

Differences in Life Satisfaction and School Satisfaction Among Adolescents From Three Nations: The Role of Perceived Autonomy Support

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Past research shows that higher well-being is reported by adolescents who live in individualistic rather than collectivistic nations. Such cross-national differences may be due to the amount of autonomy support adolescents receive from authority figures. To examine this hypothesis, in the current study, 322 adolescents from Denmark, South Korea, and the United States completed self-report surveys that assessed adolescents' school and life satisfaction and their experience of autonomy support from parents and teachers. Results showed that Danish adolescents reported highest school satisfaction, life satisfaction, and perceived autonomy support, followed by American and Korean adolescents, respectively. Furthermore, cross-national differences in school and life satisfaction were partially mediated by adolescents' perceptions of autonomy support from authority figures. These findings support self-determination theory (Deci & Ryan, 1985) and the ecological model of child development (Bronfenbrenner, 1986).

In their analysis of the factors predicting variations in the subjective well-being of adults from dozens of nations, Diener, Diener, and Diener (1995) concluded that living in a more individualistic (vs. collectivistic) nation was the single most powerful positive predictor of citizens' happiness and satisfaction. Since this ground-breaking study, research with college students (e.g., Kim, Kasser, & Lee, 2003) and adolescents (e.g., Gilman et al., 2008; Park & Huebner, 2005) has similarly found well-being benefits of living in a traditionally individualistic versus collectivistic country. Despite these consistent findings, research has yet to clearly explicate the processes through which broad national dimensions such as individualism and collectivism influence the well-being of adolescents. In the present study, we address this gap by applying insights from ecological approaches to the development of youth (Bronfenbrenner, 1979, 1986) and from self-determination theory (SDT) (Ryan & Deci, 2000, 2002) to explore the

possibility that cultural differences in adolescents' well-being are due, at least in part, to the quality of interpersonal interactions that adolescents have with authority figures in those countries.

THE MACROSYSTEM AND INTERACTIONS WITH AUTHORITY FIGURES

Bronfenbrenner's (1979, 1986) well-known ecological model of child development specifies that children's health and well-being are influenced by an array of mutually interacting environmental settings and dynamics. The most distal environmental influence is at the *macrosystem* level, where broad ideological and institutional features of the nation or country set the context for the decisions and interactions that occur at lower-level systems. For example, Bronfenbrenner notes that a culture's ideas and institutions regarding marriage, education, and politics all influence the manner in which individuals ultimately behave and interact with each other. These influences ripple all the way down to the *microsystem* level, the most proximal level of influence that includes children's direct interactions with peers, parents, teachers, and others in their immediate environment. In essence, Bronfenbrenner specifies that because the interpersonal interactions of adolescents (i.e., the *microsystem*) exist within a broader national setting (i.e., the *macrosystem*), differences at the *macrosystem* level, such as

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variations in individualism or collectivism, can lead to differences at the microsystem level, such as the quality of interactions between children and authority figures. These microsystem level differences, in turn, may affect adolescents' well-being.

One of the broad differences between individualistic and collectivistic nations pointed out by researchers studying well-being differences (Diener et al., 1995; Gilman et al., 2008) is that values and norms within traditionally individualistic nations typically emphasize greater freedom and independence to pursue goals related to personal satisfaction and interests, whereas the values and norms in collectivist nations endorse restrictions on individuals' expression of their own desires and interests. Based on the exposure to such values and norms, the interactions between authority figures and adolescents in more collectivistic nations may be characterized by fewer opportunities for adolescents to experience a sense of self-determination and autonomy than occurs in the interactions of adolescents in individualistic nations. These differences may then explain cross-national variations in adolescents' well-being.

This logic is quite consistent with SDT (Deci & Ryan, 1985), which posits that when individuals feel a sense of choice in their lives and are able to engage in behaviors that are personally interesting and valuable to them, their psychological need for autonomy is satisfied, with resulting increases in personal growth, vitality, and well-being (Ryan, 1995; Ryan & Deci, 2000). Substantial research has verified that when individuals behave with autonomy, they experience positive outcomes, such as greater well-being (Reis, Sheldon, Gable, Roscoe, & Ryan, 2000; Sheldon, Ryan, Deci, & Kasser, 2004). According to SDT, the extent to which a person experiences autonomy depends a great deal on the quality of his or her interpersonal environment and, specifically, whether authority figures in that environment are *autonomy supportive* or *controlling* (Deci & Ryan, 1985; Grolnick & Ryan, 1989; Ryan & Deci, 2000). In the context of understanding adolescents' development and well-being, SDT typically describes autonomy support as occurring when youth perceive that their parents and teachers acknowledge how they feel and support their decisions (Grolnick & Ryan, 1989; Grolnick, Ryan, & Deci, 1991). In contrast, controlling parents and teachers inhibit autonomy by being inflexible, overly demanding, or unresponsive toward adolescents' feelings and attitudes.

Research from the SDT perspective documents that children's and adolescents' perceptions of autonomy support from parents and teachers do indeed predict greater well-being. For example,

autonomy support from parents and teachers predicts greater life satisfaction and self-esteem and lower depressive symptoms among high school students (Chirkov & Ryan, 2001). Similarly, among college students, those who perceive their parents as being more controlling reported lower well-being and greater resentment toward their parents (Assor, Roth, & Deci, 2004). Such findings have also been documented across various nations (Chirkov & Ryan, 2001; Downie et al., 2007). SDT understands these effects as occurring partially because when individuals perceive autonomy support from others, they feel more secure in expressing themselves (La Guardia & Ryan, 2007). Thus, at the heart of autonomy support is an interpersonal style that endorses freedom in self-expression, which SDT assumes is a crucial ingredient toward achieving well-being.

Although past research suggests that autonomy support predicts well-being regardless of ethnic background, it may be that adolescents in different countries experience different amounts of autonomy support. According to SDT, certain culturally specific values, norms, and practices may make it difficult to satisfy the need for autonomy (Chirkov, Ryan, Kim, & Kaplan, 2003; Kasser, Cohn, Kanner, & Ryan, 2007). These values, norms, and practices sometimes reflect differences across nations in individualism and collectivism. In general, individualistic societies endorse greater self-expression and independence, whereas collectivistic societies emphasize communal sharing, interdependence, and deference to group goals over individual choices (Triandis, 1995). Research suggests that individuals from collectivist nations may experience less autonomy (Kemmelmeyer et al., 2003), perhaps due to restrictions on personal agency in pursuit of social harmony (Triandis, 1995).

A second macrosystem dimension that differentiates cultures and that might influence adolescents' interactions at the microsystem level is the vertical versus horizontal orientation of a nation (Triandis & Gelfand, 1998). Vertically oriented nations are those that emphasize social hierarchy, whereas horizontally oriented nations promote social equality. Specifically, in nations in which values and norms suggest a vertical orientation, individuals are more likely to be socially stratified in terms of class and status. In contrast, such social hierarchy is minimized in nations with values and norms that reflect a horizontal orientation, with egalitarianism instead emphasized.

According to Triandis and Gelfand (1998), lower freedom and lower equality are characteristics of societies that are both vertical and collectivist. Thus, autonomy may be especially difficult to experience in such nations, because the social environment may

constrain individuals' behaviors and actions and lead them to feel more controlled (and less supported) by authority figures above them in the hierarchy (i.e., parents, teachers, and employers). Chirkov and Ryan (2001), for example, found that Russian students had less autonomous motivation toward school and perceived lower autonomy support compared with American students. This is presumably due to the prevalence of authoritarian values in Russia, which are inconsistent with egalitarian values of equal status and power (Triandis & Gelfand, 1998). Research also shows that individuals residing in more vertically collectivistic oriented nations are less likely to autonomously regulate their nation-specific cultural practices (Chirkov et al., 2003). In contrast, the prevalent values of egalitarianism and equality in more horizontally or individualistically oriented nations may facilitate social relationships marked by autonomy support. In such countries, individuals typically feel fewer obligations to follow the dictates of others and have more opportunities to express autonomy through their self-chosen behaviors.

THE PRESENT STUDY

In summary, we propose that adolescents perceive greater autonomy support from authorities when they live in nations that are more individualistic and horizontally oriented than in nations that are thought to be more collectivistic and vertically oriented. Greater autonomy support, in turn, should be associated with higher levels of well-being, which we assessed here with adolescents' ratings of school satisfaction and life satisfaction (Huebner, Nagle, & Suldo, 2003; Huebner, Suldo, & Valois, 2003). We also expected that any cross-national differences in school and life satisfaction among adolescents would be mediated (at least in part) by how much autonomy support versus control adolescents experience in their interactions with authority figures. Specifically, we expected that adolescents in nations characterized to be individualistic and horizontal would perceive greater autonomy support from authority figures than would adolescents in nations believed to be more collectivistic and vertical and that these differences would be associated with higher levels of self-reported school and life satisfaction. We tested our ideas on data collected from adolescents raised in three nations: South Korea, Denmark, and the United States.

South Korea is thought to be relatively collectivistic and vertical in social relationships (Chirkov et al., 2003; Kim, Hegelson, & Ahn, 2002; Schwartz,

1999), probably due to the influence of a relatively rigid class-based system and Confucian beliefs that promote paternalism toward those with less power in society (Cha, 1994). Common Confucian ideals in South Korea also encourage educational attainment as a pathway to high social status and self-fulfillment, and pressure by parents and teachers on adolescents to get accepted into universities is correspondingly quite high (Lee, 2003). The focus on admission into college and the associated pressure to spend a great deal of time studying and preparing for entrance exams have been cited as possible reasons for the significantly greater level of depression among Korean students as compared with American students (Lee & Larson, 2000).

In contrast to South Korea, the founding principles of the United States that tout individual freedom, liberty, and equality emphasize individualism and somewhat de-emphasize hierarchy. Likewise, social equality and egalitarianism are highly valued among Danes (Fivelsdal & Schramm-Nielsen, 1993; Kim et al., 2002), perhaps even more so than among Americans. According to Schwartz's (1994) cross-national comparison of values, Denmark scored near the bottom of a list of 38 nations in valuing hierarchy, the United States scored near the middle, and East Asian nations, such as China, Taiwan, and Japan scored near or at the top. Schwartz's (1999) later analysis placed the United States as much more similar to South Korea in terms of a focus on hierarchy than to Scandinavian countries. Thus, although much of the ideology of American culture seems to value freedom and equality, this evidence suggests that the United States is more hierarchical than is Denmark.

Ultimately, these data suggest that the three nations we sampled from roughly fit three of the four possible types of value orientations, comprised of both the individualism/collectivism (Diener et al., 1995; Hofstede, 1984) and horizontal/vertical distinctions (Triandis & Gelfand, 1998). Specifically, Korea can be considered as being relatively collectivistic and vertical, Denmark as relatively individualistic and horizontal, and the United States as strongly individualistic but somewhat more vertical than Denmark.

An Alternative Perspective: Do National Differences Moderate the Associations Between Autonomy Support and Satisfaction With School and Life?

Although the research reviewed thus far implies that autonomy support mediates the relationship

between country of origin and indicators of well-being, our study also allowed us to test whether the relationships between autonomy support and satisfaction with school and life differ by nation. This is important to test, given recent debates about whether the psychological benefits of autonomy are specific to certain national/cultural backgrounds or are universal. Some researchers have raised the possibility that experiencing autonomy and receiving autonomy support are only important in nations that value independence and individualism but not in more collectivistic countries in which social harmony and obligations to one's group are emphasized (Iyengar & DeVoe, 2003; Miller, 1997). In contrast, because SDT holds that all humans have a psychological need for autonomy (Ryan & Deci, 2000), it would predict that the experience of autonomy support should be beneficial even in national contexts that do not highly value autonomy. The nature of our study allowed us to test these competing ideas about whether individuals' national background interacts with perceived autonomy support in predicting adolescents' satisfaction with school and life. Based on findings showing that the experience of autonomy predicts psychological benefits in collectivist countries as well as individualistic countries (Chirkov & Ryan, 2001; Chirkov et al., 2003), we expected to find little support for the moderation hypothesis presented by some researchers.

Predictions

We administered established surveys of school satisfaction and life satisfaction and of perceived autonomy support from parents and teachers to adolescents in three different countries to test three main predictions. Our primary hypothesis predicted that autonomy support would mediate between country of origin and satisfaction with life and with school. Specifically, we expected that the lower satisfaction with life and school of Korean adolescents (compared with Danish and American adolescents) and of American adolescents (compared with Danish adolescents) would be largely explained by cross-national differences in perceived autonomy support from parents and teachers. To test this hypothesis, we first sought verification that Korean students, compared with Danish and American students, would report lower satisfaction with life and school and would report lower perceived autonomy support from their parents and teachers. Danish students were also predicted to report higher autonomy support and higher satisfaction with life and school than American students, based on the differences in the two nations'

vertical orientation. Second, autonomy support from parents and teachers was expected to be positively related to both life satisfaction and school satisfaction. Lastly, we expected that the associations between autonomy support from both teachers and parents and school satisfaction and life satisfaction would not be moderated by participants' country of origin.

METHOD

Participants

Our final sample of 322 students was composed of 99 students (67 female, 32 male) from Denmark, 125 students (23 female, 102 male) from South Korea, and 98 students (66 female, 32 male) from the United States. Twelve students (8 from Denmark, 2 from South Korea, and 2 from the United States) had been dropped from the initial sample due to missing parental consent forms or substantial missing data on their surveys. The remaining students were all born in the country of their assessment. The mean ages for the Danish, Korean, and American students were 16.18 ($SD = 1.36$), 16.83 ($SD = 0.80$), and 16.01 ($SD = 1.40$), respectively. All students in the three nations attended public schools located in areas that have close access to a large city. The Danish sample was drawn from three schools with close access to a large metropolitan area in the Zealand region. Data from the United States were collected from a suburban location near a large Midwestern city. Lastly, the Korean sample was obtained from a mid-sized city located in the southern area of the peninsula. Although the household income levels of the parents of these students are unknown, the schools across the three nations are known to enroll students from middle-class income backgrounds, with respect to each nation. Among Danish students, 77.7% of the mothers and 72% of the fathers finished high school. Also, among Danish parents, 54.3% of the mothers and 48.4% of the fathers finished college or attained a graduate degree. In the Korean sample, 86.3% of the mothers and 89.9% of the fathers finished high school, and 12.0% of mothers and 31.3% of fathers finished college or obtained a graduate degree. Finally, among the American sample, 84.5% of mothers and 96.9% of fathers finished high school, and 58.8% of the mothers and 53.1% of the fathers graduated at the college.

Recruitment method. All students participated on a voluntary basis. In each school, a representative of the study made a short announcement to students in the classroom or in the school auditorium. The

surveys were given to teachers at the school who either passed them out directly to the students or delivered them to their mail boxes. We complied with the specific requests of the teachers and principals regarding recruitment in order to be culturally sensitive to each school. Thus, in Danish and Korean schools, we did not offer any compensation to their students, but did inform American participants that their names would be entered into a lottery for a chance to win a gift certificate (ranging from US\$50 to US\$100). Thus, while there was a difference in potential external incentives for participation, the Americans did not receive any direct inducement and they had a relatively slim chance of receiving any external rewards.

Procedure

Because all of the questionnaires in the survey were written in English, a back translation procedure was used for the Danish and Korean samples. First, bilingual speakers translated the survey from English into Danish or Korean. Second, different bilingual speakers then translated these surveys back into English. The minor discrepancies in the translated surveys were then discussed and corrected.

In each school, consent from the principal, headmaster, and/or homeroom teacher was first obtained. Afterwards, students were gathered in assembly or classroom settings and given a short description of the study. Survey packets, along with consent forms, were then given to the teachers of the school to later distribute among the students, who were given 1–2 weeks to return surveys to a designated drop box in their school.

Measures

The survey packets given to the students included the following measures, listed below in order of their appearance in the packets, in addition to demographic questions about participants' gender, age, and their parents' level of education, as well as some other measures not relevant to this study's hypotheses.

The Learning Climate Questionnaire (Williams, Wiener, Markakis, Reeve, & Deci, 1994). This 15-item measure assesses students' perceived autonomy support from their teachers. An example item is "My teachers listen to how I would like to do things." Because this scale had been constructed for use with college students, we reworded some

items to make them more appropriate for use with a high school sample. Scores reflecting teacher autonomy support were calculated by averaging the ratings (5 point; "strongly disagree" to "strongly agree") across these items. The Cronbach's α s in the Danish ($\alpha = .85$), Korean ($\alpha = .88$), and American ($\alpha = .91$) samples all suggested that the scale was internally reliable.

School Satisfaction Scale (from the multidimensional Students' Life Satisfaction Scale [SLSS]; Huebner et al., 2003). From a larger scale that examines various dimensions of students' life satisfaction, we used the eight items that assess students' satisfaction with school. A sample item is "I look forward to going to school." A score reflecting school satisfaction was calculated from students' ratings on a 5-point scale ("strongly disagree" to "strongly agree") on these items. The Cronbach's α s for this scale were .86 for the Danish, .87 for the Korean, and .88 for the American samples.

Perception of Parents Scale (College-Student Scale; Robbins, 1994). The 18-item autonomy subscale from the College-Student Scale (Robbins, 1994) was used to measure participants' perceived autonomy support from their mothers and fathers. An example item is "My (mother or father) helps me to choose my own direction." Scores for parent autonomy support were calculated by averaging the ratings on a 7-point scale ("not at all true" to "very true") from students' ratings of their mothers and fathers.¹ In our effort to determine whether the participants from all three nations interpreted the statements similarly, we compared the correlations among the individual items of this scale across the three groups. We found that the Korean students' interpretation of one of the items (My mother (or father) tries to tell me how to run my life) appeared different than was the case for the Danish and American students'; thus, we omitted this item from our analyses. The Cronbach's α s for the

¹We chose to average the mother's and father's autonomy support into a single parent autonomy support score to simplify our analyses. In the overall sample, the correlation between mother and father autonomy support is positive and high in magnitude ($r = .52, p < .001$). Although there is some variation across cultures in the magnitude of the correlation, in all three cultures the correlations were significant and positive (Korea $r = .49, p < .001$; Denmark $r = .65, p < .001$; United States $r = .22, p = .03$). Furthermore, the relationship between autonomy support and our other variables of interest remained similar whether we used the autonomy support variable from mothers or fathers. Thus, our use of a single parent autonomy support does not alter the interpretation of our data.

remaining items were .91 for the Danish sample, .89 for the Korean sample, and .88 for the American sample.

SLSS (Huebner et al., 2003). Participants' life satisfaction was assessed via seven items about their general quality of life (e.g., "My life is going well."). Similar to school satisfaction, ratings on a 7-point scale ("strongly disagree" to "strongly agree") were averaged to obtain a score for life satisfaction. The Cronbach's α s for this scale were .82 (Danish sample), .87 (Korean sample), and .85 (American sample).

OVERVIEW OF ANALYTIC STRATEGY

To assess the hypothesis that cross-national differences in school satisfaction and life satisfaction would be at least partially mediated by perceptions of autonomy support from parents and teachers, we first sought to verify the mean differences between Koreans versus Americans and Danes, as well as between Americans and Danes, observed in a series of one-way ANOVAs and post hoc mean comparisons. Note that the mean comparison analyses did not control for demographic variables, such as parents' level of education and the gender and age of the participants. However, the primary analysis testing autonomy support from parents and teachers as mediators included these demographic variables to control for their effects on the relationship between national origin, autonomy support, and school and life satisfaction.

After verifying the predicted differences in life satisfaction, school satisfaction, and autonomy support, as well as the predicted pattern of relationship among these variables, a path model using the AMOS program (Arbuckle, 2008) was created to test the mediation hypothesis and the moderation hypothesis simultaneously. The path model included both mediation and moderation pathways to allow us to determine whether the data supports our proposed mediation explanation versus the alternative moderation explanation.

RESULTS

Preliminary Analyses of Demographic Characteristics

Gender, age, and parents' level of educational attainment were first examined. In South Korea and in the United States, there were no gender differences regarding the variables of interest. In Denmark,

however, female students reported greater school satisfaction, $t_{(97)} = 2.68, p = .01$, than did male students. Because this gender difference was not consistent across the three groups, and because the pattern of correlations among the variables did not differ for female and male students, we collapsed the data across gender for the remaining analyses.

We next examined the relationship between age and the major variables in the study. Only two correlations emerged as significant. First, age was positively correlated with school satisfaction ($r = .36, p < .001$) among Danish students. However, age was negatively correlated with school satisfaction ($r = -.46, p < .001$) among American students. Based on this finding, our primary analysis controlled for this group difference in the association between age and school satisfaction.

Lastly, we examined parents' level of education in relation to other variables of interest. To maintain parsimony, we averaged reported educational attainment across mothers and fathers. Notably, parents' level of education differed across the three nations, $F_{(2,309)} = 37.79, p < .001$, such that the Korean parents' level of education was significantly lower compared with Danish and American parents, who did not differ from each other, according to a post hoc Tukey's *b* test ($p < .05$). Korean parents were less likely to have attended postsecondary institutions compared with Danish and American parents. Correlation analyses showed that level of education was not associated with autonomy support from parents or teachers or with satisfaction with life or school in Korea and Denmark. However, among American students, parents' level of education was positively correlated with perceived autonomy support from teachers ($r = .27, p = .01$) and with adolescents' life satisfaction ($r = .24, p = .02$).

In sum, the preliminary analyses revealed some associations between the demographic characteristics of the participants and the main variables of interest. Because of these associations, the primary analyses controlled for these demographic variables (i.e., age, gender, and parents' level of education).

Mean-Level Differences in Autonomy Support, School Satisfaction, and Life Satisfaction Across Nations

Table 1 provides the descriptive statistics, including means and standard deviations, for the primary variables of interest in the current study, including perceived autonomy support from parents and teachers, school satisfaction, and life satisfaction. This table also reports the results of mean compari-

TABLE 1
Means, Standard Deviations, and Effect Sizes (δ) for Comparisons of Autonomy Support and Satisfaction Among Danish, American, and South Korean Students

Group (contrasted)	Teacher Autonomy Support	Parent Autonomy Support	School Satisfaction	Life Satisfaction
<i>M (SD)</i>				
Overall ($n = 322$)	3.05 (0.73)	5.07 (1.09)	3.35 (0.86)	4.61 (1.44)
Denmark ($n = 99$)	3.38 (0.53) ^a	5.70 (0.95) ^a	3.81 (0.72) ^a	5.61 (0.89) ^a
United States ($n = 98$)	3.36 (0.65) ^a	4.98 (0.94) ^b	3.26 (0.84) ^b	4.94 (1.10) ^b
S. Korea ($n = 125$)	2.54 (0.64) ^b	4.64 (1.07) ^c	3.05 (0.84) ^b	3.57 (1.34) ^c
Effect size (δ)				
Denmark versus United States	0.02	0.77	0.71	0.67
Denmark versus S. Korea	1.40	1.04	0.91	1.75
United States versus S. Korea	1.28	0.32	0.25	1.10

Note. Standard deviations are noted within parentheses following each mean. Means with different superscripts are significantly different ($p < .05$) for each variable. Effect sizes were calculated using guidelines in calculating standardized mean differences provided by Hedges (1981) and Olejnik and Algina (2000).

son tests. After first establishing that there were significant differences between the American, Danish, and Korean groups of students in teacher autonomy support, $F_{(2,319)} = 69.92$, $p < .001$, parent autonomy support, $F_{(2,319)} = 31.81$, $p < .001$, school satisfaction, $F_{(2,319)} = 25.64$, $p < .001$, and life satisfaction, $F_{(2,319)} = 92.80$, $p < .001$, we conducted Tukey's *b* post hoc tests to observe which pairs of groups were significantly different from each other. Korean students, compared with their American and Danish peers, reported lower autonomy support from both parents and teacher as well as lower satisfaction with both life and school. We also found some differences between American students and Danish students. Specifically, Danish students reported greater parent autonomy support, school satisfaction, and life satisfaction than did American students; there was no difference, however, in teacher autonomy support.

Primary Analysis: Perceived Parent and Teacher Autonomy Support as Mediators

After confirming that the major variables in the current study are correlated in an expected pattern (see Table 2), with autonomy support from parents and teachers positively correlating with school satisfaction and life satisfaction in general across the three nation groups, we proceeded with our path model to test the primary hypothesis. We predicted that any differences in life or school satisfaction between the three nations we examined would be at least partially explained by differences in adolescents' perception that their parents and teachers are

autonomy supportive. In addition to testing the mediation hypothesis, the path model also tested the alternative possibility that the relationship between autonomy support and satisfaction depends on national origin (the moderation hypothesis). The

TABLE 2
Correlations Between Autonomy Support and Well-Being in the Entire Sample and in Denmark, the United States, and South Korea

	Parent Autonomy Support	School Satisfaction	Life Satisfaction
Teacher autonomy support			
Overall	.44***	.49***	.54***
Denmark	.28**	.46***	.17†
United States	.31***	.51***	.38***
S. Korea	.38**	.36***	.37***
Parent autonomy support			
Overall	—	.37***	.59***
Denmark		.45***	.48***
United States		.16*	.48***
S. Korea		.22	.46***
School satisfaction			
Overall	—	—	.47***
Denmark			.43***
United States			.44***
S. Korea			.33***

Note. $n = 322$, 99, 98, and 125 for the entire sample, Denmark, United States, and S. Korea, respectively.
*** $p < .001$; ** $p < .01$; * $p < .05$; † $p < .10$.

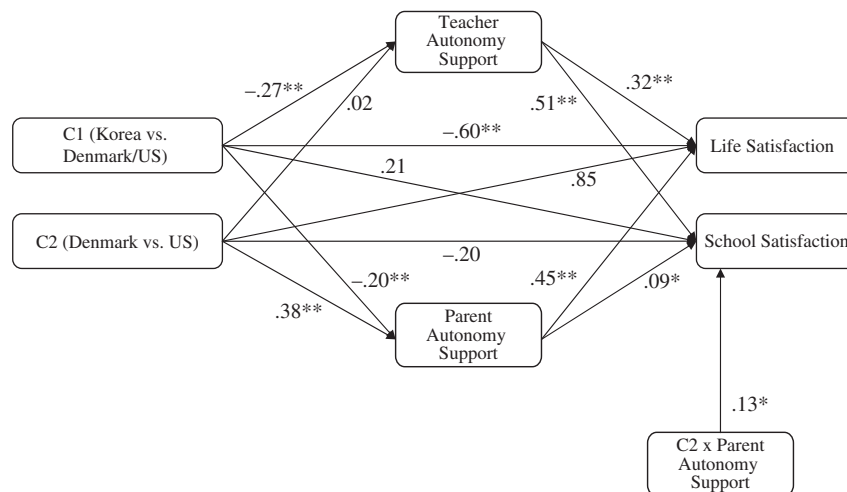


FIGURE 1 Path model testing perceived autonomy support from parents and teachers as mediators between culture and satisfaction with life and school. Covariance paths between moderation variables and mediation variables, as well as nonsignificant paths from the interaction terms (testing moderation) to school satisfaction and life satisfaction, are not presented so as to improve clarity and parsimony. Note: $^*p < .05$, $^{**}p < .01$.

construction of the path model was based on recommendations by Fairchild and MacKinnon (2009), Li et al. (1998), and Preacher, Rucker, and Hayes (2007) regarding models that combine mediation and moderation tests.

Path model construction. In this model (see Figure 1), the main effect variables included two recoded variables contrasting national differences to compare Korean students against Danish and American students (C1; coded as 2 for the Korean students and -1 for the Danish and for the American students) and to compare Danish students against American students (C2; coded -1 for the Danish students, 1 for the American students, and 0 for Korean students). C1 allowed us to contrast a traditionally collectivistic nation with typically individualistic nations. The second recoded variable, C2, allowed us to explore potential differences between Danish students and American students, representing the comparison of two individualistic nations that theoretically varied along the horizontal/vertical dimension (Schwartz, 1994, 1999). In the path model, which was constructed using AMOS version 16 (Arbuckle, 2008; see Figure 1), path arrows from these variables point to the mediator variables (i.e., parent autonomy support and teacher autonomy support), as well as to the dependent variables (i.e., life satisfaction and school satisfaction). The path model also controlled for the effects of the demographic variables (education levels for mothers and fathers, gender, age, and the interaction of age by

C2) on the main variables.² Age variable was centered around mean age (16.38).

Four interaction variables computed from the two recoded contrast variables and the two autonomy support variables (C1 \times teacher autonomy support, C1 \times parent autonomy support, C2 \times teacher autonomy support, and C2 \times parent autonomy support) were also included in the model to test for the possibility of moderation. The model also included the (bi-directional) covariance paths between moderation variables and mediation variables. Evidence for the cross-national relativity of the importance of autonomy support in predicting satisfaction with life and school would be present if the regression paths from these interaction terms to the dependent variables are significant. Because our model is *just-identified* (Loehlin, 2004), the model fit

²The main variables were controlled for the demographic variables by imposing paths from these variables to mediation variables, i.e., teacher and parent autonomy support, as well as to the outcome variables of school and life satisfaction. A variable representing the interaction of age \times C2 was also included due to the different pattern of correlations of age with school satisfaction between American and Danish adolescents. The control variables were also correlated with C1, C2, and the four variables representing moderation effects. For the sake of clarity, these demographic variables are not included in Figure 1. Their associations with the main variables are consistent with the preliminary results. Only two paths to the main variables were significant: the association between gender and school satisfaction ($p < .01$) and the association between father's level of education and life satisfaction ($p < .05$). All others were not significant (p 's $> .19$).

was perfect with respect to the data, and we do not present any model fit indices here.

Test of mediation. We first examined whether C1 and C2, the variables contrasting nation groups, consistently predicted differences in autonomy support from parents and teachers. As can be seen in Figure 1, C1, the variable contrasting Korean students with Danish and American students, significantly predicted both parent autonomy support and teacher autonomy support (p 's < .001); thus, Korean students reported lower levels of these variables over and beyond the effects of the demographic variables. C2, the variable contrasting Danish and American students, predicted parent autonomy support (p < .001) but not teacher autonomy support (p = .83), indicating that Danish students reported higher parent autonomy support compared with American students. Lastly, as hypothesized, parent autonomy support and teacher autonomy support significantly predicted school satisfaction and life satisfaction (all p 's < .03). In sum, the regression paths in the model are generally consistent with the mean comparisons and correlations reported in Tables 1 and 2.

To determine the statistical significance of the changes in regression weights from C1 and C2 to the dependent variables with the inclusion of the mediator variables, we calculated Sobel's (1982) statistics. Our results based on these statistics show that both teacher autonomy support (z = -3.08, p < .01) and parent autonomy support (z = -3.49, p < .001) partially mediate the relationship between C1 and life satisfaction (controlling for the demographic variables). In other words, the lower level of life satisfaction reported by Korean students compared with American and Danish students can be partly attributed to the lower levels of teacher autonomy support and parent autonomy support reported by Korean students, given that their age, gender, and parents' education level are held equivalent. We also found that both parent autonomy support and teacher autonomy support significantly and completely mediated the relationship between C1 and school satisfaction, such that the path from C1 to school satisfaction was no longer significant with the effects of autonomy support in the equation (z = -5.76, p < .001 for teachers; z = -1.97, p < .05 for parents). Thus, the lower level of school satisfaction among Korean students can be accounted for by their lower level of perceived autonomy support.

In addition, parent autonomy support mediated the relationship between C2 and school satisfaction (z = 2.08, p < .05) and between C2 and life satisfaction

(z = 4.33, p < .001). Thus, in comparison with their Danish peers, the American adolescents' lower scores on these two measures of satisfaction appear to be due (in part) to their perception that their autonomy is less supported by their parents. American and Danish students did not differ in their reported levels of teacher autonomy support, so we did not further examine teacher autonomy support as a mediator of differences in school satisfaction and life satisfaction between the two groups.

Tests of moderation hypotheses. To determine whether the model supported the alternative moderation hypothesis, the regression paths from the interaction terms to satisfaction with life and school were examined. As can be seen in the model, the regression paths from interaction variables involving the contrast between Korean versus Danish and American students were nonsignificant (p 's > .18). We also found that the interaction of C2 (contrast between Danish and American students) by parent autonomy support predicted school satisfaction (z = 2.53, p < .05). Although this finding does not contradict our predicted differences between Korea versus the United States and Denmark, we explored this interaction. Based on simple regression analyses, it appears that parent autonomy support for American students is a not a significant predictor of school satisfaction (β = .09, p = .93), whereas parent autonomy support is a significant predictor of school satisfaction for Danish students (β = .40, p < .001). The scarcity of research specifically probing cultural differences between the United States and Denmark makes it difficult for us to understand the cultural difference in the relationship between parent autonomy support and school satisfaction. Whatever the reason may be, it does not support some theorists' viewpoint (Iyengar & DeVoe, 2003; Miller, 1997) that autonomy support is unimportant in collectivistic cultures, as Koreans who received autonomy support reported higher levels of satisfaction.

DISCUSSION

While past studies have revealed that adolescents' and young adults' well-being varies according to their nation of residence (Gilman et al., 2008; Kim et al., 2003; Park & Huebner, 2005), research has yet to systematically examine the mechanisms by which cross-national differences affect individual adolescents. In an attempt to contribute to understanding these dynamics, we drew from ecological systems theory (Bronfenbrenner, 1979, 1986) and from SDT

(Ryan & Deci, 2000) to better understand how national background (the macrosystem) may influence the adolescents' immediate social environment consisting of their family and school (the microsystem) and thus influence the adolescents' life satisfaction and school satisfaction. By assessing adolescents' perceptions of their parents' and teachers' support of the adolescents' autonomy, we attempted to bridge the gap between broad environmental factors and satisfaction with life and with school.

Autonomy Support Mediates the Relationship Between National Origin and Satisfaction With School and With Life

According to ecological systems theory (Bronfenbrenner, 1979, 1986), countries and their norms and values (i.e., the macrosystem) provide the context for interpersonal interactions (i.e., the microsystem). Given this, we examined the possibility that norms and values present in each nation inform the ways that parents and teachers relate to and treat children, which in turn predict children's life satisfaction and school satisfaction. Specifically, we followed up on past work suggesting that (a) individuals in more individualistic and horizontal countries might experience more autonomy and (b) individuals who experience more autonomy report higher levels of school satisfaction and life satisfaction.

According to the current results, the differences in satisfaction with school and with life between adolescents from individualistic nations (i.e., Denmark and the United States) versus those from a traditionally collectivistic nation (i.e., South Korea) can be partially explained by the cross-national differences in the adolescents' perceptions of autonomy support from their parents and teachers. To the extent that adolescents felt that their parents and teachers understand their perspectives and allowed them to make their own choices, adolescents positively perceived their lives and their experiences in school. In contrast, when adolescents felt controlled by their parents and teachers, and felt that these authorities treated the adolescents' own experiences and choices as relatively unimportant, they reported lower satisfaction with life and school.

In addition to finding differences along the dimension of individualism versus collectivism, we found that adolescents from Denmark, a relatively individualistic-horizontal nation, reported higher life satisfaction and school satisfaction than adolescents from the United States, an equally individualistic but comparatively more vertical nation. Our data suggest that autonomy support from parents

again mediated these cross-national differences between American and Danish adolescents. Whereas previous research has mainly focused on the individualistic/collectivistic distinction (Diener et al., 1995; Gilman et al., 2008; Park & Huebner, 2005) in relation to well-being, our study suggests that whether a country is horizontal or vertical is also important to consider.

Testing the Moderation Hypothesis

While our mediation hypothesis was supported, we did not find consistent evidence for the idea expressed by some investigators (Iyengar & DeVoe, 2003; Miller, 1997) that experiencing autonomy is unimportant to individuals in collectivist nations. Instead, consistent with SDT's proposal that the experience of autonomy is universally important (Chirkov et al., 2003), autonomy support appeared to be beneficial to adolescents from South Korea, a traditionally collectivistic nation, as well as to adolescents from Western, individualistic nations; that is, autonomy is relevant to the life satisfaction and school satisfaction of individuals from nations that value interdependence and obligations to one's social group. This finding is consistent with previous research examining the role of autonomy in well-being within cross-nationally diverse samples (Chirkov & Ryan, 2001; Chirkov et al., 2003; Chirkov, Ryan, & Willness, 2005). These results thus support SDT's contention that, regardless of national background, the social environment's support of individuals' autonomy is an important ingredient in their satisfaction with life and with school.

The Role of Autonomy Support in Psychological Functioning

Our finding that autonomy support is positively associated with higher satisfaction with life and school provides further support for SDT's proposition that autonomy is a basic psychological need, the experience of which allows individuals to experience positive psychological benefits (Ryan & Deci, 2000). When individuals perceive that others, such as parents, teachers, and employers, support their autonomy by taking the individuals' perspectives or by allowing individuals to freely enact their actions and decision, they experience greater well-being and vitality (Ryan, 1995; Ryan & Deci, 2000). The freedom to express oneself and to perceive volition in one's behavior are fundamental factors involved in the cultivation of a unified self and an integrated personality, according to SDT (Ryan, 1995). Thus,

although experiencing autonomy is important at every age, it may be especially important for adolescents, as they attempt to establish an autonomous identity (Soenens et al., 2007). Indeed, research shows that when parents are controlling, rather than autonomy supportive, young adults' identity formation is thwarted (Luyckx, Soenens, Vansteenkiste, Gossens, & Berzonsky, 2007). Furthermore, autonomy support is thought to enhance positive personality traits, such as extraversion, whereas lack of autonomy support is thought to induce greater neuroticism among individuals (La Guardia & Ryan, 2007), which may be another reason why autonomy support facilitates psychological benefits.

Limitations and Future Research

Our data are inherently correlational in nature; thus, we encourage readers to refrain from making causal conclusions about the associations between autonomy support and satisfaction with school and life based on the results of this study. We note, however, that substantial research from SDT does indeed provide experimental evidence supporting the types of causative effects of autonomy support on motivation and well-being that are consistent with the current study's findings (Koestner, Ryan, Bernieri, & Holt, 1984; Nix, Ryan, Manly, & Deci, 1999).

A second limitation regards the comparability of our samples. Although we collected information about participants' geographical location and demographic characteristics, including subjects' age and their parents' levels of education, our lack of other important demographic information (e.g., socioeconomic status, parents' job positions) provides us with an incomplete understanding of the comparability of the samples. In addition, the recruitment strategy for the American sample differed from the Danish and Korean samples. The American students were given an incentive to participate (i.e., being entered into a lottery for gift certificates), whereas the Danish and Korean students volunteered on their own. Lastly, we were unable to calculate the rate of participation among students in each school; this is yet another limitation of our sampling procedure. Based on these limitations, the results should be interpreted with some caution with respect to the similarity in demographic status across the samples and to each sample's representation of the populations from which they were drawn.

While further research is needed to verify autonomy as a universal psychological need, especially in samples drawn from collectivistic/horizontal nations, more research investigating cultural factors

that hinder people from experiencing autonomy in individualistic nations would also be beneficial, given the differences in school satisfaction and perceived autonomy support reported here between Danish and American students. Currently, individuals from Western nations such as the United States and those of Western Europe are considered to be culturally similar, but these results suggest otherwise. Further research could inform us about specific institutional policies, which vary considerably even among the so-called Western nations, that might improve individuals' experience of autonomy and satisfaction with the quality of their lives.

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