

# Can Self-Determination Theory Explain What Underlies the Productive, Satisfying Learning Experiences of Collectivistically Oriented Korean Students?

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Recognizing recent criticisms concerning the cross-cultural generalizability of self-determination theory (SDT), the authors tested the SDT view that high school students in collectivistically oriented South Korea benefit from classroom experiences of autonomy support and psychological need satisfaction. In Study 1, experiences of autonomy, competence, and relatedness underlaid Korean students' most satisfying learning experiences, and experiences of low autonomy and low competence underlaid their least satisfying learning experiences. In Study 2, psychological need satisfaction experiences were associated with productive (achievement and engagement) and satisfying (intrinsic motivation and proneness to negative affect) student outcomes. Study 3 replicated and extended Study 2's structural equation modeling findings by showing that the hypothesized model explained students' positive outcomes even after controlling for cultural and parental influences, including the collectivistic value orientation. Study 4 replicated the earlier cross-sectional findings with a semester-long prospective 3-wave design. The authors discuss how the findings support the motivation theory's cross-cultural generalizability.

*Keywords:* autonomy, autonomy support, achievement, cross-cultural research, self-determination theory

The publications of *Research on the Sociocultural Influences on Motivation and Learning* (McInerney & Van Etten, 2004) and the *Nebraska Symposium on Motivation: Cross-Cultural Differences in Perspectives on the Self* (Murphy-Berman & Berman, 2003) raised the question of whether contemporary theories of motivation are cross-culturally relevant. If the motivation theories developed in the West, for instance, fail to inform educational practices in East, such a limitation would curtail these theories' breadth and domain of application. The motivation theory we chose to examine for its cross-cultural relevance was self-determination theory (SDT; Ryan & Deci, 2000, 2002). We selected SDT because it is an approach to motivation that puts universal (i.e., cross-cultural) needs at the center of its explanatory models and hence allowed us to test the generalizability questions raised by cross-cultural researchers.

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## Universal Needs and Cultural Values

According to SDT, autonomy, competence, and relatedness are cross-culturally universal psychological needs that when nurtured by the social context, promote positive school functioning (Reeve, Deci, & Ryan, 2004; Ryan & Deci, 2000). *Autonomy* is the need to experience one's behavior as integrated within and endorsed by the self; when autonomous, students initiate and regulate their behaviors with a high degree of volition and a sense of choice (Deci & Ryan, 1985b; Reeve, Nix, & Hamm, 2003). *Competence* is the need to be effective in one's interactions with the environment; when competent, students desire to exercise their capacities, seek out optimal challenges, and extend their skills (Deci, 1975). *Relatedness* is the need to establish close and secure attachments with others; when related, students feel emotionally connected to and interpersonally involved in warm, caring relationships (Baumeister & Leary, 1995; Deci & Ryan, 1991). The satisfaction of these needs during learning activities has consistently been linked to students' positive functioning (Ryan & Deci, 2000, 2002).

SDT is a widely empirically studied macrotheory of human motivation (Deci & Ryan, 1985b, 2000; Ryan & Deci, 2000) that provides a framework for understanding and enhancing student motivation (Reeve et al., 2004). This macrotheory exists as a collection of four interrelated minitheories to explain different motivational phenomena (Ryan & Deci, 2002), and it is within each of these minitheories that SDT has received a good deal of empirical support, including basic needs theory (Reis, Sheldon, Gable, Roscoe, & Ryan, 2000; Sheldon, Ryan, & Reis, 1996), cognitive evaluation theory (Deci, Koestner, & Ryan, 1999; Koest-

ner, Ryan, Bernieri, & Holt, 1984), organismic integration theory (Pelletier, Fortier, Vallerand, & Briere, 2001; Ryan & Connell, 1989), and causality orientations theory (Deci & Ryan, 1985a; Williams, Grow, Freedman, Ryan, & Deci, 1996). Our focus in this article is on basic needs theory, the minitheory that focuses on the three psychological needs as the requisite nutrients for people's intrinsic motivation, positive functioning, and psychological well-being.

Briefly, SDT's basic psychological needs theory suggests that the satisfaction of the autonomy, competence, and relatedness needs is necessary and sufficient for growth, integrity, and well-being. Autonomy, competence, and relatedness are viewed as organismic needs that are both cross-cultural and cross-developmental. Basic needs theory suggests that environments that support the individual's autonomy will be conducive to the satisfaction of all three needs. Several studies have assessed an overall model in which perceived autonomy support (as from one's teacher) satisfies one's psychological needs for autonomy, competence, and relatedness, and the satisfaction of these needs in turn promotes positive outcomes. Such overall model tests have largely supported the validity of the theory (see Deci et al., 2001; Vallerand, Fortier, & Guay, 1999; Williams, McGregor, Zeldman, Freedman, & Deci, 2004). However, few of these studies thus far have involved Asian student populations, although one showed that the satisfaction of each need was associated with the psychological well-being of Chinese college students (Vansteenkiste, Lens, Soenens, & Luyckx, 2005). This has led cross-cultural researchers to question whether the motivational dynamics outlined by basic needs theory (and SDT more generally) apply to students in cultures with different cultural values (McInerney & Van Etten, 2004; Murphy-Berman & Berman, 2003).

Some cross-cultural researchers have specifically argued that the basic propositions of SDT should not apply to students in Eastern cultures (Bond, 1988; Markus & Kitayama, 2003; Markus, Kitayama, & Heiman, 1996). At the center of this critique is the question of whether autonomy is a universal psychological need. These critics have noted that Eastern collectivistic cultures do not value the experience of autonomy in the same way that Western individualistic cultures do. Instead, Eastern collectivistic cultures tend to emphasize values such as conformity, social harmony, and family interdependence over values such as individuality, uniqueness, and independence (Chao & Tseng, 2002). In cultures that give primacy to social obligations and in cultures in which autonomy support is not a popular parenting or teaching style (Quoss & Zhao, 1995), psychological need satisfaction might not yield the same positive educational benefits found in Western samples (Iyengar & DeVoe, 2003; Tseng, 2004).

Proponents of SDT respond to their cross-cultural critics by making two key points (see Chirkov, Ryan, Kim, & Kaplan, 2003; Ryan, 1991, 1993; Vansteenkiste, Zhou, Lens, & Soenens, 2005). First, proponents argue that it is a conceptual error to equate the concept of autonomy with concepts such as individuality, uniqueness, and independence. Autonomy connotes an inner endorsement of one's behavior, not a separating of the self from one's ties with others (Ryan, 1993). Hence, it is perfectly consistent for individuals to be autonomously interdependent, to act autonomously in accord with the communal good, and to embrace autonomously endorsed collectivistic values (Chirkov et al., 2003; Ryan & Lynch, 1989). Hence, portrayals of SDT as "I am what I

am and my behavior is driven by my own beliefs and interests, not by anyone else's opinion or expectations for me" (Murphy-Berman & Berman, 2003, p. x) inaccurately capture SDT's articulation of how people can autonomously embrace collectivistic values. As one example, high autonomy often flourishes within close relationships and contributes positively to the enactment of prosocial behaviors, such as contributing to the welfare of one's community (Gagné, 2003).

Second, some cross-cultural researchers have implied that a cultural valuing of social harmony necessarily means that members of that society do not have a need for autonomy, or at least have a lesser need for autonomy (Iyengar & DeVoe, 2003). Just because a society values social harmony, however, does not mean that its members do not also need autonomy or that its members do not also benefit from having their autonomy supported. For instance, empirical research using participants who value social harmony has consistently shown the benefits of psychological need satisfaction on adjustment and well-being (Chirkov et al., 2003; Deci et al., 2001; Downie, Koestner, El-Geledi, & Cree, 2004; Vansteenkiste, Lens, et al., 2006). In sum, these studies make the case for supporting the SDT claim that members of a culture who strongly value interdependence and social harmony still (a) need autonomy, (b) benefit from autonomy support, and (c) suffer from autonomy frustration.

### Overview of Studies

To shed light on questions raised by cross-cultural researchers, we designed this series of studies to test (a) whether collectivistically oriented Korean students enjoy learning activities that afford basic psychological need satisfactions, including autonomy, and (b) whether Korean students benefit from their teachers' autonomy support and from their own psychological need satisfaction experiences. Within this focus, the purpose of these studies was to conduct a formal test of SDT's basic needs theory (Ryan & Deci, 2002) using samples of middle-class South Korean students, students who generally embrace collectivistic cultural values (to a greater degree than do students in the United States; Diener & Diener, 1995).

Throughout our investigation, our two overriding questions were "What underlies a productive, satisfying learning experience for collectivistically oriented Korean students?" and "Can basic needs theory account for Korean students' productive and satisfying learning outcomes?" To address the former question, we conducted Study 1. In Study 1, we asked one group of students to self-identify a recent, highly satisfying learning experience so that we could investigate the contributing role of autonomy, competence, and relatedness need satisfaction experiences (Study 1a), and we asked a second group of students to self-identify a recent, highly unsatisfying learning experience so that we could investigate the contributing role of autonomy, competence, and relatedness frustration (Study 1b).

To the extent that it became clear that psychological need satisfaction (and frustration) played a meaningful role in defining Korean students' satisfying (and unsatisfying) learning experiences, we would then have enough confidence in the basic needs conceptualization to try to answer additional questions. In Study 2, we selected a cluster of educational outcomes to represent students' productive and satisfied school functioning so that we could

test the extent to which the basic needs theory model could account for these indices of Korean students' positive functioning. To index students' productive functioning, we assessed achievement (course grade) and classroom engagement; to index students' satisfaction, we assessed intrinsic motivation (enjoyment of learning) and relative absence of negative affect. In Study 3, we attempted to replicate Study 2's initial test of the basic needs theory model after controlling for important cultural and parental influences, including a collectivistic value orientation. Finally, in Study 4, we again tested the basic needs theory model with South Korean students but used a semester-long prospective three-wave design (to complement the cross-sectional research design used in the model tests in Studies 2 and 3).

### Study 1a

When students have a satisfying learning experience, what makes that learning experience a particularly satisfying one? According to SDT's basic needs theory, students' psychological need satisfaction underlies their highly satisfying learning experiences, at least in part. We thus tested the hypothesis that when students engage themselves in learning activities, it is the underlying experiences of high autonomy, high competence, and high relatedness that explain why students judge a particular learning episode to be a highly satisfying one.

To test this hypothesis, we asked ninth-grade students to reflect on a recent classroom learning experience that they found to be highly satisfying. We asked students to self-report how important each of eight different psychological needs was in defining the learning experience as a satisfying one. To identify a set of candidate needs, we drew from Sheldon, Elliott, Kim, and Kasser's (2001) work that identified a comprehensive list of 10 possible psychological needs. In addition to autonomy, competence, and relatedness, these authors argued for the importance of each of the following seven needs: self-actualization, safety–security, self-esteem, stimulation, physical thriving, luxury, and popularity. In preparing to ask students about the salience of these 10 needs within their learning experiences, we felt that physical thriving and luxury were not relevant to classroom learning and hence included only the remaining eight candidate needs in our investigation.

To identify which needs were most important in defining a learning experience as a particularly satisfying one, we used Sheldon et al.'s (2001) two criteria. First, we asked students to rate which of these needs were most salient within their satisfying learning experience. Second, we asked students to report the extent to which they experienced positive affect during the learning experience so that we could correlate need salience with positive affect. For a need to be judged as particularly important, then, students needed to rate the need as both salient within the learning experience (thereby showing that it explains the *why* underlying the felt satisfaction) and associated with positive affect (thereby showing that it is deeply—rather than superficially—associated with satisfaction). Using these criteria, Sheldon et al. found that autonomy, relatedness, and self-esteem satisfactions were most salient; competence was next salient; and stimulation, self-actualization, security, and popularity were relatively least salient (in that order) and also that all candidate needs, when nurtured, correlated significantly with positive affect.

### Method

#### Participants and Procedure

Participants were 142 (67% boys and 33% girls) ninth-grade students from a large, middle-class, urban high school in Seoul, South Korea. As part of a regularly scheduled study hall, students completed the three-page survey. The survey was administered at the beginning of the class period, and students completed it without talking to one another. Participation was voluntary, and scores were confidential and anonymous.

#### Measures

Participants were asked to write a brief essay to identify a recent, classroom-based learning experience that was highly satisfying and then completed two measures to describe the nature of that experience. To develop our measures, we began with Sheldon et al.'s (2001) measure and then adapted items so that they applied specifically to classroom learning experiences (rather than to life events in general). We first wrote each revised item in English, and it was then translated into Korean by a professional English–Korean translator, following the guidelines recommended by Brislin (1980). Separate English back-translations were done by two graduate students who were fluent in both languages and were native Koreans. Any discrepancies that emerged between the translators were discussed until a consensus translation was reached.

*Most satisfying learning experience.* The questionnaire began by asking students to read the following (adapted from Sheldon et al., 2001, pp. 327–328):

Consider a recent classroom learning experience. What we want you to do is bring to mind the single most personally satisfying learning experience you had during class last week. We are being vague about the definition of a *satisfying learning experience* on purpose because we want you to use your own definition. Think of *satisfying* in whatever way makes sense to you. Take a couple of minutes to be sure that you come up with a *very satisfying* learning experience.

Participants described a wide range of satisfying learning experiences. For instance, 1 student wrote the following:

My math class was satisfying. Frankly speaking, I don't like math very much because math is difficult and boring. However, my math teacher knows how to make math easy and interesting. When I struggled with some math problems, she explained things step by step. When I got a wrong answer, she tried to help me understand why I got it wrong instead of criticizing me. When I had my math test back last week, I found my math score was improved. I was very glad.

*Psychological needs.* Participants were next asked to make ratings about the satisfying learning experience depicted in their essay by stating the extent to which they agreed or disagreed that each of 24 descriptive statements accurately represented what they thought and how they felt during that experience. These 24 items were closely adapted from Sheldon et al.'s (2001) need satisfaction questionnaire. This measure began with the stem "During my highly satisfying learning experience, I felt" and then listed three items for each of eight different psychological needs in a randomized order. Each item featured a response scale ranging from 1 (*not at all true*) to 7 (*very true*). The name and a sample item from each scale were as follows: high autonomy, "free to do things my own

way”; high competence, “very capable in what I did”; high relatedness, “close and connected with other people who are important to me”; high self-actualization, “I was ‘becoming who I really am’”; high stimulation, “I was experiencing new sensations and experiences”; high safety–security, “safe from threats and insecurities”; high self-esteem, “quite satisfied with who I am”; and high popularity–influence, “I had strong impact on what other people did.” The conceptual validity of these scales was derived from Sheldon et al.’s comprehensive review of the literature on psychological needs and their data (with Korean students), which showed that each individual scale displayed high internal consistency and that the overall questionnaire displayed strong factorial validity.

*Positive affect.* Participants then rated how much they experienced each of 10 different positive feelings during the satisfying learning experience. These items were selected from the Positive and Negative Affect Schedule (Watson, Tellegen, & Clark, 1988) and were rated on a response scale ranging from 1 (*not at all true*) to 5 (*very true*). Responses to the 10 items (interested, alert, proud, excited, inspired, attentive, enthusiastic, strong, determined, and active) were averaged to create a positive affect total score. The Positive and Negative Affect Schedule is a reliable, valid, and widely used measure (Watson et al., 1988), and our Korean-translated version had high internal consistency ( $\alpha = .82$ ).

### Results and Discussion

#### Mean Differences in the Salience of the Candidate Needs

Table 1 presents the mean salience for each of the eight needs in rank order. We tested differences between these means using paired-sample *t* tests. Given the number of tests performed, we followed Sheldon et al.’s (2001) procedure and adopted a significance level of .01. As can be seen from the means and their associated subscripts, the first cluster of needs included competence, autonomy, self-esteem, relatedness, and stimulation. Competence, autonomy, and relatedness salience did not differ significantly from one another; all three needs were rated equally highly. Competence (but not autonomy or relatedness) was rated as significantly more salient than either self-esteem or stimulation. All five needs in the first cluster were rated as significantly more

salient than was self-actualization. Self-actualization was rated as significantly more salient than was safety–security, which in turn was rated as more salient than popularity–influence.

#### Need Satisfaction and Positive Affect

The second column in Table 1 shows the correlation between the salience of each candidate need and students’ reports of positive affect. All eight candidate needs correlated significantly and positively with extent of positive affect. Hence, all eight needs, when nurtured, helped support the experience of positive affect. The highest (most deeply felt) positive affect was associated with high stimulation.

### Discussion

In both mean salience and extent of positive affect, the findings from Study 1a strongly replicated Sheldon et al.’s (2001) findings. All three psychological needs central to SDT were both salient within Korean students’ experiences of a satisfying learning experience and associated with positive affect. Interestingly, all eight needs, when nurtured, were associated with high positive affect. Hence, when Korean students bring to mind a highly satisfying learning experience, they think of experiences in which they felt highly competent, highly autonomous, and highly related to others (but also in which they felt high self-esteem and high stimulation).

#### Study 1b

When students have an unsatisfying learning experience, what makes that learning experience a particularly unsatisfying one? According to SDT, students’ psychological need frustration underlies their highly unsatisfying learning experiences, at least in part. So, we tested the hypothesis that when students engage themselves in learning activities, it is the underlying experiences of low autonomy, low competence, and low relatedness that explain why students judge a particular learning episode to be highly unsatisfying.

To test this hypothesis, we asked another sample of Korean students to reflect on a recent classroom learning experience that they found to be highly unsatisfying. We asked students to self-report how important each of several different psychological needs was in defining the learning experience as an unsatisfying one. As in Study 1a, we used the same set of eight candidate needs and Sheldon et al.’s (2001) two criteria to judge which needs were most important (i.e., those that were both salient and correlated with negative affect). Using these criteria, Sheldon et al. found that low autonomy and low competence were most salient; low relatedness, low self-esteem, low self-actualization, and low security were next most salient; and low stimulation and low popularity were relatively least salient (in that order) and also that all candidate needs, when frustrated, correlated significantly with negative affect

### Method

#### Participants and Procedure

Participants were 134 (63% boys and 37% girls) ninth-grade students from a large middle-class, urban high school in Seoul,

Table 1

*Mean Salience and Correlation With Positive Affect for the Satisfaction of Eight Candidate Needs Underlying a Positive, Satisfying Learning Experience*

Psychological need	Mean salience	<i>r</i> with positive affect
High competence	4.34 <sub>a</sub>	.21*
High autonomy	4.11 <sub>a,b</sub>	.39*
High self-esteem	4.09 <sub>b</sub>	.29*
High relatedness	4.07 <sub>a,b</sub>	.27*
High stimulation	4.00 <sub>b</sub>	.46*
High self-actualization	3.72 <sub>c</sub>	.38*
High safety–security	3.38 <sub>d</sub>	.30*
High popularity–influence	3.17 <sub>e</sub>	.36*

*Note.*  $N = 144$ . Means not sharing subscripts are significantly different from each other at  $p < .01$ . Means could range from 1 to 7.

\*  $p < .01$ .

South Korea. As part of a regularly scheduled study hall, students completed the three-page survey. The survey was administered at the beginning of the class period, and students completed it without talking to one another. Participation was voluntary, and scores were confidential and anonymous.

### Measures

*Most unsatisfying learning experience.* The questionnaire began by asking students to read the following (also adapted from Sheldon et al., 2001):

Consider a recent classroom learning experience. What we want you to do is bring to mind the single most personally unsatisfying learning experience you had during class last week. We are being vague about the definition of an *unsatisfying learning experience* on purpose because we want you to use your own definition. Think of *unsatisfying* in whatever way makes sense to you. Take a couple of minutes to be sure that you come up with a *very unsatisfying* learning experience.

Participants described a wide range of unsatisfying learning experiences. For instance, 1 student wrote the following:

My English teacher did not seem to care whether we followed the lecture or not. When I did not understand some grammatical rules in English, I wanted to ask questions. However, she did not have time for it. She was so busy with finishing her own lesson plans of the day. She just went on and on with her own monologue till the end of the class. English used to be one of my favorite classes last year. However, I have now come to hate sitting in English class.

*Psychological needs.* Participants were next asked to describe the unsatisfying learning experience by rating the extent to which they agreed or disagreed that each of 24 descriptive statements accurately represented what they thought and how they felt during that experience. These 24 items were closely adapted from Sheldon et al.'s (2001) need frustration questionnaire. This measure began with the stem "During my highly unsatisfying learning experience, I felt" and then listed three randomly ordered items for each of eight different psychological needs, again using a response scale ranging from 1 (*not at all true*) to 7 (*very true*). The name and a sample item from each scale were as follows: low autonomy, "not allowed to do things my own way"; low competence, "very incompetent in what I did"; low relatedness, "distant and disconnected from other people who are important to me"; low self-actualization, "I was not being allowed to 'become who I really am'"; low stimulation, "I was experiencing boredom"; low safety-security, "threatened and insecure"; low self-esteem, "quite dissatisfied with who I am"; and low popularity-influence, "I had little or no impact on what other people did."

*Negative affect.* Participants then rated how much they experienced each of 10 different negative feelings during the unsatisfying learning experience. As in Study 1a, these items were from the Positive and Negative Affect Schedule (Watson et al., 1988) and used the same 1–5 response scale. We averaged responses to the 10 items (upset, nervous, scared, jittery, irritable, guilty, afraid, distressed, ashamed, and hostile) to create a negative affect total score. Our Korean-translated version had high internal consistency ( $\alpha = .82$ ).

### Results

#### *Mean Differences in the Salience of the Candidate Needs*

Table 2 presents the mean salience for each of the eight needs in rank order. As in Study 1a, we tested mean differences among the candidate needs using paired-sample *t* tests and a .01 significance level. As can be seen from the means and their associated subscripts, the most salient frustrated needs were low autonomy and low stimulation, which did not differ significantly. Both autonomy frustration and stimulation frustration were significantly more salient than was competence frustration, which, in turn, was significantly more salient than the frustration of the other five needs. Self-actualization frustration was more salient than was popularity-influence, and self-esteem, safety-security, and popularity-influence frustration did not differ significantly from one another. The least salient need frustration was relatedness, and it was significantly less salient than all other needs except popularity-influence.

#### *Need Frustration and Negative Affect*

The second column in Table 2 presents the correlation between the salience of each frustrated need and students' reports of negative affect. The frustration of all eight candidate needs correlated significantly and positively with extent of negative affect. Hence, all eight needs, when frustrated, helped support the experience of negative affect. The highest (most deeply felt) negative affect was associated with low self-esteem.

### Discussion

In both mean salience and extent of negative affect, the findings from Study 1b mostly replicated Sheldon et al.'s (2001) findings. In terms of mean salience, the findings from Study 1b showed that autonomy frustration and competence frustration, but not relatedness frustration, were salient within Korean students' experiences of an unsatisfying learning experience. Interestingly, all eight needs, when frustrated, were associated with high negative affect, although none of the three psychological needs central to SDT were among the needs most highly associated with negative affect.

Table 2  
*Mean Salience and Correlation With Negative Affect for the Frustration of Eight Candidate Needs Underlying a Negative, Unsatisfying Learning Experience*

Psychological need	Mean salience	<i>r</i> with negative affect
Low autonomy	3.91 <sub>a</sub>	.23*
Low stimulation	3.89 <sub>a</sub>	.24*
Low competence	3.56 <sub>b</sub>	.28*
Low self-actualization	3.30 <sub>c</sub>	.27*
Low self-esteem	3.19 <sub>c,d</sub>	.48*
Low safety-security	3.11 <sub>c,d,e</sub>	.42*
Low popularity-influence	3.03 <sub>d,e,f</sub>	.40*
Low relatedness	2.77 <sub>f</sub>	.34*

Note.  $N = 134$ . Means not sharing subscripts are significantly different from each other at  $p < .01$ . Means could range from 1 to 7.

\*  $p < .01$ .

Hence, when Korean high school students bring to mind a highly unsatisfying learning experience, they think of experiences in which they felt frustrated autonomy and frustrated competence (but also low stimulation and low self-esteem).

## Study 2

The findings of Study 1 showed that the basic psychological needs emphasized in SDT constitute a core part of what explains and underlies Korean students' satisfying versus unsatisfying learning experiences. In the classroom, the extent to which students experience autonomy, competence, and relatedness satisfaction versus frustration depends in a large measure on the extent to which they do (or do not) receive sociocultural support from their teachers. To capture the essence of supportive environments, Deci and Ryan (1985b) proposed the concept of *autonomy support*. In the classroom, autonomy support occurs as teachers find ways to involve and nurture students' psychological needs during instruction (Reeve, Jang, Carrell, Jeon, & Barch, 2004). To capture the essence of nonsupportive environments, Deci and Ryan (1985b) proposed the concept of *controlling*. In the classroom, controllingness occurs as teachers neglect and frustrate students' psychological needs and instead pressure them to think, feel, and behave in specific ways. A recent distinction in the literature on teacher controllingness is that it can be expressed either as direct (or external) control in which attempts to motivate use external compulsions, such as deadlines, or as indirect (or internal, or conditional regard) control in which attempts to motivate foster internal compulsions, such as shame (Assor, Kaplan, Kanat-Maymon, & Roth, 2005; Assor, Roth, & Deci, 2004; Vansteenkiste, Simons, Lens, Soenens, & Matos, 2005). In this article, we were concerned with teachers' provision of external control, so we adopted Vansteenkiste, Simons, et al.'s (2005) term.

### *Basic Needs Theory Model*

In its essence, the basic needs theory model proposes that (a) the psychological needs for autonomy, competence, and relatedness function as requisite nutriment for students' active engagement and positive school functioning and (b) sociocultural conditions can support and nurture these needs (autonomy support) or they can neglect and frustrate these needs (external control). Here we examine the evidence for both of these propositions.

### *Autonomy Support Nurtures Overall Psychological Need Satisfaction*

In the basic needs theory model (and SDT more generally), autonomy-supportive acts of instruction nurture not only students' need for autonomy (Reeve & Jang, 2006) but also their needs for competence and relatedness (Ryan & Deci, 2000). That is, the provision of autonomy support nurtures the full range of a person's psychological needs. Such results relate to the hypothesis that when teachers support students' autonomy, then those students tend to feel more respected, trusted, and empowered, thus influencing the extent of need satisfaction experienced. In addition, autonomy support facilitates better self-regulation (e.g., pursuing personal interests and seeking out challenges). Empirical work bears out the assumption that the provision of autonomy support

nurtures not only high perceived autonomy but also high perceived competence and high perceived relatedness (Baard, Deci, & Ryan, 2004; Black & Deci, 2000; Deci et al., 2001; Hardre & Reeve, 2003; Levesque, Zuehlke, Stanek, & Ryan, 2004; Ryan & Grolnick, 1986; Vallerand et al., 1997; Williams, Weiner, Markakis, Reeve, & Deci, 1994).

This idea that autonomy support can facilitate competence and relatedness experiences as well as autonomy experiences does not conflict with some more differentiated models in this area. For example, some have argued for specific teaching behaviors to support competence (e.g., provision of structure and instruction for improvement) and relatedness (e.g., involvement, cooperative learning, and social support; Connell & Wellborn, 1991; Hollebeak & Amorose, 2005; Ntoumanis, 2005; Skinner & Belmont, 1993). That is, although autonomy support nurtures autonomy, it is the provision of structure and a focus on improving (and not necessarily autonomy support) that nurtures competence satisfaction, and it is the provision of involvement and opportunities for cooperative learning (and not necessarily autonomy support) that nurtures relatedness satisfaction. Still others add the terms *competence support* and *relatedness support* to autonomy support (Standage, Duda, & Ntoumanis, 2005). Recent empirical work has provided some support for these claims. Thus, it seems that autonomy support can contribute to overall psychological need satisfaction and that additional contextual factors may provide additional supports (see also Mageau & Vallerand's [2003] model).

### *Autonomy, Competence, and Relatedness Each Predict Students' Positive Outcomes*

Psychological need satisfaction has been shown to predict a wide range of positive outcomes (Deci & Ryan, 1985b). Basic needs theory further proposes that autonomy, competence, and relatedness independently predict students' positive school functioning. Each of the three needs has repeatedly been shown to predict intrinsic motivation (e.g., Hollebeak & Amorose, 2005) and (low) proneness to negative affect (i.e., anxiety; Deci et al., 2001). There is some evidence that autonomy and competence are more reliable predictors of students' positive outcomes than is relatedness (Taylor & Ntoumanis, 2007), and this pattern also seems to hold for measures of engagement (Deci et al., 2001; Standage et al., 2005), although some studies have shown relatedness to be a strong predictor of student engagement (Furrer & Skinner, 2003) and psychological well-being (Vansteenkiste, Lens, et al., 2006). As for student achievement (e.g., GPA), perceived competence has been shown to be the most reliable predictor among the three needs (Hardre & Reeve, 2003), although perceived autonomy and perceived competence have both been shown to predict school performance (Fortier, Vallerand, & Guay, 1995).

The purpose of Study 2 was to conduct a formal test of the basic needs theory model using a sample of Korean students. Such a theoretical model has already received support using samples of students in U.S. schools, as we reviewed. There is, however, limited support using samples of students in Asian schools (e.g., Kim, Park, & Park, 2000). We hypothesized that the SDT model that has been well supported with students in the West would similarly fit the data well for students in South Korea. That is, we predicted that students' perception of high autonomy support (and low external control) would explain significant variance in their

experiences of psychological need satisfaction and that these separate experiences of need satisfaction would in turn explain the extent to which students functioned well in school. To index students' positive functioning, we selected four educational outcomes to represent students' productive and satisfying learning experiences—namely, academic achievement and classroom engagement to represent productive schoolwork and intrinsic motivation and low negative affect to represent students' satisfaction during schoolwork.

### Method

#### Participants and Procedure

Participants were 256 (54% girls and 46% boys) 10th-grade students from a large, middle-class, urban high school in Seoul, South Korea. As part of a regularly scheduled study hall, students completed the seven-page survey in 20 min. The survey was administered at the beginning of the class period, and students completed it without talking to one another. Participation was voluntary, and scores were confidential and anonymous. We collected the questionnaire data 8 weeks into the semester and the achievement data (class grade) after the semester had ended. Through random assignment, participants received a survey that asked them to report on their experiences associated with their math, Korean, or English class.

#### Measures

The questionnaires assessed three categories of measures. One category assessed students' perceptions of their teachers' motivating styles in terms of perceived autonomy support versus external control. A second category assessed students' psychological need satisfaction. A third category assessed the set of educational outcomes. Throughout the questionnaire, we used the same 1–7 response scale for each measure (*not at all true–very true*). For the translation, a professional English–Korean translator translated the original English version into Korean. Following the guidelines recommended by Brislin (1980), separate independent English back-translations were done by two graduate students who were native Koreans and who were fluent in both languages. Any discrepancies that emerged were discussed until a consensus translation was reached. In addition to these self-report measures, we obtained students' course grades from their school records to serve as an objective measure of achievement.

*Autonomy support versus external control.* To assess perceived teacher autonomy support, we used the Learning Climate Questionnaire (LCQ; Williams et al., 1996). The LCQ has been widely used in investigations of autonomy support (Hardre & Reeve, 2003; Williams et al., 1996) and includes eight items, such as “My teacher provides me with choices and options” and “When I offer suggestions to my teacher, he or she listens carefully and considers my suggestions seriously.” The LCQ had high internal consistency ( $\alpha = .88$ ). To assess perceived external control, we used the Teacher Control Questionnaire (TCQ; Jeon, 2004). This measure, which had high internal consistency ( $\alpha = .87$ ), includes four items, such as “My teacher tries to control everything I do” and “My teacher puts a lot of pressure on me.” Because these two measures were significantly intercorrelated,  $r(256) = -.49, p <$

.01, we standardized each score and subtracted the external control score from the autonomy-supportive score to yield a single overall perceived autonomy support versus external control standardized score (see also Vansteenkiste, Zhou, et al., 2005).

*Psychological needs.* To assess the three psychological needs, we used the Activity-Feelings States Scale (AFS; Reeve & Sicklenius, 1994). The AFS offers the stem “During class, I feel” and lists 13 items. Three items assessed perceived autonomy (“free,” “I’m doing what I want to be doing” and “free to decide for myself what to do”;  $\alpha = .73$ ), three items assessed perceived competence (“capable,” “competent,” and “improving”;  $\alpha = .77$ ), and three items assessed perceived relatedness (“I belong and the people here care about me,” “involved with close friends,” and “emotionally close to the people around me”;  $\alpha = .73$ ). The AFS measures psychological needs as situationally sensitive experiential states (rather than as personality dispositions), and past research has shown the scale to be both reliable and valid (Hardre & Reeve, 2003; Reeve et al., 2003).<sup>1</sup>

*Positive educational outcomes.* We assessed four educational outcomes to represent how satisfied students felt and how productively they functioned. To assess academic achievement, we used the actual school record of each student's course grade, scored at the end of the semester on a 100-point scale. To assess engagement, we used Miserandino's (1996) engagement questionnaire, which is based on Wellborn's (1991) items and conceptualization of engagement. This measure consists of 14 items that assess students' engagement with two separate subscales, one for class involvement (7 items, such as “I listen carefully in class”;  $\alpha = .88$ ) and another for task persistence (7 items, such as “If a problem is really hard, I keep working at it”;  $\alpha = .89$ ). To assess intrinsic motivation, we used the intrinsic motivation scale from the Academic Self-Regulation Questionnaire (ASRQ; Ryan & Connell, 1989). This measure has been widely used (e.g., Grolnick & Ryan, 1989) and includes 4 items, such as “The reason I try hard in class is because I enjoy it” ( $\alpha = .93$ ). To assess proneness to negative affect, we used the Mood Rating Scale (MRS; Diener & Emmons, 1984). The MRS includes 4 items to assess positive affect and 5 items to assess negative affect. In this study, we scored only the negative affect items of frustrated, angry–hostile, worried–anxious, depressed, and unhappy ( $\alpha = .93$ ).

#### Data Analyses

We tested the hypothesized SDT model with a structural equation modeling analysis (using LISREL 8.51; Jöreskog & Sörbom, 1993). In doing so, we followed the two-step approach recommended by Anderson and Gerbing (1988). We first used confirmatory factor analysis to test the measurement model and the extent to which our measured indicators adequately related to their

<sup>1</sup> We also asked students to complete a second measure of their psychological needs, namely Gagné's (2003) Basic Psychological Needs Scale. The 21-item Basic Psychological Needs Scale has been the most widely used measure of psychological needs, mostly used in workplace settings (Baard et al., 2004; Deci et al., 2001; Ilardi, Leone, Kasser, & Ryan, 1993). In this study, each AFS scale correlated significantly and highly with its corresponding Basic Psychological Needs Scale: autonomy scales,  $r = .68, p < .001$ ; competence scales,  $r = .68, p < .001$ ; and relatedness scales,  $r = .45, p < .001$ .

associated latent variables. To create the measurement model, we used participants' scores on the LCQ and TCQ as a pair of indicators for perceived autonomy support versus external control; we used the individual items (three per scale) from each AFS scale as indicators for perceived autonomy, perceived competence, and perceived relatedness; we used course grade as a single indicator for achievement; we used scores on the Involvement and Persistence scales as a pair of indicators for perceived engagement; we created and used two sets of paired items from the ASRQ's Intrinsic Motivation scale as indicators for intrinsic motivation; and, finally, we created and used two sets of paired items from the MRS scale as indicators for proneness to negative affect. We chose to collapse the items from the ASRQ and MRS scales into paired items to ensure we kept well above Bentler and Chou's (1987) minimum ratio of 5:1 in terms of number of participants per estimated parameter. If we obtained an acceptable fit of the measurement model, we then tested the structural model to evaluate its capacity to explain students' positive functioning. To evaluate model fit, we relied on the chi-square test statistic and three indices of fit, including the standardized root-mean-square residual (SRMR), the root-mean-square error of approximation (RMSEA; Steiger, 1990), and the comparative fit index (CFI; Bentler, 1990). A nonsignificant chi-square serves as the basic test of whether a hypothesized model adequately describes the data (Bollen & Long, 1993), although we included the fit indices because they often provide a better indicator of model fit than does the chi-square statistic and because a consensus has emerged that no single overall fit statistic should be relied on exclusively (Marsh, Balla, & McDonald, 1988). To evaluate the fit of a measurement model, Hu and Bentler (1999) recommended that priority be given to the SRMR, although it should further be accompanied by one or more additional fit indices. A value of .08 or lower for the SRMR is indicative of a good model fit (Hu & Bentler, 1999). RMSEA is a summary statistic for the residuals, so the lower the number, the better; RMSEA values of .06 or less are considered indicative of good fit (Kline, 2005). CFI compares the lack of fit of the target model with the independence model, so the higher the number, the better; CFI values of .95 or more are considered indicative of good fit (Hu & Bentler, 1999). Thus, to provide the information necessary to evaluate model fit, we present four statistics: the chi-square and the three fit indices of SRMR, RMSEA, and CFI.

Results

Table 3 shows the descriptive statistics and intercorrelation matrix for the eight variables assessed in the study. In the table, "Autonomy support vs. external control" represents a standardized score in which participants' standardized scores on the TCQ have been subtracted from their standardized scores on the LCQ, "Engagement" represents the average of participants' scores on the Involvement and Persistence scales, and the remaining six variables represent participants' scores on the variable's associated questionnaire (e.g., "autonomy" represents participants' scores on the AFS's Autonomy scale). As shown in Table 3, all 28 correlations were significant and in the expected direction. Of particular importance, teachers' autonomy support versus external control correlated significantly and in the expected direction with each psychological need, and each psychological need correlated significantly and in the expected direction with each outcome.

Examining the Fit of the Basic Needs Theory Model

A confirmatory factor analysis tested the measurement model. Although the chi-square test was significant,  $\chi^2(105, N = 256) = 223.64, p < .01$ , the SRMR fit index suggested a good model fit (.05). The additional pair of fit indices suggested that the fit of the measurement model was reasonably good (RMSEA = .066, CFI = .95). In the confirmatory factor analysis, each individual indicator loaded significantly ( $p < .01$ ) and in the expected direction on its associated latent factor. We next tested the structural model. The hypothesized basic needs theory model fit the data reasonably well,  $\chi^2(113, N = 256) = 246.74, p < .01$ , SRMR = .055, RMSEA = .068, CFI = .95. The path diagram showing the standardized parameter estimates in the basic needs theory model appears in Figure 1. As hypothesized, teachers' autonomy support versus external control predicted high levels of each of the three psychological needs. Among the psychological needs, perceived autonomy and perceived competence (but not perceived relatedness) uniquely predicted each of the four separate student outcomes. Overall, our operationalization of the basic needs theory model explained substantial variance in all four outcomes, including achievement ( $R^2 = .23$ ), engagement ( $R^2 = .49$ ), intrinsic motivation ( $R^2 = .76$ ), and proneness to negative affect ( $R^2 = .35$ ).

Table 3  
Descriptive Statistics and Intercorrelation Matrix for the Dependent Variables in Study 2

Dependent measure	M	SD	1	2	3	4	5	6	7	8
1. Autonomy support vs. external control	0.00	1.73	—	.40**	.33**	.24**	.17*	.28**	.33**	-.45**
2. Autonomy	3.90	1.24		—	.73**	.45**	.30**	.68**	.74**	-.61**
3. Competence	3.93	1.31			—	.52**	.41**	.60**	.74**	-.50**
4. Relatedness	3.97	1.23				—	.21**	.38**	.37**	-.30**
5. Achievement	80.3	14.0					—	.40**	.29**	-.24**
6. Engagement	4.53	1.09						—	.61**	-.45**
7. Intrinsic motivation	3.60	1.64							—	-.48**
8. Proneness to negative affect	2.91	1.63								—

N = 256. Possible range for each dependent measure was 1 to 7, except for autonomy support versus external control, which is expressed in terms of a z score (zAutonomy Support - zExternal Control), and achievement, which had a range of 0 to 100.  
\* p < .05. \*\* p < .01.



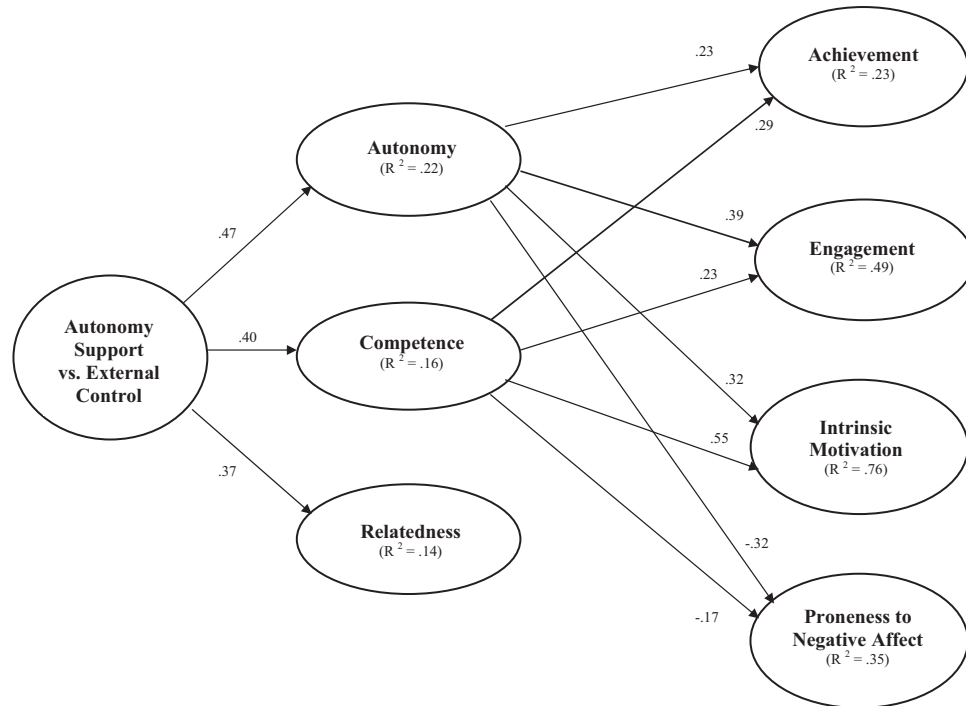


Figure 1. Standardized parameter estimates in Study 2 for the self-determination theory model of South Korean adolescents' motivation and functioning. Solid lines represent significant paths ( $p < .05$ ). The numbers adjacent to the solid lines represent standardized parameter estimates. The correlations of the disturbances for the three psychological needs were allowed to correlate and were as follows:  $r_{\text{autonomy—competence}} = .78$ ,  $r_{\text{autonomy—relatedness}} = .46$ , and  $r_{\text{competence—relatedness}} = .52$ .

### Discussion

We predicted that the SDT model would fit the data well for our sample of middle-class Korean students. The correlational data reported in Table 3 and the structural equation modeling analysis summarized in Figure 1 generally supported this prediction. Students' perceptions of their teachers as autonomy supportive were positively associated with each of the three psychological needs. Autonomy and competence were associated with the full range of outcomes, and for some outcomes relatedness also contributed (but not uniquely so). The model therefore showed mostly cross-cultural generalizability for SDT.

### Study 3

We conducted Study 3 to test the extent to which the findings from Study 2 would replicate using a different sample of students. We also used Study 3 as an opportunity to add a set of indigenously based sociocultural predictor variables to explore the extent to which they might explain Korean students' positive functioning in general and high achievement in particular—namely, a collectivistic value orientation and both cultural and parental expectations for high achievement. We included a widely used collectivistic value orientation measure to test directly the critics' claims that it would be negatively associated with variables within the SDT model, such as perceived autonomy. We did not expect collectivism to relate negatively to any variable included in the model, but we included this measure to explore for such a possi-

bility. As to the two expectation-based measures, Korean culture in general and Korean parents in particular place a great deal of emphasis on their children's high achievement in school (Kim & Park, 2006). Given these cultural and parental pressures for achievement, we tested the possibility that the more students perceived that the Korean culture and their parents expected high achievement from them, the higher their school achievement would be. More important, we included measures of collectivism, cultural expectations, and parental expectations so that we could test whether the basic needs theory model would again explain students' productive and satisfied school functioning, even after controlling for students' reports of cultural collectivism, cultural expectations, and parental expectations. To test for these effects, we (a) added students' self-reports of collectivism, cultural expectations, and parental expectations as three new predictor variables (along with autonomy support vs. external control) within the basic needs model tested in Study 2 and (b) divided the sample into participants who were either high or low in their endorsement of collectivism to test the basic needs theory model to assess whether an endorsement of high collectivism functioned as a moderator variable (e.g., the model might work for low collectivistically oriented participants but not for high collectivistically oriented participants). Throughout all these model tests, our predictions regarding the basic needs theory were the same as in Study 2—namely, that autonomy support would predict high autonomy, competence, and relatedness and that psychological need satisfaction (autonomy, competence, and relatedness) would predict the

full range of productive (achievement and engagement) and satisfying (intrinsic motivation and low negative affect) student outcomes.

*Method*

*Participants and Procedure*

Participants were 272 (54% girls and 46% boys) 10th-grade students from a large, middle-class, urban (and different from Study 2) high school in Seoul, South Korea, who completed the eight-page survey during a regularly scheduled study hall. The survey was administered at the beginning of the class period, and students completed it voluntarily, anonymously, and without talking to one another. Through random assignment, participants received a survey that asked them to report on their experiences associated with their math, Korean, or English class.

*Measures*

We used the same set of measures as in Study 2 to assess the variables included in the basic model, including the LCQ to assess perceived teacher autonomy support ( $\alpha = .90$  in Study 3); the TCQ to assess perceived teacher external control ( $\alpha = .79$ ); the AFS to assess perceived autonomy ( $\alpha = .81$ ), perceived competence ( $\alpha = .84$ ), and perceived relatedness ( $\alpha = .86$ ); Miserandino’s (1996) Involvement and Persistence scales to assess perceived engagement ( $\alpha$ s = .85 and .87, respectively); the ASRQ to assess intrinsic motivation ( $\alpha = .96$ ); and the MRS to assess proneness to negative affect ( $\alpha = .90$ ). In addition, we included three new scales to assess collectivism, cultural expectations, and parental expectations, each of which used a 1–7 response scale.

*Collectivism.* To assess students’ collectivistic orientation, we used Singelis, Triandis, Bhawuk, and Gelfand’s (1995) widely used questionnaire. This 28-item instrument assesses four constructs, including horizontal collectivism (6 items, such as “It is important to consult close friends and get their ideas before making a decision”), vertical collectivism (7 items, such as “I would do what would please my family, even if I detested that activity”), horizontal individualism (7 items, such as “I am a unique person, separate from others”), and vertical individualism (8 items, such as “It is important that I do better in school than others”). The measure has shown acceptable reliability and factorial validity when used with Korean students (Triandis & Gelfand, 1998). In

this study, we followed others’ procedure (e.g., Triandis, 1996) and combined the two collectivism scales into a single measure (13 items,  $\alpha = .70$ ).

*Cultural expectations for high achievement.* To assess perceived cultural expectations, we could not rely on an existing measure so we constructed our own, as recommended by Korean psychologists who espouse an indigenous approach to understanding Korean students’ unusually high level of academic achievement (Kim & Park, 2006). For the content of the individual items, we took (secondhand) quotations from personal interviews with a group of very high-achieving Koreans—Korean female professional golfers who have won major championship golf tournaments in the United States—as they talked about the very high achievement expectations the Korean culture places on them. Our measure had an acceptable level of internal consistency ( $\alpha = .78$ ) and featured the following five items that followed the stem “In the Korean culture, it is true for students that”: “Excelling is very important,” “working as hard as possible is very important,” “students make any sacrifice to become a top student,” “greatness comes only from much sacrifice and suffering,” and “students sacrifice everything to be successful in school.”

*Parental expectations for high achievement.* To assess perceived parental expectations, we used the Parental Expectations scale from the Multidimensional Perfectionism Scale (Frost, Marten, Lahart, & Rosenblate, 1990). The Parental Expectations scale assesses the student’s belief that his or her parents set very high, even perfectionistic, standards to live up to. Parental Expectations is a five-item scale that has been used with high-achieving students (Parker & Stumpf, 1995), including high-achieving Korean students (Dixon, Dungan, Dixon, & Kim, 2005). The Parental Expectations scale includes the following five items ( $\alpha = .77$ ): “My parents set very high standards for me,” “My parents want me to be the best at everything,” “Only outstanding performance is good enough for my family,” “My parents expect excellence from me,” and “My parents have always had higher expectations for my future than I have.”

*Results*

Table 4 shows the descriptive statistics and intercorrelation matrix for the eight variables within the basic needs theory model. As can be seen, 27 of the 28 correlations were significant and in the expected direction. Overall, as was the case in Study 2,

Table 4  
*Descriptive Statistics and Intercorrelation Matrix for the Dependent Variables in Study 3*

Dependent measure	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8
1. Autonomy support vs. external control	0.01	1.70	—	.38**	.32**	.39**	.00	.18**	.29**	-.31**
2. Autonomy	3.79	1.19		—	.72**	.68**	.23**	.65**	.78**	-.49**
3. Competence	3.79	1.28			—	.53**	.28**	.59**	.76**	-.51**
4. Relatedness	3.94	1.24				—	-.12*	.41**	.56**	-.44**
5. Achievement	79.4	13.0					—	-.29**	.28**	-.32**
6. Engagement	4.41	0.88						—	.59**	-.38**
7. Intrinsic motivation	3.49	1.57							—	-.53**
8. Proneness to negative affect	3.03	1.29								—

*N* = 272. Possible range for each dependent measure was 1 to 7, except for autonomy support vs. external control, which is expressed in terms of a *z* score (*z*Autonomy Support – *z*External Control) and achievement, which had a range of 0 to 100.

\* *p* < .05. \*\* *p* < .01.

perceived teacher autonomy support correlated significantly and in the expected direction with each of the three psychological needs, and each psychological need correlated significantly and in the expected direction with each of the four outcomes. We present the results in two parts, first by including a test of the fit of the basic needs model to the data (as in Study 2) and second by examining the effects of collectivism, cultural expectations, and parental expectations within the basic needs model.

### *Examining the Fit of the Basic Needs Theory Model*

A confirmatory factor analysis tested the measurement model. Although the chi-square test was significant,  $\chi^2(105, N = 272) = 220.13, p < .01$ , the SRMR fit index suggested a good model fit (SRMR = .047). The additional fit indices also suggested that the fit of the measurement model was reasonably good (RMSEA = .059, CFI = .96). In the confirmatory factor analysis, each individual indicator loaded significantly ( $p < .01$ ) and in the expected direction on its associated latent factor. In the test of the structural model, the hypothesized basic needs theory model fit the data reasonably well,  $\chi^2(113, N = 272) = 251.49, p < .01$ , SRMR = .045, RMSEA = .063, CFI = .96. As hypothesized and as found in Study 2, teachers' autonomy support predicted high levels of each of the three psychological needs. Among the psychological needs, perceived autonomy and perceived competence (but not perceived relatedness) uniquely predicted the student outcomes, with autonomy uniquely predicting high engagement, high intrinsic motivation, and low proneness to negative affect and competence uniquely predicting all four outcomes. As in Study 2, relatedness failed to uniquely predict any of the four outcomes. The path diagram showing the standardized parameter estimates in the basic needs theory model appears in Figure 2. Overall, the hypothesized model explained substantial variance in all four outcomes, including achievement ( $R^2 = .08$ ), engagement ( $R^2 = .53$ ), intrinsic motivation ( $R^2 = .75$ ), and proneness to negative affect ( $R^2 = .35$ ).

### *Effects of Collectivism, Cultural Expectations, and Parental Expectations*

The preceding analyses showed that the findings testing the basic needs theory model (i.e., Figure 2) replicated those found in Study 2 (i.e., Figure 1) rather well. Given that, we next tested for any additional effects that cultural collectivism, cultural expectations, and parental expectations might have on variables included in the basic needs theory model. For this analysis, we first calculated zero-order correlations between collectivism, cultural expectations, and parental expectations and all the variables included in the model. These correlations appear in Table 5.<sup>2</sup>

Given the number of correlational tests performed (24), we adopted a significance level of .01. Only one significant correlation emerged; the valuing of collectivism correlated positively with relatedness satisfaction. Cultural expectations and parental expectations failed to correlate with any of the variables within the SDT model, including achievement. Because collectivism, cultural expectations, and parental expectations generally failed to correlate with the variables in the SDT model, we had little reason to add them to the basic needs theory model as sociocultural predictors (in Figure 2) to conduct further analyses. The only significant

additional path would be from collectivism to perceived relatedness, which was the one need that failed to uniquely predict any of the student outcomes.

### *Did High Collectivism Moderate the Viability of the Basic Needs Model?*

To test for the possibility that a high valuing of collectivism might act as a moderator variable in the viability of the basic needs theory model, we divided the sample into participants who were either high or low in their endorsement of collectivism, using a median split ( $Mdn = 4.75$ ). It is possible that cross-cultural critics of SDT might argue that although basic needs theory might model students' motivational processes well for students low in collectivism, it would not be expected to do so for students high in collectivism. Accordingly, we ran a structural equation modeling analysis of the basic needs model twice, once including only those participants scoring low in collectivism and a second time including only those participants scoring high in collectivism. For both samples, the model fit was similar to that obtained with the full sample: low-collectivism students,  $\chi^2(113, N = 135) = 215.99, p < .01$ , SRMR = .055, RMSEA = .076, CFI = .94, and high-collectivism students,  $\chi^2(113, N = 135) = 231.10, p < .01$ , SRMR = .058, RMSEA = .080, CFI = .92. The path model for the low-collectivism students was similar to the path model for all students (as shown in Figure 2), whereas the path model for the high-collectivism students featured one additional significant path, as the path from relatedness to proneness to negative affect increased from  $\beta = -0.15, ns$ , in the original model (Figure 2) to  $\beta = -0.26, p < .05$ , in the high-collectivism model. Overall, however, students' varying levels of endorsement of cultural collectivism did not function as a meaningful moderator of the basic needs theory model's viability with our sample of Korean high school students.

### *Discussion*

We conducted Study 3 for two primary reasons. First, we tested whether the basic needs theory model from Study 2 would replicate with a new sample of Korean high school students. The correlational data reported in Table 4 and the structural equation model summarized in Figure 2 show that the results did replicate rather well. The one difference between the two models was that perceived autonomy predicted achievement in Study 2 but failed to do so in Study 3. Second, we tested whether the basic needs theory model would continue to explain the full range of student outcomes even after controlling for students' self-reports of cultural collectivism, cultural expectations for high achievement, and parental expectations for high achievement. As shown in Table 5 and in the LISREL-based moderator analysis, these cultural and parental influences failed to correlate meaningfully with the variables included in the SDT model and they failed to qualify (i.e., moderate) the basic needs theory model as a whole.

<sup>2</sup> In addition, collectivism correlated mildly but significantly with cultural expectations ( $r = .14, p < .05$ ) but not with parental expectations ( $r = .04, ns$ ). Cultural and parental expectations intercorrelated mildly but significantly ( $r = .14, p < .05$ ).

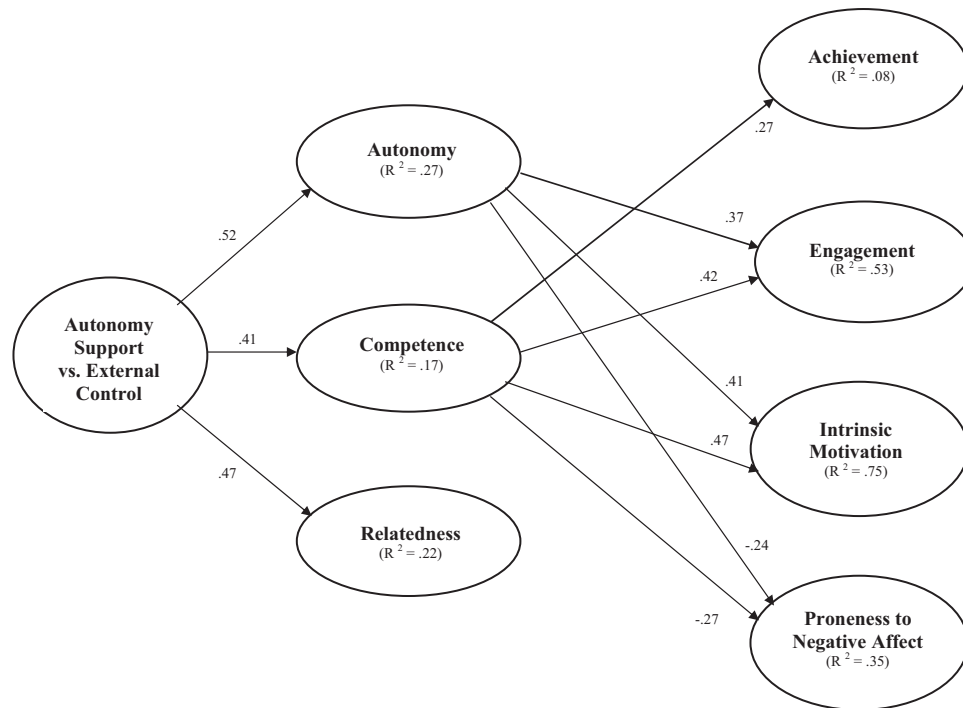


Figure 2. Standardized parameter estimates in Study 3 for the self-determination theory model of South Korean adolescents' motivation and functioning. Solid lines represent significant paths ( $p < .05$ ). The numbers adjacent to the solid lines represent standardized parameter estimates. The correlations of the disturbances for the three psychological needs were allowed to correlate and were as follows:  $r_{\text{autonomy—competence}} = .67$ ,  $r_{\text{autonomy—relatedness}} = .55$ , and  $r_{\text{competence—relatedness}} = .41$ .

## Study 4

We conducted Study 4 to extend and enhance the methodology used in Studies 2 and 3. Specifically, we measured the same set of eight variables as in Studies 2 and 3 except that we collected these data in three waves—1 month into the semester, in the middle of the semester, and 1 week before the end of the semester. Although we altered our methodology from a cross-sectional design to a prospective three-wave design, our predictions in Study 4 were essentially the same as in Studies 2 and 3: namely, that teacher autonomy support would predict students' psychological need satisfaction and that psychological need satisfaction, in turn, would be associated with high levels of students' achievement, engagement, and intrinsic motivation and low levels of students' proneness to negative affect.

### Method

#### Participants and Procedure

Participants were 10th-grade students from a large, middle-class, urban (and different from Studies 2 and 3) high school in Soowon, Korea, a city on the outskirts of Seoul, who completed a series of questionnaires during their regularly scheduled math, Korean, or English class. Each survey was administered at the beginning of the class period, and students completed it voluntarily and without talking to one another. During the first wave of data collection, 209 students completed the first questionnaire assessing

their teacher's perceived style (autonomy support or external control). During the second wave, 184 of the original 209 participants completed the second questionnaire assessing extent of psychological need satisfaction (autonomy, competence, and relatedness). The 184 persisters from Time 1 did not differ significantly from the 25 nonpersisters on either perceived teacher autonomy support or perceived teacher external control ( $ts < 1.1$ ). During the third and final wave of data collection, 175 of the 184 participants from the first two waves completed the third questionnaire assessing extent of engagement, intrinsic motivation, and proneness to negative affect. The 175 persisters from Time 2 did not differ significantly from the 9 nonpersisters on perceived teacher autonomy support, perceived teacher external control, perceived autonomy, perceived competence, or perceived relatedness ( $ts < 1$ ). We collected the achievement data (class grade) after the semester had ended. The final sample of 175 (out of the original 209) participants represented a retention rate of 84% (42% girls and 58% boys) and a class breakdown of 35% in Korean class, 34% in English class, and 31% in math class.

#### Measures

We used the same set of measures as in Studies 2 and 3 to assess the variables included in the hypothesized model, including the LCQ to assess perceived teacher autonomy support ( $\alpha = .89$  in Study 4;  $M = 3.45$ ,  $SD = 1.22$ ); the TCQ to assess perceived teacher external control ( $\alpha = .66$ ;  $M = 3.93$ ,  $SD = 1.43$ ); the AFS

Table 5  
*Effects of Cultural and Parental Influences on the Eight Variables in the Self-Determination Theory Model (Study 3)*

Dependent variable	Collectivism	Cultural expectations	Parental expectations
<i>M</i>	4.73	5.63	4.95
<i>SD</i>	0.60	1.05	1.09
Autonomy support vs. external control	.14*	-.02	-.07
Autonomy	.07	.10	-.04
Competence	-.02	.11	-.06
Relatedness	.16**	.05	-.05
Achievement	-.13*	.08	-.06
Engagement	.10	.13*	.05
Intrinsic motivation	.06	.04	-.05
Proneness to negative affect	.07	-.08	.02

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

to assess perceived autonomy ( $\alpha = .82$ ), perceived competence ( $\alpha = .76$ ), and perceived relatedness ( $\alpha = .78$ ); Miserandino's (1996) measure to assess perceived engagement ( $\alpha = .88$  and  $.84$ , respectively, for the Involvement and Persistence scales); the ASRQ to assess intrinsic motivation ( $\alpha = .96$ ); and the MRS to assess proneness to negative affect ( $\alpha = .86$ ). To assess academic achievement, we used the actual school record of each student's course grade, scored at the end of the semester and on a 100-point scale.

### Results

Table 6 shows the descriptive statistics and intercorrelation matrix for the eight variables included in the basic needs theory model. Overall, perceived teachers' autonomy support versus external control correlated significantly with perceived autonomy and perceived competence but not with perceived relatedness, and 10 of the 12 correlations between the psychological needs and the outcome measures were significant and in the expected direction.

#### Examining the Fit of the Basic Needs Theory Model

A confirmatory factor analysis tested the measurement model. Although the chi-square test was significant,  $\chi^2(105, N = 175) = 216.14, p < .01$ , the SRMR fit index suggested a good model fit (.062). The additional fit indices suggested that the fit of the measurement model was adequate (RMSEA = .070, CFI = .93). In the confirmatory factor analysis, each individual indicator loaded significantly ( $p < .01$ ) and in the expected direction on its associated latent factor. We next tested the structural model. Its fit to the data was reasonable,  $\chi^2(113, N = 175) = 242.86, p < .01$ , SRMR = .080, RMSEA = .075, CFI = .91. As hypothesized and as found in Studies 2 and 3, teachers' autonomy support versus external control predicted high levels of each of the three psychological needs.<sup>3</sup> Among the psychological needs, perceived autonomy and perceived competence (but not perceived relatedness) uniquely predicted the set of outcomes, with autonomy uniquely predicting high engagement, high intrinsic motivation, and low proneness to negative affect and competence uniquely predicting all four outcomes. The path diagram showing the standardized parameter estimates in the basic needs theory model appears in

Figure 3. Overall, the hypothesized model explained substantial variance in all four outcomes, including achievement ( $R^2 = .10$ ), engagement ( $R^2 = .27$ ), intrinsic motivation ( $R^2 = .38$ ), and proneness to negative affect ( $R^2 = .26$ ).

### Discussion

Study 4 tested SDT's basic needs theory model using a prospective three-wave design. The overall model fit was similar to that observed in Studies 2 and 3, and the pattern of significant paths among the variables in Figure 3 was strikingly similar to that found in the earlier studies. In fact, the pattern of relationships (significant paths) among the variables in Figure 3 mirrors the pattern among variables in Figure 2 (same 10 significant paths and same 5 nonsignificant paths) and closely parallels the pattern among variables in Figure 1 (the only exception was that the path from perceived autonomy to achievement was present in Figure 1 but absent in Figure 3). The magnitude of the observed paths between variables (as expressed in the standardized beta weights) was similar as well, although the strengths of the relations (beta weights) and the extent of variance explained ( $R^2$ ) were somewhat weaker in Figure 3 than in Figures 1 and 2.

### General Discussion

We conducted a series of four studies to address questions raised by cross-cultural researchers regarding the generalizability of SDT claims to collectivistically oriented student populations. Study 1a showed that all three psychological needs central to SDT's basic needs theory—autonomy, competence, and relatedness—were salient within Korean students' highly satisfying learning experiences and were associated with positive affect. Study 1b showed that low autonomy and low competence (but not low relatedness) were salient within Korean students' highly unsatisfying learning experiences and were associated with negative affect. The latter finding involving autonomy is especially important because it might not be expected within some frameworks (e.g., Markus & Kitayama, 1991) that the frustration of autonomy would be salient among Koreans. However, these same frameworks—and SDT as well—would expect relatedness frustration to be both salient and associated with negative affect for Korean students, but we did not find this to be the case.

Study 2 was designed to test the basic needs theory model with a sample of collectivistically oriented South Korean students. Results from this model test showed that perceived teacher autonomy support versus external control was associated with high levels of all three psychological needs and also that the psychological needs collectively explained substantial variance in all four indicators of productive (high engagement and high achievement) and satisfying (high intrinsic motivation and low proneness to negative affect) learning experiences. Study 3 largely replicated these findings (except perceived autonomy did not individually

<sup>3</sup> The path from autonomy support to relatedness was significant in Figure 3 because relatedness correlated significantly with teachers' autonomy support (from the LCQ) but nonsignificantly with teachers' external control (from the TCQ). The latent variables used in Figure 3 picked up this distinction, whereas the zero-order correlation in Table 6 that collapsed these two indicators into a single variable did not.

Table 6  
Descriptive Statistics and Intercorrelation Matrix for the Dependent Variables in Study 4

Dependent measure	M	SD	1	2	3	4	5	6	7	8
1. Autonomy support vs. external control	0.00	1.67	—	.29**	.23**	.08	.01	.19**	.24**	-.26**
2. Autonomy	3.94	1.29		—	.61**	.44**	-.04	.31**	.51**	-.39**
3. Competence	4.33	1.19			—	.55**	.26**	.43**	.65**	-.45**
4. Relatedness	4.25	1.13				—	-.02	.15*	.33**	-.15*
5. Achievement	66.3	19.7					—	.34**	.21**	-.16*
6. Engagement	4.57	1.03						—	.65**	-.52**
7. Intrinsic motivation	3.92	1.48							—	-.49**
8. Proneness to negative affect	2.96	1.55								—

N = 175. Possible range for each dependent measure was 1 to 7, except for autonomy support versus external control, which is expressed in terms of a z score (zAutonomy Support – zExternal Control) and achievement, which had a range of 0 to 100.

\* p < .05. \*\* p < .01.

predict achievement) and showed that the overall basic needs theory model predicted Korean students’ psychological need satisfaction and positive school functioning even after considering a number of important cultural and parental influences and expectations. In Study 4, using a prospective three-wave design, we largely replicated the earlier findings, showing that students who perceived their teachers as autonomy supportive at Time 1 also reported high levels of psychological need satisfaction at Time 2, self-reports that were further associated with productive and satisfying student outcomes at Time 3. Indeed, the relations among variables found in the three-wave prospective research design were

very similar to (but of lesser magnitude than) those observed in the two cross-sectional studies (2 and 3).

*Culturally Relevant Psychological Needs*

We realize that it is not possible to test the hypothesis that all global students possess similar psychological needs for autonomy, competence, and relatedness. What we can do empirically, however, is to look for exceptions to this SDT-based hypothesis. This was a key part of our rationale for focusing on Korean students, whom we knew in advance from previously collected data tend

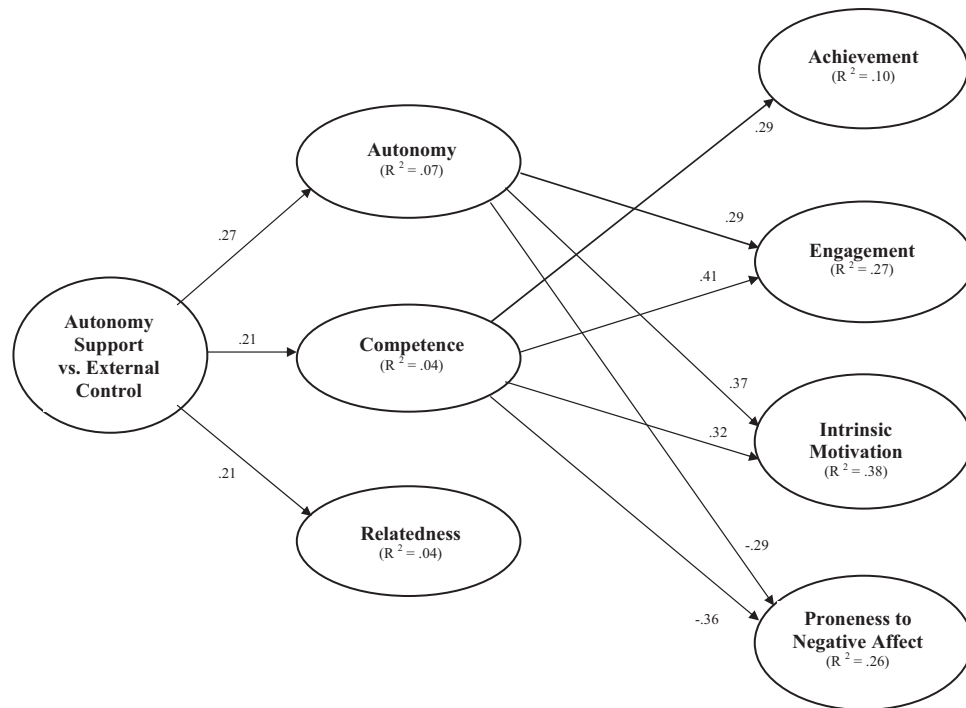


Figure 3. Standardized parameter estimates in Study 4 for the self-determination theory model of South Korean adolescents’ motivation and functioning. Solid lines represent significant paths (p < .05). The numbers adjacent to the solid lines represent standardized parameter estimates. The correlations of the disturbances for the three psychological needs were allowed to correlate and were as follows: r<sub>autonomy—competence</sub> = .48, r<sub>autonomy—relatedness</sub> = .54, and r<sub>competence—relatedness</sub> = .38.

toward more collectivistically oriented values than do students in the West (Diener & Diener, 1995). Hence, a test of the SDT model within the Korean culture represented what we anticipated to be a best opportunity to find an exception to the hypothesis that all students function positively when the social context nurtures their psychological needs, including autonomy. In examining Korean students, we found that psychological need satisfaction was associated with their positive school functioning. Hence, our confidence in the motivational relevance and universal importance of these basic psychological needs has grown.

Much of the controversy over cross-culturally relevant psychological needs originated from cross-cultural researchers who relied heavily on the contrast between the interdependent and so-called relational self versus the independent and so-called autonomous self (Markus & Kitayama, 2003). This dichotomy proved useful in helping cross-cultural researchers distinguish between Eastern and Western cultures, but it also inadvertently imposed a potentially misleading definition of autonomy (i.e., autonomy as independence), which has in turn been used specifically to criticize theories such as SDT in which autonomy actually represents self-endorsement (e.g., Iyengar & DeVoe, 2003). This failure to distinguish the concept of autonomy as an inner endorsement of one's behavior from issues of independence or separateness from others has important implications for educational practice, as it might suggest that teachers in the East, or in collectivistic cultures more generally, need not support students' autonomy as an educational strategy.

### *Relatedness*

Contrary to expectations, relatedness frustration was not associated with Korean students' highly unsatisfying learning experiences in Study 1b. Moreover, and unexpectedly, perceived relatedness failed to individually predict any of the outcomes in Studies 2, 3, or 4, although relatedness did show significant zero-order correlations with the outcomes across all four studies. These results are problematic not only for the SDT view but also for the cross-cultural critics who focus on the importance of students' social harmony orientation. It is not, we believe, that relatedness is not important to Korean students but rather that they do not generally expect secondary school learning experiences to be situated within a context of high relatedness. The Korean students we studied clearly enjoyed high relatedness during learning activities (Study 1a), but they were not distressed by its absence (Study 1b), and its in-class satisfaction did not contribute uniquely to students' productive or satisfying learning experiences. If this reasoning is sound, we suspect it is so partly because Korean students see teachers as their elders who are to be respected (rather than related to) and also partly because learning activities in Korea are largely competence- and achievement-related activities, not social- or relationship-embedded activities. Such a line of reasoning is only speculation on our part and remains to be tested empirically.

### *Indigenous Analysis*

In cross-national comparisons, Korean students score very high in achievement. For instance, in an international comparison among 41 nations, Korean high school students scored second in reading, third in mathematics, and fourth in science (OECD Pro-

gramme for International Student Assessment, 2003). Korean students, however, score just as comparatively low in psychological well-being (as assessed by measures of school enjoyment and life satisfaction; Park, 2005). That is, nationwide, Korean students tend to be productive but not very satisfied learners.

The achievement-well-being disparity is such an anomaly that Korean psychologists warn against trying to generalize Western-based motivation theories to Korean students' experiences (Kim & Park, 2006; Kim et al., 2000). An indigenous analysis of a phenomenon (e.g., Korean students' unusually high achievement) is a bottom-up, within-culture analysis that is native, does not transplant concepts from an outside culture, and does not depend on cross-cultural comparisons such as those that contrast Korean students with students in the United States (Kim, 1995; Kim & Park, 2006). According to a Korean-centered indigenous analysis, Korean students' relatively high achievement originates from within Confucian values in which students view education as part of a self-cultivation process that is pursued not out of intrinsic motivation or psychological need satisfaction but instead as a means to attain personal, social, and occupational success (Kim & Park, 2006). Although we do not disagree that Confucian-based values affect Korean students' school engagement and achievement, we find little in our data to contradict the cross-cultural generalization that Korean students, like students in the West, benefit from both psychological need satisfaction and autonomy-supportive learning climates.

### *Limitations and Future Research*

The conclusions suggested by the findings across all four studies need to be interpreted with caution. It is important to emphasize that because this is a study of what is salient in students' experiences, it was students' perceptions of their teachers' motivating styles that were a focus in this study. These perceptions were measured concurrently in Studies 1–3 with measures of students' psychological need satisfaction and several of the educational outcomes. Hence, students' own classroom functioning (e.g., intrinsic motivation and extent of engagement) might have affected their perceptions of their teachers' motivating styles and their reports of psychological need satisfaction. More positively, the pattern of findings in Study 4, which used a prospective three-wave research design, largely confirmed the basic needs theory conceptualization. Still, a next step in the empirical exploration of how basic psychological needs contribute positively to Korean students' functioning, and in particular to their high academic achievement, will need to use a truly longitudinal research design in which all the measures (perceptions of teachers' motivating style, psychological need satisfaction, and the set of productive and satisfying outcomes) are assessed at all three time points (early, midway, and later in the semester). Repeatedly measuring all the variables in the hypothesized basic needs theory model would allow for the calculation of cross-lagged correlations that can specifically examine the directional effects among variables. Future research should therefore assess all the basic needs theory variables as potential predictors and potential outcomes of the other variables. Such a data set would allow for further and richer progress in the empirical exploration of what underlies the productive, satisfying learning experiences of all global students, including collectivistically oriented Korean students.

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