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ABSTRACT

The goal theory of achievement argues that the goals stressed by schools have dramatic consequences for whether children develop a sense of self-efficacy, or whether they avoid challenging tasks, giving up when faced with failure. It is commonly believed that the goals stressed by Western-oriented schools are inappropriate to indigenous minority group students and predisposes them to school failure. This paper reports on a continuing study with a range of cultural groups in which the aim is to demonstrate the cultural relevance and applicability of goal theory to explaining and interpreting motivation in school settings. In particular, the paper describes the use of the LISREL computer program to develop motivational scales representing achievement goals that have validity and reliability in cross-cultural settings and the use of these scales for describing and explaining academic attitudes and performance across five cultural groups of secondary school students. Subjects in two linked studies were: (1) 492 Australian aboriginal students; (2) 1,173 Anglo students; (3) 487 Australian students of migrant background; (4) 529 Navajo Indians; and (5) 198 Montagnais Betsiamite Indians from Canada. Preliminary results demonstrated the reliability and validity of the developed instrument, the Inventory of School Motivation. (Contains 8 tables and 57 references.) (Author/SLD)

The relevance and application of goal theory to interpreting indigenous minority group motivation and achievement in school settings.

Round table presentation

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Abstract

Research at the classroom and school level suggests that students perceive classrooms as stressing various goals. The goal theory of achievement motivation argues that the goals stressed by schools have dramatic consequences for whether children develop a sense of self-efficacy and a willingness to try hard and take on challenges, or whether they avoid challenging tasks, giving up when faced with failure. It is commonly believed that the goals stressed by Western oriented schools are inappropriate to indigenous minority group students and predispose them to school failure.

This paper reports on a continuing study with a range of cultural groups in which the aim is to demonstrate the cultural relevance and applicability of goal theory to explaining and interpreting motivation in school settings. In particular, the paper describes the use of LISREL to develop motivational scales representing achievement goals that have validity and reliability in cross-cultural settings, and the use of these scales for describing and explaining academic attitudes and performance across five cultural groups.

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Research at the classroom and school level suggests that students perceive classrooms as stressing various goals. The goal theory of achievement motivation argues that the goals stressed by schools have dramatic consequences for whether children develop a sense of self-efficacy and a willingness to try hard and take on challenges, or whether they avoid challenging tasks, giving up when faced with failure (See Ames, 1984, 1992; Covington, 1992; Elliott & Dweck, 1988; Maehr, 1989; Maehr & Midgley, 1991).

Goals are cognitive representations of the different purposes that students may have in different achievement situations, and are presumed to guide students' behaviour, cognition, and affect as they become involved in academic work (Ames, 1992; Dweck & Elliott, 1983; Pintrich, Marx & Boyle, 1993; Wentzel, 1991). Two goals have received considerable attention from researchers: **mastery goals** (also called learning goals), and **performance goals** (also called extrinsic goals). Central to a mastery goal is the belief that effort leads to success, and that the focus of attention is on the intrinsic value of learning. With a mastery goal, individuals are oriented toward developing new skills, trying to understand their work, improving their level of competence, or achieving a sense of mastery. Mastery goals and their achievement are "self-referenced". In contrast, central to a performance goal is a focus on one's ability and sense of self-worth. Ability is shown by doing better than others, by surpassing norms, or by achieving success with little effort. Public recognition for doing better than others through grades, rewards and approval from others, is an important element of performance goal orientation. Performance goals and achievement are, therefore,"other referenced". Consequently, "self-worth" is determined by one's perception of ability to perform and to compete successfully. Hence, when a student tries hard without being completely successful (in terms of the established norms) his or her sense of self-worth is threatened (Ames, 1992, Covington, 1992; Nicholls, 1989).

The bipolar mastery versus performance continuum, while giving us valuable insights into some aspects of the motivational process and the ways in which schools may emphasise one or other of these two goal structures, suggests that these goals are mutually exclusive. Recent theorising and research, however, suggests that these are not dichotomous and that individuals may hold both mastery and performance goals, varying in salience, depending on the nature of the task, the school environment and the broader social and educational context of the institution (see e.g., Wentzel, 1991; Meece, 1991; Pintrich & Garcia, 1991). Furthermore, such an approach fails to adequately consider other relevant and interacting goals. In other words, students hold multiple goals, each of which may impact upon their level of motivation for particular tasks. These multiple goals may interact providing a complex framework of motivational determinants of action. For example, the social dimension of schooling (including the influence of parents, teachers and peers) may interact with both mastery and performance goals, and be extremely influential in affecting children's

attitudes towards schooling, in general, and learning, in particular (see Blumenfeld, 1992; McInerney, 1988, 1989a and b, 1991; McInerney & Sinclair, 1992; Pintrich & Schrauben, 1992).

The reduction of a study of the importance and motivational impact of goals to a simple mastery versus performance dichotomy particularly unsatisfactory where children from minority cultural groups are concerned. Implicit in both mastery and performance goals is a focus on individualism where priority is given to the goals of individuals. There is little emphasis however, on collectivism (reflecting an emphasis on group goals and affiliation) which is characteristic of many indigenous minority groups (Kagitcibasi & Berry, 1989; Triandis et al, 1993; Schwartz, 1990). Similarly, there there is little attention paid to group orientations such as working to preserve in-group integrity, interdependence of members and harmonious relationships.

The evidence that cultural groups within many social settings (such as employment and schooling) appear to be motivated by many different forces has intrigued psychologists, sociologists and anthropologists for years (Pederson, 1979), and has stimulated the search for better models to guide cross cultural research (Berry, 1980; Duda, 1981; McClelland, 1961; Maehr, 1984; Triandis, 1980). The research literature is rich with case studies, ethnographies, surveys and experimental studies on a vast range of cultural groups based on these and other models. One theoretical model which posits multiple goals for motivated action and which allows for the interacting effects of these goals is Maehr's Personal Investment Model (Maehr,1984; Maehr and Braskamp, 1986). In its broadest interpretation, the model conceptualises motivated behavior as being determined by three global variables: perceived goals of behaviour (which I will refer to as multiple goals), beliefs about self, and action possibilities.

Perceived goals of behavior in a situation refers to the motivational foci of activity i.e., what a person defines as 'success' and 'failure' in a particular situation. Maehr proposes four broad goal systems which are presumed to be universal: task goals (such as experiencing adventure, novelty or working to understand or improve at something), ego goals (such as doing better than others or leading the group), social solidarity goals (such as pleasing others and being concerned for other's welfare) and extrinsic reward goals (such as working for a recognition, prize or reward of some kind). (See also Schwartz, 1990 for an interesting discussion of similar universal dimensions of motivation). Each of these goal structures impacts upon an individual's sense of competence, sense of autonomy and sense of purpose in learning, and contributes to the motivational orientation of the individual.

The second component of the model is defined by Maehr as sense of self, which refers to the more or less organized collections of perceptions, beliefs, and feelings related to whom one is. Sense of self is presumed to be composed of a number of components such as sense of competence, sense of autonomy and sense of purpose, each contributing to the

motivational orientation of the individual and interacting with the motivational goals outlined above. The third component, action possibilities, refers to the behavioral alternatives that a person perceives to be available and appropriate in a given situation. These are seen in terms of sociocultural norms and external factors such as geographic location and socio-economic status that exist for the individual.

The purpose of this paper is to describe the construction, validation and use in cross-cultural contexts of the Inventory of School Motivation (ISM), which is based on the Personal Investment Model (Maehr and Braskamp, 1986). The scale was developed: (a) to test empirically the "sense of self" and "perceived goals of behaviour" dimensions of the Maehr model: (b) to test the applicability of the model and instrument in cross-cultural settings: and (c) to provide an instrument for measuring dimensions of motivation in classroom settings characterised by ethnic diversity.

The research here reports on the following:

1. LISREL analyses of the ISM to demonstrate the applicability and relevance of multiple goals and sense of self components drawn from the Personal Investment Model to Australian Aboriginal, Anglo Australian, Migrant Australian, and Navajo Indian Students;

2. The efficacy of various goals in predicting student achievement and school motivation for Australian Aboriginal, Anglo Australian, Migrant Australian, Navajo Indian and Montagnais Betsiamite students.

This research deals with the multiple goals and sense of self components of the model. Action possibilities have been discussed in a wide range of publications dealing with minority group dropouts and will not be considered in this paper.

Methodology

The methodological and conceptual difficulties involved in measuring and defining achievement motivation for cross cultural use have been discussed in a large number of publications. Earlier work of the first author has been concerned with the factorial validation of the Inventory of School Motivation (ISM), an instrument based upon the Personal Investment Model, and the use of derived ISM factor scales as predictors of a range of educationally relevant criterion variables (school confidence, perceived value of school, affect to school, desired occupation, school completion, school achievement, and absenteeism) across a range of culturally different groups (McInerney & Sinclair, 1991, 1992; McInerney, 1994a, 1994b). Responses to the ISM from a total of 2684 secondary students drawn from Australian Aboriginal, Australian Anglo, Australian Migrant and American Navajo Indian communities were subjected to exploratory factor analyses which yielded factor scales congruent with the goal theory, and which were employed as variables in a series of multiple regression analyses. The findings supported the usefulness of both the theoretical framework

as well as the validity of the ISM in analysing influential motivational goals for individuals from different cultural groups in educational settings.

There has been however, inadequate attention paid to the issue of cross-cultural differences in the *factor structure* of motivational orientations. It should be noted that this concern is not about differences in the mean *level* of motivational constructs. Rather, the question is whether responses to the items within each of the scales in an instrument have the same *meaning* for different cultural groups. Confirmatory factor analysis (CFA, Byrne, 1989; Joreskog & Sorbom, 1988) offers much stronger tests of alternative models in which specific parameter estimates, sets of parameter estimates, or all parameter estimates can be constrained to be invariant across groups (Marsh, 1987; 1993; 1994; Marsh, Hau, Roche, Craven, Balla & McInerney, 1994; Marsh, Richards, Johnson, Roche & Tremayne, 1994).

Sample

Four hundred and ninety two Aboriginal students were surveyed from Year 7 through to Year 11 from 12 high schools in New South Wales (Australia) broadly typical of the types of country and city schools that Australian Aboriginal children attend (e.g., Redfern, Matraville, Dubbo, Nowra, Wellington). Comparator Anglo and Migrant background groups were drawn fom the same schools (1173 Anglo students and 487 Migrant background students). Five hundred and twenty nine Navajo students from Grade 9 through to Grade 12 were surveyed at Window Rock High School, a large high school situated on the Navajo Reservation.

Study two included 198 Montagnais Betsiamite Indian students from Grade 7 through to Grade 12 from Ecole Secondaire Uashkaikan, Quebec, located on the Betsiamite Reservation, as well as the sample described above.

Inventory of School Motivation (ISM)

The Inventory of School Motivation (ISM) was devised to reflect components of Maehr's Personal Investment model (Maehr, 1984; Maehr & Braskamp, 1986) and to investigate the nature of school motivation in cross cultural settings (McInerney, 1988, 1991, 1992b; McInerney & Sinclair, 1991, 1992). The Inventory is broad enough to reflect the global dimensions of the model in a variety of cultural settings. Inventory questions relate to the following perceived goals of behaviour, each of which has two elements; task goals: task involvement (e.g., the more interesting the schoolwork the harder I try), and striving for excellence (e.g., I try hard to make sure that I am good at my schoolwork); ego goals: competitiveness (e.g., winning is important to me), power/group leadership (e.g., I often try to be the leader of a group); social solidarity goals: affiliation (e.g., I try to work with friends as much as possible at school), social concern (e.g., it is very important for students to help each other at school); extrinsic goals: recognition (e.g., having other people tell me that I did well

is important to me), token rewards (e.g., getting merit certificates would make me work harder at school). Questions were also written to reflect three sense of self dimensions: self-esteem (e.g., I am always getting into trouble at school); sense of competence (e.g., I like to think things out for myself at school) and sense of purpose (e.g., it is good to plan ahead to complete my schooling). Items were answered using a Likert-type scale from strongly agree (1) to strongly disagree (5). The three Australian groups and the Navajo group were presented the questionnaire in English (the common language of school for these children) although minor modifications were made to the instrument to reflect appropriate Navajo idiom. The instrument was translated from English into Montagnais for the Betsiamite following appropriate backtranslation procedures to ensure translation accuracy. The instrument was administered under standardized conditions.

Questions were randomly assigned throughout the form and contained twenty four negative items to guard against response bias.

Study 1

Statistical Analysis

In CFA, the researcher posits an a priori structure, indicating which items (or indicators) should load onto which factors (or latent variables). The ability of a solution based on this *hypothesised model* to fit the data is then tested. Goodness of fit indices are used to assess how closely a matrix reproduced from parameter estimates for the posited model correspond to the input correlation or covariance matrix based on the actual data. A more detailed introduction to the conduct of CFA is available elsewhere (Byrne, 1989; Hoyle, 1995; Joreskog & Sorbom, 1988; Pedhazur & Schmelkin, 1991), and instructive examples of the application of CFA to the issue of factorial invariance across different populations are becoming more common in educational and psychological research (eg. Marsh, 1993; Marsh, Hau, Roche, Craven, Balla & McInerney, 1994; Marsh, Richards, Johnson, Roche & Tremayne, 1994).

The relevant parameters in typical CFA studies consist of factor loadings (relations between measured variables and latent factors); factor variances and covariances (relations among the factors); and item uniquenesses (a combination of specific and error variance). Invariance in relation to factor loadings is a minimal criterion in evaluating the equivalence of factor structures between groups, but it is also desirable to assess the equivalence of factor correlations and item uniquenesses (Marsh, 1993; 1994; Marsh, Richards, Johnson, Roche & Tremayne, 1994).

In order to test the invariance of a hypothesised structure across groups, it is necessary to begin with a model that fits the data well (Byrne, 1989; Marsh, 1993; 1994). The first stage of the present study involved using LISREL 7 (Joreskog & Sorbom, 1988) to

refine the scales from the instrument. A number of preliminary models were tested (not reported here), which began with the entire pool of 100 items designed to measure the 11 factors (including eight 'perceived goals' factors and the three 'sense of self' factors). Criteria such as factor loadings, uniquenesses, and modification indices (showing items which would produce a better fit if allowed to load on other factors), were applied in addition to scale reliability results and a critical review of item wording and scale definition to eliminate poor items.

The three sense of self factors in this initial analysis were not originally intended to represent distinct goals of the motivational model in question. Results indicated that these constructs added substantial complexity to the model. As a consequence of this complication, and the large number of indicators, models based on the 11 factors demonstrated rather modest goodness-of-fit (there was a reluctance to use item pairs in the model rather than discreet items, so that poor items could be more readily identified). The sense of self factors were therefore analysed as a separate three factor model. The goodness-of-fit indices for these analyses demonstrated adequate fit, however, because of space limitations they will not be presented here. The factor structure of achievement goals was investigated by initially postulating eight distinct motivational constructs measured with 54 items from the ISM.

Results and Discussion

Subsequent LISREL analyses led to the collapsing of the two task-related factors (task involvement and striving for excellence) into one task factor, and the elimination of a further 14 items to produce a seven factor model based on 40 items (these factors, along with the three sense of self factors are outlined in Table 1, and the items defining each factor are presented in Table 2). Scale reliabilities and scale means are discussed later, in relation to Study 2. Goodness-of-fit indices for the seven factor CFA model across the entire sample and for each group separately are presented in Table 3. The Tucker-Lewis Index (TLI) and Relative Noncentrality Index (RNI) are used to assess fit, as well as the parsimony index based on the RNI (as recommended by McDonald & Marsh, 1990). The TLI and RNI vary along a 0-1 continuum, with values greater than .9 typically taken to represent a good fit (Byrne, 1989; McDonald & Marsh, 1990) although there is growing evidence that these more sophisticated 'incremental' fit indices tend to overreject true models at the .9 criterion level (Hu & Bentler, 1995). The values obtained (RNI= .866 for the entire sample, TLI= .855) are lower than traditionally considered optimal, but indicate a reasonable fit. Both the RNI and TLI indices were greater than .8 for each of the 4 groups analysed separately.

Goodness-of-fit statistics for the set of invariance tests are also presented in Table 3. Invariance was tested by comparing a four group model with no invariance constraints (TLI= .842) to models with different invariance constraints imposed. As parameters are constrained

to be equal across groups, there are fewer parameters to be estimated (so that the model becomes more parsimonious). The RNI, which contains no penalty for lack of parsimony, automatically becomes lower as fewer parameters are estimated, but this may be a result of a reduced likelihood of capitalisation on chance. A penalty for model complexity is provided in the TLI, so that it is possible for more parsimonious models to obtain a better fit (McDonald & Marsh, 1990). The PRNI imposes a more severe penalty on more complex models, providing a less conservative test of improvement in fit as the model is constrained to be equivalent between groups.

The first comparison model was specified to hold factor loadings invariant across the four groups, while allowing factor variances, factor correlations and item uniquenesses to differ between groups. This resulted in a slightly higher TLI index (TLI= .844) than that obtained in the model with no invariance constraints, providing good support for the invariance of factor loadings between the groups. When factor variances were also held invariant across groups, there was a slight decrease in fit according to the TLI (TLI= .841). The third model imposed invariance constraints on both factor loadings and factor correlations. This restriction produced a further small decrease in TLI (TLI= .840) and improved the PRNI, which more severely penalises the lack of parsimony in the unconstrained model (from .788 with no invariance constraints to .827 with factor loadings and correlations invariant).

The final two models (summarised in Table 3) resulted in more substantial decrements in TLI and RNI, although the PRNI continued to improve due to the greater model parsimony (PRNI =.845 for the completely invariant model). Overall, all the models indicate that the factor structure of the ISM is well defined and reasonably invariant across the four cultural groups.

These results, and an inspection of factor loadings, factor correlations and uniquenesses for the separate groups, suggest that the most defensible model is provided by holding factor loadings and correlations invariant, while allowing uniquenesses to vary between groups. This model is presented in Table 4. The factor loadings are generally quite large, indicating well defined factors for each of the groups. Consistent with the separate group analyses, in which the goodness-of-fit was slightly lower for the Aboriginal group, the uniquenesses for the Aboriginal group tend to be relatively larger than those for the other groups, indicating a somewhat higher degree of specific and error variance associated with a number of items in relation to this solution.

Insert Tables 1, 2 3 and 4 about here

It appears that while this general model can be applied with some confidence across different groups, on the basis of the reasonable fit of the invariance model, there may be

unique (or 'tailored') models which could provide a better fit within specific groups. This possibility should be explored in future applications of CFA. It should also be noted that there are alternative approaches to the testing and revision of models using CFA, which could also be applied across groups. For example, 'working upwards' from single factors within each group, beginning with one-factor congeneric models (Rowe, 1993), may provide a superior general model for testing, based on the best items that are in common among groups. In many contexts, it may also be appropriate to use hierarchical linear modeling to investigate cultural factors at different levels (eg., school, community) (Mok, 1993).

Conclusion

As this study demonstrates, confirmatory factor analysis allows the appropriateness of a model to be rigourously tested when applying motivational or other psychological scales across different cultural groups. The use of exploratory factor analysis, apart from its normal limitations (Rowe & Rowe, 1992) provides no way to evaluate the comparability of the derived solution between groups. The results obtained from the present data are an encouraging step towards providing strong empirical justification for the comparability of motivational constructs across diverse cultural groups.

Having evaluated the *structural* similarity of motivational constructs across the four cultural groups involved in Study 1, it is now possible to investigate, with greater confidence, similarities and differences between groups in relation to these factors and their predictive efficacies.

Study 2

It has often been argued that educational goals salient to indigenous children differ from those salient to Western children, and that these differences serve to explain differential school performance (such as academic achievement and school absenteeism) and future outcomes (such as school completion, further education, and occupational level) for these indigenous minority children. Psychometric instruments, such as the Inventory of School Motivation, are designed to describe characteristics of individuals and groups on particular dimensions of interest in order to highlight similarities and differences between groups; explain outcome variables, such as performance, in terms of particular individual and group characteristics and differences, and/or to predict future behavioural outcomes (such as school retention and choice of occupation) in terms of particular student and group characteristics.

In the next section of this paper we will explore this issue and examine the similarities and differences between the motivational profiles derived from the ISM (reflecting goals and sense of self dimensions) for Australian Aboriginal, Anglo and Migrant

examine the efficacy of the scales drawn from the LISREL analyses, described earlier, in explaining variance in student responses to a range of school related intentions, behaviors and attitudes across these five cultural groups.

These five groups can be loosely described as lying on continua from modern to traditional, and from individualist to collectivist, with the Anglo and Migrant samples located on the modern/individualist end and Aboriginal, Navajo, and Betsiamite on the traditional/collectivist end of the continua, in that order. The literature posits a number of opposing goals of traditional/collectivist versus modern/individualist societies (see, for example, McInerney, 1994a & b; McInerney, in press; McInerney & Swisher, in press). It is proposed, for example, that individuals within modern/individualistic societies are competitive, power seeking, and desirous of individual success through personal excellence. In contrast, it is proposed that individuals within traditional/collectivist societies are affiliation oriented and motivated by social concern, eschewing competitiveness and individual striving for success. It is also believed that because traditional/collectivist societies are strongly present and past oriented, members of these societies are less future oriented and more motivated by present rewards, such as token reinforcement, than individuals from modern/individualist societies. Furthermore, it is proposed that Western style schools, which emphasise individual mastery and performance goals (reflected in competitiveness and individualism), are poorly suited to children from traditional/collectivist societies, and as a result these children have poorer self esteem within the school context, poorer school confidence, and see little purpose in completing school. Using this basic framework, the following hypotheses were written to test for differences between the samples on the predictor and criterion variables of interest in this study:

Excellence: Migrant background and Anglo children will be more excellence oriented than Aboriginal, Navajo and Betsiamite children.

Competition: Migrant background and Anglo children will be more competitive than Aboriginal, Navajo and Betsiamite children.

Group Leadership: Anglo and Migrant background children will be more group leadership oriented than Aboriginal, Navajo and Betsiamite children.

Affiliation: Betsiamite, Navajo and Aboriginal children will be more affiliation oriented than Migrant and Anglo children.

Social Concern: Betsiamite, Navajo and Aboriginal children will be more social concern oriented than Migrant background and Anglo children.

Recognition: Betsiamite, Navajo and Aboriginal children will be more recognition oriented than Migrant background and Aboriginal children.

Token Reinforcement : Betsiamite, Navajo and Aboriginal children will be more token reinforcement oriented than Migrant background and Anglo children.

Sense of Purpose: Anglo and Migrant background children will have a stronger sense of purpose for schooling than Aboriginal, Navajo and Betsiamite children.
Sense of Competence: Anglo and Migrant background children will have a higher sense of competence within school settings than Aboriginal, Navajo and Betsiamite children.
Self Esteem: Anglo and Migrant background children will have higher self esteem in the school context than Aboriginal, Navajo and Betsiamite children.
Perceived Value of School: Migrant background and Anglo children will perceive more value in schooling than Aboriginal, Navajo and Betsiamite children.
School Confidence: Migrant background and Anglo children will have greater school confidence than Aboriginal, Navajo and Betsiamite children.
Intention to Complete School: Migrant background and Anglo children will have a stronger intention to complete school than Aboriginal, Navajo and Anglo children.

Statistical analyses and results

In order to describe the motivational profiles of each group, descriptive statistics were calculated on the ten Inventory scales (presented in Table 2) and three criterion scales (presented in Table 5) of interest. Table 6 presents these. Oneway analyses of variance were then conducted to ascertain if there were significant differences between the groups on each of the scales drawn from the ISM, and if these differences confirmed the hypotheses stated above. Table 6 denotes pairs of groups significantly different from each other. In the following section we will examine the findings relative to these hypotheses.

Insert Tables 5 and 6 about here

Excellence:
All groups were strongly excellence oriented. Contrary to expectations, the Navajo group was significantly more excellence oriented than any of the other groups. The Migrant background group was significantly more positive than both the Anglo and Aboriginal groups. There were no other significant differences. The Aboriginal group was the least excellence oriented. However, we note here that although significant, the differences between the groups were small.
Competition:
No group was strongly competition oriented. Findings ran counter to expectations with the Anglo group being significantly less competitive than either the Migrant group or the traditional groups. There were no other significant differences.
Group Leadership:
While all groups were negatively oriented to group leadership, our findings ran counter to expectations with the Anglo and Migrant group being significantly less group leadership

oriented than the Navajo and Betsiamite groups. While the Aboriginal group was significantly less group leadership oriented than the Navajo group, it was significantly more group leadership oriented than the Anglo group. In effect, the three traditional groups were more group leadership oriented than the two modern groups.

Affiliation:

While all groups were affiliation oriented, the Navajo group was significantly more affiliation oriented than any of the other groups. This was in line with expectations. However, the Betsiamite group expressed the lowest level of affiliation and was significantly less affiliation oriented than the Anglo group. The Migrant background group was significantly less affiliation oriented than the Anglo group. The Aboriginal group was located in the middle of the range of scores.

Social Concern:

In line with expectations Navajo children were significantly more social concern oriented than all the other groups. However, in contrast to expectations, Betsiamite children were significantly less social concern oriented than the other groups. There were no significant differences between Anglo, Migrant background and Aboriginal children on this dimension.

Recognition:

While all groups were recognition oriented, Navajo children were significantly more so than any of the other groups. There were no other significant differences.

Token Reinforcement:

While none of the groups was strongly token oriented, the three indigenous minority groups were more token oriented than the Migrant background and Anglo groups, which was in line with expectations. The Anglo group was significantly less token oriented than all the other groups, while the Migrant background group was significantly less token oriented than either the Aboriginal group or the Navajo group.

Sense of Purpose:

All groups expressed strong sense of purpose for schooling. Contrary to expectations, the Navajo group was significantly more positive than all other groups. However, in line with expectations, the Betsiamite and Aboriginal groups were less positive on this scale than the Migrant background and Anglo groups, with significant differences between the Migrant background and Anglo students for the Aboriginal group, and a significant difference between the Betsiamite and the Migrant background group. While significant, the differences between the groups were small.

Sense of Competence:

The Navajo group had a significantly higher sense of competence than the Betsiamite, Anglo and Aboriginal groups. There was no significant difference between the Navajo and the Migrant background group. The Migrant background group was also significantly more positive than the Anglo and Aboriginal groups. The Aboriginal group had significanlty less

sense of competence than any of the groups, however, differences between the groups were small.

Self-esteem:

In general, results confirmed expectations, with Aboriginal and Betsiamite groups being significantly lower in self esteem than Migrant background and Anglo children. However, contrary to expectations, the Navajo group was significantly more positive on this dimension than any of the other groups. The Migrant background group was significantly higher on this dimension than the Anglo group.

Perceived Value of Schooling:

All groups were very positive on this dimension and, in general, the results were in line with expectations, with the Aboriginal and Betsiamite groups being least positive on this scale. However, contrary to expectations, the Navajo group was significantly more positive on this scale than each of the other groups, with the Migrant background group also being significantly more positive than the Anglo, Aboriginal and Betsiamite groups. There were no other significant differences.

School Confidence:

Contrary to expectations, the Anglo group was significantly less confident than any of the traditional groups as well as the Migrant background group. Furthermore, the Migrant background group was significantly less confident than the Navajo and Betsiamite groups. The Aboriginal group was significantly less confident than the other two traditional groups and the Migrant background group, but significantly more confident than the Anglo group.

Intention to complete schooling:

Contrary to expectations, the two traditional groups (Navajo and Betsiamite) expressed significantly stronger intentions to complete schooling than the other three groups. The Navajo group was also significantly more positive than the Betsiamite group. The Migrant background group was significantly more positive to completing school than either the Anglo or Aboriginal groups. There was no significant difference between these latter two groups.

Discussion

It is clear from these findings that generalised descriptive typologies of traditional versus modern groups, such as described above, are fraught with anomalies and inconsistencies. On the most obvious level, there are no simple contrasts between the groups. On the basis of the evidence from this study, it is not possible to say particular groups are competitive, individualistic and power seeking, while other groups are non-competitive, non-individualistic and non-power-seeking. Indeed, the results discussed above suggest that the significant differences that do occur distinguish between levels at the same polar end of each scale. In other words, it is not a case of which group is, for example, affiliative or not affiliative, but rather which group is **more** affiliative among groups that are, in general,

affiliative. The evidence suggests that each of the groups has a motivational profile that is very similar to the others.

It is also important to note that where significant differences occurred, they occasionally ran counter to expectations based upon the earlier typology. For example, the Anglo group was less competitive than any of the traditional groups. Furthermore, there were examples of significant differences between the Navajo and Betsiamite groups where the two traditional groups occupied the opposite end points on the range of means!

The analyses reported above are based on grouped data and measures of central tendency. Individual differences are lost in this type of analysis. There may be children within each of the traditional and modern groups whose motivational profile approaches that of the stereotypical picture discussed above. Further analyses, based upon a more fined grained division of groups into traditional and modern than simply "group label", may demonstrate the salience of these stereotypes. For example, within the Navajo group there may be students who are more "traditional" while others are more "modern," an index of which might be facility with Navajo language. In this case, analyses would not only focus on between group differences but also within group differences. Our research will consider this in follow-up studies. Our present findings seem to indicate, however, that while there are a number of significant differences, the overall patterns across the groups are very similar, and that there are few predictable differences based on the traditional/modern typology. We examine this contention further in our sections below.

Multiple regression analyses

In our earlier analyses, we have demonstrated the validity and reliability of the ISM for use across a range of cultural groups. Utilizing scales drawn from the ISM, we have also described and compared features of the motivational pattern of each of the five groups. In this final section, we wish to examine the usefulness of the ISM in explaining the school performance of these groups on a number of major educational criteria. Our focus questions are:

1. Is the ISM effective in explaining variation in school performance criteria across the five groups?
2. Are the patterns of explanation similar across the five groups?
3. What predictor variables are most salient, and are these the same across the five groups?

Predictor variables

The predictor variables used in the multiple regression analyses were the scales drawn from the Inventory of School Motivation based on confirmatory factor analyses reported earlier. Table 2 lists the predictor variables and the items comprising each scale. Table 6 presents descriptive statistics on each of these scales (and three criterion scales) and their reliability

estimates. All predictor variables were added as a single block using SPSS-X regression procedure (SPSS, 1988).

Criterion variables

Eight criterion variables were used for the multiple regression analyses. Three of these, perceived value of school, school confidence, and intention to complete school, were constructed scales based upon a five point Likert scale from strongly agree to strongly disagree. Items comprising these scales are presented in Table 5, and each scale's reliability estimate (Cronbach's alpha), is presented in Table 6. The affect criterion was based upon a single item question (I like working at school), while the final four variables were demographic, viz., desired occupation after leaving school, elicited from the students at the time of the survey and graded on a six point scale based upon the occupational prestige of the nominated occupation; English and Maths achievement (Aboriginal, Anglo, Migrant and Betsiamite students) and Grade Point Average (GPA) (Navajo Students); and days absence for the enrolment period in which the survey was conducted (drawn from school records).

Table 7 presents the multiple regression equations for each of the criterion variables across the five groups studied.

Insert Table 7 about here

Clearly, the results demonstrate that the ISM is very effective in explaining variation in school performance criteria for the five groups. Across all the criterion variables (except attendance for the Anglo group), and across the five groups the ISM was able to explain a significant level of variance in the criterion variables. Criterion scales for which the ISM was able to explain very high levels of variance were: Intention to complete school, perceived value of school, and school confidence. The ISM was able to explain high levels of variance in Maths achievement, English achievement, desired occupation, and affect to school. The ISM was also able to explain a significant, but modest, level of variance in attendance. The size of R^2 across the groups on each criterion variable is very similar, although there is a tendency on a number of scales for it to be lower for the Navajo and Betsiamite groups (in particular, the Betsiamite). This finding may reflect the smaller sample size and a slightly lower reliability on these particular scales for the Betsiamite group (see Table 6). These results tend to support the usefulness of the instrument for use within a range of cultural groups.

To examine the patterns of similarity and difference of the multiple regression equations across the five groups, the standardised beta weights for each of the predictor variables were examined. As there are five groups, eight criterion variables and ten predictor variables, it is not possible in this paper to describe the similarities and differences between

the patterns across the groups in detail. Table 7 presents these and the reader is encouraged to spend some time examining the data. Two features are worth noting, first, the number of significant predictor variables and second, their relative importance (indicated by the beta weights) in explaining particular criteria, across the groups. Table 8 represents, in summary form, the order of importance of the predictor variables for each group across the criterion variables. It indicates that, in general, strong predictors for particular criterion scales are consistent across the groups. For example, self esteem, token reinforcement and sense of purpose appear to be consistently important in explaining Maths and English achievement across the five groups. For the intention to complete school scale, sense of purpose, self esteem affiliation and social concern appear to be consistently important across the groups; for affect to school, sense of purpose and excellence are consistently important; for perceived value of school, sense of purpose, excellence and group leadership appear to be consistently important, while finally, for school confidence self esteem, sense of competence, social concern and group leadership appear consistently important across the groups. While an examination of similarities gives us important information, it is also useful to consider differences in particular patterns. For example, it is noteworthy that for the Betsiamite group, sense of purpose is a relatively more important predictor of academic achievement in Mathematics and English than self esteem, which was relatively more important for the other four groups. While sense of purpose is an important predictor of desired occupation for Anglo, Migrant background, Aboriginal and Navajo students, social concern is relatively more important for the Betsiamite group. Similarities and differences, such as those described above, can be linked to group characteristics to supply a rich heuristic for further research.

Insert Table 8 about here

Our research also sought to discover which predictor variables were most salient, and whether these are the same or different across the five groups. A glance down the columns in Tables 7 and 8 indicates which predictor scales are repeatedly significant across a range of criterion scales for each of the groups. Clearly important predictors for each group are self esteem, sense of purpose, and excellence. Social concern and token reinforcement are relatively important predictors. A surprising finding was the relative lack of importance in explaining educational criteria of a number of scales which are suggested in the literature as being important, viz., affiliation, group leadership, sense of competence, recognition and competition. If there had been the expected differences between the five groups in the salience of the full range of predictors, these latter variables should have distinguished between the groups. However, it appears from our analyses that the groups are more similar

than different, and that the same range of predictors are important (or not important) across the groups.

Summary and conclusion

Our study has demonstrated the validity and reliability of the Inventory of School Motivation for use in cross cultural contexts. Furthermore, the ISM has enabled us to describe the motivational characteristics of a range of diverse cultural groups in terms of goal theory, and to explain group variance in a range of important educational criteria.

Our findings suggest that the motivational profiles of the diverse groups are more similar than different; that a narrow range of goals and sense of self variables are important in explaining school achievement on educational criteria, and these are similar across the groups; and that key variables used to distinguish modern/individualistic and traditional/collectivist groups do not appear to be salient in the school context. Further studies will examine within groups differences and relate these to criteria of school success.

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Table 1 Dimensions drawn from Confirmatory Factor Analyses of the Inventory of School Motivation across five cultural groups

	PERSONAL INCENTIVES
Task	Striving for excellence
Ego	Competitiveness Power/group leadership
Social Solidarity	Affiliation Social Concern
Extrinsic Rewards	Recognition Token Rewards
	SENSE OF SELF
	Sense of Purpose Sense of Competence Self Esteem

Table 2 Items comprising scales drawn from Confirmatory Factor Analyses of the Inventory of School Motivation

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Excellence (exl)

I try hard at school because I am interested in my work
I need to know that I am getting somewhere with my schoolwork
I try hard to make sure that I am good at my schoolwork
I like to see that I am improving in my schoolwork
I work hard to try to understand something new at school
When I am improving in my schoolwork I try even harder
I am always trying to do better in my school work

Competition (com)
I want to do well at school to be better than my classmates
Winning is important to me
I am happy only when I am one of the best in class
Coming first is very important to me
I work harder if I'm trying to be better than others

Group Leadership (gls)
I often try to be the leader of a group
I work hard because I want to feel important in front of my school friends
It is very important for me to be a group leader
I work hard because I want the class to take notice of me
I work hard at school so that I will be put in charge of things

Affiliation (afl)
I like working with other people at school
I can do my best work at school when I am working with others
I try to work with friends as much as possible at school
When I work in groups at school I don't do my best*

Social concern (soc)
It is very important for students to help each other at school
I like to help other students do well at school
I care about other people at school
I enjoy helping others with their schoolwork even if I don't do so well myself
It makes me unhappy if my friends aren't doing well at school

Recognition (rec)
I try to do well at school to please my teachers
Having other people tell me that I did well is important to me
Praise from my teachers for my good schoolwork is important to me
Praise from my friends for good schoolwork is important to me
I like to be encouraged for my schoolwork
At school I work best when I am praised
I want to be praised for my good schoolwork
Praise from my parents for good schoolwork is important to me

Token (tok)
I work hard at school for rewards from the teacher
I work best in class when I can get some kind of reward
I work hard at school for presents from my parents
Getting merit certificates would make me work harder at school
Getting good marks is everything for me at school

Sense of Purpose (sop)
I want to do well at school to show that I can do it
I want to do well at school so that I can have a good future
I aim my schooling towards getting a good job
I try hard to do well at school so I can get a good job when I leave
I work hard at school so that I can go on to (the final year)
It is good for me to plan ahead so I can do well at school
It is good to plan ahead to complete my schooling

Sense of Competence (sec)
I often try new things on my own
I like to think things out for myself at school
Most of the time I feel that I can do my schoolwork
I don't need anyone to tell me to work hard at school; I do it myself
I am very confident at school
Other students have to help me a lot with my work*
If I'm working alone, difficult schoolwork doesn't bother me
I always choose easy work for myself to do at school so that I don't have too much trouble*

Self Esteem (est)
I am always getting into trouble at school*
I usually do the wrong things at school*
I can do things as well as most people at school
I am bright enough to continue my schooling to the (final year) of schooling
On the whole I am pleased with myself at school
I think I can do quite well at school
I succeed at whatever I do at school
I think that I am as good as everbody else at school

Note:

* Negatively worded items were reverse scored

The scale used consisted of five points:
1. strongly agree, 2. agree, 3. not sure, 4. disagree, 5. strongly disagree

Table 3 Goodness of Fit Indices for Confirmatory Factor Analyses

MODEL	CHISQ	*df*	CHI/*df*	RNI	TLI	PRNI
Nulltot	33074.93	780	42.404	.000	.000	.000
Total	5039.52	719	7.009	.866	.855	.798
Abor	1755.50	719	2.442	.825	.810	.760
Migr	1571.78	719	2.186	.860	.848	.793
Angl	2644.93	719	3.679	.870	.859	.802
Nava	1626.25	719	2.262	.838	.825	.773
4gp(no inv)	7598.46	2876	2.642	.854	.842	.788
4gp(fl in)	7786.10	2975	2.617	.852	.844	.812
4gp(fl,v in)	7953.38	2996	2.655	.847	.841	.814
4gp(f,c in)[a]	8134.50	3059	2.659	.844	.840	.827
4gp(f,u in)	8533.08	3116	2.738	.833	.833	.832
4gp(tot in)	8725.17	3179	2.745	.829	.832	.845

Note. CHISQ=Chi-square; CHI/*df*= Chi-square/degrees of freedom ratio; RNI=Relative Noncentrality Index; TLI=Tucker-Lewis Index; PRNI=Parsimony Index for RNI.
Nulltot = Null model based on entire sample.
4gp(no inv) = four group model with no invariance constraints
4gp(fl in) = four group model with factor loadings invariant, but factor variances free to vary
4gp(fl, v in) = four group model with factor loadings and factor variances invariant
4gp(f,c in) = four group model with factor loadings & factor correlations invariant
4gp(f,u in) = four group model with factor loadings & uniquenesses invariant.
4gp(tot in) = four group model with factor loadings, factor correlations & uniquenesses invariant.
[a]Results for this model are presented in Table 4.

Table 4 Confirmatory Factor Analysis of ISM responses across four groups: Factor loadings and factor correlations invariant

	Factor Loadings							Uniquenesses			
	EXL	COM	GLS	AFL	SOC	REC	TOK	Abor	Migr	Angl	Nava
Q79	556	000	000	000	000	000	000	806	715	698	558
Q34	645	000	000	000	000	000	000	573	616	585	560
Q13	689	000	000	000	000	000	000	628	489	553	410
Q33	689	000	000	000	000	000	000	661	515	468	544
Q40	675	000	000	000	000	000	000	670	536	546	440
Q56	670	000	000	000	000	000	000	612	537	552	506
Q89	605	000	000	000	000	000	000	632	694	717	400
Q1	000	592	000	000	000	000	000	652	666	729	457
Q2	000	627	000	000	000	000	000	590	647	649	493
Q14	000	665	000	000	000	000	000	500	574	536	645
Q43	000	683	000	000	000	000	000	576	546	522	507
Q53	000	524	000	000	000	000	000	864	748	657	736
Q76	000	608	000	000	000	000	000	630	615	647	608
Q62	000	000	575	000	000	000	000	708	615	686	647
Q65	000	000	635	000	000	000	000	655	588	537	687
Q86	000	000	619	000	000	000	000	736	573	572	654
Q88	000	000	694	000	000	000	000	622	572	434	569
Q94	000	000	651	000	000	000	000	613	484	537	714
Q35	000	000	000	535	000	000	000	1.006	814	681	445
Q36	000	000	000	770	000	000	000	502	422	397	334
Q37	000	000	000	676	000	000	000	547	613	517	536
Q47	000	000	000	405	000	000	000	979	843	829	724
Q10	000	000	000	000	524	000	000	793	744	792	502
Q21	000	000	000	000	721	000	000	642	541	443	373
Q29	000	000	000	000	617	000	000	693	770	625	408
Q46	000	000	000	000	546	000	000	707	735	765	528
Q85	000	000	000	000	468	000	000	911	825	766	665
Q12	000	000	000	000	000	592	000	808	647	611	603
Q17	000	000	000	000	000	726	000	512	452	495	410
Q23	000	000	000	000	000	645	000	603	598	590	541
Q28	000	000	000	000	000	591	000	752	712	632	554
Q41	000	000	000	000	000	667	000	562	563	583	478
Q73	000	000	000	000	000	664	000	602	606	539	527
Q91	000	000	000	000	000	627	000	732	608	570	579
Q6	000	000	000	000	000	000	615	620	645	649	543
Q8	000	000	000	000	000	000	618	614	623	652	544
Q15	000	000	000	000	000	000	461	898	922	655	866
Q24	000	000	000	000	000	000	615	579	645	680	508
Q44	000	000	000	000	000	000	516	675	747	792	645
Q57	000	000	000	000	000	000	356	717	937	951	779

Factor Correlations

	EXL	COM	GLS	AFL	SOC	REC	TOK
EXL	1.000						
COM	400	1.000					
GLS	183	713	1.000				
AFL	123	-082	021	1.000			
SOC	515	046	103	450	1.000		
REC	569	639	552	144	414	1.000	
TOK	536	805	634	097	248	795	1.000

Note: Solution based on a common metric completely standardized solution (Joreskog & Sorbom 1988).

Table 5 Items defining criterion variables.

Scale
SCHOOL CONFIDENCE
I am very confident at school
I think I can do quite well at school
I succeed at whatever I do at school
INTENT TO COMPLETE SCHOOL
I intend to complete High School
School students should complete high school
I'm the kind of person who would complete High School
Personally I feel that I should complete High School
PERCEIVED VALUE OF SCHOOL
I think that it is really important to do well at school
Doing well at school is important to my future

TABLE: 6 Means, standard deviations and reliability estimates for predictor scales drawn from the ISM and three criterion scales across five cultural groups, denoting pairs of groups significantly different at the .05 level (Duncan procedure).

	Aboriginal			Migrant			Anglo			Navajo			Betsiamite			Pairs[b]
SCALE	x	SD	r[a]	x	SD	r	x	SD	r	x	SD	r	x	SD	r	
Excellence	2.03	.68	.84	1.94	.61	.83	2.01	.64	.84	1.80	.52	.80	1.95	.60	.76	acefhj
Competition	2.94	.88	.80	2.92	.94	.82	3.17	.88	.80	2.88	.66	.67	3.02	.69	.59	behi
Group Leadership	3.64	.79	.76	3.72	.76	.78	3.79	.72	.76	3.46	.79	.78	3.55	.74	.75	bcdfhi
Affiliation	2.51	.80	.67	2.57	.85	.72	2.45	.80	.71	2.32	.66	.61	2.58	.73	.61	cefhij
Social Concern	2.46	.77	.71	2.44	.72	.70	2.40	.73	.72	2.14	.59	.69	2.59	.67	.67	cdghij
Recognition	2.67	.76	.79	2.63	.81	.84	2.66	.83	.85	2.48	.72	.82	2.64	.76	.83	cfhi
Token Reinforcement	2.80	.81	.75	3.02	.78	.70	3.14	.75	.68	2.83	.70	.69	2.92	.70	.64	abefhi
Sense of Purpose	1.98	.68	.81	1.81	.65	.82	1.90	.63	.80	1.60	.50	.80	1.97	.66	.79	abcefgh
Sense of Competence	2.57	.57	.60	2.40	.59	.71	2.49	.59	.70	2.36	.50	.57	2.47	.47	.50	abcdehj
Self Esteem	2.71	.62	.65	2.41	.65	.76	2.57	.66	.78	2.24	.53	.64	2.72	.53	.58	abcefghij
Perceived Value	1.74	.89	.74	1.57	.73	.75	1.67	.80	.77	1.35	.55	.64	1.77	.73	.67	acefghj
School Confidence	2.73	.75	.52	2.65	.74	.61	2.84	.73	.62	2.33	.64	.53	2.50	.69	.57	bcdefghij
Intention to Complete School	2.67	1.16	.89	2.45	1.14	.89	2.63	1.19	.90	1.17	.36	.71	1.62	.61	.63	acdefghij
Min n			481			484			1166			502			198	
Max n			492			487			1173			529			198	

Note:

[a] Cronbach's alpha reliability estimate.
[b] Pairs of groups significantly different at .05 level
a Aboriginal/Migrant
b Aboriginal/Anglo
c Aboriginal/Navajo
d Aboriginal/Betsiamite
e Migrant/Anglo
f Migrant/Navajo
g Migrant/Betsiamite
h Anglo/Navajo
i Anglo/Betsiamite
j Navajo/Betsiamite

TABLE 7 Sets of beta weights and multiple correlation co-efficients for each sample (Anglo, Migrant, Aboriginal, Navajo, Betsiamite) on predictor scales drawn from the Inventory of School Motivation and a range of school performance criterion variables.

	PREDICTOR VARIABLES													
Criterion	**Est**	**Afl**	**Gls**	**Soc**	**Tok**	**Sop**	**Sec**	**Rec**	**Com**	**Exl**	**Mult R**	**R^2**	**F**	**DF**
Maths Achievement														
Anglo †	.390**	.015[a]	.064	.046	.292**	.256**	.019	.110*	.020	.206**	.495**	.244	20.33	10/628
Migrant †	.325**	.096	.059	.153*	.150	.199*	.032	.122	.010	.273**	.404**	.163	5.10	10/262
Aboriginal †	.389*	.075	.092	.079	.312*	.114	.068	.144	.126	.209	.503*	.253	2.24	10/66
Navajo GPA ††	.298**	.037	.003	.023	.125[b]	.183**	.089	.076	.014	.065	.428**	.183	8.43	10/377
Betsiamite	.163	.046	.024	.182[b]	.077	.260*	.151	.053	.009	.084	.350*	.123	2.17	10/155
English Achievement														
Anglo †	.423**	.090*	.121**	.132**	.193**	.242**	.071	.152**	.050	.188**	.521**	.271	23.23	10/625
Migrant †	.325**	.166**	.120	.089	.195*	.184*	.064	.192*	.156[b]	.251*	.448*	.201	6.47	10/257
Aboriginal †	.358*	.038	.233	.262*	.345**	.271[b]	.009	.073	.173	.257	.676**	.456	5.54	10/66
Navajo (not available)														
Betsiamite	.159	.067	.006	.077	.222[b]	.416**	.092	.007	.184	.259*	.381*	.145	1.90	10/112
Attendance														
Anglo	.015	.032	.037	.039	.016	.116*	.022	.003	.031	.060	.095	.009	1.01	10/1102
Migrant	.015	.020	.071	.098	.039	.173*	.006	.041	.090	.036	.203*	.041	1.85	10/434
Aboriginal	.079	.035	.037	.023	.112	.132	.088	.159*	.110	.046	.254**	.065	2.72	10/395
Navajo	.246**	.003	.047	.074	.116	.046	.028	.144*	.066	.016	.275**	.076	3.34	10/407
Betsiamite	.297**	.074	.065	.041	.120	.068	.312**	.097	.193*	.028	.334*	.111	2.33	10/186
Intention Scale														
Anglo	.230**	.077**	.013	.070**	.121**	.581**	.022	.035	.012	.063	.678**	.459	98.08	10/1155
Migrant	.211**	.109**	.065	.061	.036	.600**	.105	.042	.037	.007	.706**	.498	46.80	10/472
Aboriginal	.172**	.087*	.055	.066	.044	.617**	.018	.020	.027	.109	.633**	.401	31.77	10/475
Navajo	.127*	.026	.007	.130**	.027	.234**	.069	.073	.035	.100	.405**	.164	7.60	10/387
Betsiamite	.196*	.182*	.173[b]	.135	.027	.155	.132	.163	.000	.045	.372**	.138	3.01	10/187
Desired Occupation														
Anglo	.142**	.022	.047	.027	.058	.205**	.025	.034	.046	.035	.273**	.074	9.06	10/1128
Migrant	.231**	.040	.013	.019	.098	.292**	.026	.002	.058	.146*	.328**	.108	5.61	10/464
Aboriginal	.003	.035	.114*	.097	.108	.248**	.102	.011	.098	.049	.347**	.121	6.38	10/466
Navajo	.096	.010	.102	.002	.023	.273**	.108[b]	.028	.089	.120	.320**	.102	4.16	10/365
Betsiamite	.051	.120	.039	.233*	.241*	.129	.139	.102	.032	.224[b]	.351*	.123	2.06	10/146

TABLE..7.(continued)

Criterion	Est	Afl	Gls	Soc	Tok	Sop	Sec	Rec	Com	Exl	Mult R	R^2	F	DF
Affect to School														
Anglo	.180**	,040	.038	.080**	,044	.154**	.144**	.058	,119**	.238**	.605**	.365	66.52	10/1155
Migrant	.025	,038	,071	.083	,060.	.219**	.056	.090	.057	.260**	.558**	.311	21.31	10/471
Aboriginal	.247**	,064	,046	.058	,074	.184**	,030	.088	.071	.172*	.569**	.324	22.48	10/470
Navajo	.066	,056	.109*	.217**	.046	.104	.030	,044	,103	.210**	.465**	.216	10.92	10/397
Betsiamite	.027	,126	.000	.208*	.165	,286*	,042	.047	.000	.238*	.316*	.100	2.08	10/187
Perceived Value of School														
Anglo	,012	.036	,059*	,002	,036	.567**	,005	.042	.025	.189**	.713**	.509	119.58	10/1155
Migrant	,031	.049	,119**	,017	.082	.571**	,057	,019	.066	.213**	.732**	.536	54.54	10/472
Aboriginal	.040	.000	,162**	.064	,016	.509**	,016	.001	.031	.155*	.696**	.484	44.17	10/470
Navajo	,002	,046	,089[b]	.121*	.054	.453**	,049	,029	.067	.159**	.608**	.370	23.27	10/397
Betsiamite	.093	,110	,019	.308**	,040	,050	,093	.110	.029	.132	.393**	.155	3.42	10/187
School Confidence														
Anglo	.553**	.048**	.151**	,066**	.086**	,068**	.343**	,046	.003	,003	.826**	.682	247.89	10/1155
Migrant	.502**	.046	.154**	.003	.066	,018	.359**	,072	.062	,019	.845**	.715	118.56	10/475
Aboriginal	.446**	.054	.082	,071*	,013	,057	.326**	,006	.198**	.091	.787**	.619	77.10	10/475
Navajo	.486**	.080*	.110**	,139**	,003	,072	.300**	.055	,003	.166**	.767**	.588	58.19	10/407
Betsiamite	.341**	,079	.045	.168*	.127	,245*	.004	.070	,090	.031	.410**	.168	3.79	10/187

Note:

[a] Negative beta weights are underlined

[b] Approached significance at the .05 level

* $p < .05$ ** $p < .01$

† Scores only available for Year 10 groups

†† Grade Point Average only was available for the Navajo students

Est: Self Esteem
Afl: Affiliation
Gls: Group Leadership
Soc: Social Concern
Tok: Token Reinforcement
Sop: Sense of Purpose
Sec: Sense of Competence
Rec: Recognition
Com: Competition
Exl: Excellence

TABLE 8 Order of importance of standardized beta weights across five cultural groups.

	PREDICTOR VARIABLES									
Criterion	**Est**	**Afl**	**Gls**	**Soc**	**Tok**	**Sop**	**Sec**	**Rec**	**Com**	**Exl**
Maths Achievement										
Anglo	1				2	3		5		4
Migrant	1			4	5	3				2
Aboriginal	1				2			4	5	3
Navajo GPA †	1				3	2	4	5		
Betsiamite	3			2	5	1	4			
English Achievement										
Anglo	1				3	2		5		4
Migrant	1				3	5		4		2
Aboriginal	1			4	2	3				5
Navajo (not available)										
Betsiamite	5				3	1			4	2
Attendance										
Anglo						1				
Migrant						1				
Aboriginal					3	2		1	4	
Navajo	1				3			2		
Betsiamite	2				4		1		3	
Intention Scale										
Anglo	2	4		5	3	1				
Migrant	2	3	5			1	4			
Aboriginal	2	4		5		1				3
Navajo	3			2		1		5		4
Betsiamite	1	2	3	5		4				
Desired Occupation										
Anglo	2					1				
Migrant	2				4	1			5	3
Aboriginal			2	5	4	1	3		4	
Navajo	5		4			1	3			2
Betsiamite				1	2	5	4			3

TABLE..8.(continued)

Criterion	Est	Afl	Gls	Soc	Tok	Sop	Sec	Rec	Com	Exl
Affect to School										
Anglo	2					3	4		5	1
Migrant			5	4		2		3		1
Aboriginal	1					2		4	5	3
Navajo			3	1		5			4	2
Betsiamite		5		3	4	1				2
Perceived Value of School										
Anglo			3			1				2
Migrant			3		4	1				2
Aboriginal			2	4		1				3
Navajo			4	3		1				2
Betsiamite		3		1			4			2
School Confidence										
Anglo	1		3	5	4		2			
Migrant	1		3		5		2	4		
Aboriginal	1		4	5			2		3	
Navajo	1		5	4			2			3
Betsiamite	1	5		3		2			4	

Note:

Est: Self Esteem
Afl: Affiliation
Gls: Group Leadership
Soc: Social Concern
Tok: Token Reinforcement
Sop: Sense of Purpose
Sec: Sense of Competence
Rec: Recognition
Com: Competition
Exl: Excellence