

Tongan students' attitudes towards their subjects in New Zealand relative to their academic achievement

Mo'ale Otunuku

University of Auckland
New Zealand

Gavin T. L. Brown

Research indicates that affective attitudes such as liking of a subject and confidence in one's ability within a subject predict academic performance. Generally, immigrant minority students have positive attitudes and often have low academic performance. This study examines the self-efficacy and liking of subjects of New Zealand students and analyses the relationship of those attitudes towards academic performance in mathematics, writing, and reading by self-reported ethnicity. Data were obtained from the norming samples from the Assessment Tools for Teaching and Learning project in New Zealand. Of special interest are the relationships between attitude and performance for Pasifika and Tongan students in New Zealand. Tongan and Pasifika students had positive attitudes, but their mean scores were not significantly different to other ethnic groups except in writing for Tongan students. Tongan and Pasifika students did have lower academic performance than majority and Asian immigrant students in all three subjects. The correlation between liking and self-efficacy was fundamentally zero for Tongan and Pasifika students, while it was weakly positive for majority and Asian immigrant students. Together these results question the power of self-efficacy and liking attitudes to predict academic performance for immigrant students from agrarian or traditional societies. Further, the data suggest that 'school effects' are most likely explanations for this relationship, rather than lack of attachment, opposition, or deficiency theories.

Key words: Pasifika, attitudes, self-efficacy, achievement, secondary students

The academic performance of immigrant minority students is a matter of real concern in most societies. Immigrants often come to a new country expecting improved economic, social, and educational opportunities for their

Mo'ale Otunuku, University of Auckland, School of Teaching, Learning & Development; Gavin T. L. Brown, University of Auckland.

Professor John Hattie, University of Auckland, and the New Zealand Ministry of Education are thanked for providing access to the asTTle database.

Correspondence concerning this article should be addressed to Mo'ale Otunuku, University of Auckland, School of Teaching, Learning & Development, Faculty of Education, Epsom Campus, Private Bag 92019, Auckland, New Zealand. e-mail: m.otunuku@auckland.ac.nz

children, but experience has shown that immigrant minorities rarely experience large-scale academic success.

In New Zealand, Pasifika refers to migrants from the countries of the South Pacific like Samoa, Tonga, Cook Islands, Niue, Tokelau and Fiji. Most Pasifika immigrants came to New Zealand after World War Two from countries that were either former colonies, or mandate territories of New Zealand. Thus, some Pasifika immigrants, like Cook Islanders, have special legal rights as New Zealand citizens. Pasifika nations are largely traditional, agrarian, and in many ways, still feudal societies in nature. Most Pasifika immigrants came to New Zealand as cheap labourers and consequently, most have low socioeconomic status. Furthermore, Pasifika peoples are racially visible as they are Polynesian or Melanesian, in contrast to the dominant

Caucasian group of New Zealand Europeans (known as Pakeha), but visibly similar to the indigenous Polynesian Māori peoples. Thus, Pasifika peoples differ from the majority Pakeha groups of New Zealand in terms of race, culture, language, education, and occupation.

The level of academic performance of Pasifika students can be seen in the New Zealand qualifications systems and in standardized measures of learning. In 2002, only 4.9% of Pasifika students left secondary school with a University Bursary as their highest qualification, compared to 21.1% for non-Pasifika students. Five per cent had a University Entrance qualification as their highest qualification, compared with 8.7% for all students. In 2002, 30.8% of Pasifika students left school with no formal qualification compared to 20.2% of non-Pasifika students (Ministry of Education, 2004). In the PISA 2000 assessments of 15-year-olds' reading literacy, mathematical literacy and scientific literacy, Sturrock & May (2002) reported that Pakeha and Asian students performed significantly better than Māori and Pasifika students, who were statistically indistinguishable. The consistent message across reading, writing, and mathematics from international (i.e., TIMSS, PIRLS, PISA) and New Zealand (i.e., asTTle, NEMP, NCEA) measures of learning, is that Pasifika students achieve significantly less well than the majority and the Asian minority groups (Satherley, 2006). Consequently, a variety of government sponsored initiatives have been introduced to respond to the academic performance gap. Despite these initiatives, Pasifika, including Tongan, students continue to exhibit lower achievement levels relative to Pakeha and Asian ethnic groups in New Zealand.

Immigrant academic performance – patterns & explanations

Two powerful predictors of academic performance are students' own beliefs in their ability and interest or liking of the material they are learning. Self-efficacy refers to an individual's belief in how well he or she can successfully perform behaviours in given situations. Believing that you are good at a subject (self-efficacy) and liking a subject have both been shown to be positively related to academic outcomes (Bandura, 1986; Johnson, Crosnoe, & Elder, 2001; Pajares & Schunk, 2001; Willams, Willams, Kastberg, & Jocelyn, 2005). Self-efficacy enables students to work harder, to persist, persevere, and seek help so they can complete a task (Carter, Carter, & Sottile, 2001; Linnenbrink & Pintrich, 2003;

Schunk, 1981, 1996; Walker, 2003). Espoused liking of a subject leads to greater effort, interest, and success in those subjects (Abu-Hilal, 1992; O'Brien, Martinez-Pons, & Kopala, 1999; Walker, 2003).

Students acquire information to determine their self-efficacy from their performances, from observing others, and from persuasion and praise. When students persist at a task and successfully complete it, their self-efficacy increases because they believe that their effort and determination produced that success. Schunk (1981) found that ability feedback (e.g., "You are good at this") from teachers had very strong effect on students' self-efficacy. Low self-efficacy students will avoid attempting a difficult task, are more anxious over how to solve problems, and tend to attribute any failures in difficult tasks to deficiencies in their abilities. High self-efficacy students, on the other hand, participate more readily in tasks, feel confident that their approach to the tasks are appropriate and attribute any failures in difficult tasks to insufficient effort (Pajares & Schunk, 2001; Schunk, 1996).

Most of the studies of self-efficacy and achievement have established that there are positive associations between the two variables. Moulton, Brown, & Lent, (1991), in studying the relationships between self-efficacy and academic performance in 36 studies between 1977 and 1988, computed that efficacy beliefs were positively related to performance ($r_u = .38$) and accounted for approximately 14% of the variance in academic performance. In a larger meta-analysis, Pajares (1996) reviewed self-efficacy studies and reported that the correlations between self-efficacy and academic performance ranged from .49 to .70.

Stanant & Cristensen (2006) in their report on the Programme for International Student Assessment (PISA) 2003 assessment of OECD, countries found that immigrant students in general are motivated learners and have higher levels of positive school perceptions compared to their non-immigrant peers. A large-scale National Research Council (NRC) study in the US found that immigrant children in general arrive with high aspirations and extremely positive attitudes towards education. The study also found that for many immigrant groups, length of residency in the US is associated with declining school achievement and aspirations (Suarez-Orozco & Suarez-Orozco, 2001).

Nevertheless, there are a large number of competing theories to account for the low academic performance of immigrant minority students. 'Capital deficiency' means that certain ethnic groups lack the resources needed for academic success and capital comes in many forms such as financial,

human, social and cultural (Bourdieu, 1986; Bourdieu & Wacquant, 1992; Coleman, 1990). However, this theory fails to explain why some minority students manage to achieve as much as majority students. The theory of 'oppositional culture' claims that involuntary minorities through enslavement, conquest or colonization reject the dominant culture as a form of resistance to their subordination. To participate in the dominant cultures and their school system is a betrayal of their minority group resistance stance (Fordham & Ogbu, 1986; Kao & Tienda, 1988; Ogbu, 1978). 'Stereotype threat' is a psychological process where being reminded of negative stereotypes concerning one's ethnic group (e.g., African-Americans do poorly on hard mathematics tests) negatively impacts academic performance (Josephs & Schroeder, 1997; Steele & Aronson, 1995). 'Peer influence' states that students' educational aspirations and performances are influenced by their fellow students (Coleman, 1961; Hallinan, 1983; Kao, 2001). 'Attachment theory' argues that dropping out of school is similar to departure from any communities, which is caused by an absence of effective integration and bonding (Bowlby, 1988, 2005; Tinto, 1993). 'Critical, segregation and school effects theory' argue that the school is never a neutral site that provides all students with the same educational opportunities. In fact, the school is among the tools of the dominant social class to maintain the status quo of their societies (Bowles & Gintis, 1976; Orfield & Eaton, 1996; Willis, 1977).

The study

Since immigrant groups are reported to have very positive affects in regards to schooling and yet, at the same time, often have low academic performances, they may constitute an exception to the general rule that positive attitudes and self-efficacy contribute to raising academic performance. Such an exception raises questions about the theory and it may well be that, at least as far as immigrant minority communities are concerned, one of the competing theories is more powerful in explaining the phenomenon of positive affect and low academic performance. Thus, the research reported here has examined self-reported attitudes towards school subjects and self-efficacy in conjunction with standardized, norm-referenced curriculum-based measures of academic performance in reading, writing, and mathematics. The study is designed to answer three research questions:

1. Do Pasifika and Tongan students have positive affects (i.e., liking of subject and self-efficacy in the subject) toward these three subjects?
2. What are the academic achievements in these three subjects of the Pasifika and the Tongan students compared to other ethnic groups?
3. Are the affective variables positively correlated with academic performance as predicted by self-efficacy theory?

It is hoped that by answering these questions, the competing theories on student attitudes as explanations for academic performance can be addressed.

The data for this study has come from the norming data collected in the development of the Assessment Tools for Teaching and Learning (asTTle) software (Hattie, Brown, Keegan, et al., 2004). The asTTle is an educational resource released to New Zealand schools for voluntary use by the Ministry of Education. The asTTle permits teachers to develop their own customized but standardized tests from a bank of curriculum-aligned items for assessing literacy and numeracy developed by the University of Auckland (Hattie, Brown, Ward, Irving, & Keegan, 2006). It provides teachers, students, and parents with information about a student's attitudes and levels of achievement, relative to the curriculum achievement outcomes for Levels 2 to 6, and national norms of performance for students in Years 4 to 12. Interested readers are directed to <http://www.asttle.org.nz> for technical details of the project.

In the development of the tool, students were asked to report two attitudes to the subject in which they were being assessed (i.e., liking and efficacy), as well as complete a 40-minute low-stakes test of performance in the subject. Students voluntarily reported their ethnicity and were invited to indicate their nationality. Over 70,000 students in Years 4 to 12 (ages 9 to 18) provided data but the focus of this research is on students in secondary school only (i.e., Years 9-12, ages 13-18). Of specific interest are the attitudes and academic performances of Pasifika students and those who identified themselves as Tongan. Note that these students may be themselves immigrants (i.e., not born in New Zealand) or may be born in New Zealand of immigrant parents. Tongans were selected because the author is Tongan and sufficient students had identified their nationality as Tongan.

Methodology

Materials

Attitude. Students indicated how much they liked and how good they were at the subject in question by responding to six items drawn from the National Education Monitoring Project (NEMP) project. Generally the questions were similar across the three subjects, though wording choices were adjusted depending on subject. Items 1 to 5 were phrased exactly the same for all three subjects. Item 6 was slightly different for each subject. The items were:

Attitude 1: How much do you like doing at school?

Attitude 2: How good do you think you are at?

Attitude 3: How good does your teacher think you are at?

Attitude 4: How good does your mum or dad think you are at?

Attitude 5: How much do you like doing in your own time (not at school)?

Reading Attitude 6: How do you feel about going to a library to get something to read?

Mathematics Attitude 6: How do you feel about doing things in maths you haven't tried before?

Writing Attitude 6: How good do you think you are at spelling?

Students' responses were indicated by selecting one of four 'smiley' faces ranging from very unhappy to very happy and were scored 1 for very unhappy and 4 for very happy..

Achievement. Students' achievement in each subject was obtained through single-parameter item response theory (IRT) scoring. Scores based on IRT take into account the level of difficulty of each item answered correctly by students. This means that students who answer correctly difficult questions get higher scores than students who answer correctly easy questions regardless of how many questions are answered correctly (Embretson & Reise, 2000). The asTTle IRT scores were transformed to a scale score (Year 6 $M = 500$, $SD = 100$) which was extended through to Year 12; each subject was independently scaled. The standard error of measurement for asTTle performance estimates has been estimated to be 15, thus differences of less than that amount are statistically insignificant at a 68% confidence interval (Hattie, Brown, Keegan, et al., 2004). Thus, students in Years 4 to 12 can be compared on ability despite doing tests with

different levels of difficulty and different content since all items in a subject have been indexed to one common scale of difficulty.

Participants

The asTTle dataset contains attitude and achievement information for students from four ethnic groups (i.e., Pakeha (New Zealand European or Caucasian), Māori (indigenous Polynesian inhabitants of New Zealand), Pasifika, and Asian/Others). All student ethnicities were self-reported and standard New Zealand Statistics (Statistics, 2006) rules were used to assign students to a single category when multiple categories were selected. Any student who indicated Māori plus any other ethnicity was classified Māori; any student selecting Pasifika and any other ethnicity except Māori was classified Pasifika; similarly, students indicating Asian or Other ethnicities and European were assigned to Asian or Other; finally, a student was assigned to New Zealand European or Pakeha if he or she only chose that ethnicity.

From the tests of reading, writing, and mathematics, the ethnicities of nearly 70,000 students were established: Pakeha/New Zealand European 39,442 (51.6%), Māori 12,133 (15.9%), Pasifika 6,938 (9.1%), Asian/Other 11,122 (14.5%). The balance was missing or not given. The proportion which identified as Pasifika was slightly above the 8.4% of Pasifika students in the New Zealand population. From the Pasifika group, 465 students were identified as Tongans, 6.7% of the Pasifika sample. Unfortunately, no attitude toward mathematics for Tongan students can be reported, as the data were captured in 2003 prior to specific ethnicity being available.

The identifiably Tongan students were mostly in secondary school (97.6%) with the majority in Years 9 and 10 (41.1%). Thus, meaningful comparisons between Tongans and other groups can only be made at the secondary school level. The Tongan students were enrolled predominantly in low socio-economic status schools (59.1% in decile¹ 1; 71.6% in deciles 1-3). About one-third (30%) of the Tongan students were enrolled in single sex schools, a rate noticeably higher than the Pasifika (10.5%) ethnicity as a whole. Although it would have been possible to identify Tongan students from an examination of family names, such information was not available. Thus, where sufficient numbers permit, differences between identifiably Tongan students and other Pasifika students are made.

Procedure

The attitude data was factor analysed to confirm the existence of the efficacy and liking factors and to examine their structure. Confirmatory factor analysis (CFA) using maximum likelihood estimation with oblique rotation (Osborne & Costello, 2005) was used to confirm that the six attitude items for writing, reading and mathematics fitted into two appropriate factors. CFA models are deemed to fit the data when fit statistics least sensitive to sample size meet or exceed critical values (i.e., TLI and CFI $>.90$ and RMSEA $<.08$) (Hoyle, 1995; Hoyle & Duvall, 2004; Steiger, 2000). Analysis showed that the liking and efficacy factor model had good fit for all subjects and all samples (Table 1), except for the Tongan writing model for which the sample size was very small. Thus, factor correlations and item loadings on each factor reported in Table 1 are taken from the CFA. Mean scores per factor by ethnic group were determined (Table 2). Statistical significance tests have been criticised for being very sensitive to large sample sizes. To overcome this limitation, effect-sizes can properly show the scale of effect seen in any difference (Paul Vogt, 2005). Cohen's d effect size is the difference between the population mean divided by the average population standard deviation. An effect-size of .2 is small, .5 is medium, and .8 is large (Cohen, 1977). Sample-adjusted effect size differences in attitude by ethnicity were used to determine the practical significance of any differences in mean scores across ethnic groups (Table 3). This was calculated by finding the difference in means of two ethnic groups and dividing by the sample-size weighted, pooled standard deviation of the scores. Mean scores for each ethnic group across secondary school years was found (Table 4). The relationship of attitude to achievement was examined through inspection of bivariate correlations (Table 5).

Results

Attitudes towards Three Subjects

The factor structure of attitude to each subject is reported in Table 1, while the mean scores for each attitude for the different ethnic groups are displayed in Table 2. CFA found largely identical structures by ethnicity and by subject, indicating that the attitude questions generate stable and consistent responses across those dimensions. Since the sample sizes were large, most of the differences between ethnic groups were statistically significant, thus effect sizes

for differences are reported in Table 3. The analysis found very small differences in attitude between the Tongan and Pasifika students and those of all other ethnic groups (Cohen's d exceeded .40 only twice).

Mathematics. In mathematics, two correlated factors (liking of the subject and efficacy) were found with robust and theoretically consistent item loadings. The correlation between Liking and Efficacy was similar for both groups of students. Students had very similar mean scores for both factors, with the Asian students having the highest mean for both and Pakeha students having the lowest mean for Liking. Only the Pasifika-Pakeha difference in liking of mathematics was large, with all other differences being small. Thus, the immigrant Pasifika students were generally positive but did not have the highest attitude scores towards mathematics.

Writing. In writing attitude, two factors (i.e., Liking and Efficacy) were found for all three groups of students. Factor loading for students' attitudes towards writing were robust and theoretically consistent. The correlation between Liking and Efficacy was similar for all groups of students. Mean scores were similar and relatively negative for all groups, except the Tongan students who were significantly more positive than all others (Cohen's d ranged .64 to .86).

Reading. In reading, CFA again found two factors (i.e., Liking and Efficacy) for all three groups of students. The factor loadings for the factors were robust and theoretically consistent. The correlation between Liking and Efficacy was similar for both groups of students. Although mean scores were relatively similar (all effect sizes less than .60), Asian students liked reading most, while Pakeha students liked it least and the reverse was true for Efficacy. In Reading Efficacy, Tongans were moderately weaker than Pakeha students (Cohen's $d = -.55$). Again, although the Pasifika and Tongan students had positive attitudes, it was not true that they were the most positive of all ethnic groups.

Generally, students of all ethnic groups had two correlated attitudes (i.e., Liking and Efficacy) for all three subjects. Tongan students were much more positive about writing than all their counterparts including their Pasifika peers, moderately less positive about ability in reading than just the Pakeha students, and that otherwise their attitudes differed by only small margins to those of all other ethnic groups. These results partially disconfirmed previous results; the immigrant Pasifika and Tongan students had positive attitudes, though not the highest in mathematics and reading.

Table 1. Attitude Factor Analysis Results by Subject and Ethnicity

Subject	Student Ethnicity					
	<u>All</u>		<u>Pasifika</u>		<u>Tongan</u>	
	Factor 1	Factor 2	Factor 1	Factor 2	Factor 1	Factor 2
Mathematics						
Attitude 1	.84	—	.81	-	N/A	N/A
Attitude 2	—	.78	-	.77	N/A	N/A
Attitude 3	—	.70	-	.63	N/A	N/A
Attitude 4	—	.66	-	.57	N/A	N/A
Attitude 5	.64	—	.58	-	N/A	N/A
Attitude 6	.57	—	.52	-	N/A	N/A
Inter-Correlation	.65		.67		N/A	N/A
Model fit	N=24750; $df=8$; $\chi^2=341.3$; TLI=.97; CFI=.99; RMSEA=.041		N=1943; $df=8$; $\chi^2=38.93$; TLI=.96; CFI=.98; RMSEA=.045		N/A	
Writing						
Attitude 1	.91	-	.88	-	.65	-
Attitude 2	-	.81	-	.80	-	.83
Attitude 3	-	.77	-	.72	-	.72
Attitude 4	-	.78	-	.77	-	.67
Attitude 5	.56	-	.60	-	.73	-
Attitude 6	-	.58	-	.64	-	.55
Inter-Correlation	.72		.80		.58	
Model fit	N=22413; $df=8$; $\chi^2=610.07$; TLI=.96; CFI=.99; RMSEA=.058		N=2372; $df=8$; $\chi^2=73.86$; TLI=.96; CFI=.99; RMSEA=.059		N=116; $df=8$; $\chi^2=24.99$; TLI=.75; CFI=.91; RMSEA=.113	
Reading						
Attitude 1	-	.78	-	.73	-	.73
Attitude 2	.79	-	.75	-	.89	-
Attitude 3	.74	-	.71	-	.75	-
Attitude 4	.77	-	.73	-	.72	-
Attitude 5	-	.76	-	.75	-	.79
Attitude 6	-	.69	-	.71	-	.77
Inter-Correlation	.64		.59		.49	
Model fit	N=29337; $df=8$; $\chi^2=524.67$; TLI=.97; CFI=.99; RMSEA=.047		N=2623; $df=8$; $\chi^2=79.34$; TLI=.93; CFI=.97; RMSEA=.058		N=276; $df=8$; $\chi^2=13.99$; TLI=.95; CFI=.98; RMSEA=.052	

Note. All values are standardized CFA weights.

Table 2. *Attitudes by Ethnicity and Subject*

Ethnic Group	<u>Mathematics</u>		<u>Writing</u>		<u>Reading</u>	
	Liking	Efficacy	Liking	Efficacy	Like	Efficacy
Tongan						
<i>M (SD)</i>	N/A	N/A	2.77 (.58)	2.72 (.64)	2.82 (.81)	2.85 (.66)
Pasifika						
<i>M (SD)</i>	2.90 (.77)	2.88 (.64)	2.20 (.88)	2.21 (.73)	2.94 (.78)	2.99 (.62)
Māori						
<i>M (SD)</i>	2.62 (.77)	2.87 (.63)	2.22 (.85)	2.14 (.68)	2.79 (.83)	3.08 (.62)
Pakeha						
<i>M (SD)</i>	2.46 (.72)	2.90 (.63)	2.14 (.82)	2.11 (.71)	2.94 (.80)	3.19 (.60)
Asian/Other						
<i>M (SD)</i>	3.02 (.72)	3.06 (.60)	2.21 (.80)	2.26 (.68)	3.00 (.74)	2.83 (.68)

Table 3. *Effect Size Differences in Mean Score by Ethnicity and Subject*

Ethnic Difference	<u>Mathematics</u>		<u>Writing</u>		<u>Reading</u>	
	Like	Efficacy	Like	Efficacy	Like	Efficacy
Tongan-Pasifika	N/A	N/A	.66 ^a	.70 ^a	-.14	-.21
Tongan-Māori	N/A	N/A	.64 ^a	.85 ^a	.04	-.36
Tongan-Pakeha	N/A	N/A	.77 ^a	.86 ^a	-.15	-.55
Tongan-Asian	N/A	N/A	.70 ^a	.69 ^a	-.22	.03
Pasifika-Māori	.37	.03	-.03	.10	.18	-.15
Pasifika-Pakeha	.60 ^a	-.02	.07	.15	-.01	-.33
Pasifika-Asian	-.16	-.28	-.02	-.07	-.08	.24

Note: Negative value indicates Tongan or Pasifika is lower; positive value indicates Tongan or Pasifika is higher. ^a Values represent large effect sizes.

Academic Performance in Three Subjects:

The mean achievement scores by ethnicity and by subject for secondary school students and effect size differences between Tongan and Pasifika students and the other ethnic groups are reported in Table 4.

Mathematics. In mathematics, noticeable differences were observed. Pasifika students had the lowest mean score, Pakeha had the highest, while Māori students scored between them, and Asian/Others scored slightly less but very close to Pakeha students. The effect size differences between Pasifika and all other ethnicities were large (Cohen's $d > .75$). The

Pasifika students clearly performed worst in this subject.

Writing. In writing all ethnicities had similar mean scores, with Asian/Other and Pakeha students being slightly higher than all other ethnic groups. However, the effect sizes ranged from negligible to small. Thus, in writing, all ethnicities achieved very much the same. The immigrant Pasifika and Tongan students were slightly better than the Māori students and slightly worse than the Pakeha and Asian/Other students.

Reading. Mean scores for reading were very similar for Tongan, Pasifika, and Māori students, while Asian/other and

Table 4. Mean Academic Performance Scores by Ethnicity and Subject with Effect Size Differences

Ethnicity	Mathematics		Writing		Reading	
	M	SD	M	SD	M	SD
Tongan	N/A	N/A	596	106	635	104
Pasifika	681	123	592	132	647	104
Māori	761	84	564	142	648	112
Asian/Other	810	103	617	140	715	102
Pakeha	822	87	621	133	733	100
Total	795	104	608	137	704	109

Effect Sizes			
Tongans compared to			
Pasifika	N/A	.03	-.11
Māori	N/A	.23	-.12
Asian/Other	N/A	-.15	-.73 ^a
Pakeha	N/A	-.18	-.90 ^a
Pasifika compared to			
Māori	-.77 ^a	.20	-.01
Asian/Other	-1.24 ^a	-.18	-.62 ^a
Pakeha	-1.36 ^a	-.21	-.79 ^a

Note. Negative effect sizes indicate Tongan or Pasifika is lower; positive value indicates Tongan or Pasifika is higher. ^a Values represent large effect sizes.

Table 5. Correlations between Attitudes and Achievement by Subject and Ethnicity

Ethnic Group	Mathematics		Writing		Reading	
	Like	Efficacy	Like	Efficacy	Like	Efficacy
Tonga	N/A	N/A	-.08	-.06	.08	.19*
Pasifika	.03	.09	-.02	-.01	.06	.16*
Māori	.04	.07	.09	.12	.09	.18
Pakeha	.21*	.30*	.21*	.28*	.22*	.29*
Asian	.13*	.21*	.11	.24*	.11	.24*

Note: * Statistically significant p < .05

Pakeha were similar to each other and much higher than the Polynesian immigrant and indigenous students. Tongans achieved slightly less than Pasifika and Māori students and, like the Pasifika students, performed much worse than the Asian/Other and Pakeha students.

In summary, the Pasifika and Tongan students had lower scores in all three subjects than the majority Pakeha students

and the Asian/Other students. They scored around the same as the Māori students in reading and writing and much worse in mathematics. Thus, the results confirmed previous research in the academic performance of the immigrant Pasifika and Tongan students.

The Relationship of Attitudes to Academic Performance
The strength and statistical significance of the bivariate

correlations for the students' achievement scores and their attitude scores for the three subjects are shown in Table 5.

Tongan students had near zero correlations between achievement and attitude for both reading and writing; Pasifika students had very similar near zero correlations for all three subjects; while Māori students were likewise close to zero. Generally, for Tongan, Pasifika, and Māori attitudes the correlations of attitude towards all three subjects to achievement in the same subjects were close to zero, except in the case of efficacy in reading.

In contrast, Asian/Other and Pakeha students had small but statistically significant positive correlations between subject attitudes and achievement. In other words, their attitudes were positively associated with their achievement, whereas attitudes in these subjects had a fundamentally zero relationship towards achievement for the three Polynesian ethnic groups.

Thus, contrary to earlier findings, these results showed that attitude towards subject was fundamentally meaningless in predicting student achievement in reading, writing, and mathematics for Tongan, Pasifika, and Māori students. Bear in mind that these three groups had significantly lower achievement than Asian and Pakeha students in all three subjects. It was also the case that Tongan students were significantly more positive towards writing than all other students, and yet in this subject there was a more or less zero relationship to achievement. Clearly, the possible reasons for the lack of meaningful relationship between attitude (and especially efficacy) and achievement in these subjects for these three groups of students need to be explored further.

Discussion

This study found that the two attitude factors of liking the subject under discussion and efficacy were consistent across all ethnic groups, both in terms of structure and mean scores. Tongan and Pasifika had positive attitudes, however, except for the Tongans in writing, this group were not the highest scorers. The differences in mean scores for attitudes across all ethnic groups were generally trivial in reading and mathematics. The exceptions were (1) that Pasifika students liked mathematics more and had greater writing efficacy than Pakeha and Asian students, and (2) Tongan students had more positive writing attitudes than all the other groups. This clearly showed that immigrants' attitudes toward schooling were not always the highest and were most often no different than those of other groups. The generalisation that immigrant

populations always have positive attitudes toward schooling is quite possibly overstated.

The academic performance of Pasifika and Tongan students were found to be consistently lower than Pakeha and Asian students, with large effect sizes. This is consistent with the research literature but raises the question as to why some immigrants are doing well (i.e. Asian students). Although both are immigrants; they come from significantly different socio-economic and educational backgrounds. Most recent Asian immigrants in New Zealand are middle class, well-educated business migrants who have substantial prior experience with urban, industrialized societies. In contrast, most Pasifika and Tongan immigrants have much more restricted economic and educational resources and less experience with urban, industrial societies. Therefore, capital deficiency theories seem to fit well with the academic performance results reported here.

The study also found that Pasifika, Maori, and Tongan students' attitudes had near zero correlations with their academic achievement. The findings that Pakeha and Asian students had weak but positive correlations between attitude and performance are consistent with previous research (e.g., Moulton et al., 1991; Pajares, 1996). Clearly, attitudes towards a given subject did not account for Tongan and Pasifika students' low achievement; whereas it did account for some of the achievement of Asian and Pakeha students. These results clearly contradict the bulk of findings concerning the positive relationship of self-efficacy and school achievement. It would appear that in New Zealand, immigrant and indigenous students from lower ranked socio-economic backgrounds had a significantly different experience of schooling. Their positive attitudes about subjects and their own abilities do not relate to achievement.

We can probably rule out attachment theory and oppositional culture explanations because the Pasifika and Tongan students had largely positive attitudes towards their subjects. If cultural deficiency theory is relevant, it is only because schooling in Pasifika nations is of a significantly different type than that delivered in New Zealand. Though we cannot rule out explicitly peer influences and stereotype threats, the theory of critical, segregation and school effects seem most likely.

In the context of this study, it may be that Pasifika and Tongan students have high self-efficacy and liking of their subjects because they receive much praise and acknowledgement from their teachers and schools (Bandura, 1986; Pajares, 1996; Schunk, 1996). The teachers may be attempting to encourage these students to feel more positive about their

schooling achievement and about themselves, while disguising or ignoring the fact that the students are not achieving at the same level or standard as those of other ethnic groups. This 'feel-good' approach may improve self-efficacy while blinding students to their actual levels of achievement as well as misinforming the caregivers about their true levels of achievement. Indeed, Hattie and Timperley (2007) make such an argument about the positive effect of task, process, and self-regulation feedback compared to self-oriented feedback.

Another aspect of school effect is that the tasks assigned to Pasifika and Tongan students may be very easy and of a lower standard relative to the expected curriculum or what is undertaken by students in higher socio-economic schools. Nakhid (2003) argued that teachers perceive negatively their Pasifika students' abilities and behaviours and assign easier tasks. When these tasks are successfully completed, students may have generated greater levels of self-efficacy, ignorant of the low standard actually achieved and set. Thus, schools may be contributing to the low academic performance of Pasifika and Tongan students through obscuring the truth about their progress.

Addressing school effects has been the focus of a successful recent research project in New Zealand schools around the low academic performance and negative attitudes of indigenous Māori secondary school students. The Te Kotahitanga project has seen increases in Māori student achievement when teachers adjusted the way they communicated with Māori students (Bishop, Berryman, Tiakiwai, & Richardson, 2003). Pasifika student achievement in Year 1, increased substantially when teachers implemented a scripted teaching program that took into account the literacy skills students actually had rather than those the teachers thought they had (Phillips, McNaughton, & MacDonald, 2001). These projects suggest that teachers of Tongan and Pasifika students may have inadvertently contributed to a situation in which the students believe they are good, achieve poorly, and do not realise it.

Pasifika and Tongan have generally positive attitudes but low academic performance. The teachers of these students need to be helped to help students see the truth of their performances and to give more challenging and appropriate feedback regarding tasks, processes and self-regulation. The assumption that positive attitudes promote academic achievement for all students requires further investigation because it may not be accurate. Additionally, further studies are needed to test our emphasis on school effects as the most likely explanation for this awkward situation. It is hoped that

future research can devise programs that reduce the negative consequences from 'feel good' education while increasing actual achievement. We need to find ways to turn Pasifika and Tongan students' positive attitudes into increasing achievement rather than condemn them to blissful ignorance of the truth.

Notes

1 Decile is an indicator of socio-economic status, with 1 being lowest and 10 highest.

References

- Abu-Hilal, M. (1992). A structural model for the direct and indirect effects of sex, math anxiety on attitudes and achievement in mathematics. *Journal of Faculty of Education (Almansoura University)*, 20, 35-53.
- Bandura, A. (1986). From thought to action: Mechanisms of personal agency. *New Zealand Journal of Psychology*, 15(1), 1 - 17.
- Bishop, R., Berryman, M., Tiakiwai, S., & Richardson, C. (2003). *Te Kotahitanga: The experiences of year 9 and 10 Maori students in mainstream classrooms*: Ministry of Education, New Zealand.
- Bourdieu, P. (1986). The forms of capital. In J. Richardson, G. (Ed.), *Handbook of theory and research for the sociology of education* (pp. 241-258). New York: Cambridge University Press.
- Bourdieu, P., & Wacquant, L. (1992). *An invitation to reflexive sociology*. Chicago: University of Chicago Press.
- Bowlby, J. (1988). *A secure base: Parent - child attachment and healthy human development*. New York: Basic Books.
- Bowlby, J. (2005). *The making and breaking of affectional bonds*. London, New York: Routledge.
- Bowles, S., & Gintis, H. (1976). *Schooling in capitalist American: Educational reform and the contradictions of economic life*. New York: Basic Books.
- Carter, W., Carter, J., & Sottile, J. M. (2001). *Science achievement and self-efficacy among middle school age children as related to student development*. Paper presented at the annual meeting of the Eastern Educational Research Association, Hilton Head, SC. (Eric Document Reproduction Service No. ED458119).

- Cohen, L. (1977). *Statistical Power Analysis for the Behavioural Sciences*. New York: Academic Press.
- Coleman, J. (1961). *The adolescent society: The social life of the teenager and its impact on education*. New York: Free Press.
- Coleman, J. (1990). *Foundations of social theory*. Cambridge: Harvard University Press.
- Embretson, S. E., & Reise, S. P. (2000). *Item response theory for psychologists*. Mahwah, NJ: LEA.
- Fordham, S., & Ogbu, J. U. (1986). 'Black students' school success: Coping with the 'burden of acting white'. *The Urban Review*, 18, 176 - 206.
- Hallinan, M. T. (1983). Commentary: new directions for research on peer influences. In J. Epstein & N. Karweit (Eds.), *Friends in school*. New York: Academic Press.
- Hattie, J. A. C., Brown, G. T. L., Keegan, P. J., MacKay, A. J., Irving, S. E., Cutforth, S., Campbell, A., Patel, P., Sussex, K., Sutherland, T., McCall, S., Mooyman, D., & Yu, J. (2004). *Assessment Tools for Teaching and Learning (asTTle) version 4, 2005: Manual*. Wellington, NZ: University of Auckland/ Ministry of Education/ Learning Media.
- Hattie, J. A. C., Brown, G. T. L., & Keegan, P. J. (2003). A national teacher-managed, curriculum-based assessment system: Assessment Tools for Teaching & Learning (asTTle). *International Journal of Learning*, 10, 771-778. Retrieved October 5, 2005, from <http://gavintlbrown.cgpublisher.com/product/pub.37/prod.295>
- Hattie, J., & Timperley, H. (2007). The power of feedback. *Review of Educational Research*, 77(1), 81-112.
- Hoyle, R. H. (1995). The structural equation modeling approach: Basic concepts and fundamental issues. In R. H. Hoyle (Ed.), *Structural equation modeling: Concepts, issues, and applications* (pp. 1-15). Thousand Oaks, CA: Sage.
- Hoyle, R. H., & Duvall, J. L. (2004). Determining the number of factors in exploratory and confirmatory factor analysis. In D. Kaplan (Ed.), *The SAGE handbook of quantitative methodology for social sciences* (pp. 301-315). Thousand Oaks, CA: Sage.
- Johnson, M., Crosnoe, R., & Elder, G. (2001). Student attachment and academic engagement: The role of ethnicity. *Sociology of Education*, 74, 318-340.
- Josephs, R., & Schroeder, D. (1997). *The self-protective function of the learning curve*. Mississippi: University of Texas at Austin.
- Kao, G. (2001). Race and ethnic differences in peer influences on educational achievement. In E. Anderson & D. S. Massey (Eds.), *Problem of the century: Racial stratification in the United States*. New York: Russell Sage.
- Kao, G., & Tienda, M. (1988). Educational aspirations among minority youth. *American Journal of Education*, 106, 349-384.
- Linnenbrink, E. A., & Pintrich, P. R. (2003). The role of self-efficacy beliefs in student engagement and learning in the classroom. *Reading and Writing Quarterly*, 19, 119-137.
- Ministry of Education. (2004). *Pasifika peoples in New Zealand education: A statistical snapshot 2004*. Wellington, NZ: Ministry of Education.
- Moulton, K. D., Brown, S. D., & Lent, R. W. (1991). Relations of self-efficacy beliefs to academic outcomes: A meta-analytic investigation. *Journal of Counselling Psychology*, 38, 30-38.
- Nakhid, C. (2003). Comparing Pasifika students' perceptions of their schooling with the perceptions of non - Pasifika teachers using the 'Mediated Dialogue' as a research methodology. *New Zealand Journal of Educational Studies*, 38(2), 207-226.
- O'Brien, V., Martinez-Pons, M., & Kopala, M. (1999). Mathematics self-efficacy, ethnic identity, gender, and career interests related to mathematics and science. *Journal of Educational Research*, 92(4), 231-235.
- Ogbu, J. U. (1978). *Minority education and caste: The American system in cross-cultural perspectives*. New York: Academic Press.
- Orfield, G., & Eaton, S. E. (1996). *Dismantling desegregation: The quiet reversal of Brown v. board of education*. New York: New Press.
- Pajares, F. (1996). Self-efficacy beliefs in academic settings. *Review of Educational Research*, 66, 543 - 578.
- Pajares, F., & Schunk, D. (2001). Self-beliefs and social success: self-efficacy, self-concept, and school achievement. In R. Riding & S. Rayner (Eds.), *Perception* (pp. 239-266). London: Ablex Publishing.
- Phillips, G., McNaughton, S., & MacDonald, S. (2001). *Picking up the pace: Effective literacy interventions for accelerated progress over the transition into decile 1 schools*. Auckland, NZ: The Child Literacy Foundation and Woolf Fisher Research Centre.
- Satherley, P. (2006). *Student outcome overview 2001-2005: Research findings on student achievement in reading, writing and mathematics in New Zealand schools*. Wellington, NZ: Ministry of Education, Research Division.

- Schunk, D. (1981). Modeling and attributional effects on children achievements: a self-efficacy analysis. *Journal of Educational Psychology*, 73, 93-105.
- Schunk, D. (1996). *Self-efficacy for learning and performance*. Paper presented at the annual conference of the American Educational Research Association, New York, NY. (Eric Document Reproduction Service No. ED394663)
- Stanat, P., & Christensen, G. (2006). *Where immigrant students succeed - A comparative review of performance and engagement in PISA 2003*. Berlin: Max Planck Institute for Human Development.
- Statistics, N. Z. (2006). *Ethnicity*. Wellington, NZ: Statistics New Zealand.
- Steele, C., & Aronson, J. (1995). Stereotype threat and the intellectual test performance of African-Americans. *Journal of Personality and Social Psychology*, 67, 797-811.
- Steiger, J. H. (2000). Point estimation, hypothesis testing, and interval estimation using the RMSEA: Some comments and a reply to Hayduk and Glaser. *Structural Equation Modeling*, 7(2), 149-162.
- Sturrock, F., & May, S. (2002). *PISA 2000: The New Zealand context-the reading, mathematical and scientific literacy of 15 year-olds*. Wellington: Ministry of Education.
- Suarez-Orozco, C., & Suarez-Orozco, M. M. (2001). *Children of immigration*. Cambridge, MA: Harvard University Press.
- Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of student attrition* (2nd ed.). Chicago: University of Chicago Press.
- Vogt, W. P. (2005). *Dictionary of statistics & methodology: A nontechnical guide for the social sciences*. Thousand Oaks, CA: Sage.
- Walker, B. J. (2003). The cultivation of student self-efficacy in reading and writing. *Reading & Writing Quarterly*, 19, 173-187.
- Williams, T., Williams, K., Kastberg, D., & Jocelyn, L. (2005). Achievement and affect in OECD nations. *Oxford Review of Education*, 31(4), 517-545.
- Willis, P. E. (1977). *Learning to labour: How working class-kids get working-class jobs*. Westmead, UK: Saxon House.

Received October 24, 2006
Revision received April 5, 2007
Accepted April 20, 2007