

Experiences of Autonomy and Control Among Chinese Learners: Vitalizing or Immobilizing?

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Various cross-cultural researchers state that autonomy is not valued in Eastern cultures and, hence, is unlikely to predict optimal study functioning and well-being. In contrast, self-determination theory (SDT; R. M. Ryan & E. L. Deci, 2000) maintains that autonomous or volitional study motivation is universally important and should predict better learning and higher well-being, even among Chinese students. Two studies were conducted to shed light on this controversial issue. Findings from both studies indicated that autonomous study motivation positively predicts adaptive learning attitudes, academic success, and personal well-being, whereas controlled motivation was associated with higher drop-out rates, maladaptive learning attitudes, and ill-being. In addition, Study 2 revealed that parental autonomy support versus psychological control is related to more adaptive learning strategies and higher well-being and that these effects were mediated by students' relative autonomy for studying. The importance of defining autonomy as an intraindividual, phenomenological experience versus an interpersonal, culturally bounded value is discussed.

Keywords: learning, autonomy, independence, self-determination theory

Motivation research has played a prominent role in educational psychology over the past decade (Pintrich, 2000). A variety of motivation theories has proved useful in predicting and understanding motivational dynamics among Western students. However, during the process of generalization, some of these theories were subjected to strong criticisms by cross-cultural psychologists (e.g., Brickman & Miller, 2001; Iyengar & Lepper, 1999; Markus & Kitayama, 2003) claiming that the theories were limited to Western societies and that they would not hold in non-Western cultures.

One of these criticized theories was self-determination theory (SDT; Deci & Ryan, 2000; Ryan & Deci, 2000), which forms the conceptual basis for the present research. A crucial concept within SDT concerns the extent to which studying is autonomously motivated. According to SDT, autonomous actions are those that are regulated and endorsed by the self (Deci & Ryan, 1985) and are therefore accompanied by a sense of psychological freedom and volition (Butzel & Ryan, 1997). The theory holds that the experience of autonomy and social environments that promote autonomy (e.g., parents, teachers, etc.) are crucial for optimal learning and achievement, even for non-Western individuals (Chirkov & Ryan, 2001). However, various cross-cultural researchers (Heine, 2003;

Iyengar & DeVoe, 2003; Oishi, 2000) have argued that the experience of autonomy is not valued as strongly by Eastern learners and that such experiences are less encouraged by their instructors and parents (Rothbaum, Weisz, Pott, Miyake, & Morelli, 2000; Tseng, 2004). Therefore, the concept of autonomy would be less applicable in Eastern cultures. These criticisms gave rise to a controversy that challenges the universality of SDT. The goal of the present research is to shed further light on this controversy. We first outline the conceptualization of autonomy posed by SDT and then discuss in more detail the criticisms confronting the theory.

Self-Determination Theory

SDT maintains that people have the natural inclination to engage in activities that are experienced as self-chosen or volitional (deCharms, 1968; Deci & Ryan, 1985; Ryan & Deci, 2000). Deci and Ryan (1985) suggested that intrinsically motivated behavior is the prototype of self-determined or autonomous activity, because people's interests are fully involved in a self-catalyzing chain of activities. When intrinsically motivated, people engage in an activity for its own sake rather than for the purpose of obtaining an outcome that is separable from the activity itself, as in the case of extrinsic motivation. Although extrinsically motivated behaviors are carried out to achieve an instrumental end (Ryan & Deci, 2000), according to SDT, they can still differ in their degree of relative autonomy or self-determination, depending on the extent to which initially externally regulated reasons for acting have been gradually taken in, or internalized (Ryan & Connell, 1989; Schaefer, 1968). Because this internalization process can be more or less successful, three different types of extrinsic motivation are differentiated.

In the case of *external regulation*, people's behavior is regulated by pressuring contingencies that are overtly external to the individual, such as the promise of a reward or the threat of a punishment. In this case, the behavioral regulation has not been internal-

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ized at all. *Introjected regulation* describes behaviors that are motivated by internal prods and pressures, such as self-worth-related contingencies and feelings of guilt and shame. Although the behavioral regulation resides within the person in the sense that it no longer requires overtly external contingencies, it is also characterized by a pressured demand of oneself, and the behavioral regulation has only been partially internalized. Finally, *identified regulation*, as a third type of extrinsic motivation, is considered an internalized type of extrinsic motivation, which occurs when the value of the behavior is recognized as personally valuable (Deci, Eghrari, Patrick, & Leone, 1994). When people manage to concur with or endorse the personal relevance of the behavior, they are more likely to engage in the activity with a sense of willingness and volition. For this reason, in empirical research identified regulation is often combined with intrinsic motivation to form an *autonomous motivation* composite (e.g., Vansteenkiste, Lens, De Witte, De Witte, & Deci, 2004). Autonomous motivation is then contrasted with *controlled motivation*, which contains both external and introjected regulation. In short, SDT differentiates between autonomously motivated behaviors that are enacted with a sense of volition and psychological freedom and controlled behaviors that are typically executed with a sense of resistance, pressure, or obligation.

A variety of both correlational and experimental research (see Reeve, Deci, & Ryan, 2004, for an overview) has documented that the advantages of autonomous compared with controlled motivation for studying among Western populations are manifold, including higher well-being (Levesque, Zuehlke, Stanek, & Ryan, 2004), deep-level learning (Grolnick & Ryan, 1987), higher grades (Black & Deci, 2000), and lower dropout rates (Vallerand, Fortier, & Guay, 1997).

In addition, SDT claims that parents, among other socialization figures, can contribute to their children's autonomous motivation. More specifically, parents would promote volitional functioning in their children by being attuned to and empathic toward the child's needs, by encouraging the child to act on his or her personally valued interests, and by minimizing the use of controlling parenting techniques (Grolnick, Deci, & Ryan, 1997). Conversely, parents will induce a controlled regulation when they use overtly controlling strategies (e.g., rewards, deadlines, punishments; see Deci, Koestner, & Ryan, 1999) or more subtle and implicit pressures (e.g., guilt-induction, shaming, love withdrawal; Barber, 2002; Vansteenkiste, Simons, Lens, Soenens, & Matos, 2005) that are aimed to push adolescents to think, act, or feel in particular ways. Past research in Western samples has clearly demonstrated the beneficial well-being and learning effects of parental autonomy support (Grolnick, 2003). Conversely, consistent evidence has documented the negative developmental outcomes of controlling parenting (Barber, 2002). Moreover, a number of studies have shown that autonomous or volitional functioning mediates the relationship between parental autonomy support versus psychological control and adjustment (e.g., Grolnick, Ryan, & Deci, 1991; Soenens & Vansteenkiste, in press).

Autonomy: Patented for the West?

However, a considerable number of researchers (e.g., Ford, 1992; Iyengar & DeVoe, 2003; Markus & Kitayama, 1991, 2003) criticized these findings. They argued that the experience of autonomy corresponds less with Eastern cultures that embrace col-

lectivistic (instead of individualistic) values (Triandis, 1995) and is less relevant for individuals who hold an interdependent (instead of an independent) self-concept (Markus & Kitayama, 1991). Because autonomy, self-direction, and personal freedom are less salient concerns for people in Eastern societies (Schwartz, 1994), the assumptions of SDT would be less likely to hold in such cultures.

Similarly, it has been argued that parents in Eastern societies are less focused on promoting autonomy (Olsen et al., 2002; Quoss & Zhao, 1995). With regard to the Chinese cultural context in particular, the support of autonomy appears to be a less common socialization practice because of the prevailing Confucian values. In contrast, high emphasis is placed on conformity and family interdependence (Chao & Tseng, 2002); the maintenance of social harmony and family support are often seen as lifelong obligations (Tseng, 2004). If the promotion of autonomy is a less culturally congruent experience in Eastern cultures, it might not have the same effects as found in Western samples.

These criticisms are based on a specific definition of autonomy, which is also rooted in a particular model of agency. In their recent contribution to the Nebraska Symposium of Motivation, Markus and Kitayama (2003) distinguished between disjoint and conjoint models of agency, which build on their earlier differentiation between independent and interdependent self-concepts (Markus & Kitayama, 1991). In disjoint models, agency is constructed as an independent essence that is bounded within the individual and disconnected from others. In contrast, in conjoint models, agency is constructed by meeting social obligations and engaging in social requirements. As a consequence of these divergent models of agency, the self is differently expressed and parents are said to stimulate the expression of a different type of self. In a disjoint model, the self is affirmed through pursuing independence and personal achievement and is expressed through one's unique attributes and achievements. In a conjoint model, the self is understood as the presence of interdependent selves in relation to others and is affirmed through harmonious relationships with in-group members and meeting social norms.

Within this view of autonomy as independence (see also Gough & Heilbrun, 1983, and Murray, 1938, for a similar perspective), the pursuit of independence is seen as antagonistic to the tendency to conform to existing norms, rules, and external influences. As pointed out by Witkin and Berry (1975), the "continuous reinforced orientation toward external referents makes difficult achievement of a self differentiated from others" in "socially conformist societies" (p. 46). Consistent with these claims, a variety of studies (Cialdini, Wosinka, Barrett, Bunter, & Gornik-Durose, 1999; Feldman & Rosenthal, 1991; Kim & Markus, 1999) have shown that individuals residing in societies that hold a conjoint model of agency are more likely to act in a conformist fashion (i.e., by following external influences; Bond & Smith, 1996) and are less likely to act upon their individual and unique preferences (Kitayama, Snibbe, Markus, & Suzuki, 2004) compared with individuals coming from societies with a disjoint model of agency. On the basis of these observations and a relativistic perspective on cultures, it has been argued that the concept of autonomy would not be useful to understanding and predicting Eastern students' learning, motivation, and thriving (e.g., Cross & Gore, 2003; Iyengar & Lepper, 1999; Oishi, 2000).

Differentiating Autonomy and Control From Independence and Conformity

In contrast to these relativistic cross-cultural perspectives, SDT (Deci & Ryan, 2000; Ryan & Deci, 2000) maintains that experiences of autonomy are universally important and beneficial. To clarify this claim, it is important to distinguish at both a conceptual and operational level the concept of autonomy, as used within SDT, from the cross-cultural concepts of independence and conformity (Butzel & Ryan, 1997; Hmel & Pincus, 2002; Ryan & Lynch, 1989).

Whereas independence refers to the *interpersonal* issue of not relying on others, autonomy, as defined within SDT, reflects the *intrapersonal* and phenomenological experience of volition and choice. The opposite of autonomy is not dependence, that is, relying on others for support or guidance, but "heteronomy," that is, the experience of feeling controlled and manipulated (Butzel & Ryan, 1997; Ryan & Lynch, 1989). As a consequence, the constructs of autonomy and independence are largely orthogonal (Chirkov, Ryan, Kim, & Kaplan, 2003; Ryan, 1993). One can willingly accept guidance or support from without, but one can also feel coerced to submit to the advice or the instruction. Phrased differently, autonomy does not necessarily imply the denial of reliance on others and does not require the separation from relations (Ryan & Deci, 2003), as (implicitly) suggested by some cross-cultural perspectives (e.g., Iyengar & DeVoe, 2003; Markus & Kitayama, 2003). In contrast, feelings of autonomy and relatedness are compatible within SDT (Butzel & Ryan, 1997; Koestner & Losier, 1996).

In a similar vein, the constructs of conformity and autonomy can be seen as largely orthogonal (e.g., Dworkin, 1988). Indeed, the behavior of conforming can be experienced autonomously or heteronomously. According to SDT (Ryan, 1993), a person's adherence to external influences may reflect mere obedience or coercion, or it might represent a reflective valuing of the direction or guidance that these inputs provide. SDT agrees with cross-cultural researchers' contention that people with an interdependent sense of self are more likely to consider and anticipate the points of view of others, which is likely "a consequence of the fulfillment of the reciprocal obligations or expectations" (Markus & Kitayama, 2003, p. 10). However, according to SDT, acting in accordance with such social norms is not a hallmark of "authentic" or preferred behavior by itself (Markus & Kitayama, 2003). In contrast, it is the degree of subjective endorsement and ownership of these norms that determines whether the adherence to social obligations constitutes an indication of authenticity and self-determination versus alienation and coercion. As a consequence, in the process of conforming to societal norms and expectations, one does not necessarily feel controlled in one's actions (and, hence, experience low levels of self-determination). Instead, when societal norms and expectations are fully endorsed by the individual, conforming to these norms is likely to be experienced as self-determined.

In support of the view of autonomy as self-determination within SDT, Chirkov et al. (2003) demonstrated that autonomous or volitional enactment of cultural practices was equally important in predicting well-being in culturally very diverse samples (i.e., Turkey, South Korea, North America, Russia). Other studies among non-Western samples (e.g., Deci et al., 2001; Downie, Koestner, ElGeledi, & Cree, 2004) similarly showed the beneficial impact of autonomous motivation on well-being and adjustment outcomes.

Furthermore, a few studies have found autonomous motivation to be predictive of learning and achievement among non-Western samples. For instance, Tanaka and Yamauchi (2000; see also Hayamizu, 1997; Yamauchi & Tanaka, 1998) reported that autonomous motivation positively predicted mastery orientation, deep-level processing, and academic achievement, whereas external regulation predicted a work-avoidance orientation and was negatively related to academic achievement in a sample of Japanese undergraduate students.

In contrast to these results, d'Ailly (2003) recently reported that external study regulation, but not identified or intrinsic study regulation, positively predicted achievement in a Taiwanese student sample. However, we believe that d'Ailly's study suffers from a methodological inadequacy. Specifically, zero-order correlations between academic performance and an identified or intrinsic motivation were positive, whereas external and introjected motivation were unrelated to it. Unfortunately, rather than constructing an autonomous and controlled motivation composite to further explore these effects through regression analyses, d'Ailly (2003) entered all four self-regulatory styles simultaneously in the regression. Because the two controlled and the two autonomous motivation subscales were highly correlated, suppression effects are likely to occur (Taccq, 1997), resulting in unreliable and inconclusive results. Hence, more research is needed on this topic. The present study sought to explore the implications of controlled and autonomous motivation for Chinese students' learning attitudes, academic achievement, and dropout, an outcome that has not yet been investigated in non-Western samples from an SDT perspective.

The Present Research

In line with various cross-cultural psychologists, SDT recognizes that there exist considerable differences in the type of values and living patterns across cultures and in the way individuals' autonomous and choice-oriented functioning is met in each culture (Ryan & Deci, 2003). However, whereas various cross-cultural psychologists hold that experiences of autonomy may be unhelpful (e.g., Markus & Kitayama, 2003) or even immobilizing (e.g., Oishi, 2000) for non-Western individuals, SDT maintains that experiences of volition and choice with respect to studying should entail more optimal learning in all cultures (Ryan & Deci, 2003). Similarly, SDT holds that being coerced by externally or internally pressuring prods and demands into learning behavior is unlikely to be beneficial. This view conflicts with Markus and Kitayama's (2003) observation and claim that Asian and West Indian children "do not appear to suffer any obvious negative consequences of the enormous pressure that is placed on them to achieve; in fact, they flourish" (p. 4).

These contradictory hypotheses were tested in two cross-sectional studies. Using the SDT-derived Self-Regulation for Learning Questionnaire (Ryan & Connell, 1989), which had been successfully used in previous research among Asians (Tanaka & Yamauchi, 2000), we examined whether autonomous versus controlled motivation for learning would differentially predict learning strategies, self-reported learning behavior, dropout, and academic success among Chinese students. An additional goal of Study 2 was to examine the parental antecedents (i.e., autonomy-supportive vs. psychologically controlling parenting) of these two types of motivation and to investigate their implications for Chi-

nese students' well-being and maladjustment in addition to their learning effects.

Study 1

The goal of Study 1 was to examine the relationships between autonomous and controlled motivation for studying and a variety of learning outcomes, that is, (a) students' ability to remain focused when studying (i.e., concentration), (b) their efficient use of study time (i.e., time management), (c) their general positive outlook toward studying (i.e., attitude), (d) the extent to which they are stressed before exams and worry about exam results (i.e., performance anxiety), (e) their voluntary and active engagement in extra study activities (e.g., responding to questions in class), and (f) their engagement in maladaptive and avoidant study behaviors (e.g., missing classes). In addition to these self-reported outcomes, we also explored the relation with academic performance and dropout. According to SDT's conception of autonomy, we predicted that experiences of autonomy with respect to studying would be associated with adaptive learning and academic achievement, whereas feeling controlled would be associated with impaired learning, lower achievement, and higher dropout.

Method

Participants and Procedure

A total of 153 Chinese participants coming from Shenyang, Northeastern China, took part in the study. Ninety-three participants (62%) were female, and 57 (38%) were male; 3 participants did not provide their gender. All participants were engaged in a special English training program at the time of assessment. Within the school, 5 out of 11 class groups were randomly selected, with an average size of 30 students. Participation was voluntary, but all the students in those classes chose to participate. The students ranged in age from 18 to 39 years, with a mean age of 23.8 years.

When students had provided written consent to participate, they were administered a battery of questionnaires, which they filled out either at the beginning or at the end of a regular class during a 20-min period. The questionnaire included demographic questions and measures tapping students' study strategies, their motivation for studying, and class behaviors. Because participants were only admitted to take part in the English study program if they had already reached an intermediate level of English, an English version of the scales could be administered. Participants reported having studied English for about 9 years on average, and none of the participants had difficulties in filling out the English measures. Unfortunately, missing data on some of the self-reported questionnaires led to an exclusion of 21 participants, leaving a final sample size of 132 for most of the analyses.¹ Exam scores and information on dropout were collected 3 months later in follow-up. Out of 153 participants, 107 reported their exam scores (70%), 15 had postponed their exam (10%), 5 had withdrawn from the course (3%), and 26 did not provide any information on their current status or exam scores (17%).

Measures

Present and expected level of English. Participants rated on a 5-point Likert scale ranging from 1 (*extremely low*) to 5 (*extremely high*) their current level of English and their expected level of English at the end of the course. Four different skills were rated, that is, reading, writing, listening, and speaking. Because these four ratings formed an internally consistent measure of present ($\alpha = .82$) and expected ($\alpha = .91$) level of English, they were averaged.

Self-Regulation Questionnaire—Academics (SRQ-A). A slightly different version of the SRQ-A, developed by Ryan and Connell (1989), was

used in the present study. Rather than asking for students' reasons to engage in a variety of different classroom behaviors, participants were provided with only one introductory statement, that is, "Why are you studying English?" The validity and reliability of this instrument has been well documented in both Western samples (e.g., Ryan & Connell, 1989) and Eastern samples (e.g., d'Ailly, 2003). The measure consists of four subscales, tapping four different types of motivation for studying English, that is, external regulation (i.e., motivated by pressuring external contingencies such as rewards, expectations, and punishments; e.g., "because I feel forced by others to do so"; 4 items); introjected regulation (i.e., motivated by internal compulsions and obligations; e.g., "because I would feel bad about myself if I do not"; 5 items); identified regulation (i.e., motivated by personal commitments; e.g., "because learning English is something I personally value"; 4 items) and intrinsic motivation (i.e., motivated by inherent task pleasure and satisfaction, e.g., "because I enjoy the English classes"; 3 items). Participants were asked to indicate their agreement with the items on a 5-point Likert scale ranging from 1 (*totally disagree*) to 5 (*totally agree*). In accordance with SDT and previous studies (e.g., Vansteenkiste et al., 2004), we created an autonomous motivation composite by averaging the scores for identified and intrinsic regulation, $r(143) = .62, p < .01; \alpha = .85$, and a controlled motivation composite by averaging the scores for external and introjected regulation, $r(143) = .30, p < .01; \alpha = .60$.

Learning thoughts and strategies. Students' thought processes and study strategies were assessed with four scales from the Learning and Study Strategies Inventory (LASSI; Weinstein, Palmer, & Schulte, 1987): Attitude assesses students' general attitudes toward and interest in the English course (e.g., "In my opinion, what is taught in my courses is not worth learning"; 8 items; $\alpha = .67$); time management assesses the degree to which students create and use schedules to organize and control work progress (e.g., "When I decide to do schoolwork, I set aside a specific length of time and keep it"; 8 items; $\alpha = .52$); concentration measures students' ability to concentrate and direct their attention to academic tasks (e.g., "I am easily distracted from my studies"; 8 items; $\alpha = .74$) and performance anxiety assesses the extent to which students worry about the study and their performance (e.g., "Worrying about doing poorly interrupts my concentration on tests"; 8 items; $\alpha = .60$). All items were scored on 5-point Likert scales ranging from 1 (*not at all typical for me*) to 5 (*very much typical of me*). Finally, we also created a composite learning scale by averaging the scores for the four separate learning scales, after having reversed the performance anxiety items ($\alpha = .87$).

School behaviors. As a complement to the LASSI, which primarily measures academic attitudes and perceptions, we constructed six items that aimed to assess active and voluntary engagement in school behaviors ("Do you volunteer answers in class?"; "Do you engage in learning activities beyond course requirement?"; "Do you study English in your spare time, without being asked by others?"; $\alpha = .60$) and passive, avoidant, and procrastinating behaviors ("Have you ever missed any class until now?"; "Do you finish assignments within the last minute before next class?"; "Do you find any excuse for not attending the class?"; $\alpha = .60$). Participants indicated on a 5-point Likert scale ranging from 1 (*never*) to 5 (*always*) how often they engaged in each of these behaviors.

¹ In order to check whether participants' failure to fill out all scales was due to participants' difficulties in understanding the English questionnaires, we performed an independent *t* test. Participants who filled out questionnaires were compared with participants who failed to do so on three variables, which were assessed on the first sheet of the questionnaire. These three variables are the number of years of studying English, the present level of English, and the expected level of English. The two groups did not differ on any of these outcomes ($ps > .05$), indirectly suggesting that missing data are unlikely to be due to problems with understanding the English questionnaires.

Academic performance. Academic performance was measured by students' self-reported performance on the International English Language Testing System (IELTS; <http://www.ielts.org>). Candidates could voluntarily take the test at any time and any place according to individual preferences and receive a score for each module of the test (listening comprehension, reading comprehension, writing, and oral exam). These scores were averaged to form an overall achievement score. Self-reported exam scores have been found to be reliable estimations of students' effective exam results (Herman, Dornbusch, Herron, & Herting, 1997).

Dropout. All participants were contacted again 3 months after their initial participation in the study, and it was noted which students had withdrawn from the course and which students had persisted in the course. Dropout was dummy coded so that students persisting in the course were assigned a "0," whereas those dropping out from the course were assigned a "1."

Results

Plan of Analyses

Our hypotheses were tested in two different ways. First, we examined whether overall feelings of relative autonomy with respect to studying predicts the various learning outcomes. This relative autonomy index (RAI) was constructed by assigning a weight to each of the motivation subscales depending on their placement on the self-determination continuum (external regulation, -2 ; introjection, -1 ; identification, $+1$; and intrinsic motivation, $+2$) and then summing these weighted scores so that higher scores reflect stronger self-determined study motivation. This strategy has been used on many other occasions (e.g., Vallerand et al., 1997). Second, because the RAI obscures any possible independent effects of the two primary types of motivation within SDT, that is, autonomous motivation (i.e., identified and intrinsic) and controlled motivation (i.e., external and introjected), we also examined their independent effects through a series of multiple regression analyses. Finally, using structural equation modeling, we examined whether any direct effect of relative autonomous motivation on exam performance and dropout would be mediated by students' overall positive learning attitude.

Preliminary Analyses

To begin our analyses, we calculated Pearson correlation coefficients. The results can be found in Table 1. The RAI was positively correlated with expected level of English, the composite learning scale, attitude, concentration, time management, active class behavior, and academic achievement, whereas it was negatively correlated with performance anxiety and passive-avoidant class behavior. The RAI tended to be negatively correlated with dropping out from the course, although the effect was only marginally significant. Autonomous motivation was positively correlated with the learning composite scale, attitude, active-voluntary behavior, and exam performance and tended to be positively related to expected level of English, concentration, and time management, but was unrelated to performance anxiety and dropping out from the course. In contrast, controlled motivation was negatively correlated with the learning composite scale, attitude, concentration, and time management, whereas it was positively associated with passive behavior and dropping out from the course. Controlled motivation was unrelated to present and expected level of English and academic success. Autonomous and controlled motivation were moderately positively correlated with each other. Present level of English was negatively correlated with performance anxiety, whereas it was positively correlated with active-voluntary school behavior and performance. Expected level of English was marginally positively correlated with performance.

Concerning background characteristics, years of English was unrelated to any of the outcomes except for exam performance. Finally, an independent sample *t* test indicated that male participants had lower scores on the relative autonomy index, $t(130) = 3.29$, $p < .01$, and scored lower on autonomous motivation, $t(130) = 2.61$, $p < .01$, and learning attitude, $t(130) = 1.96$, $p = .05$, whereas they had higher performance anxiety scores, $t(130) = 3.29$, $p < .01$, and were more likely to drop out from the course, $t(125) = 3.29$, $p < .01$, compared with female participants. Hence, we controlled for gender when predicting these outcomes on the basis of motivational variables in all subsequent analyses.

Table 1
Intercorrelations Between Outcome Variables, Study 1

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Years of English	—													
2. RAI	.05	—												
3. Autonomous motivation	.07	.74**	—											
4. Controlled motivation	-.04	-.49**	.17*	—										
5. Present level of English	.13	.16	.16	.06	—									
6. Expected level of English	.03	.19*	.14	-.09	.43**	—								
7. Optimal learning composite	.01	.48**	.21*	-.42**	.18*	.03	—							
8. Attitude	.03	.41**	.21*	-.32**	.10	.01	.84**	—						
9. Concentration	-.03	.38**	.17	-.32**	.19	.02	.85**	.65**	—					
10. Time management	-.01	.42**	.16	-.38**	.12	-.01	.80**	.53**	.64**	—				
11. Performance anxiety	.03	-.35**	-.13	.33**	-.17*	-.08	-.78**	-.49**	-.52**	-.55**	—			
12. Active-voluntary behavior	.15	.32**	.45**	.12	.19*	.02	.04	-.12	.05	.14	-.07	—		
13. Passive-avoidant behavior	.05	-.27**	-.05	.34**	-.02	-.05	-.55**	-.41**	-.55**	-.50**	.39**	.15	—	
14. Performance ($n = 105$)	.30**	.25*	.24*	.01	.29**	.19	.32**	.32**	.24*	.21*	-.24*	.23*	-.09	—
15. Dropout ($n = 127$)	-.07	-.17	-.01	.23*	.02	.09	-.24*	-.26**	-.17	-.17	.17	.15	.14	—

Note. RAI = relative autonomy index. $n = 132$, unless otherwise noted.
* $p < .05$. ** $p < .01$.

Primary Analyses

Multiple regression analyses. We performed a series of multiple regression analyses to explore the independent effect of autonomous and controlled study motivation on learning outcomes and academic success. An interaction term was constructed by centering both motivation variables and multiplying the centered means. This allowed us to explore whether being autonomously motivated as a Chinese learner might have a different effect depending on whether one experiences additional pressure and control to study. Each outcome was then regressed on these three motivational predictors. The results can be found in Table 2. Autonomous motivation positively predicted attitude (after controlling for gender), concentration, time management, and active study behavior, whereas it was negatively related to performance anxiety (after controlling for gender). It was unrelated to passive-avoidant school behavior and dropping out from the course. An almost opposite pattern of findings emerged for controlled motivation: It negatively predicted attitude, concentration, and time management, whereas it was positively related to performance anxiety, passive-avoidant school behavior, and dropping out from the course, yet was unrelated to active-voluntary study behavior and academic success. None of the interaction effects was significant. The amount of explained variance in outcomes varied between .06 and .21 (all $ps < .05$).

Next, because the variables self-reported present and expected level of English as well as the number of years of studying English were significantly related to some of the outcomes, we reran the regression, controlling for these background variables. All previous effects of autonomous and controlled motivation remained significant.

Structural equation modeling. A final goal concerns the examination of the optimal learning composite as a mediator in the relationship between relative autonomy and exam performance and dropout. To this aim, we performed two series of structural equation models, one including exam performance and one including dropout as the dependent variable. Obviously, these dependent variables could not be entered simultaneously in a structural equation model, because participants who dropped out from the course did not pass an exam. Data screening with Prelis 2.54 (Jöreskog & Sörbom, 1996) indicated partial non-normality of the data, both at

the univariate and the multivariate level. Therefore, in addition to the covariance matrix, in all subsequent models we also used the matrix of asymptotic covariances as input, and we inspected the Satorra-Bentler scaled (SBS) chi-square (Satorra & Bentler, 1994) to correct for this non-normality. Solutions were generated on the basis of maximum-likelihood estimation, because maximum-likelihood estimators are the most widely used method for obtaining parameter estimates in LISREL path analyses or structural equation modeling (Bollen, 1989). To assess the fit of the model to the observed data, we used the SBS chi-square statistic and the goodness-of-fit index (GFI; Jöreskog & Sörbom, 1996). In addition, we also used the comparative fit index (CFI; Bentler, 1990) and the standardized root-mean-square residual (SRMR; Steiger, 1990), which are important indicators of adequate fit for small sample sizes (Hu & Bentler, 1999). A nonsignificant chi-square indicates a well fitting model (Bollen, 1989); fit indices above .90 are considered acceptable as is an SRMR below .09 (Browne & Cudeck, 1993).

With regard to the mediational analyses in which exam performance was the outcome, the first two requirements for mediation were met, because relative autonomous motivation was positively related to the outcome variable exam performance and the mediating variable optimal learning. Next, we tested the mediational model with SEM. In doing so, we also added the number of years of studying English and students' self-reported present level of English as covariates in the model, because both were positively correlated with exam performance. In line with the recommendations of Holmbeck (1997), two models were compared, one in which relative autonomous motivation is only indirectly related to exam performance through the optimal learning composite (i.e., a full mediation model) and one model in which there is an additional significant path from relative autonomy to the optimal learning composite (i.e., a partial mediation model). The full mediational model fit the data well: SBS $\chi^2(3, N = 96) = 4.12, ns$, GFI = .98, CFI = .97, SRMR = .06. A significant path supported each hypothesized link. Drawing a direct path from relative autonomy to exam performance did not result in a significant increase in model fit: SBS $\chi^2_{diff}(1, N = 96) = 1.88, ns$, indicating that the full mediational model is preferred over the partial mediational model. Figure 1 displays the full mediational model.

Table 2
Beta Coefficients of Multiple Regression Analyses With Autonomous and Controlled Motivation and the Interaction Term as Predictors for Learning Outcomes, Study 1

Variable	Autonomous motivation	Controlled motivation	Interaction	R^2
Self-reported learning				
Attitude	.29**	-.39**	-.00	.19**
Concentration	.24**	-.37**	-.02	.16**
Time management	.22*	-.45**	-.07	.21**
Performance anxiety	-.19*	.34**	-.06	.17**
Self-reported class behavior				
Active-voluntary behavior	.41**	.02	-.08	.21**
Passive-avoidant behavior	-.14	.37**	-.03	.13**
Actual behavior				
Exam performance ($n = 105$)	.21*	-.04	-.07	.06*
Dropout ($n = 127$)	-.03	.25**	.08	.06*

Note. $n = 132$, unless otherwise noted.

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

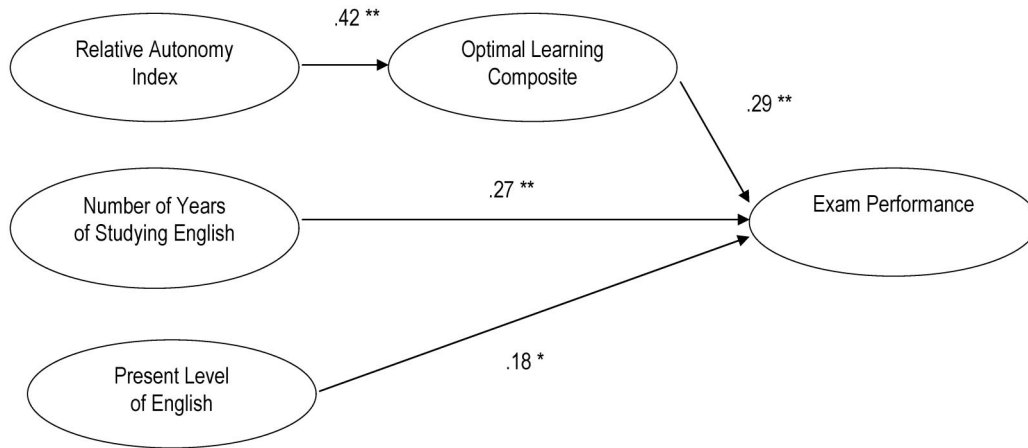


Figure 1. Structural model of the relationships between the relative autonomy index, number of years of study in English, present level of English, the optimal learning composite, and exam performance. * $p < .05$; ** $p < .01$.

Concerning the mediational analyses with dropout as the dependent variable, the first two requirements for mediation were met. Relative autonomy was significantly related (albeit marginally) to dropout and significantly predicted the mediator optimal learning attitude. In these analyses, we did not control for other variables, such as years of English and level of English, because these variables were not related to dropout. Then, we compared a full with a partial mediational model. The full mediational model fit the data well: SBS $\chi^2(1, N = 113) = 1.54, ns$; GFI = 1.00, CFI = 1.00, SRMR = .02. Adding a direct path from relative autonomy to dropout did not significantly improve the model fit: SBS $\chi^2_{diff}(1, N = 96) = 1.54, ns$, suggesting that the full mediational model needs to be preferred above the partial mediational model. Figure 2 displays this full mediational model.

Brief Discussion

This first study provided initial evidence for SDT. First, overall feelings of relative autonomy with respect to studying positively predicted a variety of adaptive learning strategies and were positively correlated with academic success. Second, when this omnibus measure of autonomy was broken down into its two primary subcomponents, that is, autonomous and controlled motivation, multiple regression analyses indicated that both composite scales of motivation had a unique and differential effect on most learning outcomes among this group of Chinese students, even after controlling for the number of years that students had been studying English and their self-reported level of English. Specifically, autonomous motivation positively predicted concentration, effective time management, and a positive study attitude, whereas it was negatively related to performance anxiety. Conversely, Chinese students who studied the English course because of external or internal obligations held a more negative attitude, had lower concentration, exhibited more signs of performance anxiety, and were less effective in managing their study time. Concerning students' self-reported and actual behaviors, we found that autonomous motivation in particular predicted positive outcomes, such as active-voluntary school behaviors and academic success, whereas controlled motivation predicted negative outcomes, such as

passive-avoidant school behaviors and dropping out from the course. Finally, the effect of relative autonomous motivation on exam performance and dropout could be fully accounted for by a composite measure that taps students' optimal learning.

Study 2

The goal of Study 2 was to replicate and extend the findings of Study 1 in two ways. First, we examined not only whether autonomous versus controlled motivation for learning differentially predicted learning outcomes but also their relationship with well-being. Previous studies within the SDT tradition among Western samples confirmed that relative autonomous study motivation positively predicts well-being (Levesque et al., 2004) and vitality (e.g., Nix, Ryan, Manly, & Deci, 1999), whereas controlled motivation to study is associated with symptoms of maladjustment, such as anxiety (Black & Deci, 2000) and negative affect (Assor, Kaplan, Kanat-Maymon, & Roth, in press). However, to our knowledge, such relationships have not been systematically examined among non-Western samples. In one study by Chirkov and Ryan (2001) among Russian and American students, we found that autonomous study motivation was equally important in predicting well-being in both student samples. In the current study, three indices of well-being (i.e., life satisfaction, vitality, and positive affect) and three indicators of maladjustment (i.e., depression, physical complaints, and negative affect) were assessed.

Second, we examined whether autonomy-supportive versus psychologically controlling parenting (Barber, 1996, 2002; Grolnick et al., 1997) would predict students' autonomous versus controlled study motivation.² The SDT-derived view of parental autonomy support versus psychological control as the encouragement of

² In addition to psychological control and autonomy support, most developmental researchers (Barber, 2002; Gray & Steinberg, 1999) also differentiate behavioral control and responsiveness. The present research focused on parental autonomy support and psychological control because these parenting dimensions seemed most useful in light of the ongoing controversy around the issue of autonomy in the literature.

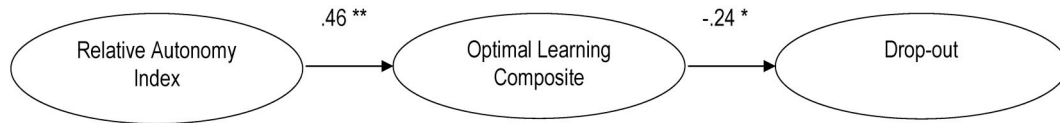


Figure 2. Structural model of the relationships between the relative autonomy index, the optimal learning composite, and dropout. * $p < .05$; ** $p < .01$.

self-initiation and the promotion of volitional functioning (Soenens et al., 2005) yields two important implications. First, it does not necessarily imply the promotion of an independent, self-reliant, and unique self (Soenens et al., 2005), as suggested by some developmental (Silk, Morris, Kanaya, & Steinberg, 2003; Steinberg, Mounts, Lamborn, & Dornbusch, 1991) and cross-cultural (Mullen & Yi, 1995) researchers. According to these authors, autonomy-supportive parents find it important that their adolescents no longer rely on them for advice and support but are able to stand on their own feet, act independently of their parents, and attain individuality. Such a socialization strategy would be typical for parents in Western societies (Rothbaum, Weisz, et al., 2000). However, just as self-determination and independence are relatively orthogonal conceptualizations of autonomy, parental autonomy support, as conceptualized within SDT, and parental promotion of independence are distinct.³ Second, the SDT-derived concept of autonomy support does not preclude the development of close, harmonious, and supportive relationships with others (Grolnick, 2003; Ryan & Lynch, 1989). According to SDT, the promotion of autonomy is not antithetical to the promotion of interdependence, a socialization practice that is more commonly used in Eastern families (Rothbaum, Pott, Azuma, Miyake, & Weisz, 2000).

Several studies have shown that autonomy-supportive versus psychologically controlling parenting is positively associated with various adaptive outcomes in Western children, including more autonomous study motivation, academic competence, and school achievement, whereas it negatively predicts learning problems, depression, and distress in emotion regulation (e.g., Assor, Roth, & Deci, 2004; see Barber, 2002, and Grolnick, 2003, for overviews).

Some developmental and cross-cultural psychologists doubt whether such findings would also hold among Eastern samples, because autonomy support would represent a typical Western parenting style, which is less frequently used by Eastern parents who rather promote interdependence. Conversely, it has been suggested that various components of psychological control, such as love withdrawal (Ho, 1986), shaming procedures, and threats of abandonment (Wu et al., 2002), are more frequently used in Eastern societies and that they are better accepted as a means of regulating Chinese adolescents' behavior (Chao, 1994; Ekblad, 1986; Olsen et al., 2002). As a consequence, the application of these parenting practices should not yield the same negative consequences as are found among Western samples (Chao & Tseng, 2002; Deater-Deckard & Dodge, 1997).

Some recent research exists on the relations between autonomy support versus psychological control and both learning and well-being among non-Western samples. For instance, Chirkov and Ryan (2001) found that parental autonomy support was equally important to well-being and self-determined study motivation among Russian and American students, and Stewart et al. (2000) reported that autonomy support positively predicted perceived

health among Pakistani boys and girls. Finally, d'Ailly (2003) reported that maternal but not paternal autonomy support positively predicted relative autonomous study motivation but were unrelated to academic performance in a Taiwanese sample. Conversely, Olsen et al. (2002) found that maternal psychological control was associated with externalizing behaviors for Chinese boys and internalizing behavior for Chinese girls.

The present study aimed to further explore these issues. On the basis of SDT, we hypothesized, first, that autonomy support versus psychological control would positively predict learning strategies and adjustment among Chinese learners, because the promotion of an internal perceived locus of causality for studying is said to be universally beneficial. Second, we predicted that the direct beneficial effects of autonomy support versus psychological control on these outcomes would be mediated by relative autonomy for studying.

Method

Participants and Procedure

Thirty-five female (44%) and 42 male (53%) Chinese students who had periodically emigrated to Belgium for an average of 8 months filled out the questionnaires during a 1-hr session in April 2003. Two participants failed to disclose their gender; thus, the total sample size was 79. They grew up in five different regions in the east and northeast regions of China (i.e., Beijing, China, Tianjin, Liaoning, Jilin, and Heilongjiang). Chinese people living in these regions are richer and better educated than people living in the inland of China. During their stay in Belgium, they lived in four different relatively small (fewer than one million inhabitants) Belgian cities. All participants were involved in a 1-year preparatory program in Belgium to learn Dutch in order to be able to progress to college or university studies. Participants' age varied from 18 to 28 years, with an average of 22.6 years.

Measures

All questionnaires included in the present study were translated from English to Mandarin, the participants' mother tongue and the language

³ Note that we consider the definition of autonomy support and psychological control deriving from SDT as highly incompatible parenting dimensions (Soenens et al., 2005). Given their incompatibility, we assume in the present study that both dimensions can be situated at the same underlying dimension. Although this overlap may seem contrary to the results of a recent study by Silk et al. (2003), who found that autonomy granting and psychological control are distinct and nearly orthogonal constructs, we believe it is not. In the Silk et al. (2003) study, autonomy granting was operationalized as parents' support of independence. As we argue in this article and elsewhere (Soenens et al., 2005), promoting independence is indeed largely unrelated to the extent to which parents are psychologically controlling. In contrast, the conceptualization of autonomy support that is used in the present study (i.e., autonomy support as promotion of volitional functioning) is thought to be strongly negatively related to psychological control (Grolnick, 2003).

spoken by more than 90% of the Chinese population. Consistent with the guidelines of the International Test Commission (Hambleton, 1994), two native English speakers translated the English questionnaire into Mandarin, which was in turn independently back-translated by two native Chinese teachers who had both been teaching English for at least 5 years. If any problems arose, these were discussed in the presence of one of the authors, and a solution was agreed on.

Self-Regulation Questionnaire—Academics (SRQ-A). A slightly different stem from that used in Study 1 assessed students' reasons for studying. Rather than asking for their reasons to study English, the items asked why they are studying in general. The four subscales again formed a relatively clear simplex pattern, and a relative autonomy index (RAI) was created in the same way as in Study 1. Also, the composite scales of controlled and autonomous motivation were computed by summing, respectively, external and introjected regulation, $r(79) = .39, p < .01, \alpha = .70$, and identified and intrinsic regulation, $r(79) = .56, p < .01; \alpha = .82$.

Study thoughts and strategies. Three of the four subscales of the LASSI (Weinstein, Palmer, & Schulte, 1987) that were used in Study 1 were also assessed in the present study, that is, concentration ($\alpha = .83$), effective time management ($\alpha = .80$), and performance anxiety ($\alpha = .76$). In addition, we also included information processing, that is, the extent to which students thoughtfully and deeply process the learning material rather than scanning through it in a rather superficial manner (e.g., "When I am studying, I try to relate things to what I know already"; 8 items; $\alpha = .79$). Items were rated on a 5-point Likert scale ranging from 1 (*not at all typical of me*) to 5 (*very much typical of me*).

Subjective well-being. Three different indicators of subjective well-being were included. We assessed positive and negative mood using the Positive Affect/Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988), and we assessed life satisfaction with the Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985). The PANAS consists of 20 mood adjectives: 10 positive (e.g., "excited," "pleased") and 10 negative (e.g., "ashamed," "distressed"). Participants were asked to rate how much they had experienced each mood "in the past month or so" on a scale ranging from 1 (*not at all*) to 5 (*extremely*). Internal consistencies for the scales in the present sample were .86 for positive affect and .80 for negative affect. The SWLS asks participants to cognitively evaluate their present life as being satisfying versus dissatisfying (e.g., "In most ways, my life is close to ideal"; 5 items). Items were rated on a 5-point Likert scale ranging from 1 (*completely disagree*) to 5 (*completely agree*). Internal consistency in the present sample was good ($\alpha = .78$). As in previous research (e.g., Sheldon & Kasser, 1995), a composite score of overall well-being was created by standardizing and summing positive affect and life satisfaction and subtracting negative affect ($\alpha = .87$).

Vitality. This seven-item scale (Ryan & Frederick, 1997) assesses participants' global feelings of energy, vigor, and aliveness over the past few months. Items were rated on a 5-point Likert scale ranging from 1 (*completely disagree*) to 5 (*completely agree*). Internal consistency was .83.

Depression. Participants completed the 20-item Center for Epidemiological Studies—Depression (CES-D) scale (Radloff, 1977), indicating how often they experienced specific depressive symptoms during the past week. Ratings were made on a scale ranging from 0 (*rarely or none of the time [less than 1 day]*) to 1 (*a couple of times [1–2 days]*) to 2 (*sometimes or regularly [3–4 days]*), to 3 (*most or all of the time [5–7 days]*). For each individual, a total severity of depression score was calculated by summing the responses. This produced a possible range of depression scores ranging from 0 (*low depression*) to 60 (*high depression*). Cronbach's alpha was .90.

Physical complaints. Participants were administered 10 items from the Somatic Complaints scale of the authorized Dutch version of the Symptom Checklist-90 (SCL-90; Arrindell & Ettema, 1986). Participants were asked to indicate how often they experienced each of the physical complaints during the past week. Ratings were made on a scale ranging from 1 (*very rarely*) to 7 (*very often*). Internal consistency was .87. This Dutch scale was

translated into Mandarin following the translation procedure recommended by the International Test Commission (Hambleton, 1994).

Parental autonomy support versus psychological control. Seven items for the psychological control scale were derived from the Parenting Scales (Lamborn, Mounts, Steinberg, & Dornbusch, 1991), whereas autonomy support was tapped with five items from the Autonomy Support scale of the Perceptions of Parents Scales (Grolnick et al., 1991). Psychological control (Barber, 1996) measures the degree to which adolescents perceive their parents as intruding on their need for autonomy by such means as love withdrawal, guilt induction, and instilling anxiety (e.g., "My mother/father is less friendly to me if I do not see things like he or she does"; $\alpha = .72$). Autonomy support taps the extent to which parents encourage their children to pursue their own interests and values (e.g., "My mother/father, whenever possible, allows me to choose what to do"; $\alpha = .76$). In line with the idea that autonomy support as defined within SDT and psychological control are highly incompatible parenting dimensions (Grolnick, 2003; Soenens et al., 2005), both styles were found to be very highly negatively correlated in the present sample, $r(79) = -.73, p < .01$. Furthermore, a principal-components analysis indicated that all items loaded on a single factor. For these reasons and in order to avoid problems with multicollinearity (Taq, 1997), psychological control items were reversed and summed with the autonomy support items to form an autonomy support versus psychological control composite.

Results

Plan of Analyses

As in Study 1, we examined the overall effects of relative autonomy on learning and well-being through correlational analyses and the separate effects of autonomous and controlled motivation through multiple regression analyses. Then, in a last step, we examined through structural equation modeling whether the effect of autonomy support versus psychological control would be mediated by relative autonomy for studying. Because the number of participants in the present sample was limited in comparison with the number of relationships to be estimated through structural equation modeling, we first reduced the number of variables that were included in the model. Therefore, we performed a principal-components analysis on the four learning outcomes (information processing, concentration, time management, performance anxiety) and the four adjustment outcomes (well-being, vitality, physical complaints, depression). Two clearly interpretable factors emerged, explaining 72% of the variance (eigenvalues = 4.41 and 1.43). The four well-being variables loaded significantly on the first factor, whereas the four learning variables loaded significantly on the second factor. Finally, we standardized and averaged the four variables in each category (after having reversed performance anxiety, depression, and physical complaints) in order to obtain a learning attitude composite ($\alpha = .94$) and an adjustment composite variable.

Preliminary Analyses

The correlations between all measured outcomes can be found in Table 3. Autonomy-supportive versus psychologically controlling parenting was positively correlated with RAI, negatively correlated with controlled motivation, and unrelated to autonomous motivation. Furthermore, autonomy-supportive versus psychologically controlling parenting was significantly positively correlated with the overall composite measure of learning and with the specific aspects of concentration and effective time management (but not information processing), whereas it was significantly

Table 3
Intercorrelations Between Outcome Variables, Study 2

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1. AS vs. PC parenting	—												
2. RAI	.37**	—											
3. Autonomous motivation	.16	.61**	—										
4. Controlled motivation	-.28*	-.55**	.32**	—									
5. Optimal learning composite	.34**	.43**	.43**	.05	—								
6. Information processing	.16	.26*	.37**	-.09	.69**	—							
7. Concentration	.28**	.44**	.46**	-.04	.91**	.49**	—						
8. Time management	.34**	.46**	.45**	-.07	.89**	.53**	.81**	—					
9. Performance anxiety	-.33**	-.22*	-.10	.16	-.76**	-.23*	-.66**	-.59**	—				
10. Adjustment composite	.24*	.44**	.31**	-.24*	.53**	.22*	.52**	.47**	-.53**	—			
11. Well-being	.13	.44**	.28*	-.26*	.54**	.25*	.50**	.48**	-.52**	.88**	—		
12. Vitality	.13	.41**	.34**	-.16	.54**	.37**	.51**	.44**	-.45**	.82**	.77**	—	
13. Physical complaints	-.22*	-.21	-.15	.13	-.14	.00	-.15	-.10	.20	-.57**	-.30*	-.21	—
14. Depression	-.18	-.32**	-.22*	.18	-.46**	-.08	-.46**	.45**	.52**	-.82**	-.69**	-.58**	.27*

Note. $n = 79$; AS = autonomy support; PC = psychological control; RAI = relative autonomy index.
* $p < .05$. ** $p < .01$.

negatively related to performance anxiety. It was positively correlated with the adjustment composite measure and significantly negatively related to physical complaints but unrelated to the three positive adjustment variables (i.e., well-being, vitality, and depression), although the relations were in the expected direction.

The RAI was positively correlated with the learning composite, concentration, time management, information processing, the adjustment composite, well-being, and vitality, whereas it was negatively correlated with performance anxiety and depression. Furthermore, as in Study 1, autonomous motivation was positively correlated with the three adaptive learning strategies (concentration, time management, and information processing). It was also positively related to well-being and vitality, whereas it was significantly negatively related to depression. It was unrelated to performance anxiety and physical complaints. Controlled motivation correlated negatively with the adjustment composite and well-being but was unrelated to learning outcomes, physical complaints, vitality, and depression, although all of these correlations were in the expected direction. As in Study 1, autonomous and controlled motivation were significantly positively correlated. Finally, all adaptive learning outcomes were positively correlated with each other and with well-being and vitality, whereas they were negatively correlated with performance anxiety and depression and were unrelated to physical complaints.

An independent sample t test indicated that gender did not predict any of the dependent variables (all $ps > .05$). Hence, we did not control for gender in any subsequent analyses.

Primary Analyses

Multiple regressions. As in Study 1, a series of multiple regression analyses was performed to explore the independent effects of autonomous and controlled motivation on learning and well-being. An interaction term was computed by multiplying the two centered variables of autonomous and controlled motivation. These results can be found in Table 4. With regard to learning, autonomous motivation positively predicted information processing, concentration, and time management but was unrelated to performance anxiety. The effects of controlled motivation on the learning outcomes were somewhat less strong compared with

those in Study 1: Controlled motivation was negatively related to time management, but the relationships with concentration and performance anxiety only approached significance; controlled motivation was unrelated to information processing. With regard to adjustment, autonomous motivation positively predicted well-being and vitality and was negatively related to depression, whereas it marginally negatively predicted physical complaints. In contrast, controlled motivation negatively predicted well-being and vitality and was positively related to depression but was unrelated to physical complaints. Finally, none of the interaction effects were significant.

Structural equation modeling. The second aim of this study was to explore whether any direct effect of autonomy-supportive versus psychologically controlling parenting on learning and adjustment would be mediated by students' relative autonomy for studying. Data screening indicated partial non-normality at the univariate and multivariate levels. Hence, as in Study 1, we analyzed the matrix of asymptotic covariances with LISREL 8.54 (Jöreskog & Sörbom, 1996), and we inspected the SBS chi-square to correct for this non-normality. Solutions were generated on the basis of maximum-likelihood estimation, and the same fit indices were used.

As mentioned above, the independent variable autonomy-supportive versus psychologically controlling parenting and the mediating variable relative autonomy were positively related to the dependent variables adjustment and learning attitudes. Hence, the first two conditions for mediation were met (Kenny, Kashy, & Bolger, 1998). Next, the full model was tested with SEM. As in Study 1, a full mediational model was compared with a partial mediational model in line with the recommendations of Holmbeck (1997). The full mediational model fit the data well, SBS $\chi^2(2, N = 79) = 4.01, ns$, GFI = .97, CFI = .95, SRMR = .07. Each hypothesized relationship was supported by a significant parameter estimate, and the full model is depicted in Figure 3. Adding a direct path from autonomy support versus psychological control to learning did not significantly increase the model fit, SBS $\chi^2_{diff}(1, N = 79) = 2.97, ns$. Similarly, adding a direct path from autonomy support versus psychological control to adjustment did not significantly increase the model fit, SBS $\chi^2(1, N = 79) = .05, ns$. Given

Table 4
Beta Coefficients of Multiple Regression Analyses With Autonomous and Controlled Motivation and the Interaction Term as Predictors for Learning and Adjustment Outcomes, Study 2

Variable	Autonomous motivation	Controlled motivation	Interaction	R ²
Optimal learning composite	.49**	-.19	-.05	.22**
Information processing	.38**	-.02	.05	.14**
Concentration	.53**	-.19	-.01	.25**
Time management	.52**	-.22*	-.03	.24**
Performance anxiety	-.17	.20	-.02	.05*
Adjustment composite	.41**	-.35**	-.04	.22**
Well-being	.36**	-.36**	-.11	.22**
Vitality	.42**	-.28*	-.03	.19**
Physical complaints	-.23	.20	-.08	.06*
Depression	-.32**	.29*	-.05	.12**

Note. *n* = 79.
* *p* < .05. ** *p* < .01.

that the partial mediation models did not improve the model fit, we concluded that the direct positive effects of autonomy-supportive versus psychologically controlling parenting on both adjustment and learning were fully mediated by relative autonomous study motivation.

General Discussion

The results of two studies among Chinese students revealed four important findings. First, experiences of relative autonomy with respect to studying are conducive to optimal learning and academic success. Second, when this overall measure of motivation is broken down into its two primary subcomponents, that is, autonomous and controlled motivation to study, it was found that the former positively predicts adaptive learning and academic success, whereas the latter forestalls the optimal learning process and increases the likelihood of dropping out of the course. Third, the benefits associated with autonomous study motivation are not limited to learning outcomes but also radiate to students' well-being. Conversely, controlled study motivation is associated with reduced well-being and increased depression. Finally, an autonomy-supportive parenting style that is characterized by the

offer of choice, empathic perspective-taking, and the minimal use of guilt- and shame-inducing tactics promotes adjustment and learning by enhancing Chinese students' relative autonomy with respect to studying. Below, we indicate how these results shed further light on the ongoing controversy in the cross-cultural and educational research concerning the adaptiveness versus maladaptiveness of experiences of autonomy and control among non-Western populations.

Autonomy and Independence

Research indicates that strivings for uniqueness, individualism, and independence are less highly valued in Eastern societies compared with Western cultures, such as China (e.g., Kim & Markus, 1999; Kitayama et al., 2004). These findings have led a number of cross-cultural researchers to conclude that experiences of autonomy will not be vitalizing (e.g., Markus & Kitayama, 1991, 2003) or will even be detrimental to people in collectivistic cultures (e.g., Oishi, 2000). Intuitively, such a claim seems reasonable, and theorists who defend the matching perspective (e.g., Sagiv & Schwartz, 2000) might provide a further theoretical justification for this cross-cultural hypothesis. The matching hypothesis holds

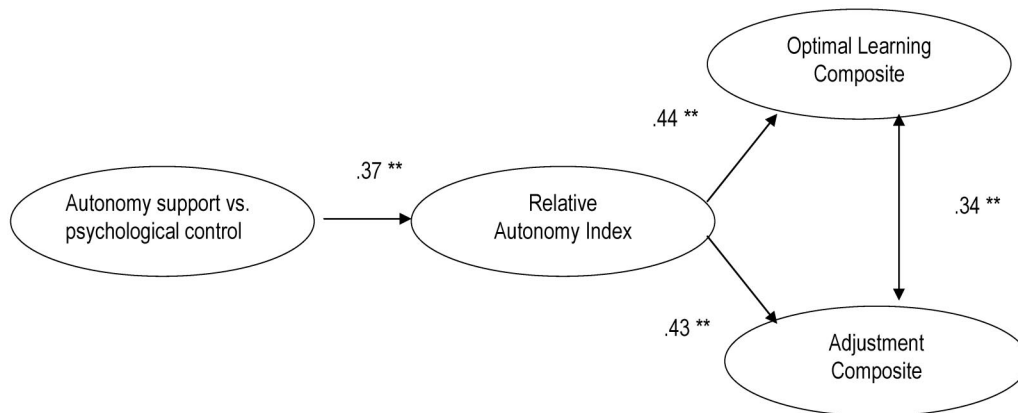


Figure 3. Structural model of the relationships between autonomy-supportive versus psychologically controlling parenting, the relative autonomy index, the optimal learning composite, and the adjustment composite. ** *p* < .01.

that when people's personal values (e.g., striving for independence) do not match or even conflict with the values prevailing and being emphasized in their direct environment and culture at large (e.g., forming a harmonious group), their well-being and optimal functioning is likely to be impaired. This is because people whose values do not fit with those of their environment are more likely to be socially sanctioned, to experience more internal conflict, and to receive fewer opportunities for realizing their own values (see Sagiv & Schwartz, 2000). Translated to the current situation, Chinese learners' individual pursuit of independence is unlikely to be associated with adaptive learning and well-being because of its conflict with the emphasis on conformity, social cohesion, and harmonious group functioning in societies that hold a conjoint model of agency (Markus & Kitayama, 2003).

However, SDT does not define autonomy in terms of independence. According to SDT, autonomy is a psychological need, and its satisfaction is critical for all individuals' optimal development. Autonomy is not conceptualized as a cognitive preference or an interpersonal value that is more or less emphasized depending on the cultural context, but rather it reflects the self-endorsement of actions on an inner, intraindividual level. If Chinese students' autonomy is defined and assessed in this way, it is consistently positively related to various indices of optimal learning and academic achievement. The positive effects of relative autonomy also radiate to well-being and adjustment outcomes. Presumably, studying represents such a central life domain to these Chinese participants that experiences of relative autonomy also affect their psychological well-being.

In a further set of regression analyses, we found that the two primary subcomponents of the relative autonomy index, that is, autonomous and controlled motivation, have an independent effect on most outcomes, suggesting that the overall effect of relative autonomy is due to both the beneficial impact of autonomous motivation and the debilitating impact of controlled motivation. For instance, autonomous motivation was associated with an adaptive learning pattern; it positively predicted a positive attitude toward studying in general and a more efficient organization of one's study time. Furthermore, autonomously motivated students are better able to remain concentrated when studying, to process the study material more thoughtfully, to feel less anxious when faced with a testing situation, and to obtain better test scores. These results confirm the contention of SDT that when people learn out of personal interest and personal conviction, they are more fully engaged in learning, and they will more fully understand and be more flexible in utilizing the newly acquired information (Reeve et al., 2004). Furthermore, the beneficial impact of autonomous motivation was not restricted to learning outcomes but also positively predicted well-being and vitality and reduced maladjustment, as indexed by the presence of depressive and physical complaints. These results are consistent with previous cross-cultural work within SDT among a sample of Russian students (Chirkov & Ryan, 2001).

Control and Conformity

Schooler (1990) argued that being an autonomous, self-directed individual who freely chooses beliefs and actions unhindered by official constraints "has been the goal of only a small portion of mankind" (p. 19). This statement was based on the observation that values such as social harmony, conformity, and interpersonal

relationships are very much prevailing in Eastern cultures. We agree with such statements. However, we cannot give any assent to the claim that the emphasis on these types of values necessarily implies that feeling pressured to meet external expectations contributes to students' optimal development (Markus & Kitayama, 2003). As SDT argues, the critical issue to predict thriving is whether the enactment of a conformist behavior takes place in a willing, autonomous, and choice-oriented manner or in a resistant, controlling, and coercive manner.

Consistent with these claims, the present research indicates that feeling pressured and controlled to study disrupts students' ability to concentrate while studying, stems an efficient organization of one's study time, provokes a negative attitude toward school, and enhances feelings of stress and performance anxiety. Of note, controlled motivation is also associated with more passive-avoidant study behaviors and with an increased risk of dropping out from the study course. To our knowledge, this is the first time that the issue of dropout has been studied from an SDT-perspective in non-Western samples, and the present result is fully consistent with previous research among Western samples (e.g., Vallerand et al., 1997). In addition, controlled motivation negatively predicted well-being and was positively associated with depressive symptomatology. Together, these findings conflict with Markus and Kitayama's (2003) argument that Eastern students might "flourish when they are forced to meet pressuring internal or external expectations" (p. 4). On the contrary, controlled motivation leads to reduced well-being and poorer learning behavior, as anticipated by SDT.

Parenting and Autonomy

A final issue concerns the parental variables that enhance Chinese students' sense of autonomy and willingness to study. The present study revealed that the Parenting Composite scale of autonomy support versus psychological control positively predicts Chinese students' relative autonomous motivation for studying. Hence, if Chinese parents acknowledge their adolescents' feelings, provide a meaningful rationale if choice is constrained, and minimize the use of guilt- and shame-inducing strategies, their offspring are more likely to study out of interest and personal dedication than in order to meet external pressures or internal obligations. In addition, students' relative autonomous study motivation was found to fully mediate the direct effect of autonomy support versus psychological control on a composite measure of learning attitudes and a composite measure of adjustment. These results replicate and extend findings with other mediational models that have been examined among Western samples (e.g., Levesque et al., 2004).

However, the results conflict with other researchers' claim that controlling parenting practices might yield a less harmful effect among Eastern adolescents because such practices are more frequently used and, hence, perceived as more legitimate. Although it is certainly possible that Chinese parents might, on average, be more controlling than their Western counterparts (e.g., Chao, 1994; Wu et al., 2002), these mean differences do not automatically suggest that controlling parenting would be adaptive in Eastern societies. In contrast, the present studies are in line with a recent study by Hasebe, Nucci, and Nucci (2004) showing that parental control over the personal domain, which bears some conceptual overlap with psychological control, equally predicts

internalizing symptoms among American and Japanese students. Basically, our results confirm the claim of SDT that autonomy-supportive versus psychologically controlling parenting should predict optimal functioning, because such practices satisfy the universal need for autonomy.

Notably, the direct effect of parenting on well-being was smaller than the effect on learning attitudes. It should be noted that the current sample of Chinese students had moved temporarily to Belgium to study and, hence, had rather limited contact with their parents. Nevertheless, parenting style appeared to influence adjustment and, even more strongly, learning attitudes. The latter seems logical because the primary goal for these Chinese students to move to Belgium was to study; hence, it can be expected that parents might, even over the telephone or by e-mail, place subtle pressure on their offspring to study or, alternatively, adopt a more supportive style when discussing study-related topics.

Limitations and Future Directions

Although the results of both studies provided consistent evidence for SDT, a number of limitations are worth mentioning. First, the study is correlational and cross-sectional in nature; hence, conclusions regarding the direction of effects cannot be drawn. For instance, it is possible that Chinese students who more effectively manage their study time create the opportunity for themselves to experience more enjoyment and better foresee the personal relevance of their studies (i.e., autonomous motivation). Future experimental and longitudinal research might help shed light on the direction of this effect. Furthermore, the present data were mostly derived from self-report measures; hence, some of the relationships might be overestimated due to shared method variance. Future research might include parental reports of parental styles and objective ratings of socially adaptive functioning.

Second, the research by d'Ailly (2003) indicates that the positive effects of relative autonomy for academic performance disappeared when controlling for perceived control, that is, participants' feelings of competence and efficacy with respect to studying. In contrast to this finding, Study 1 indicated that the effect of relative autonomy on learning and academic performance remained significant after controlling for students' expected achievement level, a variable that is likely to be associated with perceived control. However, future research might directly assess students' perceived control rather than using such a derivative measure. According to SDT, autonomy and competence constitute two different needs, and, hence, should have independent effects on adjustment and learning (see Patrick, Skinner, & Cornell, 1993; Yamauchi & Tanaka, 1998).

Third, whereas SDT holds that the provision of autonomy support, that is, the encouragement of volitional functioning (Soenens et al., 2005), should entail optimal functioning across cultures, it remains to be investigated whether the promotion of independence, as defined by Steinberg et al. (see Silk et al., 2003), is associated with similar adaptive outcomes in nonwestern societies. On the basis of the cross-cultural analyses of Markus and Kitayama (1991, 2003), Chao and colleagues (Chao, 1994; Chao & Tseng, 2002), and others, such relationships might not hold among Chinese adolescents. In contrast, the promotion of interdependence, that is, the encouragement of social harmony, might be associated with more adaptive functioning (Tseng, 2004).

Fourth, because participants had either undergone (Study 1) or were undergoing (Study 2) a selection procedure for being accepted in a foreign study program, they are likely to be highly selective in terms of capabilities. However, we expect the current findings to hold among students with lower capabilities as well, and we believe it is instructive to see that, in spite of this homogeneity of the current samples, the quality of Chinese students' motivation also matters. Notably, because Chinese participants had periodically migrated to a Western country (Study 2) or were on the verge of doing so (Study 1), they might have a self-concept that is more independent than interdependent (Markus & Kitayama, 1991), which could, according to cross-cultural researchers, explain the beneficial effects of autonomy in the current studies. Future research that directly assesses Chinese students' self-concepts would assist exploration of whether type of self-concept moderates the autonomy to learning and the autonomy to well-being relations, as predicted by cross-cultural psychologists but not by SDT.

Conclusion

As pointed out by many cross-cultural researchers, the type of values that are prevailing in different cultures can strongly vary: Whereas individuality, uniqueness, and independence are central issues in individualistic societies, social harmony, conformity, and interdependence are highly valued in collectivistic societies. However, these different interpersonal values can be pursued for very different reasons, which vary from personal ownership and voluntary self-endorsement to coercive obedience and resistance. The present research indicates that such a conceptualization of autonomy appears as fruitful for predicting Chinese students' optimal learning and well-being as it has been in Western populations; experiences of phenomenological freedom and volition are vitalizing rather than immobilizing for Eastern populations. It is our hope that these SDT-based conceptual insights might contribute to a further exploration of important motivational dynamics that turn on culturally critical issues such as autonomy and independence, and control and conformity.

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