

# Predicting Academic Success and Psychological Wellness in a Sample of Canadian Undergraduate Students

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## Abstract

**Introduction.** University students need to cope with a complex new life role and to achieve academic success. This article explores the academic performance and psychological well-being among university students in a western Canadian city.

**Method.** Using a convenience sample, a total of 501 undergraduate students in Regina, Saskatchewan took part in a self-administered questionnaire survey.

**Results.** Multiple ordinary least-squares regression analyses demonstrated that older students and those who were more satisfied with their physical health, reported a higher level of psychological well-being, indicated higher educational aspirations, attended classes on a more regular basis, spent more time on studying, and those whose fathers had a higher level of educational attainment were found to perform better academically. On the other hand, male respondents and those who were more satisfied with their physical appearance, self-image, or relationship with their significant other, scored higher on life satisfaction scale, reported a stronger sense of life purpose were found to report a higher level of psychological well-being.

**Discussion or Conclusion.** The results of this study contribute to the research literature on students' well-being and performance. Through increased understanding of the determinants of both outcome variables, educators, counsellors, academic advisors, and community health professionals will be better equipped to design intervention strategies which improve students' learning outcomes and enhance their quality of life.

**Keywords:** University students, academic performance, psychological well-being, higher education

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# Predicción de éxito académico y bienestar psicológico en una muestra de estudiantes universitarios canadienses

## Resumen

**Introducción.** Los estudiantes universitarios necesitan enfrentarse con nuevos y complejos roles y conseguir el éxito académico. Este artículo explora la ejecución académica y el bienestar psicológico entre estudiantes universitarios de Canadá.

**Método.** Utilizando una muestra de conveniencia, un total de 501 estudiantes de Regina, Saskatchewan participaron en el estudio mediante un autoinforme.

**Resultados.** Los análisis de regresión múltiple mostraron que los alumnos mayores y los más satisfechos con su salud física tenían mayores niveles de bienestar psicológico, indicaron mayores aspiraciones educativas, iban a clase con más regularidad, pasaban más tiempo estudiando, y aquellos cuyos padres tenían un nivel educativo mayor obtuvieron mejores resultados académicos. Por otro lado, los hombres más satisfechos con su apariencia física, su autoimagen, o con sus relaciones con los demás, puntuaron más alto en la escala de satisfacción vital, informaron de un mayor sentido de aspiraciones vitales y obtuvieron mayores niveles de bienestar psicológico.

**Discusión y Conclusiones.** Los resultados del estudio contribuyen a la investigación en bienestar y ejecución académica de los estudiantes. Aumentando la comprensión de los factores que influyen en ambas variables los educadores, orientadores, consejeros académicos y profesionales de la salud estarán más equipados para diseñar estrategias de intervención que permitan mejorar los resultados del aprendizaje y conectarlos con la calidad de vida.

**Palabras clave:** universitarios, ejecución académica, bienestar psicológico, educación superior

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## Introduction

A nation's investments in human capital are as vital as their stock of physical capital and their natural resource endowments. College and university education provides individuals with the knowledge and tools they need to understand and participate in today's highly competitive world. Canadians place a high value on higher education. A recent survey of Canadian attitudes on post-secondary education commissioned by the Canadian Council on Learning showed that an overwhelming majority of Canadians believe that the pace of the change in the world makes it more important than ever to ensure that people can get more education or training at any time of their life (Pacific Issues Partners, 2006). In fact, Canada surpassed 23 of the 30 member nations of the Organization for Economic Co-operation and Development in 2007 concerning the proportion of its population aged 25 to 64 that held a university degree (Statistics Canada, 2009a).

The preference of the labour market for skilled workers to compete in a global and technologically advanced economy, the immigration policies aimed at attracting highly skilled immigrants, and the recession of the early 1990s that was particularly difficult for Canadian youth are the three key factors identified by Statistics Canada (2003a) that contributed to the remarkable growth in the number of Canadians with a post-secondary education in the 1990s. The 2001 Canadian census revealed that 28% of all individuals aged 25 to 34 possessed university qualifications, and 21% held a college diploma (Statistics Canada, 2003b). During the academic year 2008-2009, Canadian universities enrolled a total of 1,112,300 full-time and part-time undergraduate students.<sup>1</sup> Three fields of study accounted for one-half of total enrolment, including (1) social and behavioral sciences, and law; (2) business, management and public administration; and (3) the humanities (Statistics Canada, 2010).

Doubtlessly, the pursuit of a higher education entails both an investment of a substantial amount of financial resources<sup>2</sup> and a strong commitment of time and effort. University life adds more stress and requires more independent decision making by young people. Students' academic achievement as an important educational outcome (Bean & Bradley, 1986; Kaufman & Creamer, 1991; Pike, 1991; Terenzini, Pascarella, & Lorang, 1982) and their psychological well-being as a key determinant of health status, therefore, warrant serious research attention.

There is a growing body of research literature on students' academic performance. Previous studies involving post-secondary students have demonstrated that some of the key determinants include gender (Baker, 2004; Clifton, 1997; Keller, Crouse, & Trusheim, 1993; Mau & Lynn, 2001), socio-economic status (Hansen & Mastekaasa, 2006; Ross, Cleland, & MacLeod, 2006), employment status (Applegate & Daly, 2006; Hunt, Lincoln, & Walker, 2004), high school grades (DeBerard, Spielmans, & Julka, 2004; Duff, 2004; Hall, Smith, & Chia, 2008; Mattson, 2007; Olani, 2009; Zwick & Sklar, 2005), high school environment (Pike & Saupe, 2002; Wolniak & Engberg, 2010), personality traits (Musgrave-Marquart, Bromley, & Dalley, 1997; Nguyen, Allen, & Fraccastoro, 2005; Ridgell & Lounsbury, 2004; Tross, Harper, Osher, & Kneidinger, 2000), health status (Mattison, 2006; Trockel, Barnes, & Egget, 2000), satisfaction with academic life (Chambel & Curral, 2005; Graunke & Woosley, 2005), amount of time devoted to study (Jackson, Weiss, Lundquist, & Hooper, 2003; Nonis & Hudson, 2006), styles of learning (Diseth, 2002; Wilding & Andrews, 2006), achievement motivation (Morris, Brooke, & May, 2003; Roebken, 2007; Steinberg, 2006), and social support (Clifton, Perry, Roberts, & Peter, 2008; Cutrona, Cole, Colangelo, Assouline, & Russell, 1994; Orpen, 1996; Spitzer, 2000; Walker & Satterwhite, 2002).

Concerning psychological well-being, gender (Cook, Bewick, Barkham, Bradley, & Austin, 2006), socio-economic status (Tong & Song, 2004), family cohesion (Dyson-Washington, 2006; Frey, Beesley, & Miller, 2006; Heris & Revilla, 1994; Kazarian, 2005; Love & Murdock, 2004), personality traits (Chang, 2006; Nguyen et al., 2005), academic workload (Monk & Mahmood, 1999), achievement motivation (Elliot, Sheldon, & Church, 1997; Tomiki, 2000), physical exercise (Lee & Yuen-Loke, 2005; Maltby & Day, 2001; Markland & Ingledew, 1997), social support (Edwards Hershberger, Russell, & Markert, 2001; Gencoz & Ozlale, 2004; Morris, 1997; Rodriguez, Mira, Myers, Morris, & Cardoza, 2004; Solberg & Villarreal, 1997), and social problem solving orientation (McCabe, Blankstein, & Mills, 1999; Miller, 2001) have been identified as significant predictors of students' psychological well-being. Various comparative studies have also provided evidence that post-secondary students fared worse than the general population on measures of psychological well-being (Roberts, Golding, Towell, & Weinreb, 1999; Stewart-Brown et al., 2000). As university students face a myriad of challenges and stressors in the academic environment and relatively little research attention has been given to those who study in smaller Canadian

cities, this article attempts to explore the determinants of the academic achievement and psychological well-being among undergraduate students in Regina, Saskatchewan.

## **Method**

### *Participants*

This analysis is based on data collected as part of a larger investigation into the social attitudes and general well-being among university students in Regina during the academic year 2003-04 (Chow, 2008). Using a convenience sample, a total of 501 undergraduate students at the University of Regina took part in a self-administered questionnaire survey. The sample consisted of 147 (29.7%) male and 348 (70.3%) female students<sup>3</sup> with a mean age of 21.42 years ( $SD = 4.91$ ). Caucasian students ( $n = 443, 89.9%$ ) and Canadian citizens ( $n = 484, 98.0%$ ) constituted an overwhelming majority of the sample. A sizable proportion of the respondents were registered with the Faculties of Arts ( $n = 276, 55.4%$ ), Administration ( $n = 49, 9.8%$ ), Science ( $n = 49, 9.8%$ ), Social Work ( $n = 38, 7.6%$ ), Kinesiology ( $n = 21, 4.2%$ ), and Education ( $n = 21, 4.2%$ ). Regarding marital status, most were never married or single ( $n = 426, 86.1%$ ). A significant proportion of the respondents indicated either Protestantism ( $n = 138, 30.1%$ ) or Catholicism ( $n = 173, 37.8%$ ) as their religious affiliation. Over half of the sample had a father ( $n = 251, 53.0%$ ) or a mother ( $n = 273, 56.6%$ ) with post-secondary education. As well, over half of the sample ( $n = 257, 56.7%$ ) reported an annual family income of more than \$ 60,000.

### *Instrument*

A 10-page questionnaire containing 30 questions was administered to all participants. The self-administered survey instrument consisted of questions developed by the researcher to measure students' academic performance and well-being. Demographic information, including sex, age, marital status, religious affiliation, employment status, race/ethnic background, socio-economic status, and parents' educational attainment, was also collected.

### *Procedure*

With the co-operation of the faculty members in the Department of Sociology and Social Studies, self-administered questionnaires were distributed to various Sociology and Social Studies classes. Students were informed both in writing and verbally that participation was voluntary and that return of their completed survey would serve as their participation consent. The survey took approximately 20 minutes to complete and no incentive was provided. Although the respondents were recruited from Sociology and Social Studies classes, it should be emphasized that these 501 students were officially registered with quite a number of faculties and schools, including Administration, Arts, Education, Engineering, Fine Arts, Journalism, Kinesiology, Science, and Social Work.

### *Statistical Analysis*

Descriptive and inferential analyses were conducted using the Statistical Package for the Social Sciences. The internal consistency of all scales used was assessed by Cronbach's alpha reliability test. Two multiple ordinary least-squares regression models were constructed to identify the major determinants of respondents' academic performance and psychological well-being.

## **Results**

### *Measures of Academic Performance and Psychological Well-being*

*Academic Performance.* Self-reported grade point average (GPA) was used to measure students' academic performance. Nearly half of the respondents ( $n = 227$ , 46.8%) obtained an average of 70-79%. About a quarter of the sample received a GPA of 60-69% ( $n = 123$ , 25.4%) or 80-89% ( $n = 113$ , 23.3%). Relatively few students reported a passing GPA of 50-59% ( $n = 18$ , 3.7%) or a GPA of 90% or higher ( $n = 4$ , .8%).

*Psychological Well-being.* The frequency of feeling sad, lonely, stressed, like crying, depressed, and hopeless in the past 30 days was used to measure students' psychological well-being. The response categories ranged from 1 to 5, with 1 = *never*, 2 = *very infrequently*, 3 = *infre-*

quently, 4 = frequently, and 5 = very frequently. As displayed in Table 1, 75.1% ( $n = 374$ ) felt stressed, 28.3% ( $n = 140$ ) felt like crying, 25.5% ( $n = 126$ ) felt sad, 24.7% ( $n = 122$ ) felt lonely, 19.3% ( $n = 95$ ) felt depressed, and 9.5% ( $n = 47$ ) felt hopeless. An additive scale was constructed ( $M = 19.46$ ,  $SD = 4.92$ ) and was found to be internally consistent, with a Cronbach's alpha reliability coefficient of .85.

Table 1. *Descriptive statistics for items measuring psychological well-being*

	1	2	3	4	5	M	SD
	N	N	N	N	N		
	(%)	(%)	(%)	(%)	(%)		
a. Sad	29	136	204	101	25	2.91	.954
	(5.9)	(27.5)	(41.2)	(20.4)	(5.1)		
b. Lonely	81	135	157	93	29	2.71	1.125
	(16.4)	(27.3)	(31.7)	(18.8)	(5.9)		
c. Stressed	7	39	78	220	154	3.95	.951
	(1.4)	(7.8)	(15.7)	(44.2)	(30.9)		
d. Like crying	105	113	138	106	34	2.70	1.215
	(21.2)	(22.8)	(27.8)	(21.4)	(6.9)		
e. Depressed	130	147	120	72	23	2.41	1.160
	(26.4)	(29.9)	(24.4)	(14.6)	(4.7)		
f. Hopeless	255	122	71	36	11	1.84	1.061
	(51.5)	(24.6)	(14.3)	(7.3)	(2.2)		

(1 = Never; 2 = Very infrequently; 3 = Infrequently; 4 = Frequently; 5 = Very frequently)

### *Major Factors Affecting Academic Performance and Psychological Well-being*

To disentangle the factors affecting university students' academic performance and psychological well-being, two models using multiple ordinary-least squares (OLS) regression analysis were constructed.

*Academic Performance.* Eleven predictor variables,<sup>4</sup> including sex, age, religion, employment status, physical health, psychological well-being, educational aspirations, class attendance, hours spent on studying, father's education, and socio-economic status, were included in the OLS regression model for academic performance. The overall OLS regression model, as presented in Table 2, was found to be significant ( $F_{(11, 489)}=8.73$ ,  $p<.001$ ) and accounted for



14.5% of the variation in academic performance. Age ( $\beta=.108$ ,  $p<.05$ ), physical health ( $\beta=.099$ ,  $p<.05$ ), psychological well-being ( $\beta=.102$ ,  $p<.05$ ), educational aspirations ( $\beta=.183$ ,  $p<.001$ ), class attendance ( $\beta=.108$ ,  $p<.05$ ), hours spent on studying ( $\beta=.193$ ,  $p<.001$ ), and father's education ( $\beta=.121$ ,  $p<.01$ ) were found to be significantly associated with academic performance. More specifically, older students and those who were more satisfied with their physical health, reported a higher level of psychological well-being, indicated a higher educational aspirations, attended classes on a more regular basis, spent more time on studying, and whose fathers had a higher level of educational attainment were found to have obtained a higher GPA.

Table 2. *Unstandardized and standardized regression coefficients for effects of socio-demographic and background variables on academic performance*

	b	$\beta$
1. Sex	-.086	-.0489
2. Age	.018	.108 *
3. Religion	-.069	-.042
4. Employment status	-.005	-.003
5. Physical health	.087	.099 *
6. Psychological well-being	.017	.102 *
7. Educational aspirations	.181	.183 ***
8. Class attendance	.112	.108 *
9. Hours spent on studying	.014	.193 ***
10. Father's education	.077	.121 **
11. Socio-economic status	.031	.075
(Constant)	1.109	
F	8.730 ***	
R <sup>2</sup>	.164	
Adjusted R <sup>2</sup>	.145	
N	501	

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

*Psychological Well-being.* Thirteen predictor variables,<sup>5</sup> including sex, employment status, socio-economic status, religious involvement, physical health, physical appearance, self-

image, life satisfaction, life purpose, relationship with significant other, relationship with family, relationship with friends, and academic performance, were included in the OLS regression model for psychological well-being. The overall regression model, as shown in Table 3, was found to be significant ( $F_{(13, 487)}=16.038, p<.001$ ) and explained 28.1% of the variation in psychological well-being. Sex ( $\beta=.24, p<.001$ ), physical appearance ( $\beta=.143, p<.01$ ), self-image ( $\beta=.113, p<.05$ ), life satisfaction ( $\beta=.234, p<.001$ ), life purpose ( $\beta=.094, p<.05$ ), and relationship with significant other ( $\beta=.085, p<.05$ ) were found to be significantly related to psychological well-being. Put succinctly, male respondents and those who were more satisfied with their physical appearance, self-image, or relationship with their significant other, scored higher on life satisfaction scale, reported a stronger sense of life purpose were found to demonstrate a higher level of psychological well-being.

Table 3. *Unstandardized and standardized regression coefficients for effects of sociodemographic and background variables on psychological well-being*

	b	$\beta$
1. Sex	2.567	.240 ***
2. Employment status	.070	.007
3. Socio-economic status	.072	.012
4. Religion	-.057	-.035
5. Physical health	.243	.046
6. Physical appearance	.690	.143 **
7. Self-image	.576	.113 *
8. Life satisfaction	.340	.234 ***
9. Purpose in life	.079	.094 *
10. Relationship with significant other	.394	.085 *
11. Relationship with family	-.060	-.021
12. Relationship with friends	-.089	-.014
13. Academic performance	.299	.049
(Constant)		1.974
F		16.038 ***
R <sup>2</sup>		.299
Adjusted R <sup>2</sup>		.281
N		501

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

## Discussion and Conclusions

The primary goal of the present investigation was to better understand the academic success and psychological health among university students in a western Canadian city. This inquiry reveals that a number of socio-demographic and background variables significantly contributed to the explanation of these two outcome variables.

Concerning academic performance, age was found to be positively associated with a higher GPA. This finding is probably related to the maturity level of the students (Hoskins, 1997). As well, senior undergraduate students might have adopted better approaches to learning as they would be more likely to have enrolled in courses that were directly related to their areas of specialization.

This study also provides support for the positive link between academic performance and educational aspirations (Chow, 2003; Kaufman & Creamer, 1991). Consistent with previous studies (McFadden & Dart, 1992; Paden & Stell, 1997), students who put more time into studying performed better academically. In fact, there is empirical evidence that study time significantly interacts with ability to influence academic performance (Nonis & Hudson, 2006). Additionally, as regular lecture attendance is indicative of students' commitment and motivation to their studies, this study corroborates findings from earlier research that class attendance and GPA are positively related (Billington, 2008; Fjortoft, 2005; Halpern, 2007; Lai & Chan, 2000; Ledman & Kammuche, 2002; Silvestri, 2003).

Father's educational attainment, as a measure of human capital that constitutes the potential for a cognitive environment conducive to learning, emerged as another variable predictive of students' GPA. This result may reflect the significance the fathers place on educational achievement and their specific encouragement of scholarly pursuits, confirming the enduring influence of parents' education on their offspring's educational attainment (Buchmann & DiPrete, 2006; Mullen, Goyette, & Soares, 2003; Nakhaie & Curtis, 1998).

The present analysis also underscores the importance of students' physical health on academic performance. This finding is in line with prior research which has highlighted the

vitality of various health-related variables on students' GPA, including exercise, sleep habits, and nutritional habits (George, Dixon, Stansal, Gelb, & Pheri, 2008; Miller, Danner, & Staten, 2008; Trockel et al., 2000). Without doubt, health issues that affect students' ability to attend lectures, complete assignments, write papers, or take examinations may have a negative impact on their ability to succeed academically.

Finally, as the adverse effects of stress (Haines et al., 1996; Hilary & Brent, 1994) on students' academic performance have been well-documented, it is not difficult to understand that students who exhibited better psychological well-being were found to perform better academically (McKenzie & Schweitzer, 2001; Vaez & Laflamme, 2008).

Concerning psychological well-being, as previous studies have shown that female university students were more likely to experience a greater number of stressors (Misra, McKean, West, & Russo, 2000) and to report a higher level of perceived stressfulness (Day & Livingstone, 2003), it is unsurprising that male students were found to report a higher level of psychological well-being in the present analysis.

In addition, relationships, as an indirect measure of support, appear to be of particular importance to these undergraduate students. Those who reported more positive relationships with their significant other exhibited higher levels of psychological well-being. Earlier studies have ascertained that support and well-being are positively linked and that support can buffer the effects of negative events and stress (Cotton, Dollard, & De Jonge, 2002; Gencoz & Ozlale, 2004; Nezlek & Allen, 2006). As noted by Home (1997, 1998), there is empirical research suggesting that it is often the individual's perceived satisfaction, rather than the absolute number of instrumental and emotional supports available, that affect psychological outcomes. Furthermore, low quality of emotional support was shown to be related to poorer psychological functioning among female university students (Carney-Crompton & Tan, 2002).

Satisfaction with physical appearance and self-image emerge as two other factors contributing to students' psychological well-being. These findings mirror the results from earlier research (Chow, 2002; Harter, 1999; Huebner & Alderman, 1993; Lackovic-Grgin, Dekovic, Milosavljevic, Cvek-Soric, & Opacic, 1996; Leung & Leung, 1992; Neto, 2001; Wilson & Peterson, 1988) which reveal that individuals who accept themselves in a positive manner and

believe that a similar viewpoint is shared by others will develop a more favourable evaluation of their general well-being and overall life conditions.

As expected, a positive association was found between life satisfaction and psychological health (Pai, 1996; Yanez, 1995). Students who were more satisfied with their life circumstances were found to report a higher level of psychological well-being. Finally, life purpose was found to be another significant predictor. Students who had clear goals and a strong sense of direction in life exhibited better psychological well-being (Adams, Bezner, Drabbs, Zambaranom, & Steinhardt, 2000; King, Richards, & Stemmerich, 1998).

To conclude, post-secondary institutions play a critical role in training individuals to compete and succeed in a knowledge-driven, information global economy, and an increasingly diverse and complex society. The institutional environment should be challenging, supportive, and capable of nurturing optimal learning and performance in students. Equally important, these institutions should be committed to providing programs and activities that will enhance the quality of life for students. The results of this study contribute to the research literature on students' performance and well-being. In particular, the key factors affecting the academic performance and psychological well-being in a sample of Canadian undergraduate students have been identified. Through increased understanding of the major determinants of both outcome variables, academic advisors, educators, counsellors, and community health professionals will be better equipped to design intervention strategies which enhance students' quality of life and facilitate student learning. The present study has limitations that researchers need to consider when weighing the impact of the findings. As this survey was undertaken on a group of students at a mid-sized university in a western Canadian city, some of the findings may be unique to this institution and this particular sample of students. This study is also limited by the reliance on self-reported data. Caution should therefore be exercised in interpreting the findings. An agenda for further research should include an examination of variation across types of post-secondary institutions (e.g., community colleges, university colleges, and institutes of technology) and student populations in other geographical locations (e.g., large metropolitan areas vs. smaller cities). It would also be worthwhile to investigate the specific sources of academic and psychological stress and coping strategies among post-secondary students.

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## Notes

- (1) Drawing on nationwide surveys of young people in Canada, it has been projected that more than one in six of the teenagers today expect to graduate from university and another one in ten anticipate at least enrolling in a university program (Bibby, 2001).

- (2) Canadian full-time undergraduate students paid an average of \$ 4,917 in tuition fees for the 2009-2010 academic year, up from \$ 4,747 the year before. During the 1990s, the undergraduate tuition fees increased at an annual average rate of more than 9.6%. Since 2000, increases have slowed to an average of 3.8% (Statistics Canada, 2009b, 2007).
- (3) Of the 501 survey respondents, 6 did not respond to the sex/gender question.
- (4) A total of eleven predictor variables were included in the multiple OLS regression model for academic performance. *Sex* (1 = male; 0 = female), *employment status* (1 = employed; 0 = not employed), and *religion* (1 = Protestant and Catholic; 0 = other) were measured as dichotomous variables. *Age* ( $M = 21.42$ ,  $SD = 4.91$ ) was a continuous variable. *Employment status* was a categorical variable (1 = employed; 0 = not employed). *Physical health* ( $M = 3.83$ ,  $SD = .92$ ) was measured on a five-point scale (1 = very dissatisfied to 5 = very satisfied). *Psychological well-being* was a composite score ( $M = 19.46$ ,  $SD = 4.92$ ) based on frequency of feeling sad ( $M = 2.91$ ,  $SD = .954$ ), lonely ( $M = 2.71$ ,  $SD = 1.125$ ), stressed ( $M = 3.95$ ,  $SD = .951$ ), like crying ( $M = 2.70$ ,  $SD = 1.215$ ), depressed ( $M = 2.41$ ,  $SD = 1.16$ ), and hopeless ( $M = 1.84$ ,  $SD = 1.061$ ) in the past 30 days on a five-point scale (1 = never; 2 = very infrequently; 3 = infrequently; 4 = frequently; 5 = very frequently). This scale was found to be internally consistent, with a Cronbach's alpha reliability coefficient of .85. The academic program that respondents intended to complete (1 = no degree or diploma or certificate; 2 = university diploma or certificate; 3 = bachelor's degree; 4 = master's degree; 5 = doctoral degree) was used as a measure of *educational aspirations* ( $M = 3.47$ ,  $SD = .82$ ). *Class attendance* was based on respondents' degree of agreement with the statement "I attend classes on a regular basis, i.e., at least 80% or more" on a five-point scale ( $M = 4.49$ ,  $SD = .77$ ). *Hours spent on studying* ( $M = 14.75$ ,  $SD = 11.59$ ) was a continuous variable. *Father's education* was a categorical variable (1 = no formal education; 2 = primary school; 3 = secondary school; 4 = community college; 5 = university; 6 = graduate school). *Socio-economic status* ( $M = 7.11$ ,  $SD = 2.06$ ) was an additive scale (Cronbach's alpha reliability coefficient = .55.) based on respondents' self-assessed socio-economic status (1 = low to 5 = high) and family's total yearly income (1 = \$20,000; 2 = \$ 20,001 to 40,000; 3 = \$ 40,001 to 60,000; 4 = \$ 60,001 to 80,000; 5 = \$ 80,001 to \$100,000 or under to 6 = \$ 100,001 or more).
- (5) A total of thirteen predictor variables were included in the multiple OLS regression model for psychological well-being. *Sex* (1 = male; 0 = female) and *employment status* (1 = employed; 0 = not employed) were dichotomous variables. *Socio-economic status* ( $M = 3.41$ ,  $SD = .8$ ) was a continuous variable based on a five-point scale ranging from 1 (low) to 5 (high). *Time spent on religious activities* ( $M = 1.18$ ,  $SD = 2.986$ ) was based on the number of hours per week. *Satisfaction with physical health* ( $M = 3.83$ ,  $SD = .92$ ), *physical appearance* ( $M = 3.4$ ,  $SD = 1.01$ ), and *self-image* ( $M = 3.65$ ,  $SD = .95$ ) were measured on a five-point scale ranging from 1

(very dissatisfied) to 5 (very satisfied). *Life satisfaction* was a five-item scale based on respondents' degree of agreement (1 = strongly disagree to 5 = strongly agree) with the following five items: (1) In most ways my life is close to my ideal ( $M = 3.62$ ,  $SD = .826$ ); (2) The conditions of my life are excellent ( $M = 3.73$ ,  $SD = .876$ ); (3) I am satisfied with my life ( $M = 3.87$ ,  $SD = .811$ ); (4) So far I have gotten the important things I want in life ( $M = 3.53$ ,  $SD = .995$ ); and (5) If I could live my life over, I would change almost nothing ( $M = 3.28$ ,  $SD = 1.125$ ). This additive scale ( $M = 18.04$ ,  $SD = 3.38$ ) was found to be internally consistent, with a Cronbach's alpha reliability coefficient of .772. *Life purpose* was a ten-item scale ( $M = 40.87$ ,  $SD = 5.84$ ) based on respondents' degree of agreement with the following statements (1 = strongly disagree to 5 = strongly agree): (1) My life has clear goals and aims ( $M = 3.84$ ,  $SD = .854$ ); (2) I feel my life has a sense of direction ( $M = 3.96$ ,  $SD = .764$ ); (3) I feel my life has a sense of meaning ( $M = 4.04$ ,  $SD = .766$ ); (4) My personal existence is full of purpose ( $M = 3.92$ ,  $SD = .811$ ); (5) There are things I still want to achieve in my life ( $M = 4.65$ ,  $SD = .57$ ); (6) My personal existence is full of direction ( $M = 3.86$ ,  $SD = .817$ ); (7) I feel my life has a sense of purpose ( $M = 4.04$ ,  $SD = .766$ ); (8) My personal existence is full of meaning ( $M = 3.91$ ,  $SD = .821$ ); (9) I feel my life is going nowhere ( $M = 1.69$ ,  $SD = .834$ ); and (10) There is no purpose in what I am doing ( $M = 1.63$ ,  $SD = .847$ ). The coding for the last two statements was reversed so that a higher composite score would reflect a stronger sense of life purpose. This scale was found to be internally consistent, with a Cronbach's alpha reliability coefficient of .909. *Degree of satisfaction with relationships with significant other* ( $M = 3.67$ ,  $SD = 1.06$ ) and *with friends* ( $M = 4.12$ ,  $SD = .75$ ) was based on a five-point scale ranging from 1 (very dissatisfied) to 5 (very satisfied). *Satisfaction with family* was a two-item scale ( $M = 7.93$ ,  $SD = 1.7$ ) based on degree of satisfaction with the relationships with parents and siblings, with a Cronbach's alpha reliability coefficient of .60. Finally, *academic performance* was based on self-reported overall grade point average ( $M = 3.92$ ,  $SD = .81$ ) on a five-point scale (1 = under 50; 2 = 50-59; 3 = 60-69; 4 = 70-79; 5 = 80-89; 6 = 90-100).

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