2024

Collectivism and efficacy: Relationship to academic performance in early adolescents

Richvinder Kaur
Long Island University

Collectivism and Efficacy: Relationship to Academic Performance in Early Adolescents

BY

Richvinder Kaur

A MASTER'S THESIS SUBMITTED TO THE GRADUATE FACULTY OF

THE SCHOOL OF HEALTH PROFESSIONS

LONG ISLAND UNIVERSITY, BROOKLYN CAMPUS

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR

THE DEGREE OF MASTER OF ARTS

MAJOR DEPARTMENT:

PSYCHOLOGY

SPONSORING COMMITTEE:

_____

Committee Chair

Gary Kose, Ph.D.

CERTIFIED BY:

_____

Dean

Michael Patanlon, Ph.D.

_____

Reader

Tristan Adams, Ph.D.

Date: December 2023

Abstract

This study explored the mathematics efficacy beliefs of 270 South Asian (Indo American) immigrant and Anglo American nonimmigrant 7th grade students. Self-efficacy beliefs strongly predicted mathematics performance for both cultural groups, but there were differences between the 2 groups in the sources of self-efficacy, the predictiveness of the secondary motivation variables. It is argued that the Indo American students are more vertical or hierarchical than the Anglo-American students and that comparison with others strongly influences their motivation beliefs and the formation of their efficacy beliefs. Self-efficacy in some cultures may be more other-oriented than is typically seen in Western cultures. A caution against generalizing about Asian populations is given, and implications.

Table of Content

Collectivism and Efficacy: Relationship to Academic Performance in Early Adolescents

Do efficacy beliefs operate in the same way across cultures? Considerable recent research has converged on the idea that many psychological processes are culturally contingent, with the result that "many of the findings currently regarded as 'basic' to . . . psychology are a function of particular cultural frameworks" (Fiske, Kitayama, Markus, & Nisbett, 1998, p. 916). Pajares (2000) called for a "culturally attentive" educational psychology that investigates human functioning in a range of social and cultural settings. Extensive research has been devoted to the study of self-efficacy beliefs in education (see, e.g., Pajares & Graham, 1999; Schunk, 1991; Zimmerman, 2000) and other diverse fields, but to this point, most of the work has involved Western, typically American, participants. Cross-cultural research can begin to clarify how different cultural beliefs and practices shape efficacy beliefs and help explain how efficacy beliefs might operate as a function of culture (Pajares, 2000). This article examines self-efficacy from a cross-cultural perspective; more specifically, this article investigates the mathematics efficacy beliefs of early adolescents from Indo Canadian (Punjabi Sikh) immigrant and Anglo Canadian (primarily European) nonimmigrant backgrounds.

Self-efficacy beliefs are context-specific evaluations of the capability to successfully complete a task and are formed through mastery experiences (past performance), vicarious experience, social/verbal persuasion, and interpretations of physiological and emotional states (Bandura, 1995). These beliefs contribute to prediction of academic outcomes beyond the contributions offered by ability, previous attainments, knowledge, and skill alone. According to

Bandura (1993), students need more than ability and skills to perform successfully; they also need the sense of efficacy to use these skills well and to regulate their learning.

Compared with related constructs such as competence beliefs and self-concept, self-efficacy beliefs are more task specific and are established through criterion reference rather than through comparison with others (Bong & Clark, 1999; Bong & Skaalvik, 2003; Zimmerman, 1995). For example, scales measuring math self-concept or math competence might ask, "Are you good at math (compared with others in your class)?", whereas a scale measuring math self-efficacy might contain the item "How confident are you in solving a two-digit multiplication question?" Conceptually, self-concept consists of both cognitions and related feelings, whereas self-efficacy comprises cognitions or beliefs about capabilities (Bong & Clark, 1999). Efficacy beliefs play a role in managing motivation in expectancy-value theory, which asserts that individuals evaluate courses of behavior for their value or potential to produce certain outcomes. Self-efficacy beliefs, then, consist of the degree to which individuals believe they can control their level of performance and their environment (Bandura, 1997).

Although some research has investigated the sources of efficacy beliefs (Anderson & Betz, 2001; Hampton, 1998; Lent, Lopez, & Bieschke, 1991; Matsui, Matsui, & Ohnishi, 1990), the universality of findings is open to question. Eaton and Dembo (1997) suggested that "researchers must focus on clarifying the underlying factors of motivation within each specific cultural group" (p. 438), but no cross-cultural studies to this point have explored the sources of self-efficacy beliefs, nor have any studies investigated self-efficacy sources of early adolescents. Cultural context or cultural dimensions (such as individualism and collectivism [I/C]) may play a key role in influencing how self-efficacy beliefs are formed in diverse settings. Oettingen (1995) proposed that cultural differences on the I/C continuum may affect the appraisal of the Robert M.

Klassen, Faculty of Education, Simon Fraser University, Burnaby, British Columbia, Canada. This article is based on a doctoral thesis completed at Simon Fraser University. The thesis was recently awarded the American Psychological Association Division 15 Paul R. Pintrich Outstanding Dissertation Award (2005). I thank thesis committee members Jack Martin and Phil Winne for their support and encouragement of this research. information used to determine self-efficacy beliefs. Furthermore, she suggested that efficacy sources are differentially valued according to cultural dimension. Markus and Kitayama (1991) proposed that in collectivist cultures, "others will be assigned much more importance, will carry more weight, and will be relatively focal in one's own behavior" (p. 229). It is possible that the self-oriented sources—past performance and emotional arousal— may be more highly valued among individualistic cultural groups, whereas the other-oriented dimensions of social persuasion and vicarious experience may be stronger influences among persons with collectivist leanings. Examining efficacy sources from a cross-cultural perspective provides valuable theoretical and practical information about the universality of how self-efficacy beliefs are formed.

The measurement of the four sources of self-efficacy poses a challenge for researchers. Previous studies have treated the sources of efficacy beliefs as generalized tendencies that may not inform real-time formation of specific self-efficacy beliefs. For example, items such as "I really hate math" (from Matsui et al., 1990) or "I received good grades in classes that required giving speeches" (from Anderson & Betz, 2001) do not necessarily assess the formation of efficacy beliefs but instead reflect general tendencies about a domain. Although real-time assessment of efficacy beliefs is possible ("How confident are you that you can solve this problem?"), real-time assessment of the sources of these beliefs is more cumbersome. However, efficacy beliefs are not formed exclusively at the moment when one faces a task in real time but

instead are formed through the selection and reflective interpretation of enactive, vicarious, persuasive, and physiological events (Bandura, 1997). The sources of self-efficacy beliefs are influenced by both generalized and context-specific cognitions and depend on the sorting and interpreting of events when a specific task is approached. For measurement purposes, presenting the sources of self-efficacy in a relevant context connected to one's task-specific efficacy beliefs may result in greater validity than has been achieved in previous studies.

The cultural dimensions of I/C refer to the degree of separateness and connectedness of individuals and groups (Markus & Kitayama, 1991; Triandis, 1995). Individualist cultures tend to emphasize I consciousness, independence, individual initiative, and right to privacy (Kim, Triandis, Kagitcibasi, Choi, & Yoon, 1994). In contrast, collectivist cultures have a tendency to stress we consciousness, collective identity, group solidarity, and duty (Kim et al., 1994). The results from recent research have suggested that efficacy beliefs operate differently in different cultures (see, e.g., Earley, Gibson, & Chen, 1999; Klassen, 2004; Schaubroeck, Lam, & Xie, 2000). An individual's sense of self is, to some extent, culture specific, with different cultural groups emphasizing varied aspects of self-functioning (Markus & Kitayama, 1991). Asian cultures are typically described as collectivist and Western cultures, especially North American culture, as strongly individualistic. Indian culture has been described as collectivist (Laungani, 1999; Verma & Triandis, 1999) as well as mixed (Mishra, 1994; D. Sinha & Tripathi, 1994), and although no studies have investigated the efficacy beliefs of immigrant South Asian groups (such as Indo Canadians), other immigrant groups (e.g., East Asian Americans) have been shown to retain self-belief characteristics of their culture of origin (see, e.g., Coon & Kemmelmeier, 2001; Eaton & Dembo, 1997; Whang & Hancock, 1994).

Further refinements to I/C have been made (Singelis, Triandis, Bhawuk, & Gelfand, 1995; Triandis, 1996; Triandis & Gelfand, 1998) with the additional overlay of vertical (emphasizing hierarchy, status, conformity, and authoritarianism) and horizontal (emphasizing equality, self-direction, benevolence, and sociability) elements, resulting in the four dimensions of vertical individualism, horizontal individualism, vertical collectivism, and horizontal collectivism. I/C are considered to be independent (or coexistent; see D. Sinha & Tripathi, 1994) dimensions; individuals and cultural groups might score high or low on each dimension or have divergent scores on the two dimensions (Triandis, 1996; Triandis & Gelfand, 1998). The addition of vertical and horizontal elements adds descriptive sophistication and explanatory power to the wellused dimensions of I/C and may help explain differences in how efficacy beliefs and their sources operate across cultures.

Bandura (1997, 2002) rejected the notion that self-efficacy plays a lesser role in collectivist cultures: "People live their lives neither entirely autonomously nor entirely interdependently in any society. . . . Interdependence does not obliterate a personal self" (Bandura, 1997, p. 32). He pointed out that cultures within the collectivist dimension vary greatly and that individuals, too, adjust their behavior depending on the context. With in-group members, collectivists display a high level of communalism; with out-group members, collectivists behave differently. Self-efficacy, Bandura argued, is equally valued by collectivists because "without a resilient sense of self, people are easily overwhelmed by adversities in their attempts to improve their group life through collective effort" (Bandura, 1997, p. 32).

When self-efficacy comparisons between individualist and collectivist cultures are made, the results almost invariably show that the non-Western participants rate their efficacy lower than Western participants, regardless of level of performance, but with better calibration (Eaton

& Dembo, 1997; Oettingen, 1995; Salili, Chiu, & Lai, 2001; also see Klassen, 2004, for a review of this literature). However, because cross-cultural motivation research has not been conducted in many settings, little is known about how efficacy might operate with (a) individuals from non-Western, non-East Asian cultural backgrounds (e.g., from South Asian cultural backgrounds) or (b) adolescents below the college or senior high school age range. Furthermore, there is a need for increased understanding of how self-efficacy might operate in comparison to other relevant motivation constructs in diverse settings (Pajares & Graham, 1999) and a need for further exploration as to how aspects of culture might influence efficacy beliefs. In addition to self-efficacy, a few other motivation constructs have been examined across cultures. Self-concept is one of the most-studied contemporary motivation constructs (Bong & Clark, 1999) and has been shown in numerous studies to act as a significant predictor of academic performance. Previous cross-cultural research (e.g., Stigler, Smith, & Mao, 1985; Whang & Hancock, 1994) has shown (East) Asian students to rate their mathematics self-concept lower than non-Asian American students in spite of the fact that East Asian children score higher on mathematics achievement. Some researchers (e.g., Eaton & Dembo, 1997; Steinberg, Dornbusch, & Brown, 1992) have suggested that Asian students are more motivated by a desire to meet their parents' academic expectations than culturally Western students. In this regard, fear of failure and the related construct of parental value of education have been shown to be culturally pertinent motivation constructs. Steinberg et al. (1992) showed that (East) Asian American students displayed higher levels of fear of failure and academic achievement than non-Asian students and that fear of failure was a strong predictor of academic performance for the Asian students. Eaton and Dembo (1997) found that not only was fear of failure a better predictor of achievement for Asian American students than for non-Asian students, it was a better predictor of academic

performance than was self-efficacy for the Asian students. Immigrant parents, regardless of ethnicity, frequently have higher academic expectations for their children than nonimmigrant parents (see, e.g., Gibson & Bhachu, 1991). Fulgini (1997) discovered that the academic effort and performance of adolescent children of immigrants are fueled by perceived parental value of education, defined as the perception that parents expect better than average grades in school and higher than average attainment in postsecondary settings.

Relative to East Asians, South Asians have not been well represented in the academic motivation and self-efficacy literature. Whereas there is evidence that people from an East Asian cultural background might display lower and more accurate efficacy ratings than do students from Western backgrounds, researchers who make claims about Asians or non-Westerners based on these findings may be overgeneralizing their conclusions (Fiske et al., 1998). Little or no cross-cultural self-efficacy research has been conducted involving South Asian immigrants in spite of the fact that Indians are the second largest immigrant group in Canada (Kwak & Berry, 2001) and the third largest Asian immigrant group in the United States (United States Census Bureau, 2002). Although Hofstede (1980) characterized India as relatively low in individualism and Triandis (1996) claimed India is a vertical collectivist culture, some researchers and theorists have disagreed with these assessments. D. Sinha and Tripathi (1994) asserted that Indian culture supports an unusually (by Western standards) complex and contextual "coexistence of contradictions" whereby "Indian culture and psyche are neither predominantly collectivist nor individualist in orientation. Their distinguishing feature is that they incorporate elements of both orientations" (p. 136). In D. Sinha and Tripathi's survey of Indian cultural orientation, the majority of participants (86.6%) displayed a mixed orientation as a first choice, and only 1% chose a collectivist orientation. Similarly, Mishra (1994) found mixed orientations in both

younger and older upper-caste Hindu participants and concluded, “The Indian form of collectivism seems to contain some streaks of individualism” (p. 238).

There is reason to believe that family and cultural aspects of life in South Asian groups might influence the formation and operation of motivation beliefs. Laungani (1999) proposed that Indian society “cannot be seen than other in familial and communal terms” (p. 197). Members of Indian families and communities, Laungani contended, operate on a ranking or hierarchical system (the extended family hierarchy is a microcosm of the community hierarchy) and place emphasis on relationships over work and activity. J. B. P. Sinha, Sinha, Verma, and Sinha (2001) argued that Indians are more contextual than Westerners when making decisions and consider desh (place), kaal (time), and paatra (person) before deciding how to proceed in a specific situation. In a sociological study of immigrant Indian Sikh populations living in California and Great Britain, Gibson and Bhachu (1991) claimed that Sikh immigrant adolescents— both girls and boys—are characterized by an academic persistence that is the result of strong familial beliefs that education is a primary avenue to upward mobility in a majority-culture environment that is sometimes hostile and discriminatory. This family emphasis on educational perseverance pays off: Sikh girls in California and Great Britain outperformed Sikh boys and majority-group girls and boys in high school grades, although in both contexts more Sikh boys than Sikh girls pursued university-level education and professional degrees. The cultural background of contextual, hierarchical, and relationship-oriented being influences Indians’ view of self in relation to others and, consequently, their self-beliefs.

Adolescents from all cultural groups experience the physiological and psychological changes associated with puberty and may be prone to changes in the self-perceptions of their efficacy to complete specific tasks. Because early adolescence is a period when once overly

optimistic children experience a burgeoning awareness of peers and their relative abilities (Stipek, 1998), it is not surprising that in some cultural settings, achievement motivation has been shown to decline during this phase (Eccles, Midgley, & Adler, 1984; Wigfield & Eccles, 1994). Changes in self-efficacy beliefs during the middle school years (i.e., Grades 6 – 8) influence the potential for achieving academic success: Early adolescents with low perceived academic and self-regulatory self-efficacy were found to display more physical and verbal aggression and greater emotional irascibility than adolescents with high self-efficacy (Bandura, 1993). Self-efficacy beliefs play an important role in determining how well adolescents weather the transitions associated with this developmental period. The physical and psychosocial changes, along with the environmental transitions, associated with adolescence bring about a loss of personal control that results in a reduction in the confidence needed to manage challenging tasks (Bandura, 1997). Anderman and Maehr (1994) noted that domain-specific attitudes, overall school-related attitudes, and motivation all suffer a significant drop in the middle school years. In addition, success in specific academic domains, such as mathematics, becomes increasingly important during this developmental stage regardless of cultural background because entry into higher level math and science courses is often predicated on math success in early adolescence.

This study was designed to put self-efficacy to the test in terms of its generalizability to an Indo Canadian, specifically immigrant Punjabi Sikh, group of early adolescents. To minimize the influence of the participants' language background on performance mathematics was chosen as the domain of interest for this study. The primary questions in this study were (a) Is self-efficacy a valid predictor of performance for Indo Canadian immigrant and Anglo Canadian nonimmigrant early adolescents, or do other motivation variables better explain performance, (b)

are efficacy beliefs formed from the same sources for both cultural groups, and (c) do the cultural dimensions of I/C help explain cross-cultural variation in efficacy beliefs?

To answer the first question, three secondary motivational constructs—math self-concept (Marsh, 1992), fear of failure (Eaton & Dembo, 1997), and perceived parental value of academics (Fulgini, 1997)—were measured to investigate whether or not self efficacy stands up as a valid predictor of performance across cultures. Some cross-cultural studies have examined only one targeted motivation variable and compared how that variable operates differentially across cultures. This study provides a sterner test for self-efficacy. Comparing the predictiveness of self-efficacy with other culturally salient motivational and attitudinal variables helped to build an argument that efficacy beliefs are universal predictors of performance.

Next, using an adapted form of the scale designed by Matusi et al. (1990), math self-efficacy was assessed in the two cultural groups. The measure used to assess the sources of self-efficacy in this study is an improvement over previous measures because it is context specific and the respondent's efficacy beliefs are primed through reference to his or her confidence to complete a particular task. Furthermore, the enhanced scale displays good psychometric properties, with a factor analysis showing internally consistent factors that are well defined by the variables. Although a few studies have investigated the sources of self-efficacy beliefs for specific populations and in specific domains (Hampton, 1998; Lent et al., 1991; Matsui et al., 1990), no studies have examined the sources of academic self-efficacy from a cross-cultural perspective. The cultural dimensions of I/C, subdivided into vertical and horizontal components, were used to provide a theoretical framework for this study.

Method

Participants

The sample consisted of 270 (118 male, 152 female) Grade 7 students (drawn from an initial sample of 383 participants) from eight public and two private elementary schools in a large urban/suburban community. Research participants were volunteers; they received a small gift of candy at the completion of data collection. Demographic information collected included country of birth, language(s) spoken at home, father's level of education, father's country of birth, and reported previous grade in math. Participants were categorized according to father's country of birth and language(s) spoken in the home (see Gudykunst & Bond, 1997). Students who had been born in Canada or the United States, whose father had been born in Canada or the United States, and who spoke only English at home were classified as Anglo Canadian (44 male, 68 female, n = 112). Students who had been born in India or whose father had been born in India and who spoke Punjabi, or English and Punjabi, at home were grouped as Indo Canadian (74 male, 84 female, n = 158). For the purposes of this article, Anglo Canadian refers to English-speaking, predominantly European-background, nonimmigrant students (whose fathers were also Canadian or American born); Indo Canadian refers to Punjabi Sikh immigrants or children of Punjabi Sikh immigrant fathers. Although ethnic background information was not collected beyond father's birthplace, the immigration pattern in this community is such that most non-European immigrants have arrived in the past 30 years; the vast majority of the Anglo Canadian students were of European descent (less than 1% Black or Latin American according to census information). According to school officials, the parents of the Indo Canadian students in this community were almost exclusively Sikhs from the Punjab region in northern India. Out of the total of 383 participants, 104 did not fall into either of the two main groups (father's country of

birth was East Asia, Africa, Eastern Europe, the Middle East, or South America) and were not included in any of the analyses.

Anglo Canadian group.

For this group of 112 students, the mean age was 12.43 years (SD = .51), the mean math grade (D 1 through to A 7) was 5.24 (SD = 1.34), and the mean father's level of education (ranging from 1 didn't attend high school through to 5 completed college or university) was 3.83 (SD 1.02).

Indo Canadian group.

The 158 students in this sample had a mean age of 12.30 years (SD = .51) and an average previous math grade of 5.10 (SD = 1.34). The average level of father's education for this group was 3.63 (SD = 1.24). There were no significant differences between the two cultural groups for any of the demographic variables. There were no significant differences on any of the motivational, performance, cultural dimension, or demographic variables. Also, there were no significant differences on any of the motivation, cultural, or performance variables between the 17 Indian-born and the 141 Canadian-born Indo Canadian students.

Procedure

Approval for the project was sought and obtained from the university research ethics board, the school district research department, and the principals of the private schools. Teachers from 16 classes agreed to allow me to come and explain the project to the class and to ask for participants. The project was explained to the students, and parental permission forms were

handed out and collected by the classroom teacher. Approximately 85% of students contacted agreed to participate in the research project and brought back signed parental permission forms.

The participating students completed the research measures in the classroom setting; students who elected not to participate or who had not returned signed permission forms were taken by the teachers to other areas. Each data collection session took approximately 1 hr and 15 min and included all of the measures. The order of administration was as follows: demographic information; parental importance measure; the I/C, math self-concept, and fear of failure combined measure; the sources of self-efficacy measure; the math self-efficacy and math measures; and a collective efficacy measure and group task (not reported in this article). For half of the classes, the order of administration was altered with the demographic information followed by the collective efficacy measure and group task, followed by the parental importance measure, I/C measure, math self-concept measure, and so on. All items were read aloud to the students, who also had a copy of the questionnaire in front of them. At the end of the session, students were thanked for their participation.

Measures

Father's level of education. A measure of parental level of education was included as an index of socioeconomic status. Students were informed that they could rate their mother's level of education if they were in a one-parent family. Math measure (performance task). The 22-item math measure was created in cooperation with school district staff to reflect some of the content (basic arithmetic skills, decimals, fractions, simple algebra) covered in the Grade 7 math program (Cronbach's = .80 for Anglo Canadians =, .77 for Indo Canadians). The mean score for the whole sample was 12.97 (SD = 3.79). Self-efficacy for math. Participants completed a 22-

item self-efficacy measure that used a 0 –10 scale with three descriptors: No chance (at 0), Maybe can do (at 4 – 6), and Certain can do (at 10). Students were given a practice item on an overhead projector with the following oral and written instructions:

"I want to know about your confidence to solve these 22 math questions on your own in 15 minutes. Read each question, and before you actually do the question, rate how sure you are that you can solve the question. Rate your degree of confidence by recording a number from 0 to 10 in each of the blanks using the scale given below. Let's try one as an example."

Self-efficacy for math scores were calculated as the mean efficacy rating for each student. Similar direct approaches to mathematics self-efficacy measurement have been used with good reliability by other self-efficacy researchers (e.g., Pajares & Graham, 1999; Pajares & Miller, 1997; Schunk & Cox, 1986). The Cronbach's alpha obtained in this study was .91 for each cultural group. The mean score for the whole sample was 7.55 (SD = 1.65).

Sources of self-efficacy.

The sources of mathematics self-efficacy scale was adapted from the measure developed by Matsui et al. (1990) and comprehensively modified. This particular scale was chosen because of its good internal consistency and its conciseness—an important factor for research involving early adolescents. A subsequent factor analysis revealed strong content validity. The 15-item sources of self-efficacy scale included 5 items for three of the self-efficacy sources hypothesized by Bandura (1997)—vicarious experience, social persuasion, and emotional arousal. As in the Matsui et al. study, past performance was operationalized as the students' reported the previous semester's math grade. Self-report of previous math grades is a theoretically valid method of assessing enactive experience because these reports reflect one of the strongest diagnostic indicators of personal capabilities (Anderson & Betz, 2001). Reported previous math grades influence self-efficacy because they provide "authentic evidence of whether one can muster

whatever it takes to succeed" (Bandura, 1997, p. 80). The reliability coefficient for the entire scale was .78 for Anglo Canadians (.75 for Indo Canadians), with the following alpha levels obtained for each source: social persuasion .87 (.82), vicarious experience .73 (.70), and emotional arousal .76 (.74).

Fear of academic failure.

This 6-item scale was adapted from Eaton and Dembo (1997), who found that fear of failure predicted performance differentially across cultures. Modifications to this measure consisted of the inclusion of the 0 –10 scale used throughout this project. Students were asked, "How true are the following statements of you?" and responded with 0 (Not true at all) to 10 (Very true). The measure included items such as "I don't think I can get a good job if I do badly in school" and "Doing badly in school will disappoint my parents very much." The internal consistency reliability coefficient obtained for this measure in this study was .63 for the Anglo Canadians and .68 for the Indo Canadians; the whole sample mean score was 7.86 (SD = 1.70).

Math self-concept.

The 6-item math self-concept scale was taken from Marsh (1990), who investigated students' self-concepts in 16 academic areas. Students responded using a 0 –10 scale. Self-concept items included "Compared to others I am good at math" and "I have always done well in math." The reliability coefficient for this measure (Cronbach's alpha) was .91 for the Anglo Canadians (.88 for Indo Canadians), consistent with the range of .885–.949 given in Marsh. The mean score for the whole sample was 6.93 (SD= 1.96).

Perceived parental value of academics.

Fulgini (1997) found students' perceptions of their parents' value of academic success to be a strong predictor of academic success for children from immigrant families. The 6-item scale was completed using the 0 –10 scale used for the other measures in this study and asked the respondents to "Rate the importance to your parents of the following items." Items included "Getting high grades in math" and "Being the best student in the class." Internal consistency, measured using Cronbach's alpha, was measured at .81 for the Anglo Canadians and .76 for the Indo Canadians for the current study. The mean score for the whole sample was 7.75 (SD = 1.66).

Individualism/collectivism.

The I/C scale included in this study was adapted from the 16-item scale created through factor analysis by Triandis and Gelfand (1998) and further investigated by Soh and Leong (2002). The primary dimensions of I/C were further subdivided into horizontal (emphasizing equality) and vertical (emphasizing hierarchy) components, resulting in the four dimensions of vertical and horizontal collectivism and vertical and horizontal individualism. Adaptations to the original measure included revised wording to reflect the target age group and setting, as well as the use of a 0 –10 scale. Vertical collectivism was represented by items such as "Family members should stick together, no matter what," and "It's important to me that I respect decisions made by my group." Horizontal collectivism included "The well-being of other students is important to me" and "I feel good when I work with others." The vertical individualism items included "Winning is everything" and "It is important that I do better than others," and horizontal individualism was represented by items such as "I'd rather depend on

myself than others" and "I rely on myself most of the time; I rarely rely on others." Reliability coefficient (Cronbach's alpha) for the whole scale was .80 for the Anglo Canadians and .74 for the Indo Canadians. Reliability coefficients for the four subdimensions were as follows: (Anglo Canadians followed by Indo Canadians in parentheses): horizontal individualism = .66 (.57), vertical individualism = .75 (.71), horizontal collectivism = .57 (.57), and vertical collectivism .69 (.66).

Results

Prior to analysis, the data were screened for normality, linearity, and homogeneity of variance. Nine students (five Indo Canadian and four Anglo Canadian) were excluded from the study as they were multivariate outliers detected through analysis of standardized residuals in multiple regression.

To examine the relationship between the independent variables of cultural group and sex, the dependent variables of math performance, and the four motivational variables (i.e., math self-efficacy and the three secondary motivational variables of self-concept, fear of failure, and perceived parental value of academics), a 2x 2 between-groups multivariate analysis of variance was carried out. Using Wilks's criterion, the combined dependent variables were not affected by the interaction of cultural group and sex, F(1, 266) 1.90, p = .09. The relationship between sex and the dependent variables was significant, F(1, 266) 4.78, p < .01, $\eta^{2} =$ .08. Follow-up univariate tests showed a significant sex difference for math self-concept, F(1, 266) 11.17, p < .01, but effect size was low, $\eta^{2} =$ .04. Although there were mean self-concept differences between the sexes (male = 7.37, female = 6.59), there was no interaction between sex and cultural group. A significant relationship between cultural group and the dependent variables was

found, F(1, 266) 38.87, p < .01. This reflects a strong association between cultural group and the combined dependent variables, $\eta^{2} =$ .43. As a follow-up to the multivariate analysis, univariate comparisons were made. In Table 1, mean scores and standard deviations for math performance, self-efficacy, fear of failure, math self-concept, and perceived parental view of math for the two groups are presented. The Indo American group scored significantly higher than the Anglo American group (mean scores of 13.41 and 12.37, respectively) on the math performance variable, F(1, 266) 4.53, p < .03, $\eta^{2} =$ .02.

Among the motivation variables, there were significant differences in self-efficacy, F(1, 266) = 8.78, p < .01, $\eta^{2} =$ .03; fear of failure, F(1, 266) 102.74, p< .01, $\eta^{2} =$ .28; and perceived parental value of academics, F(1, 266) 172.85, p < .01, $\eta^{2} =$.41, with all means higher in the Indo American group. The two groups calibrated their efficacy and performance at an equivalent level, with the Indo American rating their efficacy to complete math tasks slightly higher and then performing at a slightly higher level.

Within-group correlations of math performance, previous performance (math grade), self-efficacy, self-concept, fear of failure, and parents' value of academic success are presented in Table 2. For the Anglo American group, math performance was most strongly related to math self-efficacy (r = .62), previous math grade (r = .50), and math self-concept (r = .48). In the case of the Indo American students, math performance was strongly related to self-efficacy (r = .64), self-concept (r = .53), and previous math grade (r .46).

Table 1. Means and standard deviations for Math Performance and Motivational Variables.

	Anglo-American Group (n =112)		Indo Americans Group (n = 158)		
	M	SD	M	SD	
Math Performance*	12.37	4.02	13.41	3.56	.02
Math Self-efficacy**	7.21	1.72	7.79	1.56	.03
Math Self Concept	6.75	2.19	7.06	1.77	.01
Fear of Failure**	6.78	1.74	8.61	1.18	.28
Parental Importance**	6.50	1.65	8.64	.92	.41

P< .05 ** p < .01

Table 2. Within –Group Correlations for Math Performance, Previous Math grade, and Motivational variables.

Variables	1	2	3	4	5	6
Math Performance	-	.46**	.64**	.53**	.08	.22*
Previous Math Grade	.50**	-	.36**	.60**	-.04	.00
Math Self Efficacy	.62**	.44**	-	.41**	.21*	.33*
Math Self Concept	.48**	.66**	.54**	-	.25*	.21*
Fear of Failure	.20*	.19*	.22*	.34**	-	.47**
Parental Importance	.27*	.16	.32*	.29*	.58**	-

Note. Correlations for Anglo students appear below the diagonal; correlations for the Indo-American appear above the diagonal.

- P < .05 ** < .01

Sequential (hierarchical) multiple regression (see Table 3) was used to determine if self-efficacy improved prediction of math performance beyond that afforded by previous math performance and the culturally salient motivation variables of math self-concept, fear of failure, and parents' perceived value of academic success. Order of entry was chosen to test the role of self-efficacy over and above variables shown to be significantly related to performance in previous cross-cultural research. For the Anglo Canadians, the entry of past performance on Step 1 resulted in a significant R^2 =.25. The entry of the secondary motivation variables on Step 2 significantly increased R^2 = .31, and the entry of self-efficacy on Step 3 significantly raised R^2 = .46, (F(5, 106) 17.76, p < .01. After entry of all of the variables, self-efficacy was the strongest predictor of math performance for the Anglo Canadian students (β = .467, p < .01), followed by previous performance (β = (.253, p < .01). Math self-concept, perceived parental importance, and fear of failure did not significantly contribute to the equation.

For the Indo Canadian group, the entry of math grade on Step 1 resulted in a significant R^2 = .21. The entry of the secondary motivation variables as a block on Step 2 significantly raised R^2 = .31, and the entry of self-efficacy on Step 3 resulted in a significant increase in R^2 = .51, (F(5, 152) 31.76, p < .01). After all of the variables were entered, self-efficacy was the strongest predictor of math performance (β = .509, p < .01), followed by math self-concept. (β = 281, p < .01). Previous math grade, parental importance, and fear of failure did not contribute significantly to the regression equation.

Table 3. Summary of Sequential (Hierarchical) Multiple Regression for Variables Predicting Math Performance- Anglo Americans (N = 112) and Ido-Americans (N =158).

Variables	β	*SE B*	β	*R*	R^2
		Anglo-Americans			
Step 1				50**	.25
Math Grade	1.5	.25	.498**		
Step 2				.56**	.31
Math Grade	0.98	.32	.326**		
Fear of Failure	-.0.10	.23	-0.43		
Math Self Concept	0.42	.21	.229*		
Parental Importance	.43	.24	.178		
Step 3				.68**	.46
Math Grade	.76	.29	.253**		
Fear of Failure	-0.02	.21	-.010		
Math Self Concept	0.08	.19	.042		
Parental Importance	0.18	.22	.076		
Math Self Efficacy	1.09	.21	.467**		

Table 3 (continued)

. Summary of Sequential (Hierarchical) Multiple Regression for Variables Predicting Math Performance- Anglo Americans (N = 112) and Ido-Americans (N =158).

Variables	β	*SE B*	β	*R*	R^2
			Indo-Americans		
Step 1				.46**	.21
Math Grade	1.23	.19	.498		
Step 2				.57**	.32
Math Grade	0.63	.23	.238**		
Fear of Failure	0.76	.18	.375**		
Math Self Concept	0.41	.29	.105		
Parental Importance	-0.15	.24	-.05		
Step 3				.71**	.51
Math Grade	0.29	.20	.110		
Math Self Concept	0.57	.16	.281**		
Parental Importance	-0.11	.26	-.031		
Fear of Failure	-0.21	.20	-.078		
Math Self Efficacy	1.16	.15	.509**		

*p <.05 ** p < .01

Discussion

The central question addressed in this study was: Do self-efficacy beliefs operate differently for different cultural groups? A few cross-cultural investigations in educational psychology have explored differences between Western and non-Western individuals, especially between Asian and non-Asian students, with typical conclusions that Asian or Asian American students display more modest self- beliefs in the face of superior performance. In this study, Indo American students calibrated their efficacy and performance in a way that was similar to the Anglo American students— higher self-efficacy beliefs were linked with higher levels of performance. Previous researchers have questioned the applicability of various self-beliefs to Asian populations. Whang and Hancock (1994), for example, proposed that "theories of achievement motivation are rooted in individualism and may have validity primarily for American and other similar cultures" (p. 315). In the current investigation, as is frequently the case in cross-cultural research (McInerney, 1998; McInerney, Hinkley, Dowson, & Van Etten, 1998), there are both similarities and differences between the contrasted cultural groups. In the present case, self-efficacy has been shown to be a relevant factor influencing performance for both cultural groups, and one's past performance to be a predictor of efficacy beliefs for both groups. However, it is also apparent that the South Asian, Indo American adolescents viewed the world through a different cultural lens, with a stronger emphasis on social comparison and social hierarchy, and that this unique cultural perspective influenced the ways in which they were motivated to achieve and the ways in which their motivation beliefs were formed. The Indo American brand of self-efficacy is shaped much more strongly by others, Furthermore, in a comparison of self-beliefs, the other-oriented or comparative variable of self-concept was needed in addition to self-efficacy to explain performance for the Indo American, whereas for the Anglo

American students, self-efficacy and previous performance were sufficient to explain current performance.

Future exploration of efficacy beliefs might profitably examine the processes through which recently arrived immigrants acquire the self-understanding and motivational beliefs of the majority group. The Indo American group in this study clearly functioned within a "contact zone" (Hermans & Kempen, 1998, p. 1116) in which Punjabi Sikh culture and majority Anglo American culture intersect. For immigrant Asian groups, views of a variety of social structures—parental authority, children's rights, children's obligations, and cultural traditions— change with degree of acculturation (Kwak & Berry, 2001). Ghuman (1994), in his study of the acculturation process of Indo American high school students, found the mostly Punjabi Sikh adolescents to largely reject the "inward looking attitudes of their parents [e.g., not mixing with Whites, sticking to their food, living in the areas where the community has settled, rejecting traditional arranged marriages]" (p. 239) but to remain positive about their religion and home language. In the context of the current study, an exploration of changes over time in the vertical cultural dimensions of I/C may help researchers to understand one aspect of self-understanding. Longitudinal or cross-sectional research investigating changes in the sources and formation of self-efficacy (including social comparison) beliefs may also help with understanding of the changes in motivational beliefs that occur during adolescence and with the effects of acculturation. This article has suggested some theoretical links between cultural dimension and efficacy beliefs; future research that establishes stronger empirical links between cultural dimensions and efficacy formation will be welcome.

"Modern education needs cross-cultural psychology" (Triandis, 2001, p. 1) to understand how all students function in today's multiethnic schools. Earley and colleagues (Earley, 1994,

1999; Earley et al., 1999) found that people respond differently to training and instruction depending on their cultural background. The Indo American students in this study displayed tendencies toward I/C with a particular emphasis on the vertical aspects of both of these dimensions. The focus on social comparison appeared to influence the Indo Canadian students' self-beliefs more so than it did those of the Anglo American students. Those working with Indo American and other vertically oriented populations would be well served to understand the cultural basis for the perhaps unanticipated concern with social comparison. In light of the finding that emotional arousal had a strong negative effect on efficacy beliefs for both groups of early adolescents, teachers may wish to focus attention on strategies designed to reduce students' anxiety. Anxiety undermines confidence, which, in turn, undermines academic performance. Finally, the strength of self-efficacy beliefs in predicting performance across cultures should be acknowledged by those working with children in multicultural settings: Students' confidence beliefs may, in fact, be the best indicator of future performance.

Results from this study need to be interpreted cautiously and might apply only to Indo American Punjabi Sikhs and not to broader populations of South Asians. Previous studies have mistakenly generalized from a single cultural group to all Asians, ignoring the scores of cultures represented by that label. A reliance on other-oriented cognitions and a focus on the close ties of family may not be unique to this sample of Indo Canadian immigrants but may generally hold true for many immigrant groups. Differences found between the Indo American immigrant and Anglo American nonimmigrant samples in this study cannot be attributed only to culture; immigration status (as well as degree of acculturation) also plays a role in influencing performance, cultural dimensions, and motivation. However, alternative methodologies are also problematic: Differences found in cross-national comparisons cannot be attributed solely to

cultural differences but can be attributed also to other contextual differences, such as education systems. The design of this study holds the advantage of a general equivalence of context for the two cultural groups, at least with regards to the school setting. Because the sample was disproportionately female (56%), perhaps due to a higher proportion of the Grade 7 boys not returning research consent forms, the results may not accurately reflect the results from a more proportionate sample (although sex differences were minimal). Including a self-efficacy measure and criterial task with close specificity and correspondence has been recommended (see, e.g., Bandura, 1986; Pajares, 1996) but may have introduced method bias that would have been avoided if the predictor and criterion variables had come from different sources. However, steps were taken to reduce common method variance—items from different constructs were intermixed, order of tasks was counterbalanced, and respondent anonymity was ensured (see Podsakoff, MacKenzie, Lee, & Podsakoff, 2003, for a discussion of method variance in behavioral research). With regard to the measurement of the sources of self-efficacy, the use of reported previous math grade as a measure of enactive experience (past performance) is not optimal. Although previous researchers (e.g., Matsui et al., 1990) have used this method, it masks the cognitive appraisal made by the student of the actual attainment. For example, a reported grade of B may represent a personal triumph for one student or a major disappointment for another, and it will thus affect the formation of self-efficacy beliefs differently. For efficacy researchers in the future, a cognitive appraisal of personal performance, rather than reported previous performance, would provide more valid and constructive information.

References

Agarwal, R., & Misra, G. (1986). A factor analytic study of achievement goals and means: An Indian view. International Journal of Psychology, 21, 717–731.

Anderman, E. M., & Maehr, M. L. (1994). Motivation and schooling in the middle grades. Review of Educational Research, 64, 287–309.

Anderson, S. L., & Betz, N. E. (2001). Sources of social self-efficacy expectations: Their measurement and relation to career development. Journal of Vocational Behavior, 58, 98 –117.

Bandura, A. (1986). Social foundations of thought and action: A social cognitive theory. Englewood Cliffs, NJ: Prentice-Hall.

Bandura, A. (1993). Perceived self-efficacy in cognitive development and functioning. Educational Psychologist, 28, 117–148.

Bandura, A. (1995). Self-efficacy in changing societies. Cambridge, England: Cambridge University Press. Bandura, A. (1997). Self-efficacy: The exercise of control. New York: Freeman.

Bandura, A. (2002). Social cognitive theory in cultural context. Applied Psychology: An International Review, 51, 269 –290. Bong, M., & Clark, R. E. (1999). Comparison between self-concept and self-efficacy in academic motivation research. Educational Psychologist, 34, 139 –153.

Bong, M., & Skaalvik, E. M. (2003). Academic self-concept and selfefficacy: How different are they really? Educational Psychology Review, 15, 1– 40.

Coon, H. M., & Kemmelmeier, M. (2001). Cultural orientations in the United States: (Re)examining differences among ethnic groups. Journal of Cross-Cultural Psychology, 32, 348 –364. Earley, P. C. (1994). Self or group? Cultural effects on training on selfefficacy and performance. Administrative Science Quarterly, 39, 89 – 117.

Earley, P. C. (1999). Playing follow the leader: Status-determining traits in relation to collectiveefficacy across cultures. Organizational Behavior and Human Decision Processes, 80, 192–212.

Earley, P. C., Gibson, C. B., & Chen, C. C. (1999). "How did I do?" versus "How did we do?" Cultural contrasts of performance feedback use and self-efficacy. Journal of Cross-Cultural Psychology, 30, 594 – 619.

Eaton, M. J., & Dembo, M. H. (1997). Differences in the motivation beliefs of Asian American and non-Asian students. Journal of Educational Psychology, 89, 443– 440.

Eccles, J. S., Midgley, C., & Adler, T. (1984). Grade-related changes in the school environment: Effects on achievement motivation. In R. Ames & C. Ames (Eds.), The development of achievement motivation (pp. 283– 331). Greenwich, CT: JAI Press.

Fiske, A. P., Kitayama, S., Markus, H. R., & Nisbett, R. E. (1998). The cultural matrix of social psychology. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), The handbook of social psychology (4th ed., Vol. 2, pp. 915–981). New York: McGraw-Hill.

Fulgini, A. J. (1997). The academic achievement of adolescents from immigrant families: The roles of family background, attitudes, and behavior. Child Development, 68, 351–363.

Ghuman, P. A. S. (1994). Canadian or Indo-Canadian: A study of South Asian adolescents. International Journal of Adolescence and Youth, 4, 229 –243.

Gibson, M. A., & Bhachu, P. K. (1991). The dynamics of decision making: A comparative study of Sikhs in Britain and the United States. In M. A. Gibson & J. U. Ogbu (Eds.), Minority status and schooling: A comparative study of immigrant and involuntary minorities (pp. 63–95). New York: Garland.

Gudykunst, W. B., & Bond, M. H. (1997). Intergroup relations across cultures. In J. W. Berry, M. H. Segall, & C. Kagitcibasi (Eds.), Handbook of cross-cultural psychology (Vol. 3, pp. 119 –162). Needham Heights, MA: Allyn & Bacon.

Hampton, N. Z. (1998). Sources of academic self-efficacy scale: An assessment tool for rehabilitation counselors. Rehabilitation Counselling Bulletin, 41, 260 –277. Hermans, H. J

. M., & Kempen, H. J. G. (1998). Moving cultures: The perilous problems of cultural dichotomies in a globalizing society. American Psychologist, 53, 1111–1120.

Hofstede, G. (1980). Culture's consequences: International differences in work-related values. Beverly Hills, CA: Sage.

Kim, H. C. Triandis, C. Kagitcibasi, S. C. Choi, & G. Yoon (Eds.), Individualism and collectivism: Theory, methods and applications (pp. 1–16). Thousand Oaks, CA: Sage.

Kwak, K., & Berry, J. W. (2001). Generational differences in acculturation among Asian families in Canada: A comparison of Vietnamese, Korean, and East-Indian groups. International Journal of Psychology, 36, 152– 162.

Laungani, P. (1999). Cultural influences on identify and behavior: India and Britain. In Y. T. Lee, C. R. McCauley, & J. G. Draguns (Eds.), Personality and person perception across cultures (pp. 191–212). Mahwah, NJ: Erlbaum.

Lent, R. W., Lopez, F. G., & Bieschke, K. J. (1991). Mathematics selfefficacy: Sources and relation to science-based career choice. Journal of Counseling Psychology, 38, 424 – 430.

Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. Psychological Review, 98, 224 – 253.

Marsh, H. W. (1990). The structure of academic self-concept: The Marsh/ Shavelson model. Journal of Educational Psychology, 82, 623– 636.

Marsh, H. W. (1992). Content specificity of relations between academic achievement and academic self-concept. Journal of Educational Psychology, 84, 35– 42.

Marsh, H. W., Roche, L. A., Pajares, F., & Miller, D. (1997). Item-specific efficacy judgments in mathematical problem solving: The downside of standing too close to trees in a forest. Contemporary Educational Psychology, 22, 363–377.

Matsui, T., Matsui, K., & Ohnishi, R. (1990). Mechanisms underlying math self-efficacy learning of college students. Journal of Vocational Behavior, 37, 225–238.

Hinkley, J., Dowson, M., & Van Etten, S. (1998). Aboriginal, Anglo, and immigrantAustralian students' motivational beliefs about personal academic success: Are there cultural differences? Journal of Educational Psychology, 90, 621– 629.

Mishra, R. C. (1994). Individualist and collectivist orientations across generations. In U. Kim, H. C. Triandis, C. Kagitcibasi, S. C. Choi, & G. Yoon (Eds.), Individualism and collectivism: Theory, method, and applications (pp. 225–238). Thousand Oaks, CA: Sage.

Oettingen, G. (1995). Cross-cultural perspectives on self-efficacy. In A. Bandura (Ed.), Self-efficacy in changing societies (pp. 149 –176). Cambridge, England: Cambridge University Press.

Pajares, F. (1996, April). Assessing self-efficacy beliefs and academic outcomes: The case for specificity and correspondence. Paper presented at the annual meeting of the American Educational Research Association, New York, NY.

Pajares, F. (2000, April). Seeking a culturally attentive educational psychology. Paper presented at the meeting of the American Educational Research Association, New Orleans, LA.

Pajares, F., & Graham, L. (1999). Self-efficacy, motivation constructs, and. mathematics performance of entering middle school students. Contemporary Educational Psychology, 24, 124 –139.

Pajares, F., & Miller, M. D. (1997). Mathematics self-efficacy and mathematical problem-solving: Implications of using different forms of assessment. Journal of Experimental Education, 65, 213–228.

Podsakoff, P. M., MacKenzie, S. B., Lee, J-.L., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. Journal of Applied Psychology, 88, 879 –903.

Salili, F., Chiu, C. Y., & Lai, S. (2001). The influence of culture and context on students' motivational orientation and performance. In F. Salili, C. Y. Chie, & Y. Y. Hong (Eds.), Student motivation: The culture and context of learning (pp. 221–247). New York: Kluwer.

Schaubroeck, J., Lam, S. S. K., & Xie, J. L. (2000). Collective efficacy versus self-efficacy in coping responses to stressors and control: A cross-cultural study. Journal of Applied Psychology, 85, 512–525.

Schunk, D. H. (1991). Self-efficacy and academic motivation. Educational Psychologist, 26, 207–232. Schunk, D. H., & Cox, P. D. (1986). Strategy training and attributional feedback with learning disabled students. Journal of Educational Psychology, 78, 201–209.

Singelis, T. M., Triandis, H. C., Bhawuk, D., & Gelfand, M. J. (1995). Horizontal and vertical dimensions of individualism and collectivism: A theoretical and measurement refinement. Cross-Cultural Research, 29, 240 –275.

Sinha, D., & Tripathi, R. C. (1994). Individualism in a collectivist culture: A case of coexistence of opposites. In U. Kim, H. C. Triandis, C. Kagitcibasi, S. C. Choi, & G. Yoon (Eds.), Individualism and collectivism: Theory, methods and applications (pp. 123–136).

Thousand Oaks, CA: Sage.

Sinha, J. B. P., Sinha, T. N., Verma, J., & Sinha, R. B. N. (2001). Collectivism coexisting with individualism: An Indian scenario. Asian Journal of Social Psychology, 4, 133–145.

Soh, S., & Leong, F. T. L. (2002). Validity of vertical and horizontal individualism and collectivism in Singapore: Relationships with values and interests. Journal of Cross-Cultural Psychology, 33, 3–15.

Steinberg, L., Dornbusch, S. M., & Brown, B. B. (1992). Ethnic differences in adolescent

achievement: An ecological perspective. American Psychologist, 47, 723–729.

Stigler, J. W., Smith, S., & Mao, L. W. (1985). The self-perception of competence by Chinese children. Child Development, 56, 1259 –1270.

Stipek, D. (1998). Motivation to learn: From theory to practice. Needham Heights, MA: Allyn & Bacon. Triandis, H. C. (1995). Individualism and collectivism. Boulder, CO: Westview Press.

Triandis, H. C. (1996). The psychological measurement of cultural syndromes. American Psychologist, 51, 407– 415.

Triandis, H. C. (2001). Modern education needs cross-cultural psychology. In D. M. McInerney & S. Van Etten (Eds.), Research on sociocultural influences on motivation and learning (Vol. 1, pp. 1–13). Greenwich, CT: Information Age Publishing.

Triandis, H. C., & Gelfand, M. J. (1998). Converging measurement of horizontal and vertical individualism and collectivism. Journal of Personality and Social Psychology, 74, 118 – 128.

United States Census Bureau. (2002). Asian and Pacific Islander populations. Retrieved September 11, 2004, from http://www.census.gov/ population/www/socdemo/race/api.html

Verma, J., & Triandis, H. C. (1999). The measurement of collectivism in India. In W. J. Lonner & D. L. Dinnel (Eds.), Merging past, present, and future in cross-cultural psychology (pp. 256 –265). Bristol, PA: Swets & Zeitlinger.

Whang, P. A., & Hancock, G. R. (1994). Motivation and mathematics achievement: Comparisons between Asian-American and non-Asian students. Contemporary Educational Psychology, 19, 302–322.

Wigfield, A., & Eccles, J. S. (1994). Children's competence beliefs, achievement values, and general self-esteem: Change across elementary and middle school. Journal of Early Adolescence, 14, 107–138.

Zimmerman, B. J. (1995). Self-efficacy and educational development. In A. Bandura (Ed.), Self-efficacy in changing societies (pp. 202–231). Cambridge, England: Cambridge University Press.

Zimmerman, B. J. (2000). Self-efficacy: An essential motive to learn. Contemporary Educational Psychology, 25, 82–91. Received September 18, 2003 Revision received June 7, 2004 Accepted June 8, 2004