5: QUALITATIVE FINDINGS

This chapter presents the findings based on the eight focus group interviews conducted in Canada and India during the later phase of data collection as a follow-up to the primary research method, surveys. Specifically, the chapter addresses the following research question: What are the perspectives, beliefs, and recommendations of Indian immigrant adolescents in Canada and Indian adolescents in India in regard to instructional practices and classroom environments that they believe affect their academic engagement and academic achievement?

Despite adequate planning and preparation for focus group sessions, I had to face two major challenges while conducting focus group interviews among Indian immigrant adolescents in Canada and among Indian adolescents in India. First, although the facilitator/moderator of focus group discussions was a member of the cultural or community group of the focus group participants, the participants appeared to be generally reluctant to disclose and share their views, feelings, and experiences. Second, a few participants dominated the discussions, which, in turn, discouraged less articulate and less confident participants from actively participating in focus group discussions. These two major challenges limited the richness of qualitative data and thereby affected the subsequent analysis and interpretation of focus group data.

Thematic analysis of focus group data identified two overarching themes—academic engagement and academic environments (see Figure 4).

**Academic Engagement**

**Indian Immigrant Adolescents**

When the Indian immigrant adolescents in Canada were asked whether or not they cared about school and academics, each one of them unanimously said, “Yes, I...
do care about school and academics.” However, the reasons for caring about school and academics varied from person to person. Although the responses varied widely, most of the responses of Indian immigrant adolescents indicated that they had extrinsically motivated reasons—external regulation, introjected regulation, and identified regulation—to care about school and academics. One of the Indian immigrant adolescents, Pankaj (FG #2), remarked, “I care about school and academics because I need education to get a good job.” Concurring with Pankaj, Shonali (FG #2) said, “Caring about school and academics is important if you want to be successful in the future. Education is the key to a successful future. To reap the rewards, we have to do well at school.”

Raima (FG #1) cared about school and academics because “in my future job, I want to do something that I really enjoy. So school is going to give me the opportunity to discover what I really like, and what I want to do for the rest of my life.” Himanshu (FG #3), on the other hand, cared about school and academics “in order to get into a good university, and to secure scholarships.” Vishal’s (FG #1) primary motivation for caring about school and academics was: “It not only helps me but also people that I care for. I can be there to help them out at their time of need as well.”

The Indian immigrant adolescents also spoke of the importance of getting good academic grades in high school. Like Himanshu (FG #3), many of the Indian immigrant adolescents emphatically stated the sole motivation for getting good academic grades in high school was “to secure admission in premier institutions of higher learning.” Sachin (FG #4) said:
I want to get good grades because I don’t want to go to a university that I don’t want to go to. I want to take subjects that I’m interested in; not just work at any place that I don’t want to. So that’s why I want to get good grades.

As well, some of the Indian immigrant adolescents felt that it was important for them to do better than others. “It is extremely important for me to do better than others,” Manish (FG #1) said. Malini (FG #3) described the reasons behind the need for performing better than others:

I think it’s important for me to do better than others because when you apply for universities they look for the top students in high schools. So if you want to get into good universities, you do have to compare yourself with the better students.

Even though the majority of Indian immigrant adolescents cared about school and academics for extrinsic rewards, one of the Indian immigrant adolescents had an intrinsically motivated reason—intrinsic motivation to know—to care about school and academics. Ishita (FG #4) described her reasons for caring about school and academics this way:

I actually do care about school and academics, and the reason for that is that, personally, it increases knowledge throughout the world. As time goes on, you learn about new things, and in order to learn new things you need to have the knowledge of old things. If you want to correct something, theory for example, you should have previous knowledge. That’s why I find school and academics important.

Like Ishita, a few of the Indian immigrant adolescents wanted to get good grades in high school because they believed that students who were getting good academic grades were acquiring knowledge. Natasha (FG #2) remarked, “You want to get good grades because good grades mean that you have knowledge about what’s happening around you.” Hemant (FG #2) agreed with Natasha, “I want to get good grades so I can have the knowledge.”
When asked about their interest in academics and learning in high school, the majority of Indian immigrant adolescents disclosed their unflinching interest in academics and learning: “I am more interested in school.” Gayathri (FG #3) explained, “When you are in high school, you are closer to the future. You have to take things seriously, become more hard working and interested.” Pankaj (FG #3) added, “I have more interest because I know that I have to work hard.” Pooja (FG #1) was more interested in school “because I like the different contents now.” Mehga (FG #4) shared her reasons for maintaining interest in academics and learning: “I have always been quite serious about academics, and I have always tried to excel in academics. Obviously, when you get into higher grades, you have better sense of responsibility. You aim for university, and you prepare for it.”

**Indian Adolescents**

Similar to the Indian immigrant adolescents in Canada, the Indian adolescents in India also cared about school and academics. Extrinsic motivation—external regulation, introjected regulation, and identified regulation—was one of the major reasons for valuing school and academics among Indian adolescents. When asked about school and academics, Satish (FG #4) responded, “Yes, I do care about school and academics because without school and academics I don’t think I will have a good future. With good schooling and academics, I could go for higher studies; I could get a better job.” Kajol (FG #1) was also much concerned and serious about school and academics because “I do care about my career, job opportunities, and admission in good colleges.” Agreeing with Kajol, Divya (FG #1) said, “I feel that school and academics are very important in my life, and it will play a very important role in my future.”

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Although the majority of Indian adolescents had extrinsic reasons to value school and academics, a few of the Indian adolescents valued school and academics for intrinsic reasons. More specifically, some of the Indian adolescents cared about school and academics because they had an intrinsic motivation to know. Manjit (FG #3) stated, “To me, education is more important than anything. I will continue my education till the end of my life.” Vijay (FG #2), who also aspired to be a life-long learner, remarked:

Of course, I care about school and academics. I should get good education in school. It’s compulsory for me because I know that knowledge is power. An educated person can lead a society to great success. If a person is not educated, he may create many problems, and he might not know the things happening. So if you want to know the world and science, what is the development in science in each country, we have to have knowledge and education.

Not surprisingly, the Indian adolescents’ motivation for securing good academic grades in high school was not different from the motivation of their Indian immigrant peers in Canada. The Indian adolescents were extrinsically motivated to get good academic grades in high school. Specifically, many of the Indian adolescents were striving hard to receive good academic grades to secure admission in a college of their choice. “I should get good marks so that I could get into good colleges,” Rahul (FG #1) said. Juana (FG #3) felt that “grades are definitely important. High school is a turning point. If I get good marks, I will get into a good college.” Padma (FG #4), on the other hand, was very much concerned about securing good academic grades in high school because “if I don’t get good marks, my parents are going to kill me.” However, Rasitha (FG #4) disagreed with her peers:

Grades are mostly based on theoretical knowledge. In fact, that is helpful only for the medical and engineering entrance exams. It has no practical value. I should have practical as well as theoretical knowledge so that I could make it more useful in whatever I go.
Abijith (FG #2), unlike most of his counterparts in India, believed that academic grades were not everything:

Getting good marks would be the happiest thing. But a good mark is not what education is all about. I need to study what the subject matter is. That’s what is important. It’s not just the marks people are going to look at; they are going to look at what knowledge you have. So more than getting good marks, it’s the knowledge that I acquire from school is more important.

Frustrated with the way others viewed one’s academic performance in school, Kajol (FG #1) resented:

We should not care about a person by looking at his or her academic performance. Most people are judging the person by looking at his or her academic performance. We should see how creative and innovative ideas he or she has. That’s more important than looking at a person’s grades in school.

The Indian adolescents also reflected on the importance of doing better than others at school. Sanjay (FG #3) found that “everyone wants to be first in the class, and tries. That gives you recognition. We can become famous, and teacher’s pet, like some people call it.” Like their Indian immigrant counterparts in Canada, the Indian adolescents in India were striving to perform better than others at school for extrinsic rewards. Padma (FG #2) explained, “We need to stand out with our marks. The competition is higher now than it used to be in lower grades. Grades determine whether you are good or bad. They judge us with it.”

Despite the importance they accorded to school and academics, many of the Indian adolescents in India, unlike their Indian immigrant peers in Canada, did not find school and school work interesting. Most of the Indian adolescents in India had become bored with academics. Namitha (FG #3) said, “I feel less interested now, and was more interested while studying in lower classes.” Manjit (FG #3) stated, “I have become less interested in school and school work.” Avinash (FG #1) lamented, “Our syllabus is getting tougher as the grade increases. So in lower classes we had to study
very little; but now we have to study a lot. I have lost my interest.” In line with Manjit’s and Avinash’s thinking, Juana (FG #3) explained the reasons for losing interest in school and school work:

The portions have increased four times and the interest is definitely going down. It has definitely decreased because the duty in the 12th grade is getting good marks. It is just a duty for us. We have to do it.

In short, the majority of Indian immigrant adolescents in Canada and Indian adolescents in India cared about school and academics for extrinsically motivated reasons. Both sets of responses pertaining to engagement in academics and interest in learning clearly suggest that the Indian immigrant adolescents in Canada and the Indian adolescents in India are predominantly guided by the three variants of extrinsic motivation—external regulation, introjected regulation, and identified regulation. However, there were a few exceptions among the Indian immigrant adolescents in Canada and among the Indian adolescents in India alike. A few of these adolescents were serious about school and academics for intrinsically motivated reasons, especially for intrinsic motivation to know.

**Academic Environments**

**Indian Immigrant Adolescents**

The Indian immigrant adolescents in Canada were asked questions revolving around their classroom learning environments during the focus group sessions to gauge their classroom teachers’ motivational styles. The focus group discussions indicated that the Indian immigrant adolescents’ classroom learning environments were not seen as conducive to nurture and enrich their inner motivational resources, to
maintain their intrinsic motivation, and to facilitate internalization. Instead, the classroom learning environments appeared to be both demanding and controlling.

When the Indian immigrant adolescents in Canada were asked whether or not they had the freedom to choose their own assignments and to work at their own pace, the majority of them indicated that they did not have opportunities to choose what to do. Pankaj (FG #2) lamented, “We don’t get a chance to choose our assignments. Our teachers give us our assignments. It’s up to them. They decide the assignments.” Rohan (FG #4) said, “We cannot choose our assignments. Apart from choosing the questions that you want to answer first, we don’t get any freedom in that.”

Furthermore, the classroom learning environments interfered with the Indian immigrant adolescents’ preferred pace of learning. “I don’t get to work at my own pace. I’m usually pressured,” Hemant (FG #2) complained. Karan (FG #3) lamented, “I wish I had more freedom.” The responses of Indian immigrant adolescents suggested that the classroom learning environment was not instrumental in fostering an internal locus of causality and in promoting a sense of volition. The Indian immigrant adolescents felt that they were pursuing the goals of their classroom teachers rather than their own goals. Vishal (FG #1) remarked:

We don’t really get to choose our own assignments. We have to do it. They just give it to us. Let’s say, I have to do both biology and English together. I have to choose what I have to do first or second. This is where you have to choose first: which one is due first, which one is more important. That is the choice they give you. In assignments, they let you do your own observations. The topic would be the same as the rest of the class.

The Indian immigrant adolescents also seemed to be unhappy with their classroom teachers’ controlling instructional behaviour—monopolizing the learning material. Pankaj (FG #2) suggested, “Fifty percent of the course material should be chosen by the teachers, and fifty percent should be chosen by the students.”
Figure 4. A thematic model of academic engagement among Indian immigrant and Indian adolescents.
He explained the reason: “I’ll be more motivated and more interested because that’s the thing I want to learn.” Megha (FG #4) said, “Students should be given some kind of freedom so that they enjoy whatever they are learning. So it really stays with them in the long run.”

The students strongly felt that they should be involved in making decisions about what they learned. Niraj (FG #1) suggested, “The teacher can ask the class what is interesting.” However, he added, “Ultimately, it is the teachers’ decision what they want to choose. But the class should have a say.” Naina (FG #3) asserted, “We should be involved in making decisions because we get more choice in what we do.” Himanshu (FG #3) believed that students should be involved in making decisions about what they learn “because if you do not like what you are learning, you won’t pay much attention.” Pankaj (FG #2) recommended, “Students should be involved in choosing the learning materials, and in deciding the learning objectives of the course.”

Finally, many of the Indian immigrant adolescents were concerned about the conspicuous lack of teacher-student interactions during classroom instruction. “They should interact,” Malini (FG #3) suggested. Like her peers, Malini wanted to have many opportunities to talk to the classroom teachers during instruction because “if they interact with you, getting good grades is like pretty easy.” Rohan (FG #4) said, “I think, teachers should be really engaged with the students; be enthusiastic, and have them interested in what they are doing.”

**Indian Adolescents**

Compared with the classroom learning environments of Indian immigrant adolescents in Canada, the academic environments of Indian adolescents in India were not too different. The focus group discussions of Indian adolescents in India indicated
that the classroom learning environments of Indian adolescents were not perceived as conducive to identify, nurture, and strengthen their inner motivational resources. The instructional behaviours of classroom teachers in India were apparently controlling in nature rather than autonomy-supportive.

Most of the Indian adolescents in India complained that they did not have the freedom to choose their own assignments. Namitha (FG #3) lamented:

Every day we get many assignments. It’s compulsory; we must do it. So we have no freedom of choosing our assignments. If teachers give us assignments, we have to do it. Otherwise, some sort of punishment; something will be given to us. So it’s out of compulsion we are doing it.

Vijay (FG #2) said, “I don’t think we have the freedom to choose our assignments. What teachers are giving, we are doing that.” The Indian adolescents experienced controlling classroom conditions, characterized by an absence of choice. Frustrated with the lack of opportunities to choose his own assignments, Govind (FG #4) complained, “Teachers are forcing us to take up assignments.” Students were obliged to perform academic work, which was not valued for its own sake or for the ends it provided.

Furthermore, like their counterparts in Canada, the Indian adolescents were not allowed to work at their own pace. Bhaskar (FG #1) said, “I like to work at my own pace. But we are forced to work on what the teachers give; and we are forced to do it.” The Indian adolescents experienced more pressure and tension during learning because their classroom teachers were not autonomy-supportive. Alok (FG #3) remarked, “We do not have any choice about that; we are basically forced to do the work. We don’t have our own time. So we are pressurized in a way.”

The Indian adolescents also felt the need to get involved in making decisions about what they learned. Dileep (FG #2) said, “We should be able to take our own
decisions.” Malini (FG #1) asserted, “It is necessary to be involved in decisions concerning our learning.” Alok (FG #3), however, had a reason: “We should be involved because we are the students who are learning.” However, the Indian adolescents were not involved in decisions pertaining to their own learning. Sanjay (FG #3) said, “The teachers are like strangers. They come to class, take class, and leave. They say, if you want you study.”

These adolescents had infrequent interactions with their classroom teachers, and were discouraged from voicing their own opinions. As Dileep (FG #2) complained, “Teachers just come, take class, and go. Interaction between teachers and students is less. They just teach. They are in a hurry; always finishing up the portions.” Rahul (FG #1) was worried that their teachers were least concerned “whether we understand or not” because “they just want to finish off the portions.” In addition to the disappointment of losing interest in learning, the Indian adolescents were resentful at their classroom teachers’ instructional behaviour. Namitha (FG #3) said, “They have to change.” Vijay (FG #2) stated, “I think teachers should be more friendly and interactive to the students. They should make students feel more involved.” Malavika (FG #2) had a recommendation: “They should know the scientific way of teaching. They should know the art of communication and the art of teaching.”

The classroom learning environments in India were not seen as supportive enough for Indian adolescents to experience warmth and empathy. The Indian adolescents did not receive informative feedback or positive encouragement. Divya (FG #4) said, “They should motivate the students.” Many of the Indian adolescents
agreed that their classroom teachers should be supportive, encouraging, and friendly.

Malini (FG #1) said:

Teachers should always be morally supportive to the students. They should always encourage the students rather than telling them that you’re good for nothing or you can’t do it. They should not see the world from the negative point of view. They should always see the positive in the student, and what he can do.

Rasitha (FG #4) suggested, “Teachers, they should be encouraging. They should be patient.” Radha (FG #1) remarked:

The teachers must be friendlier. Once they know us well, they know what we like. They’ll know how to make it interesting. Then, we will be interested in the subject. If we don’t like our teacher, then we won’t like the subject. We won’t be listening to the teachers. Once we start liking our teachers, it will automatically be interesting.

In summary, the Indian immigrant adolescents in Canada and the Indian adolescents in India perceived their classroom learning environments as controlling and demanding in nature. According to the Indian immigrant and Indian adolescents’ perceptions, the classroom teachers in Canada and India seemed to adopt a controlling motivating style toward students during classroom instruction rather than an autonomy-supportive motivating style. The Indian immigrant adolescents in Canada and Indian adolescents in India perceived their classroom teachers as not responsive, not supportive, and not flexible. Thus, according to the Indian immigrant and Indian adolescents, the classroom teachers motivated their students through pressure rather than through interest. Hence both the Indian immigrant adolescents in Canada and the Indian adolescents in India appeared to engage in learning activities without the support of an internal locus, volition, and perceived choice. The academic engagement of Indian immigrant adolescents in Canada and Indian adolescents in
India, therefore, lacked the motivational foundation of personal interest, valuing, and task involvement.
CHAPTER 6: DISCUSSION

The purpose of the present study was to: 1) examine the relationships among academic self-concept, academic motivation, and academic achievement for Indian immigrant adolescents in Canada in comparison to their peers in India; and 2) explore the perspectives, beliefs, and recommendations of Indian immigrant and Indian adolescents in Canada and India in regard to instructional practices and classroom environments that might affect their academic self-concept, academic motivation, and academic achievement. The following three research questions addressed the purpose of the study:

1. To what extent do Indian immigrant adolescents in Canada differ from their counterparts in India in terms of their self-reported academic self-concept, academic motivation, and academic achievement?

2. To what extent does academic motivation mediate the relationship between academic self-concept and academic achievement for Indian immigrant and Indian adolescents?

3. What are the perspectives, beliefs, and recommendations of Indian immigrant adolescents in Canada and Indian adolescents in India in regard to instructional practices and classroom environments that they believe affect their academic engagement and academic achievement?

This chapter builds on the results reported in the previous two chapters to provide a more in-depth discussion of both quantitative and qualitative findings. The chapter has five sections. The first section discusses the results presented in the previous two chapters in terms of the three research questions. The second section presents a discussion of overarching ideas. The third section explores the implications
of the study for practice and policy. The fourth section describes the limitations of the study and implications for future research. The chapter concludes with final thoughts.

Research Questions

Research Question # 1. To what extent do Indian immigrant adolescents in Canada differ from their counterparts in India in terms of their self-reported academic self-concept, academic motivation, and academic achievement?

When non-standardized GPA scores were used in DDA, three variables—English GPA, overall school GPA, and verbal self-concept—were associated with group separation in DDA. The results of DDA revealed that both the Indian immigrant female and male adolescents in Canada had significantly higher English GPA than their counterparts in India. However, inconsistent with prior research (e.g., Nowell & Hedges, 1998; Rinn, McQueen, Clark, & Rumsey, 2008; Skaalvik & Rankin, 1990), no gender differences were found in each group with regard to adolescents’ achievement in English. Specifically, no significant differences were found between Indian immigrant female and Indian immigrant male adolescents in Canada, and between Indian female and Indian male adolescents in India in terms of their English GPA. This finding suggests that gender stereotypes about verbal abilities (favouring females; see Skaalvik & Rankin, 1990) may not influence the Indian immigrant and Indian adolescents’ achievement in English.

The differences observed between Indian immigrant adolescents in Canada and Indian adolescents in India in terms of their overall school and English GPAs may not be an accurate reflection of gaps in academic achievement between these adolescents, but rather may simply be artefacts of the assessment standards and
methods. The student assessment standards and methods used in Canada may not be the same as the student assessment standards and methods employed in India. As a result, average student achievement and school-average achievement may vary between Canada and India. However, such variations in academic achievement may not be an indication of inequalities in academic achievement between Indian immigrant adolescents in Canada and Indian adolescents in India. Moreover, because GPA is a combination of assessment standards and actual achievement, it has been found to be problematic in properly assessing and comparing the academic achievement of students cross-nationally (see Soh, 2010). If the differences between the Indian immigrant and Indian adolescents with respect to overall school and English GPAs are not a mere reflection of variations in student assessment standards and methods between the two countries, the following factors may offer possible explanations for variability in academic achievement.

Although differences in individual student characteristics may cause variation in English language learning outcomes (see August & Hakuta, 2005), social context factors, such as parental education, parental English language proficiency, and exposure to English at school and in informal social situations, have been found to have an important impact on English language proficiency of immigrant adolescent students (see Carhill, Suárez-Orozco, & Páez, 2008). Because more socio-economically advantaged Indians immigrate to Canada (Vohra & Adair, 2000), and these economic class immigrants are selected for permanent residence in Canada on the basis of a set of stringent requirements (see Citizenship and Immigration Canada, 2011), the Indian immigrant parents in Canada are more likely to have higher levels of education and English language proficiency than most of their counterparts in
India. Indeed, parents’ education plays an important role in the development of their children’s academic English proficiency—the ability to use English in academic contexts (see Hakuta, Butler, & Witt, 2000). Similarly, the level of parental English language proficiency is also associated with children’s academic English proficiency (Páez, 2001). Studies have demonstrated that highly educated parents are more likely to expose their children to academically-oriented English vocabulary (e.g., Goldenberg, Rueda, & August, 2006), and to provide language environments at home that are very similar to the language environments of school (e.g., Dickinson & Tabors, 2001).

Furthermore, the amount of time that immigrant adolescent students spend speaking English in informal social situations with English-speaking peers and adults has been found to be predictive of immigrant adolescent students’ English language proficiency (e.g., Carhill et al., 2008). Compared to their peers in India, the Indian immigrant adolescents in Canada have ample opportunities to socialize and interact with English-speaking peers and adults. Such frequent opportunities for socialization and interaction may have also helped the Indian immigrant adolescents in Canada to hone their English language skills, which in turn improved their achievement in English.

As regards the verbal self-concepts of Indian immigrant and Indian adolescents, the Indian immigrant female adolescents had significantly higher verbal self-concept than the other three groups—Indian immigrant male, Indian female, and Indian male adolescents. No significant differences, however, were found among these three groups in terms of their verbal self-concepts. Even though the Indian immigrant females and males were achieving more or less at the same rates in English
(no gender differences were found), the Indian immigrant males still perceived their English language skills/abilities as lower than the Indian immigrant females. Thus the significantly higher verbal self-concept of Indian immigrant female adolescents may also help to explain one of the reasons for their significantly higher English GPA as compared to their male and female counterparts in India. Consistent with prior research (e.g., Areepattamannil & Freeman, 2008), it suggests that students who have higher verbal self-concept tend to have higher English GPA, and/or students who have higher English GPA tend to have higher verbal self-concept.

Moreover, studies have documented that female students generally report higher verbal self-concept scores than do male students (e.g., Skaalvik & Rankin, 1990, 1994; Skaalvik & Skaalvik, 2004). However, unlike the Indian immigrant female adolescents, the Indian female adolescents in the study did not report significantly higher verbal self-concept than their male counterparts in Canada and India. The unfavourable social context factors may have worked against the advantage of Indian female adolescents in this regard.

The DDA indicated as well that the Indian immigrant female adolescents had significantly higher overall school GPA than the Indian female and male adolescents. Further, the Indian immigrant male adolescents had significantly higher overall school GPA than their Indian male counterparts. No significant differences were found between Indian immigrant female and Indian immigrant male adolescents in Canada, and between Indian female and Indian male adolescents in India in terms of their overall school GPA.

Since the medium of instruction in participating schools was English, adolescent students’ academic English proficiency may impact their overall school
achievement. There is growing evidence that limited English proficiency is associated with lower school GPAs (e.g., Ruiz-de-Velasco & Fix, 2000; Suárez-Orozco & Suárez-Orozco, 2001). The Indian adolescents’ low levels of academic English language proficiency may have hindered their full participation in academic content, and in turn lowered their subsequent academic achievement.

In addition to these adolescents’ academic English language proficiency, parental socio-economic status (SES) may have influenced the overall school GPA of both Indian immigrant and Indian adolescents. Meta-analyses indicate that students with higher SES backgrounds tend to outperform their peers from less privileged backgrounds (e.g., Sirin, 2005). Because the Indian immigrant adolescents in Canada come from comparatively better socio-economic backgrounds (Agrawal & Lovell, 2010), their parents are more likely to actively involve in the education of their children, and to provide their children with a wide range of educational resources and opportunities.

Yet another related factor that might have influenced the overall school GPA of Indian immigrant adolescents would be parental expectations and aspirations for their children’s educational attainment. Numerous studies suggest that high parental expectations and aspirations for their children’s education may influence children’s academic success (see Yamamoto & Holloway, 2010, for a review). Parental expectations and aspirations for their children’s education are found to be higher among immigrant families in general and among Asian immigrant families in particular (Adshade, 2011). High parental expectations may help to convey to children the value their parents place on achievement, thereby boosting children’s academic motivation and academic self-efficacy, fostering parental involvement in
children’s academic and school activities, and influencing teachers’ perceptions and evaluations of the child (Yamamoto & Holloway, 2010). All of these factors would lead to high academic achievement among school children.

Finally, variables such as math GPA, math self-concept, school self-concept, intrinsic motivation, extrinsic motivation, and amotivation were not associated with group separation in DDA. These findings suggest that there are no glaring differences between the Indian immigrant adolescents in Canada and the Indian adolescents in India in terms of their math GPA, academic self-concepts (except verbal self-concept), and academic motivation. Thus the academic trajectories of the Indian immigrant adolescents in Canada and the Indian adolescents in India are not markedly different from each other, except that the Indian immigrant adolescents’ opportunities to live and study in an English-speaking country likely worked to their advantage with respect to their English and overall school GPAs and verbal self-concept.

A possible explanation for the lack of differences between the Indian immigrant adolescents in Canada and the Indian adolescents in India with respect to their math GPA, math self-concept, school self-concept, and academic motivation would be the cultural homogeneity of these adolescent students. Both the Indian immigrant and the Indian adolescents come from a moderately collectivist culture (Supple, Ghazarian, Peterson, & Bush, 2009). While cultural heterogeneity of adolescents may cause differences in academic self-concept, academic motivation, and academic achievement among adolescent students belonging to varied racial/ethnic backgrounds (see Areepattamannil & Freeman, 2008; Chiu & Chow, 2010), cultural homogeneity of adolescents may not create such differences among adolescent students (see Chiu & Chow, 2010).
Research Question # 2. To what extent does academic motivation mediate the relationship between academic self-concept and academic achievement for Indian immigrant and Indian adolescents?

While both intrinsic and extrinsic motivation mediated some of the relationships between academic self-concepts and academic achievement for the Indian immigrant adolescents in Canada, only intrinsic motivation mediated such relationships for the Indian adolescents in India. However, amotivation did not mediate the relationships between academic self-concepts and academic achievement for either the Indian immigrant or Indian adolescents.

The mediational role of intrinsic motivation in the association between academic self-concepts and academic achievement is in congruence with the findings of Guay, Ratelle, et al. (2010). Guay and colleagues tested the relationships among academic self-concept, autonomous motivation, and academic achievement among 925 French-speaking adolescent students in Quebec, Canada. The authors found support for the mediational role of autonomous motivation in the relations between academic self-concept and academic achievement. The findings of the present study with respect to the mediational role of intrinsic motivation suggest that the Indian immigrant and Indian adolescents who perceive themselves as academically competent may obtain higher grades in school because their academic self-concepts help them to be more intrinsically motivated toward school and academics.

The findings reveal the critical role that intrinsic motivation—an autonomous form of motivation—plays in improving the academic achievement of both Indian immigrant and Indian adolescents. Hence this finding is also consistent with SDT’s proposition. According to SDT, individuals with high perceived competence or
positive academic self-concepts are more likely to have high autonomous or intrinsic motivation toward their activity because they are acting with an internal perceived locus of causality (Deci & Ryan, 2002).

However, extrinsic motivation as well mediated the relationships between academic self-concepts and academic achievement for Indian immigrant adolescents in Canada. The Indian immigrant adolescents in Canada who had higher positive academic self-concepts also tended to be extrinsically motivated, and reported higher GPAs. This finding suggests the crucial role that extrinsic motivation plays in the association between academic self-concepts and academic achievement among Indian immigrant adolescents in Canada. Furthermore, in line with SDT, it suggests that autonomous or intrinsic motivation and controlled or extrinsic motivation may not be necessarily opposite dimensions, and individuals can potentially report both motivations for a given academic domain (Ryan & Connell, 1989). Lepper et al. (2005) postulate that intrinsic and extrinsic motivation may be largely orthogonal dimensions of motivation in school, and developing both intrinsic and extrinsic motives can be adaptive for students.

Although the Indian immigrant adolescents in Canada and the Indian adolescents in India are culturally homogeneous groups, extrinsic motivation, however, did not mediate the relations between academic self-concept and academic achievement for the Indian adolescents in India. The Indian adolescents in India who had higher perceived academic competence and GPAs tended not to be extrinsically motivated. This finding indicates that these adolescents may not be acting with an external perceived locus of causality, and their high perceived academic competence
might be promoting their autonomous or intrinsic motivation toward school and academics.

Finally, the mediational analyses revealed that amotivation did not mediate the association between academic self-concepts and academic achievement among Indian immigrant and Indian adolescents. These adolescents’ positive academic self-concepts might be acting as a protective factor, thereby providing a potentially important buffer against the detrimental effects of academic amotivation. For example, Eckert, Schilling, and Stiensmeier-Pelster (2006) have documented that students’ positive academic self-concepts are particularly important in buffering the potentially negative influences of failure on subsequent performance.

Research Question # 3. What are the perspectives, beliefs, and recommendations of Indian immigrant adolescents in Canada and Indian adolescents in India in regard to instructional practices and classroom environments that they believe affect their academic engagement and academic achievement?

The focus group discussions with the Indian immigrant adolescents in Canada and the Indian adolescents in India suggested that they cared about school and academics: “Yes, I do care about school and academics.” However, they cared about school and academics primarily for extrinsically motivated reasons: “Caring about school and academics is important if you want to be successful in the future. Education is the key to a successful future. To reap the rewards, we have to do well at school.” Most of the Indian immigrant adolescents in Canada and the Indian adolescents in India had the three variants of extrinsic motivation—external regulation (e.g., “To get into a good university, and to secure scholarships.”), introjected regulation (e.g., “Grades determine whether you are good or bad. They
judge us with it.”), and identified regulation (e.g., “I feel that school and academics are very important in my life, and it will play a very important role in my future.”). Only a very few Indian immigrant and Indian adolescents cared about school and academics for intrinsically motivated reasons—intrinsic motivation to know: “More than getting good marks, it’s the knowledge that I acquire from school is more important.”

The focus group interviews with the Indian immigrant adolescents in Canada and the Indian adolescents in India also revealed that their classroom learning environments were demanding and controlling in nature. Both the Indian immigrant adolescents in Canada and the Indian adolescents in India lamented that they had absolutely no freedom to choose their own assignments (e.g., “We cannot choose our assignments. Apart from choosing the questions that you want to answer first, we don’t get any freedom in that.”), and to work at their own pace (e.g., “I don’t get to work at my own pace. I’m usually pressured.”). They indicated that they were pursuing the goals of their classroom teachers rather than their own goals. Moreover, these Indian immigrant and Indian adolescents perceived their classroom teachers as not responsive, not supportive, and not flexible: “The teachers are like strangers. They come to class, take class, and leave. They say, if you want you study.”

The controlling motivating style of classroom teachers in Canada and India may explain one of the reasons why the Indian immigrant adolescents in Canada and Indian adolescents in India are predominantly extrinsically motivated toward school and academics. According to SDT, all students possess inner motivational resources to engage constructively and proactively in academic learning (Reeve et al., 2008). However, social contexts may either nurture or thwart students’ inner motivational
resources, such as need for autonomy, intrinsic motivation, personal interests, intrinsic goals, and self-endorsed values (Reeve et al., 2008; Su & Reeve, 2010). The classroom learning environment is one of the social contexts that may either support or block students’ tendencies toward internalization or intrinsic motivation (Reeve et al., 2008). Whereas autonomy-supportive classroom contexts are likely to foster an internal perceived locus of causality, controlling classroom contexts are likely to promote an external perceived locus of causality (Ryan & Deci, 2009). Therefore, there is growing consensus among educational researchers and social psychologists that autonomy-supportive classroom contexts tend to promote autonomous or intrinsic motivation among students, and controlling classroom contexts tend to promote controlled or extrinsic motivation among students (e.g., Assor et al., 2005; Jang et al., 2010).

However, collectivist cultures tend to place a greater emphasis on extrinsic goals rather than intrinsic goals (Ingrid, Majda, & Dubravka, 2009). Kumar and Maehr (2007) outline some of the reasons behind the extrinsic motivation of Indian adolescents as follows:

Education, particularly in English medium schools, is considered the gateway to power, prestige, and status. Adolescents are under tremendous pressure to achieve high grades so that they will gain admission to prestigious Indian or foreign colleges, and thereby bring pride to their families. In many middle-class homes, children’s education often becomes a family mission. The focus of parents and other elders is to ensure the child spends as many hours as possible studying, attending coaching classes, and cramming for exams and entrance tests to the exclusion of all other activities. Here, the motivational goals promoting achievement behaviour are extrinsic, utilitarian, and social. They are directed toward achieving upward mobility, recognizing parental sacrifices, fulfilling familial obligations for achieving success, and making the family proud—particularly in social comparisons with other families. (pp. 53-54)
Prior research also suggests that the association between extrinsic motivation and academic achievement might be stronger in collectivist cultures than in individualist cultures (collectivist extrinsic motivation hypothesis). Although Chiu and Chow (2010) did not find support for the collectivist extrinsic motivation hypothesis, other studies have found support for the collectivist extrinsic motivation hypothesis in collectivist cultures, such as Hong Kong (Moneta & Siu, 2002) and Taiwan (d’Ailly, 2003). Moneta and Siu (2002) reported that extrinsic motivation was more strongly associated with achievement than intrinsic motivation among elementary, secondary, and college students in Hong Kong. The d’Ailly (2003) study underlined the role of social achievement motivation rather than autonomous motivation in promoting elementary Taiwanese students’ academic achievement. Therefore, the collectivist extrinsic motivation hypothesis may offer yet another reason for the extrinsic motivation of Indian immigrant adolescents in Canada and Indian adolescents in India.

Insofar as individuals in collectivist cultures are likely to place great importance on extrinsic goals, parents in collectivist cultures are likely to be more controlling and less autonomy-supportive (Rudy & Grusec, 2001). An extensive body of research, conducted in both individualist and collectivist cultures, has demonstrated that parental autonomy support promotes children’s intrinsic or autonomous motivation, whereas controlling parenting behaviours undermine children’s intrinsic or autonomous motivation (see Grolnick, Friendly, & Bellas, 2009 and Pomerantz & Moorman, 2010, for reviews).

For example, Katz, Kaplan, and Buzukashvily (2011) examined the role of parents’ motivation in their children’s autonomous motivation for doing homework
among 135 students in a moderately collectivist culture, Israel. Katz and colleagues highlighted the positive association between parental autonomy support and children’s autonomous motivation for doing homework. In contrast, Ginsburg and Bronstein (1993) found that controlling parenting behaviours, such as high parental surveillance of homework, were related to extrinsic motivation orientation among 93 Caucasian children in a highly individualist culture, the United States. Similarly, Leung and Kwan (1998) reported that controlling parenting behaviour or authoritative parenting was related to extrinsic motivation among 404 Chinese adolescents in a highly collectivist culture, Hong Kong. Thus the extrinsic motivation among Indian immigrant adolescents in Canada and Indian adolescents in India toward school and academics could possibly be attributed to controlling parenting behaviours or authoritative parenting in collectivist cultures.

Several factors may compel teachers and parents to adopt a controlling motivating style rather than an autonomy-supportive motivating style in both individualist and collectivist cultures. Pressures from above (from school administrators, colleagues, departmental chairs, school boards, and parents) and pressures from below (from students) may force teachers to adopt a controlling motivating style toward students during classroom instruction (Pelletier et al., 2002; Reeve, 2009). Such pressures tend to undermine teachers’ self-determined motivation toward teaching (Pelletier et al., 2002). Moreover, teachers who are inherently authoritarian and highly conservative tend to have controlled motivations; hence they may relate to students in controlling ways (Reeve & Assor, 2011).

Parents’ experiences of internal and external pressures, combined with available socio-economic resources may limit parents’ abilities to provide facilitative
environments for promoting their children’s autonomous motivation (see Grolnick, 2009 and Grolnick et al., 2009, for reviews). Parents in families with low socio-economic resources and high levels of stress are more likely to be controlling rather than autonomy-supportive toward their children (Grolnick, Weiss, McKenzie, & Wrightman, 1996; Grolnick, Benjet, Kurowski, & Apostoleris, 1997). Parents with high levels of contingent self-worth also tend to enact controlling parenting behaviours (Grolnick et al., 1997). Finally, factors within children (personality and behavioural factors) may interfere with parents’ capacities to support children’s autonomous motivation (Grolnick et al., 1996).

**Overarching Ideas**

The purpose of the study was to examine the impact of non-cognitive factors, such as academic self-concept, academic motivation, and teacher autonomy support, on academic achievement for Indian immigrant adolescents in Canada and Indian adolescents in India. The key findings of the study suggest that the Indian immigrant adolescents in Canada do not differ in most respects from their counterparts in India, despite the Indian immigrant adolescents having emigrated from a moderately collectivist culture—India—to a highly individualistic culture—Canada. Hermans and Kempen (1998) posit that travel and relocation from one culture to another culture may result in an interweaving of cultures—cultural practices of the home culture may blend with those of the host culture to form a ‘hybridized culture.’ Similarly, Fuligni (1998) found among 998 first-, second-, and third-generation immigrant adolescents in the United States with Mexican, Chinese, Filipino, and European backgrounds that these adolescents’ ethnic labels, attitudes, values, behaviours, and their perceived
subjective cultures varied as a function of intercultural contact. Furthermore, prior research demonstrates that immigrant adolescents’ native culture values may align more with host culture values with each passing generation (e.g., Fuligni, Witkow, & Garcia, 2005; Portes & Rumbaut, 2001).

Nonetheless, the present study suggests that the Indian immigrant adolescents, even after spending some years in Canada, may not have changed their ethnic identity, attitudes, values, and behaviours with respect to their education. This finding thus supports other studies that indicate foreign-born adolescent students are likely to feel unwilling or unable to identify with the ethnic labels of the host culture (e.g., Fuligni, Kiang, Witkow, & Baldelomar, 2008; Kiang, Witkow, Baldelomar, & Fuligni, 2010). Kiang et al. (2010) examined the changes in ethnic identity (ethnic exploration and ethnic belonging) during the 4 years of high school among 541 adolescents with Latin American, Asian, and European backgrounds in the United States. Even though within-person analyses of change indicated fluctuation in individual adolescents’ ethnic identity over the years, adolescents as a group did not report developmental changes in their ethnic exploration and ethnic belonging over time.

Fuligni et al. (2008), in a longitudinal study of 380 adolescents from Asian and Latin American immigrant families in the United States, also examined whether or not there was a normative change toward the inclusion of pan-ethnic and American terms in ethnic labels as adolescents progressed through the 4 years of high school. In addition, the authors assessed whether or not changes in the use of pan-ethnic and American terms varied according to the adolescents’ ethnic background, generation, and gender. Fuligni and colleagues, however, did not find support for the normative
trend toward the inclusion of pan-ethnic or American terms in Asian and Latin American immigrant adolescents’ most important ethnic labels across the high school years. Nonetheless, there were changes within many adolescents’ ethnic labels from year to year, largely due to fluctuations in these adolescents’ ethnic affirmation and exploration, and proficiency in their heritage languages. Moreover, Fuligni et al. indicated that first-generation (foreign-born) Asian and Latin American immigrant adolescents were more likely to use ethnic heritage labels compared to their second- and third-generation counterparts.

There may be varied reasons why the Indian immigrant adolescents, following immigration to Canada, remained unchanged in regard to their values and attitudes toward school and academics. Seelye and Wasilewski (1996) postulate that immigrant parents who want to maintain their heritage culture and traditions may compel their children to maintain the same culture, values, and traditions. For example, Kiang and Fuligni (2009) examined the relationships between ethnic identity (ethnic exploration and belonging) and family processes (family respect, family obligation, daily family assistance) among 679 adolescents from Latin American, Asian, and European backgrounds in the United States. Adolescents’ ethnic identity was strongly related to family respect, obligation, and daily assistance. Further, Latin American and Asian adolescents reported significantly higher family obligation and assistance than their European peers.

In addition to family processes, immigrant adolescents’ heritage language proficiency may influence their use of heritage ethnic labels. Immigrant adolescents who are highly proficient in the heritage language are more likely to strongly identify themselves with their heritage ethnic labels (Fuligni et al., 2008). Moreover,
immigrant adolescents who regard their ethnic identity as important in their lives—ethnic centrality—may actively seek to learn more about their ethnic origins, which, in turn, may strongly connect them to their ethnic heritage (Kiang, 2008). Ethnic centrality was found to be higher in immigrant adolescents from Latin American and Asian backgrounds than from other backgrounds (see Fuligni et al., 2005). Such immigrant adolescents are least likely to immerse themselves in the host culture (Kiang, Perreira, & Fuligni, 2011; Fuligni et al., 2008).

The current study also indicated that classroom instructional behaviours in Canada did not markedly differ from the classroom instructional behaviours in India with respect to adolescent perceptions of autonomy support. The Indian immigrant adolescents in Canada and Indian adolescents in India perceived their classroom teachers as controlling rather than autonomy-supportive. This finding may seem surprising because individualist cultures, unlike collectivist cultures, tend to place a greater emphasis on autonomy and autonomy support. However, studies conducted in both individualist and collectivist cultures have found that teachers commonly enact controlling instructional behaviours, and only rarely enact autonomy-supportive instructional behaviours (e.g., Assor, Kaplan, & Roth, 2002; Reeve et al., 2004). Assor et al. (2002) surveyed 862 children and early adolescents in a moderately collectivist culture, Israel, to assess classroom teachers’ instructional behaviours. The Israeli students identified autonomy-suppressing behaviours among their classroom teachers. Based on a series of classroom observations in high schools, the Reeve et al. (2004) study revealed that classroom teachers displayed less autonomy-supportive behaviours during instruction in a highly individualist culture, the United States.
Previous studies have primarily examined separately the relationships between academic self-concept and academic achievement, and between academic motivation and academic achievement. In contrast, this study examined the relationships among academic self-concept, academic motivation, and academic achievement because academic self-concept has motivational properties (see Byrne 1984, 1996). Even though the study provided empirical support for the value of intrinsic motivation in the education of Indian immigrant and Indian adolescents, the findings of the study indicated that other proximal factors in adolescents’ academic lives, such as teacher autonomy support, may influence the relations among academic self-concept, academic motivation, and academic achievement for Indian immigrant and Indian adolescents. The preponderance of extrinsic motivation toward school and academics among Indian immigrant and Indian adolescents suggests that the degree of parental autonomy support may also impact such relations among these adolescents. Thus the study pinpoints the need for testing models encompassing such proximal influences in adolescents’ lives. As Bong (1996) remarked, “one of the problems facing current academic motivation research is that despite a proliferation of theories and models testing specific relationships and hypotheses, no single model can capture the full dynamics of motivated behaviours” (p. 150).

Although the Indian immigrant and Indian adolescents in the study indicated some of the different types of intrinsic and extrinsic motivation identified by SDT during focus group discussions, the study did not find support for the seven-factor structure of AMS. Instead, the study revealed a three-factor structure. This result suggests that the Indian immigrant adolescents in Canada and Indian adolescents in India may be failing to differentiate between the different types of intrinsic and
extrinsic motivation. In that the seven-factor structure of AMS has been primarily validated in individualist countries among Caucasian school children (Cokley, 2000), the current finding indicates that the structure of intrinsic and extrinsic motivation may be culturally variant. The Indian immigrant adolescents in Canada and Indian adolescents in India belong to a moderately collectivist culture, and their perceptions and attitudes toward school and academics may be different from those of their counterparts in individualist cultures.

In summary, the study found the following: (a) Indian immigrant adolescents in Canada are not markedly different from Indian adolescents in India in terms of their academic trajectories; (b) Indian immigrant and Indian adolescents’ perceptions of teacher instructional behaviours are similar; and (c) Intrinsic motivation mediates some of the relations between academic self-concepts and academic achievement for both Indian immigrant adolescents in Canada and Indian adolescents in India. These findings offer important implications for practice for classroom teachers and parents.

**Implications for Practice**

Implications for practice include the need to (a) enhance academic self-concept, (b) improve academic skills, (c) promote autonomy-supportive teaching, and (d) foster autonomy-supportive parenting.

Given the comparatively lower verbal self-concepts and English GPA of Indian adolescents in India, English teachers in India have a pivotal role to play in improving their students’ verbal self-concepts and academic skills in English. There is mounting evidence that self-concept enhancement intervention programs would help
to improve the self-concepts of adolescents in educational settings (e.g., O’Mara, Green, & Marsh, 2006; O’Mara, Marsh, Craven, & Debus, 2006).

Meta-analyses of the effectiveness of self-concept enhancement interventions in schools suggest that self-concept enhancement intervention programs would be more efficient and effective if such interventions incorporated appropriate praise and/or feedback strategies (e.g., attributional feedback, goal feedback, or contingent praise) into the program (O’Mara et al., 2006). Moreover, targeting disadvantaged adolescents with diagnosed problems (e.g., those diagnosed with pre-existing problems, such as low self-esteem, behavioural problems, and learning disabilities) would be more valuable and effective than preventive intervention programs (Haney & Durlak, 1998; O’Mara et al., 2006). Hence English teachers in India need to design appropriate self-concept enhancement intervention programs to enhance the verbal self-concept of Indian adolescents.

However, self-concept enhancement intervention programs may not alone effectively help the Indian adolescents in India to improve their academic achievement and academic English language proficiency. To be effective, skills training interventions need to be designed and implemented in conjunction with self-concept enhancement interventions (see O’Mara et al., 2006). Unfortunately, some of the grave deficiencies cited by previous authors plaguing India’s education system in general and the English language education in India in particular may thwart the proper development and implementation of appropriate academic skills training intervention programs in schools across India (see Hornberger & Vaish, 2009; Sheorey, 2006; Vaish, 2008).
In a recent review examining the plight of English language teaching and learning in schools across India, Shah (2010) pinpoints some of the major flaws in the Indian education system: heavy reliance on the outdated grammar-translation method, inadequacy of well-written textbooks, lack of curricular focus on the communicative elements of English, examination-oriented teaching and learning, and the emphasis on rote learning and memorization. Therefore, before designing appropriate self-concept enhancement and academic skills training interventions, the educational policy makers in India may need to address these issues in a satisfactory manner.

Furthermore, the findings of the study indicate the need to promote autonomy-supportive teaching during classroom instruction. Because the use of an autonomy-supportive motivating style during classroom instruction is associated with a wealth of positive student outcomes (see Reeve et al., 2004, for a review), it is important to develop autonomy-supportive teachers rather than controlling teachers. To create autonomy-supportive classrooms, teachers need to gain knowledge, skill, and training in how to be more autonomy-supportive toward their students (Reeve & Assor, 2011). Meta-analyses have demonstrated the effectiveness of such intervention programs in developing an autonomy-supportive motivating style among teachers (e.g., Su & Reeve, 2010). Hence pre-service and in-service teacher training programs in Canada and India may need to design and implement appropriate autonomy-supportive intervention programs with a view to developing autonomy-supportive teachers, who are capable of nurturing their students’ inner motivational resources.

However, teacher autonomy support may not alone foster students’ autonomous academic motivation. Teacher autonomy support may need to be supplemented with parental autonomy support. Unlike controlling parenting,
autonomy-supportive parenting—promotion of children’s volitional functioning (Soenens et al., 2007)—is associated with more positive psychological, developmental, and educational outcomes in adolescents, including improved academic achievement (Soenens & Vansteenkiste, 2005; Wong, 2008), greater academic motivation, and higher levels of subjective well-being (Chirkov & Ryan, 2001).

The benefits of parental autonomy support underscore the need for developing and promoting autonomy-supportive behaviours toward their children among the Indian immigrant and Indian parents. Autonomy-supportive parenting behaviours may include, among others, taking children’s perspectives and viewpoints, encouraging and supporting children’s initiatives and autonomous problem solving, and offering children choices (Grolnick, 2009; Grolnick et al., 2009). Parent training programs/parenting interventions based on SDT may help parents to become more autonomy-supportive (Joussemet, Landry, & Koestner, 2008). As well, prior research demonstrates that parenting interventions emphasizing autonomy support have led to considerable improvements in familial climate and parenting practices (Fetsch & Gebeke, 1995). Hence it is imperative to design such parenting interventions targeted at fostering autonomy-supportive parenting.

Limitations of the Study and Implications for Future Research

There are five primary limitations to the current study. First, the study used self-report measures to assess Indian immigrant and Indian adolescents’ academic achievement, academic self-concept, and academic motivation. Although self-report measures are not inherently inferior to behavioural and biological measures (see
Haeffel & Howard, 2010), the critics of self-report research have always challenged the very validity and reliability of self-report measures (see Fulmer & Frijters, 2009, for a review).

Reactivity—changes in responding that occur when research participants know they are being measured—is one of the major limitations of self-report measures (Stangor, 2010). The use of self-report measures of academic self-concept and academic motivation may result in self-promotion, the most common type of reactivity. Self-promotion may occur when research participants respond in ways that they think would make them look good, that is, the research participants might resort to overestimating their positive traits and underestimating their negative traits (Stangor, 2010). Furthermore, although self-reported grades may reflect the actual grades of students with high ability and good GPAs, they may not represent accurately the actual scores of students with low ability and low GPAs (Kuncel, Crede, & Thomas, 2005).

To offset the flaws in self-report research, therefore, future research examining the relationships among academic achievement, academic self-concept, and academic motivation may benefit from the use of a wider range of methodologies for measuring academic achievement, academic self-concept, and academic motivation in addition to the self-report methodology (Fulmer & Frijters, 2009). Such additional methodologies may include, among others, behavioural, phenomenological/authentic, and neuropsychological/physiological approaches (see Fulmer & Frijters, 2009).

Second, this study was cross-sectional in nature (i.e., the same students were not tracked over time). Hence the study did not employ a longitudinal approach to examine the relationships among academic achievement, academic self-concept, and
academic motivation for the Indian adolescents in Canada and India. A longitudinal research design involving the same research participants before and after immigration to Canada would have been a better research methodology. The complexity and nuances associated with identifying the prospective research participants from India, who would be immigrating to Canada along with their parents, hindered such a research design.

However, such a research design would have accrued some unique benefits. Specifically, a longitudinal approach may have helped to examine the changes in Indian adolescents’ academic achievement, academic self-concept, and academic motivation before and after immigration to Canada. Therefore, future research investigating the impact of social psychological constructs, such as academic self-concept and academic motivation, on school achievement of children emigrating from countries across the world might benefit from the adoption of a longitudinal research design.

Third, the focus group participants in Canada and India were generally reluctant to disclose their opinions. This problem not only limited the richness of qualitative data but also constrained the analysis and interpretation of focus group interview data. Future research involving focus group participants from Indian immigrant and Indian adolescent populations may need to develop and employ focus group interview strategies most appropriate to such culturally diverse groups, which, in turn, may help researchers to glean an in-depth understanding of such adolescents’ educational trajectories.

Fourth, the study did not collect data with regard to Indian immigrant and Indian adolescents’ family income, parental education, parental occupational status,
and Indian immigrant adolescents’ age on arrival in Canada. The exclusion of these confounding variables might have inflated the parameter estimates. Future research examining the relationships among academic self-concept, academic motivation, and academic achievement may need to control for these confounding variables to avoid type 1 error.

Finally, data for the present study were drawn from the Indian immigrant and Indian adolescents belonging to Kerala, one of the states in India. Because India is a culturally diverse country, the relationships among academic achievement, academic self-concept, and academic motivation for the Indian immigrant and Indian adolescents in the study may not be generalizable to adolescents across cultures in India. Given the dearth of research on Indian adolescents’ school engagement and achievement, future research involving participants hailing from diverse cultures in India may help to formulate appropriate educational policies and interventions to enhance Indian adolescents’ motivation, engagement, and achievement.

**Final Thoughts**

The findings of the study support the notion that academic achievement of Indian immigrant and Indian adolescents are not solely individually determined outcomes. Even though individual cognitive characteristics are important predictors of school engagement and achievement across cultures, the results of the study attest to the positive and influential impact of non-cognitive correlates of academic engagement and achievement among Indian immigrant and Indian adolescents. Thus the study underlines the need to investigate the influence of non-cognitive factors on
school engagement and achievement in addition to the cognitive factors affecting students’ academic engagement and achievement.

Notwithstanding the lack of consensus among educational researchers and social psychologists on the value of autonomy and autonomy support in collectivist cultures, the findings of the present study highlight the need to support autonomy in the classroom. More specifically, the findings with respect to the roles of autonomy and autonomy support in the school engagement and achievement of Indian immigrant and Indian adolescents underscore the importance of enhancing autonomy and autonomy support in moderately collectivist cultures, such as India. The study, therefore, concurs with SDT’s proposition that autonomy is a universal psychological need in the context of academic learning.

Finally, prior research that examined the school engagement and achievement of adolescents has primarily employed quantitative research methods. In contrast, the current study adopted a mixed methods research design to better understand the academic engagement and academic achievement of Indian immigrant adolescents in Canada and Indian adolescents in India. The qualitative component of the study—focus group interviews—helped to shed light on the classroom learning environments of Indian immigrant and Indian adolescents. The quantitative component of the research—surveys—helped to overcome the limited ability of qualitative inquiry to make generalizations, and to estimate the prevalence of phenomena in terms of Indian immigrant and Indian adolescents’ academic self-concept, academic motivation, and academic achievement. Thus, in the present study, the mixed methods research design addressed the weaknesses of qualitative and quantitative research methods while taking advantage of each research method’s peculiar strengths. Indeed, culture-
oriented research in educational psychology can be richly informed by the insights and perspectives that mixed methods research designs bring forth.

In conclusion, the conspicuous lack of knowledge on the academic trajectories of Indian immigrant adolescents in Canada and Indian adolescents in India makes it imperative to conduct studies similar to the present one. Furthermore, in the era of globalization and multiculturalism, it is of utmost importance to examine the influence of psycho-educational constructs, such as academic self-concept, academic motivation, and teacher autonomy support, on academic achievement of children and youth across cultures. A better and deeper understanding of the academic trajectories of children and youth across cultures may enable educators to develop appropriate strategies to properly engage them in academic learning, which, in turn, may promote their academic success.
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APPENDIX A: LETTER OF INFORMATION (SURVEY)

I am a doctoral student in the Faculty of Education at Queen’s University. I am writing to request your participation in a research study entitled “Cross-cultural Differences in Academic Motivation, Academic Self-concept, and Academic Achievement: A Study of Adolescents in Canada and India.” This research is conducted under the supervision of my doctoral supervisor, Dr. John G. Freeman, Faculty of Education, Queen’s University. This research has been cleared by the Queen’s University General Research Ethics Board.

The purpose of the present study was twofold: first, to examine the relationships among academic self-concept, academic motivation, and academic achievement for Indian immigrant adolescents in Canada in comparison to their peers in India; and second, to explore the perspectives, beliefs, and recommendations of Indian immigrant and Indian adolescents in Canada and India in regard to instructional practices and classroom environments that affect their academic self-concept, academic motivation, and academic achievement. A deeper understanding of the factors influencing academic motivation, academic self-concept, and academic achievement of these adolescents has the potential to shed light on their learning processes. The study may also help educators in both Canada and India to develop more concrete and effective instructional practices and environments facilitating these adolescents’ learning.

Participation involves completion of a paper-and-pencil questionnaire containing items about academic motivation, academic self-concept, and academic achievement. It should take approximately 15-20 minutes to complete the questionnaire. Participation in the survey is entirely voluntary. You can withdraw at any time and there will be no disadvantage if you decide not to complete the survey. You are assured that no information collected will be reported to anyone who is in authority over you. Information gathered from the survey will be stored securely and once the information has been analysed, all surveys will be destroyed. There are no known risks, discomforts or inconveniences associated with participation in the research study. You are not obliged to answer any questions that you find objectionable or which make you feel uncomfortable. This research may result in publications of various types, including journal articles, professional publications, newsletters, books, and instructional materials for schools. At no time will the actual identity of the participants be disclosed. If the data are made available to other researchers for secondary analysis, your identity will never be disclosed.

If you have any questions about this project, please contact me at 4sa4@queensu.ca (613-548-4645) or my doctoral supervisor, Dr. John G. Freeman, at freemanj@queensu.ca (613-533-6000 x 77298). For questions, concerns or complaints about the research ethics of this study, contact the Education Research Ethics Board at ereb@queensu.ca or the chair of the General Research Ethics Board, Dr. Joan Stevenson 613-533-6081 (chair.greb@queensu.ca).

Sincerely,
Shaljan Areeppattamannil

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APPENDIX B: LETTER OF CONSENT (SURVEY)

I agree to participate in the study entitled “Cross-cultural Differences in Academic Motivation, Academic Self-concept, and Academic Achievement: A Study of Adolescents in Canada and India,” conducted through the Faculty of Education at Queen's University.
I have read and retained a copy of the Letter of Information and the purpose of the study is explained to my satisfaction.
I have had any questions answered to my satisfaction.
I understand that, upon request, I may have a full description of the results of the study after its completion.
I understand that the researchers intend to publish the findings of the study.
I understand that participation is voluntary, and that I am free to withdraw from this study at any time without negative consequences.
I am aware that I can contact the researcher, Shaljan Areepattamannil, at 4sa4@queensu.ca (613-548-4645) or his doctoral supervisor, Dr. John G. Freeman, at freemanj@queensu.ca (613-533-6000 x 77298) if I have any questions about this project. For questions, concerns or complaints about the research ethics of this study, contact the Education Research Ethics Board at ereb@queensu.ca or the chair of the General Research Ethics Board, Dr. Joan Stevenson 613-533-6081 (chair.greb@queensu.ca).

I HAVE READ AND UNDERSTOOD THIS CONSENT FORM AND I AGREE TO PARTICIPATE IN THE STUDY.

Please sign one copy of this Consent Form and return to Shaljan Areepattamannil. Retain the second copy for your records.

Student’s name (Please Print): ________________________________

Signature of Student: ________________________________

Date: ________________

I HAVE READ AND UNDERSTOOD THIS CONSENT FORM AND I AGREE TO ALLOW MY SON/DAUGHTER TO PARTICIPATE IN THE STUDY.

Signature of parent/guardian: ________________________________

Date: ________________

If you wish to receive a copy of the final report, please provide your email address.
### APPENDIX C: DEMOGRAPHIC QUESTIONNAIRE

1. Are you?  
   - [ ] Male  
   - [ ] Female

2. How old are you?  
   - [ ] 16  
   - [ ] 17  
   - [ ] 18  
   - [ ] 18+

3. What is your country of origin?  
   - [ ] Canada  
   - [ ] Other (write in)

4. How would you describe your grade in English?  
   - [ ] Mostly 90’s (A’s)  
   - [ ] Mostly 80’s (B’s)  
   - [ ] Mostly 70’s (C’s)  
   - [ ] Mostly 60’s (D’s)  
   - [ ] Mostly 50’s (F’s)

5. How would you describe your grade in Math?  
   - [ ] Mostly 90’s (A’s)  
   - [ ] Mostly 80’s (B’s)  
   - [ ] Mostly 70’s (C’s)  
   - [ ] Mostly 60’s (D’s)  
   - [ ] Mostly 50’s (F’s)

6. How would you describe your overall grade in school?  
   - [ ] Mostly 90’s (A’s)  
   - [ ] Mostly 80’s (B’s)  
   - [ ] Mostly 70’s (C’s)  
   - [ ] Mostly 60’s (D’s)  
   - [ ] Mostly 50’s (F’s)
APPENDIX D: ACADEMIC MOTIVATION SCALE (HIGH SCHOOL VERSION)

Why Do You Go To School?

Using the scale below, indicate to what extent each of the following items presently corresponds to one of the reasons why you go to school.

<table>
<thead>
<tr>
<th>Why Do You Go To School?</th>
<th>Does not correspond at all</th>
<th>Corresponds a little</th>
<th>Corresponds moderately</th>
<th>Corresponds a lot</th>
<th>Corresponds exactly</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Because I need at least a high-school degree in order to find a high-paying job later on.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2 Because I experience pleasure and satisfaction while learning new things.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>3 Because I think that a high-school education will help me better prepare for the career I have chosen.</td>
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<tr>
<td>4 Because I really like going to school.</td>
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<tr>
<td>5 Honestly, I don't know; I really feel that I am wasting my time in school.</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 For the pleasure I experience while surpassing myself in my studies.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 To prove to myself that I am capable of completing my high-school degree.</td>
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</tr>
<tr>
<td>8 In order to obtain a more prestigious job later on.</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>9 For the pleasure I experience when I discover new things never seen before.</td>
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<tr>
<td>10 Because eventually it will enable me to enter the job market in a field that I like.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 Because for me, school is fun.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>12 I once had good reasons for going to school; however, now I wonder whether I should continue.</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>13 For the pleasure that I experience while I am surpassing myself in one of my personal accomplishments.</td>
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<tr>
<td>14 Because of the fact that when I succeed in school I feel important.</td>
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<td></td>
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<tr>
<td>15 Because I want to have &quot;the good life&quot; later on.</td>
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<tr>
<td>16 For the pleasure that I experience in broadening my knowledge about subjects which appeal to me.</td>
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<tr>
<td></td>
<td>Because this will help me make a better choice regarding my career orientation.</td>
<td>1 2 3 4 5 6 7</td>
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<td></td>
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<tr>
<td>18</td>
<td>For the pleasure that I experience when I am taken by discussions with interesting teachers.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>I can't see why I go to school and frankly, I couldn't care less.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>For the satisfaction I feel when I am in the process of accomplishing difficult academic activities.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
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<tr>
<td>21</td>
<td>To show myself that I am an intelligent person.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>In order to have a better salary later on.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Because my studies allow me to continue to learn about many things that interest me.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Because I believe that my high school education will improve my competence as a worker.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>For the &quot;high&quot; feeling that I experience while reading about various interesting subjects.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>I don't know; I can't understand what I am doing in school.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>Because high school allows me to experience a personal satisfaction in my quest for excellence in my studies.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>Because I want to show myself that I can succeed in my studies.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

APPENDIX E: SELF DESCRIPTION QUESTIONNAIRE – II (SDQ - II)

<table>
<thead>
<tr>
<th></th>
<th>MATHEMATICS is one of my best subjects</th>
<th>FALSE</th>
<th>MOSTLY FALSE</th>
<th>MORE FALSE THAN TRUE</th>
<th>MORE TRUE THAN FALSE</th>
<th>MOSTLY TRUE</th>
<th>TRUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I am hopeless in ENGLISH classes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>People come to me for help in most SCHOOL SUBJECTS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>I often need help in MATHEMATICS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>I look forward to ENGLISH classes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>I am too stupid at school to get into a good university</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>I do badly on tests that need a lot of READING ability</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>If I work really hard I could be one of the best students in my school year</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>I have trouble understanding anything with MATHEMATICS in it</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Work in ENGLISH classes is easy for me</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>I get bad marks in most SCHOOL SUBJECTS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>I enjoy studying for MATHEMATICS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>I am not very good at READING</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>I learn things quickly in most SCHOOL SUBJECTS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>I do badly in tests of MATHEMATICS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>ENGLISH is one of my best subjects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>I am stupid at most SCHOOL SUBJECTS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>Statement</td>
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<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
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<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>19</td>
<td>I get good marks in MATHEMATICS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>I hate READING</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>I do well in tests in most SCHOOL SUBJECTS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>I never want to take another MATHEMATICS course</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>I get good marks in ENGLISH</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>I have trouble with most SCHOOL SUBJECTS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>I have always done well in MATHEMATICS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>I have trouble expressing myself when I try to write something</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>I am good at most SCHOOL SUBJECTS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>I hate MATHEMATICS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>I learn things quickly in ENGLISH classes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>Most SCHOOL SUBJECTS are just too hard for me</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Self-concept Enhancement and Learning Facilitation (SELF) Research Centre, University of Western Sydney.
Hello, my name is Shaljan Areepattamannil. I am a 3rd year Ph.D. student in the Faculty of Education at Queen’s University. My doctoral research focuses on academic self-concept, academic motivation, and academic achievement of Indian adolescents in Canada and India.

Participation involves completion of a paper-and-pencil questionnaire containing items about academic motivation, academic self-concept, and academic achievement. It should take approximately 15-20 minutes to complete the questionnaire.

There are no known risks, discomforts, or inconveniences associated with participation in the research study. You are not obliged to answer any questions that you find objectionable or which make you feel uncomfortable.

Your participation in this study is completely voluntary. There is no penalty for not participating. You have the right to withdraw from the study at any time without consequence.

You are assured that no information collected will be reported to anyone who is in authority over you.

Here is the package that contains the letter of information and consent form.

To participate in the study, it is important that you and your parent/guardian read the letter of information and sign the consent form.

Does anyone have any questions?
## APPENDIX G: STANDARDIZED PATH COEFFICIENTS FROM CONFIRMATORY FACTOR ANALYSIS FOR THE ACADEMIC SELF-CONCEPT ITEMS

<table>
<thead>
<tr>
<th>Item</th>
<th>MSC</th>
<th>SSC</th>
<th>VSC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematics is one of my best subjects</td>
<td>.80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I look forward to mathematics classes</td>
<td>.68</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I enjoy studying for mathematics</td>
<td>.78</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I get good marks in mathematics</td>
<td>.80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have always done well in mathematics</td>
<td>.75</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I often need help in mathematics</td>
<td>.63</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have trouble understanding anything with mathematics in it</td>
<td>.62</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I do badly in tests of mathematics</td>
<td>.69</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I never want to take another mathematics course</td>
<td>.67</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I hate mathematics</td>
<td>.73</td>
<td></td>
<td></td>
</tr>
<tr>
<td>People come to me for help in most school subjects</td>
<td>.39</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If I work really hard I could be one of the best students in my school year</td>
<td>.41</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I learn things quickly in most school subjects</td>
<td>.55</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I do well in tests in most school subjects</td>
<td>.62</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am good at most school subjects</td>
<td>.66</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am too stupid at school to get into a good university</td>
<td>.56</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I get bad marks in most school subjects</td>
<td>.65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am stupid at most school subjects</td>
<td>.67</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have trouble with most school subjects</td>
<td>.67</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Most school subjects are just too hard for me</td>
<td>.65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I look forward to English classes</td>
<td>.52</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work in English classes is easy for me</td>
<td>.70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>English is one of my best subjects</td>
<td>.71</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I get good marks in English</td>
<td>.70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I learn things quickly in English classes</td>
<td>.68</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am hopeless in English classes</td>
<td>.48</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I do badly on tests that need a lot of reading ability</td>
<td>.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am not very good at reading</td>
<td>.51</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I hate reading</td>
<td>.47</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I look forward to English classes</td>
<td>.40</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* MSC = Math self-concept; SSC = School self-concept; VSC = Verbal self-concept. All standardized path coefficients were statistically significant at $p < .05$.  

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APPENDIX H: FACTOR LOADINGS OF EXPLORATORY FACTOR ANALYSIS WITH OBLIQUE ROTATION OF ACADEMIC MOTIVATION SCALES

<table>
<thead>
<tr>
<th>Factor</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Because I really like going to school.</td>
<td>.73</td>
<td></td>
<td></td>
</tr>
<tr>
<td>For the pleasure I experience when I discover new things never seen before.</td>
<td>.72</td>
<td></td>
<td></td>
</tr>
<tr>
<td>For the pleasure I experience while surpassing myself in my studies.</td>
<td>.71</td>
<td></td>
<td></td>
</tr>
<tr>
<td>For the “high” feeling that I experience while reading about various interesting subjects.</td>
<td>.70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Because I experience pleasure and satisfaction while learning new things.</td>
<td>.69</td>
<td></td>
<td></td>
</tr>
<tr>
<td>For the satisfaction I feel when I am in the process of accomplishing difficult academic activities.</td>
<td>.68</td>
<td></td>
<td></td>
</tr>
<tr>
<td>For the pleasure that I experience when I am taken by discussions with interesting teachers.</td>
<td>.65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Because high school allows me to experience a personal satisfaction in my quest for excellence in my studies.</td>
<td>.65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Because for me, school is fun.</td>
<td>.62</td>
<td></td>
<td></td>
</tr>
<tr>
<td>For the pleasure that I experience while I am surpassing myself in one of my personal accomplishments.</td>
<td>.60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>For the pleasure that I experience in broadening my knowledge about subjects which appeal to me.</td>
<td>.60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Because my studies allow me to continue to learn about many things that interest me.</td>
<td>.56</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Because I want to have “the good life” later on.</td>
<td>.70</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Factor Loadings of Exploratory Factor Analysis With Oblique Rotation of Academic Motivation Scales (Continued)

| In order to have a better salary later on. | .66 |
| In order to obtain a more prestigious job later on. | .66 |
| Because of the fact that when I succeed in school I feel important. | .65 |
| Because this will help me make a better choice regarding my career orientation. | .64 |
| Because I want to show myself that I can succeed in my studies. | .62 |
| Because I believe that my high school education will improve my competence as a worker. | .57 |
| To prove to myself that I am capable of completing my high-school degree. | .57 |
| Because eventually it will enable me to enter the job market in a field that I like. | .51 |
| Because I think that a high-school education will help me better prepare for the career I have chosen. | .48 |
| To show myself that I am an intelligent person. | .48 |
| Because I need at least a high-school degree in order to find a high-paying job later on. | .38 |
| I can't see why I go to school and frankly, I couldn’t care less. | .74 |
| I don’t know; I can't understand what I am doing in school. | .68 |
| I once had good reasons for going to school; however, now I wonder whether I should continue. | .66 |
| Honestly, I don’t know; I really feel that I am wasting my time in school. | .63 |

*Note.* Salient loadings ≥ .30. Factor 1: Intrinsic motivation (α = .90); Factor 2: Extrinsic motivation (α = .85); Factor 3: Amotivation (α = .76)
APPENDIX I: INVITATION TO PARTICIPATE IN A FOCUS GROUP INTERVIEW

Thank you for completing the survey.

As a part of this research, I am planning to collect additional information from you by conducting focus groups. A focus group is a group interview in which a group of students are asked to share information on a particular topic.

I would like to invite you to attend a focus group, which will involve about 8 to 10 students. These group sessions will take place at your school. It will be conducted at a time that is convenient to all who are being invited. One interviewer will lead the focus groups and an assistant will be present to take notes. The focus group will be for approximately 90 minutes and will be audio taped. Students who participate in a focus group will be provided refreshments and will be entered into a draw to win a $25 (1000 Indian Rupee) gift card.

If you are interested in participating in a focus group, please provide the following information so that I may contact you.

Name: __________________________

Email: __________________________
APPENDIX J: LETTER OF INFORMATION (FOCUS GROUP)

I am a doctoral student in the Faculty of Education at Queen’s University. I am writing to request your participation in a research study entitled “Cross-cultural Differences in Academic Motivation, Academic Self-concept, and Academic Achievement: A Study of Adolescents in Canada and India.” This research is conducted under the supervision of my doctoral supervisor, Dr. John G. Freeman, Faculty of Education, Queen’s University. This research has been cleared by the Queen’s University General Research Ethics Board, and also by your school board.

The purpose of the present study was twofold: first, to examine the relationships among academic self-concept, academic motivation, and academic achievement for Indian immigrant adolescents in Canada in comparison to their peers in India; and second, to explore the perspectives, beliefs, and recommendations of Indian immigrant and Indian adolescents in Canada and India in regard to instructional practices and classroom environments that affect their academic self-concept, academic motivation, and academic achievement. A deeper understanding of the factors influencing academic motivation, academic self-concept, and academic achievement of these adolescents has the potential to shed light on their learning processes. The study may also help educators in both Canada and India to develop more concrete and effective instructional practices and environments facilitating these adolescents’ learning.

To do this research, I am planning to conduct some group interviews. I am inviting you to participate in one of these interviews. These interviews, called focus group interviews (i.e., unstructured group interviews), will involve about 8 to 10 students. Participation in the focus group interview is entirely voluntary, although one person per focus group will be randomly selected to receive a $25 (1000 Indian Rupee) gift card of his or her choice. You can withdraw at any time, and there will be no disadvantage if you decide not to withdraw from the focus group interview.

The focus group interview will take place at your school and will be conducted at a time that is convenient to all who are being invited. The focus group interview will be for approximately 90 minutes and will be audio taped. You are requested not to discuss the content of the focus group discussion outside of the group. In addition, the note-taker will take notes to make a written record of the sequence of questions and answers. These notes will be written up and maintained as a computer file. The taped interview will be transcribed, and then the tape will be destroyed. Data will be secured in a locked office and confidentiality is absolutely guaranteed.

There are no known risks, discomforts, or inconveniences associated with participation in the research study. You are not obliged to answer any questions that you find objectionable or which make you feel uncomfortable.

This research may result in publications of various types, including journal articles, professional publications, newsletters, books, and instructional materials for schools. At no time will the actual identity of the participants be disclosed. A pseudonym will replace your name on all data that you provide to protect your identity. If the data are
made available to other researchers for secondary analysis, your identity will never be disclosed.

If you have any questions about this project, please contact me at 4sa4@queensu.ca (613-548-4645) or my doctoral supervisor, Dr. John G. Freeman, at freemanj@queensu.ca (613-533-6000 x 77298). For questions, concerns or complaints about the research ethics of this study, contact the Education Research Ethics Board at ereb@queensu.ca or the chair of the General Research Ethics Board, Dr. Joan Stevenson 613-533-6081 (chair.greb@queensu.ca).

Sincerely,
Shaljan Aareepattamannil
APPENDIX K: LETTER OF CONSENT (FOCUS GROUP)

I agree to participate in the study entitled “Cross-cultural Differences in Academic Motivation, Academic Self-concept, and Academic Achievement: A Study of Adolescents in Canada and India,” conducted through the Faculty of Education at Queen's University.

I have read and retained a copy of the Letter of Information and the purpose of the study is explained to my satisfaction.

I have had any questions answered to my satisfaction. I have been informed that the focus group interview will be recorded by audiotape.

I understand that, upon request, I may have a full description of the results of the study after its completion.

I understand that the researchers intend to publish the findings of the study.

I understand that participation is voluntary, and that I am free to withdraw from this study at any time without negative consequences.

I am aware that I can contact the researcher, Shaljan Areepattamannil, at 4sa4@queensu.ca (613-548-4645) or his doctoral supervisor, Dr. John G. Freeman, at freemanj@queensu.ca (613-533-6000 x 77298) if I have any questions about this project. For questions, concerns or complaints about the research ethics of this study, contact the Education Research Ethics Board at ereb@queensu.ca or the chair of the General Research Ethics Board, Dr. Joan Stevenson 613-533-6081 (chair.greb@queensu.ca).

I HAVE READ AND UNDERSTOOD THIS CONSENT FORM AND I AGREE TO PARTICIPATE IN THE STUDY.

Please sign one copy of this Consent Form and return to Shaljan Areepattamannil. Retain the second copy for your records.

Student’s name (Please Print): ________________________________

Signature of Student: ________________________________

Date: ________________

I HAVE READ AND UNDERSTOOD THIS CONSENT FORM AND I AGREE TO ALLOW MY SON/DAUGHTER TO PARTICIPATE IN THE STUDY.

Signature of parent/guardian: ________________________________ Date: ________________

If you wish to receive a copy of the final report, please provide your email address.
APPENDIX L: FOCUS GROUP INTERVIEW GUIDE

1. Do you care about school and academics? Why or why not?
2. Do you want to get good grades? Why or why not?
3. Do you have more interest, less interest, or about the same interest in school and schoolwork as lower grade students? How? Why?
4. In your classes, how important is it for you to do better than others? Do you think there is more or less competition than when you were in the lower grades? Why or why not?
5. What do you have to do to get good grades this year?
6. In your schoolwork this year, do you ever work at your own pace, or get to choose your assignments? If yes, how?
7. Do you think you should be involved in making decisions about what you learn? If yes, which decisions?
8. Do you feel teachers should work with you differently than in the earlier grades? What should they do differently? What should they do the same?
9. What are the most important things teachers could do to help you become more serious about school learning?
APPENDIX M: DESCRIPTIVE DISCRIMINANT ANALYSIS USING STANDARDIZED GPA SCORES

Wilks’s Lambda and Canonical Correlation for the Four Groups

<table>
<thead>
<tr>
<th>Test of Function(s)</th>
<th>Wilks’s λ</th>
<th>χ²</th>
<th>df</th>
<th>P</th>
<th>R²</th>
<th>R²²</th>
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</thead>
<tbody>
<tr>
<td>1—3</td>
<td>.81</td>
<td>145.74</td>
<td>27</td>
<td>.000</td>
<td>.35</td>
<td>12.25%</td>
</tr>
<tr>
<td>2—3</td>
<td>.93</td>
<td>51.62</td>
<td>16</td>
<td>.000</td>
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Group Centroids

<table>
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<tr>
<th>Group</th>
<th>Function 1</th>
<th>Function 2</th>
</tr>
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<tbody>
<tr>
<td>1. Male Indian</td>
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<td>.01</td>
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<tr>
<td>2. Female Indian</td>
<td>.08</td>
<td>−.33</td>
</tr>
<tr>
<td>3. Male Indian immigrant</td>
<td>−.02</td>
<td>.35</td>
</tr>
<tr>
<td>4. Female Indian immigrant</td>
<td>−.57</td>
<td>−.05</td>
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### Standardized Discriminant Function and Structure Coefficients for the Four Groups

<table>
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<tr>
<th>Variable</th>
<th>Coefficient</th>
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<th>r&lt;sup&gt;2&lt;/sup&gt;&lt;sub&gt;s&lt;/sub&gt;</th>
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<tbody>
<tr>
<td><strong>Function 1</strong></td>
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<td>-.14</td>
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<tr>
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<td>0.1521%</td>
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<td>.29</td>
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<tr>
<td>Verbal self-concept</td>
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<td>-.57</td>
<td>0.3249%</td>
</tr>
<tr>
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<tr>
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