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STUDENTS IN CANADA

The Longitudinal Adaptation Process of International Students in Canada

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In 2006, there were approximately 2.5 million international students (IS) studying worldwide (Institute of International Education [IIE], 2006). IS make noteworthy economic, educational and intercultural contributions to the host countries in which they choose to study. In the United States alone, IS and their families contribute \$13.5 billion per annum to the US economy (IIE, 2005). The presence of IS also enhances the educational experience of domestic students, as these students bring a new perspective (Ward, 2001). Furthermore, when IS are present within the classroom, instructors are more likely to adopt new teaching methods that are similar to IS' previous educational experiences and often differ from traditional Western teaching strategies (Ward, 2001). IS also contribute to an increased understanding of diversity and global issues, create international business and trade connections, become political allies, and promote foreign policy interests (NAFSA, 2003). Due to these substantial contributions, there is competition among nations including Canada, the United Kingdom, Australia and New Zealand to increase international enrolment (Snow, 2006). As a strategy to attract IS, Canada has formulated a wide-ranging plan including initiatives such as funding for outreach programs and marketing, as well as simplified visa and university application processes (Schneider, 2000).

#### *International Students in Canada*

In 2002, there were 104,662 IS in Canada, representing 203 different countries and comprising 5.9% of the national student body (Canadian Bureau for International Education [CBIE], 2002). The majority of these students were at the post-secondary level, enrolled in a college/trade school (14,341) or university (52,235). These figures represent a 12.6% increase in student enrolment from the previous academic year. Although this increase is numerically significant, Canada still lags behind its aforementioned competitors. IS were concentrated in three provinces: Ontario (38.8%), Québec (20.4%) and British Columbia (20.8%), analogous to national patterns of immigrant settlement (Citizenship and Immigration Canada [CIC], 2006). Accordingly, the five universities with the largest enrolment of international students were located in either Ontario (University of Toronto, York University) or Québec

(McGill, Université de Montréal, Université du Québec; CBIE, 2002). Approximately one out of every four IS hailed from Asia, the top-sending region in 2001-02. In fact, three of the top five sending nations were Asian: (1) South Korea (14.1%); (2) United States of America (10.3%); (3) People's Republic of China (9.64%); (4) France (6.31%); and (5) Japan (4.5%). This high representation may be partially attributable to a recent surge in Chinese (45.9%) and South Korean (34.1%) enrolment. More recent statistics suggest that these trends are being maintained. In the 2004-2005 academic year, IS enrolment was up 7.3% on the previous year, and almost half (46.4%) of IS were from Asia (Statistics Canada, 2006).

### *Cross-Cultural Adjustment*

Since IS constitute a significant and rising portion of student bodies and make economic, educational and intercultural contributions, their adjustment and psychological well-being are important issues to consider for university administrators and research communities (Chirkov, Vansteenkiste, Tao & Lynch, 2007). Popadiuk and Arthur (2004) argue that if educational institutions are prepared to welcome IS, they must also be capable of providing culturally appropriate support. In order to change current programs, services and tools, or to implement entirely new ones, we must first recognize factors that may facilitate or hinder the cross-cultural adjustment process.

Research indicates that a host of sojourn-related issues face IS, including separation from family in the home country, severe homesickness, social isolation, language barriers, discrimination and difficulties adjusting to social norms and customs, and making friends from the larger society (Huxur, Mansfield, Nnazor, Schuetze, & Segawa, 1996; Lee & Rice, 2007; Leung & Berry, 2001; Ryan & Twibell, 2000; Swagler & Ellis, 2003). The literature on IS has identified a series of factors that affect these students' ability to adjust to the new culture and overcome difficulties such as those listed above (e.g. Hechanova-Alampay, Beehr, Christiansen & Van Horn, 2002; Poyrazli, Kavanaugh, Baker & Al-Timimi, 2004).

*Psychological Well-Being.* Research has demonstrated links between psychological well-being and various indicators of psychological and socio-cultural adaptation. As a construct, psychological well-being is positively associated with self-esteem, life satisfaction and internal control (Ryff & Singer, 1996) and negatively related to psychophysical distress (Safdar, Lay, & Struthers, 2003). Safdar and colleagues (2003) found that individuals scoring higher on psychological well-being tended to have more outgroup contact. In addition to these direct associations, Ward and Rana-Deuba (1999) posit that psychological well-being moderates the relationships between acculturation, cultural distance (i.e. the degree of (dis)similarity between one's heritage culture and that of the society to which one is adapting) and psychophysical distress.

*Social Support.* Kuo and Roysircar (2006) report that social support (actual and perceived), buffers the acculturative stress that faces IS due to perceived prejudice. Berry, Kim, Minde and Mok (1987) report that those IS with a limited social support network in the host society tend to experience greater stressors than those with more social support. Forming friendships with members of the host society can be especially beneficial for IS; these peers can serve as cultural informants, thereby reducing emotional distress (Ward & Rana-Deuba, 2000) and facilitating adjustment (Hechanova-Alampay et al., 2002; Westwood & Barker, 1990; Yang, Noels & Saumure, 2006; Ying, 2003; Ying & Liese, 1991). Similar findings have been reported by Ying (2003) who reports that having relationships with members of the host society is negatively related to loneliness. Unfortunately, research has found that relationships between IS and members of the host society are infrequent, despite the fact that IS express an expectation and interest in establishing them (Lewthwaite, 1996; Ward, 2001).

Forming relationships with IS from other countries is also beneficial, as these relationships are positively associated with emotional well-being and adjustment (Ward & Kennedy, 1993; Ward & Rana-Deuba, 2000; Ying & Liese, 1991). Ward (2001) argues that IS who are in more frequent contact

with ethnically different others tend to be better adjusted in psychological, social and academic terms than those without such contacts.

Ingroup and outgroup social support are not mutually exclusive. In fact, Swagler and Ellis (2003) argue that the most adjusted students are those that have both ingroup and outgroup contacts. Similarly, Poyrazli et al. (2004) report that students with a balance of ingroup and outgroup friends experience less acculturative stress and more social support than those who either solely or primarily befriend co-nationals.

*Cultural Competence.* Much of the research that has looked at sojourners' adjustment has incorporated cultural competence, particularly linguistic ability. In a qualitative study, Swagler and Ellis (2003) report that IS express language barriers as their number one concern. Although these participants believed that poor English skills hampered their adjustment, Swagler and Ellis (2003) conclude that confidence in language proficiency is a better predictor of adjustment than actual language skills per se. Other research reports direct relationships between linguistic ability and the quality of a sojourner's international experience, both in terms of adjustment and acculturative stress (Duru & Poyrazli, 2004; Poyrazli et al., 2004; Yeh & Inose, 2003; Ying, 2003). In a similar vein, Constantine, Okazaki and Utsey (2004) report a negative relationship between language fluency and depression. Dao, Lee and Chang (2007) extend this knowledge with their finding that self-perception of English fluency is a more significant predictor of depression than either perceived social support or level of acculturation. Researchers have found that linguistic ability can also affect sojourner adjustment because of its relationship with outgroup contact (e.g. Lewthwaite, 1996). For instance, Zhang and Brunton (2007) found that linguistic ability directly influenced opportunities to form relationships with members of the dominant society, in both educational and social settings.

*Academic Hassles.* Lewthwaite (1996) identified a series of academic problems facing IS, including difficulties in understanding lectures, taking notes, and reading and reviewing academic

material. Leung (2001) found that academic hassles are positively predictive of psychological adjustment in two samples of Chinese immigrants, one in Canada, and one in Australia. Kuo and Roysircar (2006) and Jou and Fukada (1996) also found that academic problems influenced adaptation outcome measures.

*Psychophysical Distress.* Kuo and Roysircar (2006) found that education-related acculturation (a composite of linguistic ability, learning environment and familiarity with the Canadian educational system) and acculturative stress were negatively related among young unaccompanied Taiwanese sojourners studying in Toronto. Jou and Fukada (1996) also found that increases in interpersonal stress, academic problems, and financial anxiety lead to poorer mental health among Chinese IS studying in Japan. Lay and Nguyen (1998) reported that length of stay is related to depression and outgroup hassles among Vietnamese-Canadian immigrants, although the more time that had passed since their immigration, the more likely it was that their depressive symptoms would have ameliorated. Dao and colleagues (2007) report a link between gender, English ability, social support and depression among Taiwanese IS in the U.S.; specifically, being female, and/or having less perceived linguistic ability and less social support is associated with higher levels of depression.

#### *The Multi-Dimensional Individual Difference Acculturation (MIDA) Model*

Because there are some common issues facing individual immigrants and sojourners in almost any new cultural environment, Safdar and colleagues (2003) have proposed a pancultural approach to the adjustment of newcomers to a larger society. They argue that immigrants generally strive to improve their economic and political status and life satisfaction, maintain their heritage culture, participate in the new society, and maintain psychophysical stability during periods of stress.

The MIDA Model is composed of three predictor and three outcome variables. The predictor variables are composite measures of resources and difficulties and include: 1) Psychosocial Resources (a composite of psychological well-being, perceived outgroup social support, and cultural competence); 2)

Co-national Connectedness (a composite of ethnic identity and perceived ingroup social support); and 3) Hassles, or chronic irritants that can either be specific to a newcomer's experience (e.g. difficulty understanding academic procedures at the host university), or more general (e.g. lack of money). The outcome variables are measures of psychological and physical health status and socio-cultural adaptation and include: 1) Outgroup Contact; 2) Ingroup Contact; and 3) Psychophysical Distress. Previous research has validated this model with different groups, including Iranian immigrants in three different countries (Safdar, 2002), Indian and Russian immigrants to Canada (Safdar, 2008) and immigrants in rural and urban Canada (see the chapter in this volume, Safdar, Rasmi, Dupuis, & Lewis).

### *The Present Study*

The aims of the present study were two-fold: 1) to investigate the process of cross-cultural adjustment of IS in Canada; and 2) to test the MIDA model using longitudinal data. To date, all the studies using the MIDA model have employed a cross-sectional design, failing to capture the directional paths between the predictor and outcome variables. We were specifically interested in testing whether or not resources and difficulties at Time 1 (T1) would predict health status and socio-cultural adaptation at Time 2 (T2, 18 months later). To address this, we ran two alternative models using Structural Equation Modelling (SEM); Model 1: in which resources and difficulties at T1 predicted health status and socio-cultural adaptation at T2, and the reverse model, Model 2: in which health status and adaptation at T1 predicted resources and difficulties at T2. It was anticipated that Model 1 would fit the data better than Model 2. Additionally, the following hypotheses were made on the basis of previous tests of the model (Safdar, 2002, 2008; Safdar et al., 2003; Safdar et al., this volume):

- 1) Psychosocial Resources at T1 would predict Psychophysical Distress and Outgroup Contact at T2.

Those with a high level of Psychosocial Resources at T1 were predicted to report less Psychophysical Distress and be more likely to engage with the larger Canadian society at T2 than those with fewer Psychosocial Resources.

- 2) Co-National Connectedness at T1 would predict Ingroup Contact at T2. Those who reported a high level of connectedness with their heritage culture at T1 would be more likely to engage with their ingroup community at T2 than those who reported less connectedness to their heritage culture.
- 3) Academic Hassles at T1 would predict Psychophysical Distress at T2. Those reporting more Academic Hassles at T1 would also report more Psychophysical Distress at T2 than those reporting fewer Academic Hassles.

## Method

### *Participants*

In the present study, we recruited from two universities in Southwestern Ontario, one large (York University) and one small (University of Guelph). In 2003, York University had 2,925 IS, making up roughly 8.1% of the total student body. In the same year, University of Guelph had 958 IS, comprising about 6.1% of the total student body.

A total of 89 IS (49 Guelph, 40 York) participated in the first wave of the study, and 60 (38 Guelph, 22 York) in the second round of data collection, eighteen months later. The majority of participants were female (67.4%). The mean age at the start of the study (T1) was 22.1 years and ranged from 17 – 35. Most participants (85.4%) were single. Participants represented all programs of study, including: Biological Science, Management and Economics, Physical and Engineering Science and Social and Applied Human Science at graduate and undergraduate levels. Participants were from 48 different countries, representing all regions of the world. The majority of students (44.8%) cited Asia as their region of origin. The most frequently reported country of citizenship was China (21.3%).

In September 2005 (T1), first year IS were sent an e-mail inviting them to participate in the study. This e-mail contained a link to the online questionnaire as well as an ID code to record with their questionnaire. This procedure was repeated 18 months later (March 2006), at the end of the second

semester of the second year. Every participant's ID code was used to connect their data at T1 with data collected at T2. All participants were financially reimbursed for their participation at T1 and T2.

### *Materials*

All the scales in this study were compiled into a single online questionnaire and administered in English.

*Demographic Information.* The first section of the questionnaire asked respondents to indicate their gender, age, marital status, arrival date in Canada, and if (and when) they were planning to return to their home country. Participants were also asked how much formal education they had received in English, their program of study and estimated academic average. Finally, they were asked to specify their country of birth and ethnic background.

*Psychological Well-Being.* We administered Ryff's (1989) 18-item *Psychological Well-Being Scale*. This measure consists of six components: self-acceptance (example item, "I like most aspects of my personality"), positive relations with others (e.g. "People would describe me as a giving person, willing to share my time with others), autonomy (e.g. "I judge myself by what I think is important, not by the values of what others think is important"), environmental mastery (e.g. "I am quite good at managing the many responsibilities of my daily life"), purpose in life (e.g. "Some people wander aimlessly through life, but I am not one of them") and personal growth (e.g. "For me, life has been a continuous process of learning, changing, and growth"). There are three items for each component. Each item is rated on a 5-point scale ranging from "Strongly Disagree" (1) to "Strongly Agree" (5). Cronbach's alpha coefficients for the present study were high at T1 (.84) and T2 (.84).

*Outgroup Social Support.* We administered a 5-item measure, adapted from Zimet, Dahlem, Zimet and Farley's (1988) *Multi-dimensional Scale of Perceived Social Support*. Participants rate administrative, academic and social support systems. Items pertain to support of friends from the larger society (e.g. "I have Canadian friends who would help me when I want help") and their educational

institution (e.g. “Some of my instructors have provided support in my academic progress”). Participants rate each item on a 5-point scale, ranging from “Strongly Disagree” (1) to “Strongly Agree” (5).

Cronbach’s alpha coefficients were satisfactory at T1 (.72) and T2 (.70); however, this measure has been found to be highly reliable over time (Zimet et al., 1988).

*Cultural Competence.* This 10-item measure was adapted from Lay, Fairlie, Jackson, Ricci, Eisenberg, Sato, et al.’s (1988) measure of Cultural Competence, which was originally based on LaFromboise, Coleman, and Gerton’s (1993) research. Four of the ten items relate to English communication skills (comprehension, speaking, reading and writing). The remaining items address cultural efficacy (example item, “I think that I am familiar with Canadian norms and culture”), relationships (e.g. “I believe that I am able to develop interpersonal relationships with Canadians”) and social norms (e.g. “I know how much I should tip in restaurants and taxis”). Items are rated on a 5-point scale ranging from “Not at All” (1) to “Very Well” (5). The language items are averaged and added to the other items, in order to avoid inflating the impact of linguistic ability. Cronbach’s alpha coefficient ranged from good at T1 (.79) to excellent at T2 (.87).

*Ethnic Identity.* This 15-item scale was adapted from Cameron, Sato, Lay and Lalonde’s (1997) measure and examines the strength of participants’ ethnic ties. The area of primary interest is the degree of participants’ integration with ethnically similar others. Participants are asked to rate each statement on a 6-point scale, ranging from “Strongly Disagree” (1) to “Strongly Agree” (5) and “Not Applicable” (6). Items include “Being a member of my ethnic group is important to my sense of what kind of person I am”, and “I have more in common with my ethnic group than any other ethnicity”. Cronbach’s alpha coefficients for this scale were good: .84 (T1) and .88 (T2).

*Ingroup Social Support.* This 6-item measure, a subscale of Zimet et al.’s (1988) *Multi-dimensional Scale of Perceived Social Support*, assesses the support systems provided to IS by members of their ethnic ingroup. Participants rate each statement on a 5-point scale, ranging from “Strongly

Disagree” (1) to “Strongly Agree” (5) and “Not Applicable” (NA). Sample items include: “Friends from my ethnic group are around when I am in need” and “I get the emotional help and support I need from my family”. Cronbach’s alpha coefficients for this measure were: .81 (T1) and .88 (T2).

*Academic Hassles.* This 9-item scale was adapted from *The Inventory of College Students’ Recent Life Experiences* (Kohn, Lafrieniére, & Gruevich, 1990) and *The Undergraduate Stress Questionnaire* (Crandall, Preisler, & Aussprung, 1992). Items relate to problems experienced by the participant from time of application to the commencement of their studies. The items include direct references to the student’s academic career, as well as indirect topics such as financial preparation and enrolment. Example items include: “Obtaining money for tuition fees”, “Arranging for a place to live”, “Seeking an academic advising appointment”, and “Getting course credit from my home educational institution accepted”. Participants rated each item on a 4-point scale, ranging from “Not at all a problem” (1) to “A big problem” (4). Cronbach’s alpha coefficients were .67 (T1) and .76 (T2).

*Ingroup and Outgroup Contact.* This 10-item scale is a shortened version of Ward and Rana-Deuba’s (1999) *Acculturation Index* (see Appendix A). Respondents are asked to rate each item on a 7-point scale, ranging from “Not at all similar” (1) to “Very similar” (7). Topics covered include beliefs, norms and traditions. Sample questions include: “Religious beliefs”, “Political ideology”, and “Social customs”. Cronbach’s alpha coefficients with items referring to the outgroup (Canadians) were .92 (T1) and .94 (T2). With items referring to the ingroup, Cronbach’s alpha coefficients were .86 (T1) and .91 (T2).

*Psychophysical Distress.* We adapted this 14-item checklist from Kohn, Gruevich, Pickering & Macdonald’s (1994) *Health Problems Inventory – Revised* and Cheng and Hamid’s (1996) *The Stress Symptoms Checklist*. Participants rate the frequency and intensity of 14 psychological and physical symptoms. Items are rated on a 4-point scale, ranging from “Not at All” (1) to “Extremely” (4) and

include “Loss of interest in sex or pleasure”, “Having crying spells” and “Feeling helpless”. Cronbach’s alpha coefficients for this measure were high: .89 for each T1 and T2.

## Results

### *Descriptive Statistics*

The mean and standard deviations for each of the variables in the models are presented in Table 1. Paired samples t-tests were conducted to examine the mean differences at T1 and T2. The results indicated that participants reported lower Outgroup Social Support,  $t(59) = 3.77, p < .001$ , and lower Ingroup Contact,  $t(59) = 2.44, p < .001$ , at T2 compared to T1. Participants also reported higher Cultural Competence,  $t(59) = -6.62, p < .001$ , higher Academic Hassles,  $t(59) = -12.62, p < .001$ , and higher Psychophysical Distress at T2,  $t(59) = -3.48, p < .001$ .

Overall, participants reported a low level of psychophysical distress at T1 ( $M = 1.69, SD = .53$ ) and T2 ( $M = 1.95, SD = .63$ ), as well as a high level of psychological well-being at both times (T1:  $M = 3.90, SD = .53$ ; T2:  $M = 3.94, SD = .51$ ). Gender differences with respect to the six variables in the model at T1 and T2 were examined and no effect was found, Wilks’ Lambda = .77,  $F(8, 49) = 1.78, p = .10$ . Furthermore, no difference was found between the two universities on the variables in the model, Wilks’ Lambda = .84,  $F(8, 49) = 1.13, p = .36$ .

### *Model Specification*

Preliminary analyses also indicated that most of the variables had less than 10% of values missing. The only variable with 20% missing values was Ingroup Contact at T1. Missing data was replaced using Maximum Likelihood Estimation (MLE), a procedure that is commonly preferred to mean substitution, as it considers additional information in the dataset when providing an estimate (Acock, 2005).

The zero-order correlation coefficients between all variables in the model for both T1 and T2 are presented in Table 2. Structural Equation Modeling (SEM) was used to examine whether the relationship

between the predictor and outcome variables in the MIDA model is unidirectional, as posited. SEM is an appropriate method to employ as the aim of the present study is confirmatory of an existing model, rather than exploratory<sup>i</sup>. Ingroup Contact, Outgroup Contact, Academic Hassles and Psychophysical Distress were measured using single measures and were treated as observed variables. Psychosocial Resources and Co-National Connectedness were measured using composite variables. The overall measure of Psychosocial Resources consisted of the mean standardized scores for Psychological Well-being, Outgroup Social Support, and Cultural Competence. The Co-National Connectedness composite was formed by taking the mean standardized scores for Ethnic Identity and Ingroup Social Support. These composite factors were then treated as observed variables in the model.

To test our hypotheses, two models were tested. In both models, in order to depict all the possible associations, paths between each of the three predictors were connected to all three outcome variables. In the first model (see Figure 1), Psychosocial Resources T1, Co-National Connectedness T1, and Academic Hassles T1, referred to collectively as *resources and difficulties*, were used as predictor variables and Ingroup Contact T2, Outgroup Contact T2, and Psychophysical Distress T2, referred to collectively as *health status and socio-cultural adaptation*, as outcome variables. In the second model (see Figure 2), we reversed the first model, using the health status and socio-cultural adaptation variables (Ingroup Contact, Outgroup Contact, and Psychophysical Distress) T1 as predictors, and the resources and difficulties variables (Psychosocial Resources, Co-National Connectedness, and Academic Hassles) T2 as outcomes.

### *Model Analysis*

*Model 1 - resources and difficulties at T1 predicting health status and socio-cultural adaptation at T2.* The initial SEM analysis revealed a good fit between the model and the data,  $X^2(4, N = 60) = 4.51, p = .34, X^2/df = 1.13, GFI = .98, RMSEA = .05$  (Figure 1). The non-significant Chi-square indicated that the difference between the observed and estimated data was not significant. In addition,

the Goodness-of-fit index was above .90, the Root Mean Square Error of Approximation was within the acceptable range (.00 to .05), and the ratio of Chi-square and degrees of freedom was below 3.0 indicating an adequate fit between the model and the data (Raykov & Marcoulides, 2000).

*Relations between variables in Model 1.* As predicted in Hypothesis 1, Psychosocial Resources was significantly and positively linked to Outgroup Contact ( $\beta = .65$ ) and negatively to Psychophysical Distress ( $\beta = -.20$ ), indicating that individuals reporting high psychosocial resources were more likely to have contact with the Canadian society and have low psychophysical distress. This provides support for Hypothesis 1. Unpredicted, however, was a positive relation between Psychosocial Resources and Ingroup Contact ( $\beta = .50$ ).

Consistent with Hypothesis 2, Co-National Connectedness was significantly related to Ingroup Contact ( $\beta = .58$ ). Although not predicted, Co-national Connectedness was also significantly inversely related to Psychophysical Distress ( $\beta = -.22$ ), indicating that increased connectedness to their community was associated with participants reporting decreased distress.

Furthermore, as predicted in Hypothesis 3, Academic Hassles was significantly related to Psychophysical Distress ( $\beta = .37$ ), indicating that individuals reporting a high level of academic hassles were also likely to report high psychophysical distress. Overall, the model included three non-significant paths, none of which had been hypothesised to be significant<sup>ii</sup>: 1) Co-national Connectedness–Outgroup Contact; 2) Academic hassles–Ingroup Contact; and 3) Academic Hassles–Outgroup Contact.

*Model 2 - health status and socio-cultural adaptation at T1 predicting resources and difficulties at T2.* The initial SEM analysis for the reversed model revealed a poor fit,  $X^2(4, N = 60) = 14.84, p = .005, X^2/df = 3.71, GFI = .93, RMSEA = .21$  (Figure 2). The significant Chi-square indicated that there was a difference between the observed and estimated data. In addition, these indices indicate that the model does not adequately fit the data (Schumacker & Lomax, 2004). Furthermore, the Root Mean

Square Error of Approximation was higher than the acceptable range (.00 to .08), and the ratio of Chi-square and degrees of freedom was greater than 3.0 indicating a poor fit (Raykov & Marcoulides, 2000).

*Relations between variables in Model 2.* Three significant paths were found. First, Outgroup Contact was positively ( $\beta = .29$ ) related to Psychosocial Resources, indicating that those who reported engaging with Canadian society at T1 were more likely to report high psychosocial resources at T2. Second, Psychophysical Distress (T1) was negatively ( $\beta = -.56$ ) related to Psychosocial Resources (T2) indicating that individuals reporting low psychophysical distress were more likely to report high psychosocial resources 18 months later. Third, Psychophysical Distress (T1) and Academic Hassles (T2) were negatively related ( $\beta = -.44$ ), indicating that individuals reporting more psychophysical distress were more likely to report fewer academic hassles 18 months later. Overall, the model included six non-significant paths: 1) Ingroup Contact–Psychosocial Resources; 2) Ingroup Contact–Co-national Connectedness; 3) Ingroup Contact– Academic Hassles; 4) Outgroup Contact–Co-national Connectedness; 5) Outgroup Contact–Academic Hassles; and 6) Psychophysical Distress –Co-national Connectedness.

### Discussion

Previous studies using the MIDA model of acculturation (Safdar, 2002; Safdar et al., 2003; Safdar et al., this volume) have been cross-sectional and the question remained: would statistical prediction translate into temporal prediction? The present study indicates that the model works across time in the proposed direction, with resources and obstacles predicting health status and socio-cultural adaptation over a period of 18 months. The alternative reading of the cross-sectional data, that health status and socio-cultural adaptation predict resources and obstacles, does not produce a model that fits the data over time. There is strong support here for the model itself, which is intended to indicate what Ward (2001) refers to as core variables, applicable to a variety of acculturating groups in a variety of

acculturative contexts. There is also strong support for the proposed direction of the model, as it has been demonstrated that, in this case, statistical prediction does translate into temporal prediction.

To date, the model itself appears consistent across different nationalities (Iranian, Russian, Indian, Eastern European and mixed), in different countries of settlement (Canada, U.K. U.S.), and in urban and rural contexts (Safdar, 2002; Safdar et al., 2003; Safdar et al., this volume). This would lead one to suggest that the predictive direction of the model over time would also be consistent across different groups. Although participants in the present study were students who plan to return to their country of origin after their studies, overall, there is little to suggest that these findings will not be, at least in broad terms, generalizable to other populations.

Although the reversal of the proposed model produced a poor fit with the data over time, there were certain paths in the model that were significant. Psychophysical Distress (T1) inversely predicted Academic Hassles (T2), so the more distress they felt early on, the fewer hassles they reported experiencing later on, or, conversely, less distress (T1) was related to more hassles (T2). This is a difficult relationship to interpret, particularly as these are the two variables that increase over time. The literature on hassles and distress reports a direct and positive link between the two (Finch, Hummer, Kolody, & Vega, 2001; Hashim, 2003) and, as cross-sectional tests of the model have consistently found links between these variables, this may simply indicate the robustness of the relation and also that, an overall increase in reports of both variables notwithstanding, those who reported higher rates of hassles and distress at time 1, also did so at time 2. The other two significant pathways in the non-significant model are plausible, and might be interpreted as an indication of the interactive nature of some of these variables. Both Outgroup Contact and Psychophysical Distress (T1) were related to Psychosocial Resources (T2), the former positively, so that more contact with the outgroup at T1 predicted more Psychosocial Resources at T2; the latter inversely, so that more distress at T1 predicted fewer Psychosocial Resources at T2.

In the proposed model all hypothesized relations between variables were found to be significant (Psychosocial Resources T1 - Outgroup Contact and Psychophysical Distress T2, Co-National Connectedness T1 - Ingroup Contact T2, and Academic Hassles T1- Psychophysical Distress T2). Nevertheless, it should be noted that some paths also work with the model reversed, although overall the reversed model is a poor fit. This would suggest that these are interacting variables. In addition, there were two unanticipated relations between the predictor and outcome variables: between Psychosocial Resources and Ingroup Contact, and inversely between Co-National Connectedness and Psychophysical Distress. Neither of these relations is counter-intuitive, and the same applies to the three non-significant paths in the proposed model. There is no reason to assume that Academic Hassles would predict Ingroup or Outgroup Contact, neither would Co-national Connectedness be expected to predict contact with the outgroup.

No gender differences in any of the variables were found. This is quite consistent with previous research using the MIDA model. Clearly, there must be differences between male and female experiences of cultural adaptation, but either they are minor, or they are inconsistent and, therefore, are not evident across a sample. As the MIDA model is intended to test core variables that are relevant to diverse acculturating groups in varying situations, the lack of gender difference at this core level would suggest that differences between the genders in acculturation experiences may be variable across situations. Further exploration, perhaps at a qualitative level, might indicate more personal differences in experience across genders.

It is also worth noting that, although they were relatively low in psychophysical distress, the distress reported by participants, as well as their experience of academic hassles increased over the 18 month period of the study. This may be something for the attention of those institutions that are hosting international students; if those students experience of Canada continues to deteriorate, they are likely to leave with unfavourable impressions.

## Conclusion

Overall, the results of the study provide strong support for the MIDA model and demonstrate that the predictor variables do, in fact, predict the outcome variables over time and, more importantly, that the reverse is not the case. As the analysis is correlational in nature, this ability of the model to predict over time is an important finding. Furthermore, the use of SEM as a powerful multivariate analysis technique to test causal modeling in addition to the employment of longitudinal data, support the causal relationships among variables in the MIDA model with a linear equation flow.

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Table 1

Means and Standard Deviations and for Each Variable at T1 and T2

|                          | Time 1<br>Mean (SD) | Time 2<br>Mean (SD) |
|--------------------------|---------------------|---------------------|
| Psychological Well-Being | 3.90 (.53)          | 3.94 (.51)          |
| Outgroup Social Support  | <b>3.65 **(.77)</b> | <b>3.33 **(.97)</b> |
| Cultural Competence      | <b>3.73 **(.55)</b> | <b>4.13 **(.61)</b> |
| Ingroup Social Support   | 3.95 (.82)          | 3.73 (1.07)         |
| Ethnic Identity          | 3.47 (.65)          | 3.35 (.88)          |
| Academic Hassles         | <b>1.81 **(.50)</b> | <b>3.30 **(.52)</b> |
| Ingroup Contact          | <b>4.86 *(1.18)</b> | <b>4.42 *(1.46)</b> |
| Outgroup Contact         | 4.45 (1.24)         | 4.43 (1.34)         |
| Psychophysical Distress  | <b>1.69 **(.53)</b> | <b>1.95 **(.63)</b> |

Means in bold are significantly different from T1 to T2.

\*  $p < .05$ , \*\*  $p < .001$

Table 2

Correlation coefficients between all the variables at T1 and T2.

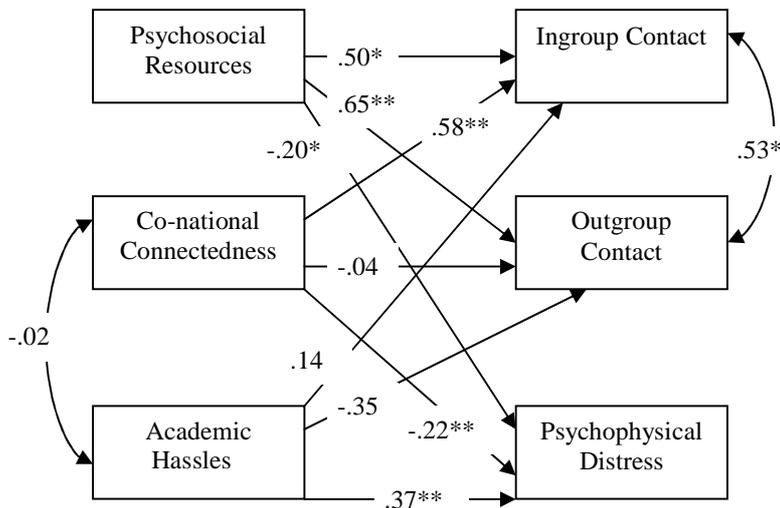
|                              | 1            | 2           | 3            | 4            | 5           | 6       |
|------------------------------|--------------|-------------|--------------|--------------|-------------|---------|
| 1. Psychosocial Resources    | 1            | .21         | .43**        | .33*         | .47**       | -.54*** |
| 2. Co-national Connectedness | <b>.09</b>   | 1           | .39**        | .09          | -.17        | -.32*   |
| 3. Academic Hassles          | <b>-.23</b>  | <b>-.06</b> | 1            | .17          | .30*        | -.28*   |
| 4. Ingroup Contact           | <b>.10</b>   | <b>.03</b>  | <b>-.02</b>  | 1            | .36**       | -.16    |
| 5. Outgroup Contact          | <b>.39**</b> | <b>-.19</b> | <b>-.05</b>  | <b>.34**</b> | 1           | -.05    |
| 6. Psychophysical Distress   | <b>-.29*</b> | <b>-.04</b> | <b>.46**</b> | <b>.02</b>   | <b>-.18</b> | 1       |

Note: The bold numbers below the diagonal represent the correlation coefficients between each of the variables at Time 1. The non-bold numbers above the diagonal represent the correlation coefficients between each of the variables at Time 2.

\*  $p < .05$ , \*\*  $p < .01$

Figure 1

Model 1: Resources and Difficulties at T1 Predicting Health Status and Socio-cultural Adaptation at T2



\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

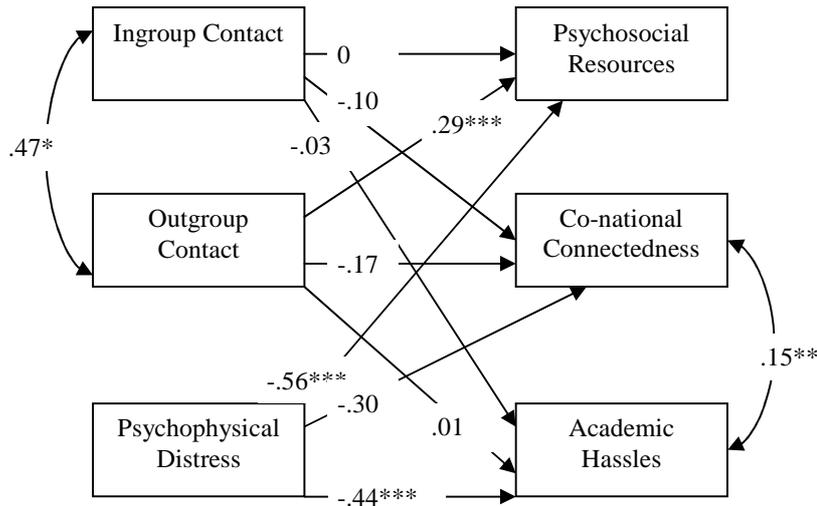
For ease of presentation, measurement errors (E) have been omitted from the figure. They are:

Psychosocial resources  $E = .52$ ; Co-national connectedness  $E = .70$ ; Academic hassles  $E = .25$ ; Ingroup contact  $E = 1.72$ ; Outgroup contact  $E = 1.49$ ; Psychophysical distress  $E = .28$ ; Co-national connectedness – Academic hassles  $E = -.02$ ; Ingroup contact – outgroup contact  $E = .53$ .

Figure 2

Model 2: Health Status and Socio-cultural Adaptation at T1 Predicting Resources and Difficulties at

T2



\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

For ease of presentation, measurement errors (E) have been omitted from the figure. They are:

Ingroup contact E = 1.37; Outgroup contact E = 1.52; Psychophysical distress E = .27; Resources E = .32; Co-national connectedness E = .68; Academic hassles E = .21; Ingroup contact – Outgroup contact E = .47; Co-national connectedness – Academic hassles E = .15.

## Appendix A

## Acculturation Index

This section is concerned with how you see yourself in relation to other people from your country and people from Canada. You are asked to consider two questions about your current lifestyle. Are your experiences and behaviours similar to people from your country? Are your experiences and behaviours similar to Canadians?

Use the following scale to indicate how similar your various experiences of daily life are compared to people from YOUR country.

not at all similar    1-----2-----3-----4-----5-----6-----7    very similar

1. Clothing
2. Pace of life
3. Food
4. Religious beliefs
5. Recreational activities
6. Accommodation/residence
7. Friendships
8. Cultural activities
9. Political ideology
10. Social customs

Use the following scale to indicate how similar your various experiences of daily life are compared to people from Canada.

not at all similar    1-----2-----3-----4-----5-----6-----7    very similar

1. Clothing
2. Pace of life
3. Food
4. Religious beliefs
5. Recreational activities
6. Accommodation/residence
7. Friendships
8. Cultural activities
9. Political ideology
10. Social customs

## End Note

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<sup>i</sup> Preliminary analyses revealed normal distributions for all variables with the exception of psychological well-being at time 1, skewness = -1.20, kurtosis = 3.66. To correct the skewness of the variable, first, a reciprocal transformation was computed, followed by a logarithmic transformation, and then a final reciprocal transformation. SEM was conducted using the transformed and non-transformed data. Since the findings of the two analyses were not significantly different, the raw or untransformed data were adopted for all the analyses.

<sup>ii</sup> Non-significant paths were not removed given that one of the goals of the study was to test two models with identical paths but with the directions of the paths reversed. Furthermore, given that no hypothesis was made about two way paths connecting exogenous or endogenous variables, these paths are not discussed in the text. The error variances, however, are presented in each figure.