Examination of time perspective, hope, self-efficacy, and ethnic identity: A structural equation model

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ABSTRACT

Recent research indicates that time perspective, hope, self-efficacy, and ethnic identity explain a significant, independent portion of the variability in academic performance (Adelabu, 2008). Very few studies have used structural equation modeling to explore the direct and indirect effects of these theoretical orientations when combined within one conceptual model. This study tested a conceptual model that included ethnic identity, time perspective (present, future), self-efficacy, and hope. We used causal modeling procedures to explore the direct and indirect effects of these theoretical orientations on students' academic achievements in science and mathematics. Two hundred and forty-eight Form 4 (139 girls and 109 boys) adolescents completed a number of inventories (e.g., Hope). LISREL 8.72 indicated the direct positive effects of time perspective (present, future) on academic performance; hope was also influenced by both present time perspective and self-efficacy. No indirect effects between the theoretical constructs and academic performance were observed. A one-way *MANOVA* revealed no statistical difference between boys and girls in this theoretical framework.

Key words: Time perspective, hope, self-efficacy, ethnic identity

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One important research focus in educational psychology is concerned with the achievement of minority adolescents. This line of research inquiry has involved, for example, an examination of factors such as the style of living (urban, rural, suburban), ethnic and cultural diversity, and socioeconomical status and their associations with adolescents' academic achievement (Adelabu, 2007; Phan & Deo, 2007). Furthermore, the impetus arising from this line of inquiry is the amalgamation of different educational-psychology theories within one framework that could explain students' academic learning. This research study examines three major educational-psychology theories – time perspective, self-efficacy, and a sense of hope – and how they combine to influence students' educational success. Differing from other studies, we focus our research investigation in a population that is "minority" in socioeconomical stratifications and class. Discrepancies in living standards and socioeconomical development contribute to academic success, and in our view require further analysis and development.

The Present study: A structural equation model

This research study extents the work Adelabu (2007, 2008), involving minority adolescents and their academic achievements. Central to our research is an examination of the different factors that could influence adolescents' academic achievement. Similar to previous studies, the emphasis of our investigation is concerned with the sociocultural milieu that shapes individuals' beliefs and learning. We focus in particular the sociocultural context of Fiji, a developing country that has experienced three coup d'états since 1987. The political upheaval and instability of the past three decades has left the country and the Pacific region, in general, in a state of uncertainty. The historical and socioeconomical plight of the ethnic Fijian minority, the Indo-Fijians, reflects the similar predicaments that are shared by other ethnic minorities elsewhere (e.g., African Americans). A number of scholars have discussed in-depth the life struggle that Indo-Fijians go through (e.g., Nabobo-Baba, 2006; Phan, 2008a; Phan & Deo, 2006, 2007). The racial discrimination experienced by these individuals has led to a collective mindset established concerning the motive and purpose of education. Many Indo-Fijian children are inculcated at an early age to view education as a medium that is instrumental towards social and economical mobility, as well as geographical migration (Phan, 2008b; Phan & Deo, 2007). This indoctrination has led many children to deliberate their futures with a strong conviction, where the belief lies in academic excellence. Furthermore, the envisaged future established early on in life instills the perception that extrinsic motivation is crucial in learning and professional development.

The future orientation and the determination to succeed academically in life do not transpire positively for all Indo-Fijian adolescents, especially those who are poor or those who live in rural and very remote areas. The socioeconomical uncertainty of this region leaves many families to feel unsettled and disconnected from the main-stream societies at large. There is a shared feeling of hopelessness that not much of a future exists. Future anticipation and/or planning is viewed and perceived as a non-existing phenomenon. For many poor Indo-Fijian adolescents, especially those who live in remote and rural areas the future is bleak with few, if any, opportunities. The anticipation of a future is considered as a myth and that not much will eventuate into realistic consequences. Many adolescents live their daily lives with close proximity objectives and goals; for example, assisting a younger sibling with his/her homework, or helping with household chores. In essence, the plight of the Indo-Fijians reflects similarly the case of the Argentinean adolescents in Vázquez and Rapetti's (2006) study. Collectively, in our view, these adolescents (i.e., Argentinean and Indo-Fijian) face and share similar

socioeconomical struggles in life which ultimately contribute to their personal development. This does not mean to say, however, that some adolescents from rural settings and low socioeconomical classes have not gone on to achieve better things in life. One can only speculate the extent to which future goals and aspirations contribute to these adolescents' academic, social, and personal development.

Research investigation from another ethnosocial perspective may contribute theoretically and empirically to the literature. Our exemplification of the Indo-Fijian people in the Pacific reflects, similarly, the historical and sociocultural accounts of other adolescents mentioned in other research studies (Adelabu, 2007, 2008; Seginer & Halabi, 1991; Vázquez & Rapetti, 2006). Research concerning students' academic learning and its relations with other social milieu dimensions (e.g., ethnic identity) and theoretical frameworks (e.g., time perspective, self-efficacy) in the Pacific has been limited to a few research studies; the work of Phan (2009a) involving tertiary students shows, for example, that FTP predicted achievement goal orientations (mastery, performance-approach, performance-avoidance), effort, and deep processing strategies. Likewise, Phan's (2007) path analysis study reveals college students' self-efficacy beliefs are related to the different phases of reflection (e.g., understanding)(Leung & Kember, 2003; Mezirow, 1998).

The brief evidence outlined previously provides a basis for further research into the interrelations between time perspective, self-efficacy, hope, and ethnic identity. This study attempts to explore the interrelatedness of these four theoretical frameworks and students' academic performances. Furthermore, the overall analysis of our research investigation may provide relevant information pertaining to how the sociocultural contexts of the Pacific may shape adolescents' time perspectives. Based on a synthesis of the literature, our study is guided by four major hypotheses:

HP1: There will be associations between time perspective, ethnic identity, self-efficacy and hope, and academic performance.

HP2: Time perspective (present, future), ethnic identity, self-efficacy and hope will make direct contributions to the prediction of academic performance.

HP3: Ethnic identity, present time perspective, self-efficacy and hope will make direct contributions to the prediction of future time perspective.

HP4: Ethnic identity, present time perspective and self-efficacy will make direct contributions to the prediction of hope.

There is evidence to suggest that there is a positive association between time perspective and academic performance (Lennings, Burns, & Cooney, 1998; Simons, Dewitte, & Lens, 2004; Zimbardo & Boyd, 1999), as well as self-efficacy and academic performance (see Pajares, 1997; Pajares & Schunk, 2001). Likewise, research studies by Adelabu (2008), Snyder, Feldman, Shorey, and Rand (2002) and others emphasise the important relationship between hope and students' academic learning. Finally, the importance of ethnic identity as an antecedent of academic performance is highlighted in a number of research studies (Adelabu, 2008; Perry, 2003).

The hypothesis concerning the relationship between ethnic identity and future time perspective is consonant with previous studies that explored ethnic identity and other related social milieu dimensions (Brown, 2001; Brown & Jones, 2004; Poole & Conney, 1987). There is also clear and consistent evidence that self-efficacy serves as a positive predictor and mediator of various motivational variables. However, much less is known about the relationship between hope and future time perspective; for example, Adelabu's (2008) study failed to explore the relation between these two variables. There are reasons to believe that determination and the ability to generate plans and accomplish goals may serve as a motivational factor that could, in turn, help individuals in their thoughts and attitudes toward the future. In fact, one could argue

that this relationship is analogous. Finally, the relationship between present and future time perspectives requires further examination. Zimbardo and Boyd (1999) reported, for example, that a present time perspective is related negatively to academic achievement. This evidence highlights the impediment of one's own representation of the self at the present time and how this has negative impact on learning. The question here is whether thoughts and attitudes of the present time may also contribute positively to individuals' anticipation of the future.

Existing research studies indicate the positive predictive role of self-efficacy on various motivational variables (Pajares, 1996; Pajares & Schunk, 2001). A strong sense of self-efficacy, for example, may help individuals to articulate, plan and reach their goals successfully. Much less is known, however, about the relationships between ethnic identity and hope, and between present time perspective and hope. There is limited evidence, at present, to support the hypothesised relationships between ethnic identity and present time perspective and hope. The possible analogous relation between present time perspective and hope needs further validation using correlational data. Similarly, the possible association between ethnic identity and hope requires a detailed examination. Previous theoretical contentions in the area of time perspective have argued that individuals who are bounded by an "ethnic minority" status, often feel pessimistic in their thoughts and beliefs concerning future objectives and goals (Vázquez & Rapetti, 2006). The stigma of having an ethnic minority status may result in similar thoughts and beliefs concerning one's sense of hope for the future.

In summary, the hypotheses outlined differ from previous research studies (e.g., Adelabu, 2008; Perry, 2003; Snyder *et al*., 2002; Vázquez & Rapetti, 2006) on two main premises. First, we incorporated the study of ethnic identity, time perspective, self-efficacy, and hope in a full structural equation model (See Figure 1). Structural equation modeling (SEM) is an advantageous statistical method as it allows researchers to examine direct, indirect and total effects of latent constructs within a conceptual model (Bentler, 1990; Byrne, 1998). Second, we postulated a number of structural paths between the motivational constructs (e.g., self-efficacy → hope) that have not been explored in previous research studies.

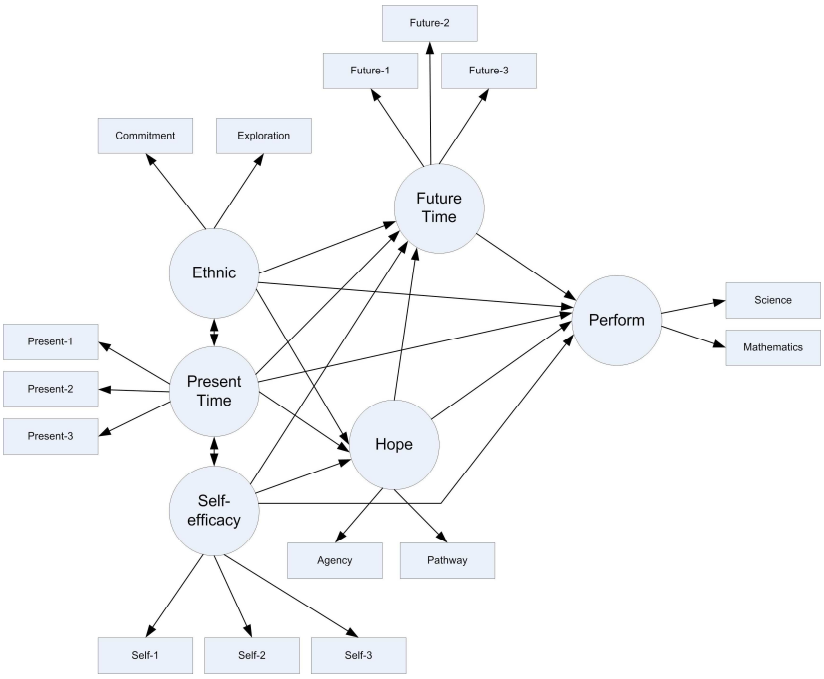

Figure 1: A conceptual model of ethnic identity, time perspective, self-efficacy, hope and academic performance.

Method

Participants

Participants were 248 Indo-Fijian adolescents (139 females, 109 males) enrolled in four rural and remote secondary schools in Fiji. Students, enrolled in Form 4[1], ranged in age from 15 to 17 years with a mean age of 15.9 years. The four schools that we have chosen are located in low socioeconomical class areas; household incomes would not exceed $US4000.00 per annum. Our sampling was purposive and the participants in this study were deliberately chosen given their socioeconomical statuses.

Measures

Time perspective (present, future) was measured using the Zimbardo Time Perspective Inventory (ZTPI) Shorten Form (Keough, Zimbardo, & Boyd, 1999). The 22-item inventory contains items such as: "If I don't get things done on time, I don't worry about it" and "I believe that my future is beautiful and well planned." Participants rated each item on a 7-point scale ranging from 1 (very untrue) to 7 (very true). Cronbach's alpha value for the present time perspective scale was .86, whereas the alpha value for the future time scale was .89.

Hope was measured using the Hope Scale (Snyder, Harris, Anderson, Hollerman, Irving, Sigmon, Sandra, Yoshinobu, Gibb, Langelle, & Harney, 1991), a 12-item inventory that is designed to measure a sense of successful determination in meeting one's goals (agency) and a sense of being able to generate successful plans to meet one's goals (pathways)(Adelabu, 2008). Sample items include, for example: "I work hard to reach my goals" (agency) and "there are lots of ways around a problem" (pathways). Participants rated each item on a 7-point scale ranging from 1 (definitely false) to 7 (definitely true). Cronbach coefficients were .84 (agency) and .85 (pathway).

Ethnic identity was measured using the Multi-Ethnic Identity Measure (MEIM: Phinney, 1992). The inventory, containing 15 items, assesses ethnic identity search/exploration (defined by an interest in seeking out information about one's ethnic/cultural group) and ethnic identity affirmation/belonging/commitment (defined by feelings of affiliation, belonging, and connectedness towards one's ethnic/cultural group). Sample items include, for example: "I have spent time trying to find out more about my ethnic group, such as history, traditions, and customs" (ethnic identity search/exploration) and "I am happy that I am a member of the group I belong to" (ethnic affirmation/belonging/commitment). Each item was rated on a 7-point scale, ranging from 1 (strongly disagree) to 7 (strongly agree). Cronbach coefficients ranged from .90 to .92. Students' self-efficacy for academic learning was measured using the Patterns of Adaptive Learning Survey (PALS)(Midgley, Maehr, Hruda, Anderman, Anderman, Freeman, Gheen, Kaplan, Kumar, Middleton, Nelson, Roeser, & Urdan, 2000). This inventory with responses ranging from 1 (not at all true) to 7 (very true) contains items such as, "I'm certain I can master the skills taught in class this year" and "I can do almost all the work in class if I don't give up." Cronbach coefficient was .88.

Finally academic achievement was measured by grade point averages in science and mathematics. Participants were explained at the outset why their grades were needed. The instruments were administered in tutorial classes with the assistance of a tutor. Participation by the students was voluntary and no remuneration was provided. Students were instructed to write down their student number for the purpose of collecting their overall marks in science and mathematics. Students were assured of anonymity and were informed why their overall performance marks were

[1] *Form 7 is the highest form in secondary schools in Fiji before students attend university.*

needed.

Statistical analysis

The conceptual model illustrated in Figure 1 was tested and analysed using structural equation modeling (SEM) procedures. Descriptive statistics were calculated and preliminary analyses were carried out using SPSS 16.02. SEM is considered an appropriate statistical procedure as it enables examination of both direct and mediating effects between motivational variables and academic performance (Bollen, 1989; Byrne, 1998; Kline, 2005). Furthermore, SEM techniques have a strong theoretical grounding and empirical support, and allow the testing of competing models and/or refinement of an *a priori* model to fit the data. The most common fit indexes that are recommended when reporting SEM analyses include: the chi-square statistic; the Steiger-Lind root mean square error of approximation (RMSEA; Steiger, 1990) with its 90% confidence interval; the Bentler comparative fit index (CFI; Bentler, 1990); and the non-normed fit index (NNFI; Bentler & Bonett, 1980).

We used LISREL-8.72 with covariance matrices and maximum likelihood (ML) procedures to test the structural equations. The statistical program LISREL-8.72 for the PC (similar to SPSS AMOS 7), developed by Jöreskog and Sörbom (2001), enables the testing of *a priori* models and provides various goodness-of-fit index values. We analysed covariance matrices because correlation matrix analysis is known to involve potential problems, such as producing incorrect goodness-of-fit measures and standard errors (Byrne, 1998; Jöreskog & Sörbom, 2001). A number of goodness of fit index values are calculated by LISREL; however, the three reported in this study are the CFI, the NNFI, and the RMSEA. Models with CFI and NNFI values close to .95 and RMSEA values below .05 are normally considered an indication of good model fit (Byrne, 1998).

In the subsequent SEM analysis, six latent constructs (ethnic identity, present time perspective, future time perspective, self-efficacy, hope, and academic performance) were formed. Ethnic identity was defined by two measured indicators; present time perspective was defined by three measured indicators; future time perspective was defined by three measured indicators; self-efficacy was defined by three measured indicators; hope was defined by two measured indicators; and academic performance was defined by two measured indicators – science and mathematics.

Results

The correlation matrix of eta and ksi is presented in Table 1. The proposed *a priori* model showed an excellent fit, as reflected by the various goodness-of-fit index values (*CFI* = .99, *NNFI* = .99, *RMSEA* = .03). Figure 2 shows the full structural model with paths from the measured indicators to their latent variables statistically significant at the .05 and .01 levels. For example, the factor loadings were .81 to .89 for measured indicators descriptive of the ethnic identity scale, .72 to .81 for measured indicators descriptive of the present time perspective scale, .60 to .87 for measured indicators descriptive of the future time perspective scale, .81 to .86 for measured indicators descriptive of the self-efficacy scale, and .81 for the two measured indicators descriptive of the hope scale. The structural coefficients for statistically significant paths between the latent factors ranged from .29 to .51.

Table 3 displays direct and indirect effects. There were two direct effects on academic performance (present time perspective: β = .51; future time perspective: β = .30). The strongest total effect on hope was provided by self-efficacy (β = .47), followed by present time perspective (β = .29). Of future time perspective, only present time perspective exerted a direct positive effect (β = .31).

Table 1: Correlation matrix of eta and ksi.

	Hope	Future	Perform	Ethnic	Present	Self-eff
Hope	1.00					
Future	.11	1.00				
Perform	-.01	.43 *	1.00			
Ethnic	.14	-.08	-.06	1.00		
Present	.44 *	.29 *	.47 *	.14	1.00	
Self-eff	.55 *	.04	-.03	.30 *	.32 *	1.00

Note: * $p < .05$. Future = future time perspective, Present = present time perspective, Ethnic = ethnic identity, Self-eff = self-efficacy, Perform = performance.

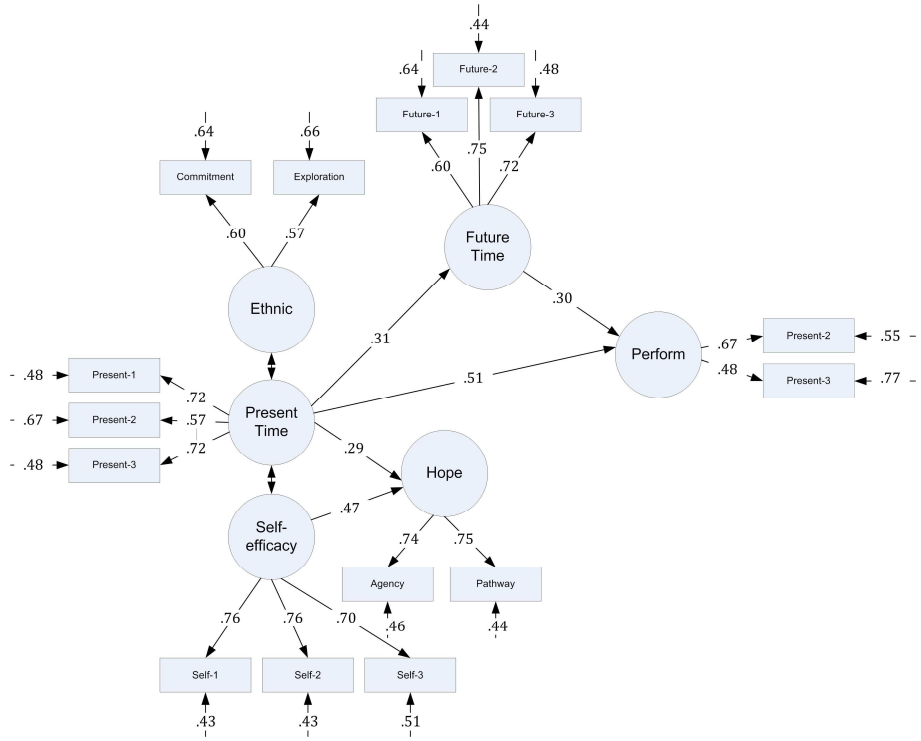

Figure 2: A full model of different motivational variables and academic performance. Non-significant paths have been omitted for clarity; the paths included are significant at $p < .05$.

To extend the analysis, a one-way multivariate analysis test was performed to explore the possibility of gender differences in relation to the variables under investigation: hope, self-efficacy, ethnic identity (affirmation, exploration), present and future time perspective, and academic performance. The independent variable was gender. Preliminary assumption was conducted to ensure for normality, linearity, univariate outliers, and multivariate outliers, and no violations were noted. To avoid Type I errors, a Bonferroni correction of $p < .007$ was applied. Levene's tests showed that the assumption of equal variance for all variables had been met ($p > .05$). The results indicated no statistically significant difference between males and females on the combined dependent variables ($F[7,238] = 2.06$, Wilks' $\lambda = .96$, $\eta^2 = .04$). When the results for the dependent variables were considered separately using adjusted alpha values, no significance was observed.

Table 2: Indirect, direct, and total effects.

Effect	Direct		Indirect	Total	
On performance					
• Of future time perspective	.30	**	-	.30	**
• Of hope	-.22		.00	-.22	
• Of ethnic identity	-.05		-.03	-.08	
• Of present time perspective	.51	**	.03	.54	**
• Of self-efficacy	-.07		-.11	-.18	
On future time perspective					
• Of hope	.01		-	.01	
• Of ethnic identity	-.12		.00	-.12	
• Of present time perspective	.31	**	.00	.31	**
• Of self-efficacy	-.03		.00	-.03	
On hope					
• Of ethnic identity	-.04		-	-.04	
• Of present time perspective	.29	**	-	.29	**
• Of self-efficacy	.47	**	-	.47	**

Note: * $p < .05$, ** $p < .01$.

Discussion

This research investigation is concerned with an examination of relationships between academic achievement and FTP, self-efficacy beliefs, hope, and ethnic identity (affirmation, exploration). Existing research studies (e.g., Adelabu, 2007, 2008; Brown & Jones, 2004) have provided evidence to indicate the important variance in academic achievement that is explained by the four theoretical frameworks outlined. A number of studies have explored separately the relationships between FTP, self-efficacy beliefs, hope, and ethnic identity in sociocultural contexts; for example, African American adolescents living in rural and urban areas of the United States (Adelabu, 2008; Taylor, Casten, Flickinger, Roberts, & Fulmore, 1994). Other research investigations have involved other ethnic minority groups – for example: Argentinean adolescents (Vázquez & Rapetti, 2006) and Israeli Druze, Arab, and Jewish adolescents (Seginer & Halabi, 1991). Our examination of the Indo-Fijian adolescents was significant as it provided additional information in relation to the study of adolescents and their academic learning in different sociocultural settings. In particular, the current socioeconomical status of the Pacific, especially the political uncertainty that espouses this region, has shaped individuals' personal experiences. Adolescents' personal developments in the Pacific are similar to those experienced by the Argentinean and African American adolescents. Our research investigation, however, is not on a cross-cultural comparison of findings with other countries *per se*, but whether existing theoretical and empirical relationships could be applied to another social and cultural context.

The evidence ascertained in this study highlights three major points: (i) the positive effect of time perspective on students' academic performances, (ii) the positive effects of time perspective and self-efficacy on hope, and (iii) the nonsignificance in gender differences in relation to FTP, self-efficacy, hope, ethnic identity, and academic achievement. There were no indirect effects between the theoretical orientations and academic performance in science and mathematics were observed.

Consistent with existing research (Andriessen, Phalet, & Lens, 2006; Lennings *et al.*, 1998; Shell & Husman, 2001), the findings show that academic performance was influenced by

time perspective (present, future). Adolescents interested in formulating anticipatory thoughts concerning immediate and long-term outcomes were more inclined to engage and perform in their learning. This evidence, in contrast to the works of Leshan (1952) and Vázquez and Rapetti (2006), suggests that individuals from low socioeconomical classes can still accomplish and succeed in life, academically. This differs from other research studies that have discerned the negative future expectations of many poor adolescents. We speculate that envisage of a positive representation of oneself in the future may, in itself, arise from the socioeconomical situation of the region. The argument is that perhaps, the current socioeconomical status of Pacific helps individuals to anticipate and contemplate positively about their future prospects. In fact, the need to escape financial hardship and rural life may serve as a motivational force to help many young adolescents to perform academically in school. Further research investigation could explore to see whether, in fact, social and economical conditions shape individuals' future goals and expectations. The case of the Indo-Fijians is relatively unique; as explained by researchers (Phan, 2008b; Phan & Deo, 2007), the experience of landlessness and the socioeconomical uncertainty of the region help, in part, create a sense of purpose and determination in one's future prospect. In this analysis, the envision of a positive representation of oneself at the present time and in the future is a powerful incentive for many Indo-Fijian adolescents to achieve in their learning.

The evidence also shows that hope was influenced by both present time perspective and self-efficacy. The positive effect of present time perspective on hope is not surprising, given the close association between the two theoretical constructs. Adolescents who envisage, positively, about their present goals and anticipations are more inclined to take time to generate successful plan to reach their goals. This finding differs from previous research studies that showed no analogous relationship between time perspective and hope (e.g., Adelabu, 2007, 2008). Some other research studies (e.g., Phan, 2009a; Simons *et al*., 2004) have, however, found from structural equation modeling the positive predictiveness of time perspective on related motivational constructs. Our findings here provide further support for the positive effects of time perspective (present, future) on academic achievement, as well as on different motivational constructs. It is important therefore that adolescents are encouraged to think positively about their thoughts and attitudes toward the future. A healthy time perspective is conducive to productivity and academic success.

Consistent with Bandura's (1986, 1997) social cognition theory and previous studies (Pajares & Johnson, 1996; Pajares & Kranzler, 1995; Pajares & Valiante, 1997), our findings also indicate the positive effect of self-efficacy beliefs on different motivational constructs, in this case hope. Adolescents who are self-efficacious to engage in academic learning are more determined to set and reach their goals in life. In this analysis, self-efficacy is seen as a potent motivational force in human agency to influence individuals' thoughts, goal settings, and performance. This evidence reinforces the argument concerning the need for educators to encourage and foster a positive sense of self-efficacy. Furthermore, the structural path identified between self-efficacy and hope in this study contributes theoretically to the importance of self-efficacy as a determinant.

Male and female Indo-Fijian adolescents did not differ in ethnic identity, time perspective, hope, self-efficacy, or academic performance. In the area of time perspective, for example, our findings differ from previous studies (e.g., Adelabu, 2008; Honora, 2002) that indicated significant gender differences. One possible explanation for this is that the ongoing problems of poverty and uncertainty may have contributed to this nonsignificance in gender differences. The socioeconomical problems faced by Indo-Fijians in the Pacific have led many parents to inculcate to their children at an early age, disregard of genders, to strive for academic success and excellence (Phan, 2008a; Phan & Deo, 2007). There is also an argument that the ethos and cultural beliefs of this region, which bind people collectively, may contribute to individuals' determination and motivation to excel academically. In essence, values and beliefs shared by the people of a particular society could subsume other factors (e.g., ethnicity, gender)

in determining individuals' cognitive thoughts, motivation, and the teaching and learning processes (Phan, 2009b).

Conclusion

In conclusion, the conceptual model and empirical findings in this study make theoretical and practical contributions to the literature on time perspective, self-efficacy, hope, and ethnic identity. This investigation is significant as it involved an examination of different theoretical frameworks using structural equation modeling. Furthermore, our research has provided a methodological insight into the psychometric properties of the various inventories used in this study. Importantly, the evidence ascertained from the current study emphasizes on the cultural appropriateness of the various inventories used (e.g., MEIM: Phinney, 1992) and how these inventories can be adapted to different sociocultural settings. Researchers in various cultural contexts, such as the Pacific have addressed the methodological issue of validity and cultural appropriateness when researchers attempt to use "Western-context" questionnaires and inventories to explore time perspective, self-efficacy, etc (Phan & Deo, 2007).

Although this research study has established some important and useful findings, there are however some limitations in methodology and research design that warrant further research investigation. First, there is a need to continue and extend the study of time perspective in different socioeconomical and cultural contexts. The process of exploring how one's historical background and social settings shape individuals' present and future time perspectives can be made using longitudinal data. Ethnographical procedures (Brewer, 2005) could be used to capture the cultural dimensions that may help, in part, to develop and shape individuals' time orientations and hope.

Second, future research could extend the focus to include how other ethnic minority groups experience time perspectives and hope, for example, in their academic development. Ethnic identity from other ethnic/cultural groups may differ and help to explain one's sense of hope or future time perspective. The socioeconomical contextualisation of a particular setting may also, in part, help to explain a person's envisage of a positive future or outcome. Third, researchers need to explore the underlying processes entailing FTP, hope, and self-efficacy from a qualitative perspective. Some researchers (Adelabu, 2007) have questioned, for example, the accuracy, validity, and reliability of self-reported questionnaires when administering to adolescents.

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