University of Alberta

Accommodating to the Learning Environment: Secondary Control, Academic Motivation, and Language Learning Outcomes in Two Cultures.

by

Kathryn Everhart Chaffee

A thesis submitted to the Faculty of Graduate Studies and Research
in partial fulfillment of the requirements for the degree of

Masters of Arts

Department of Psychology

Fall 2013
Edmonton, Alberta

Abstract

This study proposes to identify how secondary control, which involves adjusting the self to accommodate the environment, fits into the framework of Self-Determination Theory for both Canadian and Japanese second language students. It was hypothesized that secondary control via positive reappraisals of a negative situation (i.e., having an authoritarian language instructor) would moderate the relation between perceptions of the teacher and students' motivation and affect. Correlational analyses of the questionnaire responses of 154 Canadian university students and 158 Japanese university students asking them about their experiences in a foreign or second language class revealed that the use of secondary control via positive reappraisals is associated with higher need satisfaction and more self-determined motivation in both Canada and Japan. Contrary to expectations, moderation effects of secondary control were not found. These findings indicate that secondary control via positive reappraisals can be a helpful strategy for maintaining students' language learning motivation.

Acknowledgements

I would like to thank my supervisor, Kimberly Noels for her support and feedback throughout all stages of this project and her openness to my ideas. I would like to thank her for her attention to detail in helping me to organize and implement those ideas.

I would like to offer my special thanks to Maya Sugita McEown for her assistance with the study design, and the choice and translation of measures. I would also like to express my gratitude to my collaborators in Kansai, Atsushi Mizumoto and Osamu Takeuchi, without whom it would have been impossible to collect data in Japan.

I am also grateful to my supervisory committee members, Takahiko Masuda and Elena Nicoladis, as well as my arms-length examiner Marian Rossiter for their helpful questions, comments, and suggestions.

Special thanks also to Matt Russell and Sawa Senzaki for their help with translation, Dayuma Vargas Lascano and Sandra Wiebe for their statistical instruction and advice, and all my lab-and-floormates for making the lab and the department a great place to work. I would also like to express my appreciation to the undergraduate research assistants who helped to collect the Canadian data.

Lastly, I would like to thank my parents for raising me to value knowledge and education, and my husband for his support.

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The study of foreign and second languages facilitates intercultural communication and helps students to learn about other cultures. The intensity of students' engagement in language learning has been linked to later language proficiency (Masgoret & Gardner, 2003). However, language learning circumstances are often not ideal for promoting students' engagement. Factors that cause students to feel controlled have been shown to negatively affect motivation (e.g. Deci, Eghrari, Patrick, and Leone, 1994). The fact that language study is often compulsory at Canadian and U.S. universities, as is the study of English as a Foreign Language (EFL) in many countries, is thus potentially problematic. As well, environmental influences such as having a language instructor with an authoritarian teaching style are also likely to make students feel controlled, thereby decreasing their motivation for language learning. Thus the question of how student motivation can be maintained under environmental constraints becomes important.

The current project seeks to address how students in different cultures maintain motivation and positive affect in the face of controlling environmental factors. In this study, I examine secondary control as a possible strategy to mitigate the negative effects of having a controlling instructor in a university language class. I begin by describing primary and secondary control and the self-determination theory of motivation. I then consider the different ways that

controlling forces in the environment affect people from different cultures, and finally discuss how secondary control may explain some of these differences.

Motivation

I plan to use self-determination theory (Deci & Ryan, 1985; 2000) as a framework to look at how secondary control relates to motivation. Self-determination theory describes different types of motivational orientations, or classes of reasons for engaging in an activity or task. These orientations represent a continuum of increasingly self-endorsed types of reasons, as well as amotivation, in which an individual cannot see any reason or value for the activity. According to Deci & Ryan (2000), external regulation refers to the use of rewards or punishments from others as the reason for behavior and is considered the most controlled motivational orientation. In the language classroom, an example of this form of regulation could involve studying the target language solely to fulfill a university requirement. Introjected regulation is slightly more internalized in that the motivating reward or punishment is a more self-regulated one, such as pride, guilt, or self-esteem maintenance; a student might study the target language because perceived pressure from parents would make them feel guilty if they did not. This form of motivation is still considered relatively controlled, because it is not necessarily consistent with the person's own values. More internalized and autonomous is identified regulation, which involves seeing personal value in the activity, but as a means to achieve an important goal rather than for the sake of the activity itself. Thus an individual might study the target language out of a genuine

desire to better understand a friend who speaks it. Individuals high in the fourth orientation-- integrated regulation-- see the activity in question as both personally important and consistent with their values and sense of self; this orientation is therefore highly internalized. This orientation might involve reasons such as a second-generation immigrant studying her parents' native language because she identifies with their culture. Finally, intrinsic motivation, in which an activity is pursued out of interest in or enjoyment of the activity itself, is considered fully internalized and self-determined (Deci & Ryan, 2000). These types of motivation are sometimes dichotomized such that external and introjected regulations are considered "controlled" motivation, while the latter three are "autonomous" or "self-determined" motivation (Deci & Ryan, 2000).

Self-determination theory also describes three fundamental psychological needs; relatedness, competence, and autonomy are argued to contribute to our capacity to experience intrinsic motivation and lead to general well-being. Relatedness is a feeling of warmth and connectedness to others, and competence describes ability to perform well at the given task. Autonomy refers to the degree to which a person's actions are self-endorsed and consistent with his or her values, beliefs, and desires (Deci & Ryan, 2000). These three needs must be fulfilled in order to experience self-determined motivation (i.e. intrinsic motivation, integrated regulation, and identified regulation). If these needs are infringed upon, individuals tend to feel more controlled and therefore experience greater introjected or external regulation, and they may even become amotivated. These

three needs are not considered equal in relative importance; at least in Western societies, autonomy has generally been conceived as the most central of these three needs in terms of motivation (Deci & Ryan, 2000).

According to self-determination theory, more self-determined forms of motivation, including intrinsic motivation, integrated regulation, and identified regulation, should be associated with positive academic outcomes. High intrinsic motivation predicts higher grades and higher standardized test scores for children, while extrinsic motivation, and especially amotivation, have been associated with low test scores and grades (Lepper, Corpus, & Iyengar, 2005). Intrinsic motivation is also associated with a preference for more challenging tasks (Abuhamdeh & Csikszentmihalyi, 2009). This type of orientation should in turn allow individuals to engage in the high-skill and optimally challenging activities required to experience flow (Csikszentmihalyi, 1997). In language classes, intrinsic motivation has been associated with high self-evaluations of language competence, greater intention to continue language studies, higher motivational intensity, and lower classroom anxiety (Noels, Clement, & Pelletier, 1999; Noels, Pelletier, Clément, & Vallerand, 2000). In learning contexts, at least, intrinsic motivation appears to lead to more effective learning, higher effort, and more challenge-seeking behavior.

Primary and Secondary Control

According to Rothbaum, Weisz, and Snyder (1982), the idea of "control" has traditionally referred to "the individual's ability to change the environment to fit

the self's needs" (p. 8). However, the authors argue that if helplessness is the opposite of control, then secondary control, although its target is internal rather than external, is also control. Rothbaum and colleagues rebrand this traditional, externally-targeted control as "primary control."

Secondary control[1], then, is the degree to which individuals express agency by changing the self to "fit in" with the environment. According to Morling and Evered (2006), secondary control includes both accepting the situation as it is and adjusting the self to fit that situation. Tweed, White, and Lehman (2004) describe secondary control as "internally-targeted," while primary control is "externally-targeted" because secondary control involves managing the self, while primary control involves influencing the environment outside the individual. Both secondary and primary control are control in the sense that they involve exerting influence—over something external in the case of primary control, and over something internal in the case of secondary control. Both of these definitions are consistent with lay usage of the word "control." These two strategies are not necessarily at odds; indeed, some evidence suggests that it may sometimes be most adaptive to use both together (e.g. Hall, Perry, Ruthig, Hladkyj, & Chipperfield, 2006).

1. There is some disagreement about use of the term "secondary control," to refer to this type of action, since this behavior is not necessarily "secondary" to or less adaptive than primary control. Some researchers have suggested a switch to such terms as "accommodation" (Skinner, 2007), "adjustment," (Morling, Kitayama, & Miyamoto, 2002; Tsai, Miao, Seppala, Fung, & Yeung, 2007), or "internally targeted control" (Tweed, White and Lehman, 2004). In the interest of consistency with most of the prior research dealing with this concept, I will use the term "secondary control" in this paper.

Four subtypes of secondary control were described when the construct was initially defined by Rothbaum et al. (1982), and these were later refined by Weisz and colleagues (1984). Following Weisz et al.'s formulation, the first subtype was interpretive secondary control, which overlaps with positive reappraisal in that it involves efforts to adjust one's attitude towards a situation by trying to derive meaning from the experience or focus on the benefits of it. Preliminary results indicate that this type of secondary control may be the most predictive of Canadian students' motivation (Chaffee, Noels & McEown, 2013). Predictive control, which functions to help the individual avoid uncertainty or disappointment, is achieved by accepting the probable outcome of a situation and adjusting one's expectations to fit that outcome through strategies such as lowering one's aspirations. Individuals can also engage in vicarious secondary control by aligning themselves with an in-group, institution, or individual in order to psychologically benefit from others' successes. Interpretive secondary control overlaps with positive reappraisal in that it involves efforts to adjust one's attitude towards a situation by trying to derive meaning from the experience or focus on the benefits of it. Finally, when individuals decide to accept situations as good or bad luck rather than fight them, Weisz et al. (1984) called this illusory secondary control. These subtypes involve elements of accepting situations as well as adjustment of the self, although some subtypes may lean more towards one or the other of these aspects (Morling & Evered, 2006).

Effects of Controlling Environments in Asia and North America

When forces in the environment limit an individual's choices and opportunities to act freely, self-determination theory indicates that these circumstances should have a negative effect on feelings of autonomy and thereby intrinsic motivation. In North America, having unconstrained choices has long been considered an important-- and perhaps even central-- constituent of autonomy. The chance to make even unimportant choices leads to increases in both motivation and task performance for Euro-North American children (Iyengar & Lepper, 2002), but a controlling language instructor or even a simple reward can decrease North Americans' intrinsic motivation and make them feel less autonomous (Deci, Koestner, & Ryan, 1999; Noels et al., 1999). Thus, North Americans' feelings of autonomy predict positive outcomes, but are highly sensitive to perceived constraint.

The Japanese EFL context provides an interesting comparison point for a number of reasons. Unlike North American university classes, Japanese EFL classes tend to be teacher-centered, with the teacher controlling the class and students following instructions (Holden & Usuki, 1999; McEown & Takeuchi, 2012; Miller, 1995). Some studies have shown that Japanese university students express a preference for teacher-centered English learning (Kimura, Nakata, & Okumura, 2001; Matsuura, Chiba, & Hildebrandt, 2001), though others have found that students prefer communicative learning to teacher-centered approaches (Holden & Usuki, 1999; Miller, 1995). It has been hypothesized that autonomy may be less relevant, or perhaps differently constituted, in interdependent cultures

such as those in East Asia compared to individualistic North America (e.g. Iyengar & Lepper, 1999; Yeh & Yang, 2006). Japanese university students may be more accustomed to highly structured language classes than North Americans, and it is possible that they will react less negatively to this lack of autonomous choice than North Americans do.

One indication that East Asians' experience of autonomy may be different from North Americans' experience is evident in East Asians' responses to choice. Japanese view themselves as having comparatively less control than North Americans (O'Connor & Shimizu, 2002), and Asians generally express much less preference for having choices than European Americans do (Iyengar & Lepper, 2002). European Americans also seem to see themselves as having more choices available to them than Asians; American students in Japan perceived themselves to have about 50% more choices in the course of an average day than the local Japanese did (Iyengar & Lepper, 1999). This pattern of findings suggests that while choice is of great importance for North Americans, it is not necessarily such a central constituent of autonomy for Asians; North American culture encourages North Americans to exert influence over the world by making choices in a way not apparent in most other cultures (Iyengar & Lepper, 1999).

A study by Iyengar and Lepper (1999) indicates that the context surrounding a choice may be as important for Asians as the choice itself. European American children in their study were highly motivated by their own personal choice and having a choice also improved learning outcomes for European American

children, but these children experienced having the choice made for them as controlling and demotivating. Asian American children, on the other hand, were also demotivated by a choice made for them by the experimenter, but were actually more motivated by a choice that was made for them by in-group members (their classmates or their mother) than by a choice made for themselves. Bao and Lam (2008) found that how motivated Chinese pupils were by their mother's or teacher's choice depended on their sense of relatedness, or the closeness of the relationship with the choice-maker. Children who felt very close to the parent or teacher making the choice were as motivated as those who made their own choice, but when the relationship was more distant, children were demotivated by the other's choice. The researchers also found that motivational orientation had a main effect on engagement that was not moderated by relatedness, suggesting that freedom of choice is not the same as autonomy for Chinese students (Bao & Lam, 2008). These findings highlight the motivational importance of relatedness to in-group members for East Asians.

Despite such cultural differences, Deci and Ryan (2000) argue that self-determination theory has broad relevance across cultural contexts. When interdependence is personally valued, as in Japan, reactions to choice like those seen among East Asians may be self-endorsed and therefore autonomous. Similarly, when self-construals are interdependent, meaning that significant others are integrated into the sense of self, as they tend to be in Asia (Markus & Kitayama, 1991), choices made by significant others may be experienced as self-

determined because they will be seen as connected to the self. This is illustrated in a study by Miller, Das, and Chakravarthy (2011); North Americans (who tend to have highly independent self-construals) felt less satisfied and as though they had little choice in their behavior when they engaged in socially expected helping, whereas Indians did not show a negative association between duty and choice. This was because the sense of duty was internalized for the interdependent Indians but not the North Americans.

Also supporting Deci and Ryan's claims about the cross-cultural validity of self-determination theory, autonomy-supportive environments have been shown to correlate with need satisfaction, well-being, and engagement in both school and work situations in more authoritarian countries such as Bulgaria and Russia, and autonomy support from teachers predicted intrinsic motivation in Russian schools (Deci et al., 2001; Chirkov & Ryan, 2001). Autonomy has also been found to predict well-being in eight cultures, including Japan (Church et al., 2012). Individuals in China and Russia showed less discrepancy between ideal and actual self when with autonomy-supportive partners (Lynch, LaGuardia, & Ryan, 2009), while controlling, authoritarian environments have been shown to predict lower intrinsic motivation in Japan (Kage, 1991). Another study found that autonomy not only predicted Japanese EFL students' language learning motivation, but did so more strongly than relatedness or competence (Noels, in press). These results mirror findings from North America. This suggests that despite cultural differences in how the social circumstances surrounding choices are experienced,

self-determination theory remains a useful framework for studying motivation cross-culturally.

Whereas North Americans show a preference for personal choices and a tendency to feel controlled rather easily, East Asians show less preference for making choices and a tendency not to experience choices made for them by significant others and in-group members as controlled. Perhaps these differences can be further explained through an examination of what strategies are commonly used to achieve a sense of agency in these cultures.

Role of Secondary Control: Linking Secondary Control and Academic Motivation

Secondary control has been found to be more prevalent in Japan and other interdependent and collectivistic countries than in more individualistic and independent cultures such as North America (Ashman et al., 2006; Kurman, Hui, & Dan, 2010; Morling, 2000; Morling et al., 2002; Tsai et al., 2007). Engaging in secondary control may be considered a way of expressing agency, but the fact that it can involve accommodating the self to others in the social context may indicate a link to relatedness and interdependence. Ashman, Shiomura, and Levy, (2006) found that advanced age and being Japanese were both associated with high levels of interdependence, and that this interdependence predicted higher levels of adjusting the self to fit with others via secondary control. This may indicate that secondary control increases relatedness and not just autonomy. In fact, while situations described by American students in which they had engaged in primary

control were found to be related to feelings of efficacy, stories written by Japanese students about instances when they had engaged in secondary control were found to promote feelings of relatedness (Morling et al., 2002).

Sense of personal control has previously been found to show positive relationships with intrinsic motivation (e.g. Boggiano, Main, & Katz, 1988), so it is not unreasonable to expect that secondary control might have a similar effect; Hladkyj and colleagues (1998; in Perry, Hall, & Ruthig, 2005) found weak positive correlations between secondary control and intrinsic motivation. Hall et al. (2006) found that among students who failed their first test in a university class, being high in both primary and secondary control was associated with the highest GPA and lowest dropout rates. Thus secondary control seems to be an adaptive strategy for dealing with initial failure, at least when paired with primary control. This is particularly interesting in light of Heine et al.'s (2001) finding that North Americans tend to be demotivated by failure; secondary control may have a protective effect on motivation for certain types of students. However, little work has been done to clarify how secondary control fits into the self-determination theory framework.

To examine possible connections between secondary control and the self-determination theory of motivation, we conducted a questionnaire study of 100 Canadian university students studying languages other than English to see whether secondary control has a positive effect on motivation by buffering the negative effect of a controlling instructor on students' language use anxiety in the

classroom and their energy towards their language studies (Chaffee et al., 2013). These represent important language-learning outcomes because anxiety in the language class may hamper learning by making a student reluctant to practice speaking (and indeed language-use anxiety has been shown to be associated with lower language proficiency; Bernaus & Gardner, 2008), while academic engagement has been found to be associated with high grades and low school burnout (Salmela-Aro & Upadaya, 2012).

Language classes are an especially good context for studying the effects of secondary control in classrooms with controlling instructors because of both the global importance of language learning as a facilitator for intercultural communication and the fact that language classes tend to have small class sizes. Language classes are usually among the smallest classes taken during the first two years of university, and as such students likely have more opportunities to interact directly with their language instructor than with most of their other university instructors. Because of these class characteristics, students in language classes are likely more able to rate their instructor's controlling behaviors, and they may be more affected by them as well.

Secondary control via positive reappraisals (i.e. interpretive secondary control) was positively correlated with intrinsic motivation and integrated and identified regulation, and these correlations were stronger than those between these orientations and primary control. Students low in secondary control via positive reappraisals reported high language-use anxiety and low engagement (specifically,

low energy) towards their target language studies when they perceived their instructor as controlling, but high engagement and only moderate levels of anxiety with autonomy-supportive instructors. Students high in positive reappraisal reported moderate anxiety and high energy regardless of instructor rating. This evidence suggests that secondary control may be helpful for students who are in a situation that might hamper their autonomy, such as a classroom environment with a controlling instructor.

Positive reappraisals also appeared to boost students' intrinsic and internalized reasons for language learning when their instructor was not perceived as supportive of students' autonomy (Chaffee et al., 2013). However, instead of remaining highly intrinsically motivated regardless of perception of the instructor, as was expected, students high in secondary control via positive reappraisals actually reported higher intrinsic motivation when their instructor was controlling than when the instructor was autonomy supportive. I also expected low-reappraising students' intrinsic motivation to increase with instructor autonomy-support (in accordance with self-determination theory), so the fact that these students' intrinsic motivation remained moderate was puzzling as well.

Also unexpected was the fact that only secondary control via positive reappraisals showed these effects. Vicarious secondary control and secondary control through lowering aspirations (which overlaps with predictive control as described by Weisz et al., 1984) were also assessed, but these subtypes of secondary control did not correlate as expected with other variables. Vicarious

secondary control was not significantly associated with engagement, anxiety, or intention to continue studying the target language, while lowering aspirations actually appeared to be harmful to Canadian students' language learning, as it correlated positively with anxiety and negatively with engagement. These findings merit further research to clarify the role of these two types of secondary control, as well as the effect of secondary control on intrinsic motivation.

Given that Japan is a more interdependent society than Canada, vicarious control, which involves aligning oneself with others in order to achieve a sense of control, might be an effective buffer to environmental constraints. Lowering aspirations may have been seen as "giving up" in Canada, a society where ambition and "following one's dreams" is encouraged, but it is possible that this strategy also might be adaptive in Japan, if Japanese students tend to frame lowered aspirations more positively, perhaps in terms of "having realistic expectations."

Objectives and Hypotheses

The objectives of the current project are two-fold. While many studies have focused on either how aspects of the language learning context affect learners or how individual difference variables relate to motivation, few have looked at how individual-level characteristics of language learners interact with the learning context. Thus, my first objective is to replicate and extend the results of Chaffee et al., (2013) by attempting to again demonstrate the moderation effect of secondary control, especially positive reappraisals, on the relation between

motivational orientation and various language learning outcomes such as academic engagement, intention to continue studying the target language, self-evaluated language competence, and confidence using the target language. I will also consider whether other forms of secondary control, including secondary control via lowering aspirations and vicarious secondary control also moderate these relations. If the findings prove reliable, in future studies I will examine reasons for the unexpected pattern of findings with regards to secondary control, intrinsic motivation, and language learning outcomes.

Second, I will examine the cross-cultural validity of the findings by comparing Canadian and Japanese students. Secondary control may help to explain why East Asians seem to respond differently to choice from North Americans; I expect to find that secondary control is a factor that contributes to East Asians' ability to maintain their motivation in circumstances that North Americans tend to find demotivating—specifically, when there are controlling forces present in the language classroom, I anticipate that secondary control will buffer the negative effects of this control, perhaps even more effectively than it does in Canada.

Past research indicates that Japanese students should have higher levels of secondary control than North Americans (e.g. Ashman et al., 2006; Morling et al., 2002). It has also been claimed that Japanese students may be more accustomed to controlled learning environments than Canadians (Matsuura at al., 2001; McEown

& Takeuchi, 2012). These factors may lead to stronger relations between secondary control strategies and motivation in Japan than in Canada.

Hypothesis 1: Japanese students will experience their language learning environments as more controlling than Canadian students such that they will perceive their English instructors as more controlling and they will have a more controlled motivational orientation than Canadians.

Hypothesis 2: The motivational variables will be related to each other and to the outcome variables as would be predicted by self-determination theory in both cultures. Specifically, satisfaction of the fundamental needs for autonomy, competence, and relatedness will be positively associated with the autonomous motivational orientations (intrinsic motivation, integrated regulation, and identified regulation) and negatively associated with amotivation. Perceived autonomy-support from the instructor should be positively correlated with need satisfaction and autonomous motivation, while these variables will show a negative association with instructor controllingness. Amotivation will correlate positively with instructor controllingness and negatively with instructor autonomy-support. The autonomous motivational orientations will correlate positively with intention to continue studying the target language, the intensity of academic engagement, and language competence, and negatively with language class anxiety, while amotivation will show correlations in the opposite direction with these outcomes.

Hypothesis 3: Japanese students will report higher levels of secondary control than Canadians.

Hypothesis 4: Both primary and secondary control will show positive associations with fundamental need satisfaction. Primary control will have a strong positive correlation with feelings of autonomy (but not feelings of relatedness) in both Canada and Japan. Consistent with Morling et al., (2002), secondary control will be positively correlated with autonomy, classroom relatedness, and relatedness with the instructor in both Canada and Japan, but the correlation with relatedness will be stronger in Japan.

Hypothesis 5: Primary control and secondary control via positive reappraisals will be positively correlated with self-determined motivation (intrinsic motivation and integrated and identified regulation) in Canada, and negatively correlated with amotivation, external regulation, and introjected regulation. Primary control and all three subtypes of secondary control (vicarious, lowering aspirations, and positive reappraisals) will be positively correlated with intrinsic motivation and integrated and identified regulations and negatively correlated with amotivation and external and introjected regulations in Japan.

Hypothesis 6: I predict that secondary control will moderate the effect of a controlling language instructor on language learning motivation, intention to continue studying the target language, language use anxiety, the intensity of academic engagement, and language competence. All of these represent important language learning outcomes; intention to continue studying the target language

indicates that a student is likely to improve their language proficiency through further study. According to a meta-analysis by Masgoret & Gardner (2003), the intensity of motivation (in this case, a behavioural construct including aspects similar to academic engagement and intention to continue) was found to be the single strongest predictor of language learning achievement.

In Canada, secondary control via positive reappraisals will moderate the relation between perceived controllingness of the instructor and learning outcomes (including autonomous motivational orientations, academic engagement, intention to continue studying the target language, self-evaluated language competence, and low language-use anxiety) such that students high in secondary control experience more positive outcomes than those low in secondary control when the teacher is seen as controlling, but not when the teacher is autonomy-supportive.

In Japan, there will be a moderation effect of positive reappraisals in the same pattern as in Canada, and analogous effects will be seen for vicarious secondary control and secondary control via lowering aspirations as well.

Method

Participants and Procedure

All participants were university students who were registered in language classes. Only participants who spent 15 minutes or longer to complete the questionnaire were included in the analyses. Participants who spent less than 15 minutes completing the questionnaire tended to show a pattern of responses that

indicated that they were not responding seriously; many of these students chose the same answer option for every question or showed positive correlations between reversed and non-reversed items. Other cases resulted from computer errors which caused the survey to restart from the beginning. The full questionnaire included over 250 items and took most individuals between 20 and 45 minutes to complete, with Japanese participants spending an average of 27 minutes and Canadians spending an average of 32 minutes. This criterion led to 5 students from the Canadian sample and 49 from the Japanese sample being dropped from the analyses.

Canada. One hundred and fifty-four native English-speaking Canadian citizens or permanent residents who were enrolled in a class studying any language other than English were included in the analyses. These participants were identified from the University of Alberta Department of Psychology subject pool and invited to participate in the survey. Participant ages ranged from 17 to 29 years with a mean age of 18.93 (SD=1.77). 72.1% were female, 22.9% were male and 10 subjects did not answer. Students in their first year of university studies made up 68.8% of the sample. Of the participants, 29.9% were studying French, 22.1% were studying Spanish, and the rest were studying ASL, Arabic, Chinese, Cree, German, Greek, Italian, Japanese, Korean, Latin, Norwegian, Polish, Punjabi, Swedish, or Ukrainian, and 21.1% reported that one or both parents were native speakers of the language they were studying. Of the 73.40% of students with declared majors, 7.62% were majoring in either the target language or a

closely related subject (e.g. German studies, Classics), and 6.67% were majoring in Linguistics. Students reported language class sizes ranging from 8 to 50 students with a mean class size of 25.5 (*SD*=7.55). Language classes at the Canadian university from which the sample was drawn typically meet a minimum of 3 and often as many as 5 times per week for a weekly total of between 3 and 6 hours of class time. Students had been attending their language class for between 4 and 8 weeks when they completed the questionnaire.

Japan. One hundred and fifty-eight native Japanese-speaking Japanese students were recruited in their English classes at a Japanese university. Participants ranged from 18 to 23 years of age with a mean of 19.40 (SD=1.12). Of the sample, 37.3% were female, 58.2% were male[2], and 4.4% did not specify their sex. Most (66.5%) were in their first year of university studies. All students in the Japanese sample had declared majors. Of the participants, 15.89% were majoring in English or a closely related subject such as English literature, 2.65% were majoring in a foreign language other than English, and none were Linguistics majors.

English classes at the Japanese university met once a week for 90 minutes and typically focused on either reading, writing, listening, or speaking rather than all 4 skills together as in the Canadian language courses. Most students at the Japanese university were required to take at least 2 different English courses per semester, so students typically had at least 3 hours of English class each week, but

[2] No mean gender differences were found in Canada, but significant differences were found in Japan such that females showed higher autonomous motivation, language class anxiety, and academic engagement, and lower perceived controllingness of the instructor.

only 1.5 hours with any one instructor. Students reported class sizes ranging from 15 to 45 students with a mean class size of 38.36 (*SD*=10.88). Most (63.43%) of the Japanese students reported that they were completing the questionnaire about a class that focused on computerized reading tasks. English classes at the university from which the Japanese sample was drawn often last for the entire school year rather than a single semester, and so 79.1% of the students reported that they had been attending their current English class for at least 6 months.

Materials

The questionnaire was presented in the students' native language and tailored to reflect the target language being studied by each participant, such that in Japan the questions were worded to refer to the English, and in Canada, the language the student reported that they were studying (example: "How long have you been studying [the target language]). After answering questions about background and demographic information, participants rated each questionnaire item on a 5 or 7-point scale, with 5 or 7 being the highest score (e.g. "Strongly agree," "Always," etc.) and 1 being the lowest (e.g. "Strongly disagree," "Never," "Not at all;" See Table 1 for reliability statistics for all scales). Negatively worded items were reverse-scored so that a high mean score on each scale indicated a high degree of endorsement. Full scales are included in Appendix A.

Where possible, scales that had previously been translated into Japanese and used in Japan were used. Other scales were chosen based on high Cronbach α values in previous research and perceived applicability to the Japanese university

context. These scales were then translated into Japanese by a native speaker of that language, back-translated into English by a native English speaker who was unfamiliar with the scales, and discrepancies were resolved by the author (a native English speaker) and a native speaker of Japanese.

Primary and Secondary Control. Wrosch, Heckhausen, and Lachman's (2000) scale was used to measure primary control (5 items; "When faced with a bad situation in my [target language] class, I do what I can to change it for the better." See Table 1 for means and Cronbach α values) and two subscales of secondary control (lowering aspirations, 5 items; "When my expectations are not being met in my [target language] studies, I lower my expectations," and positive reappraisals, 4 items; "When I am faced with a bad situation in my [target language] studies, it helps to find a different way of looking at things."). Ashman et al. (2006) were successful in using these subscales to show cultural differences between Japanese and North Americans. Four items from Hall et al. (2006; "Knowing that other students in [target language] have the same grades as I do gives me a comforting feeling of having something in common with others,") measured vicarious secondary control. Twelve secondary control items from Chaffee, Noels, and McEown (in preparation; "When things don't go my way in my [target language] studies, I am able to adapt to the situation;" See Appendix B for results of an exploratory factor analysis of the primary and secondary control scale) were also included. These items were rated on a 5-point scale with 1 being "not at all" and 5 being "a lot."

Instructor Autonomy-Support. Students rated their perception of their target language instructor as autonomy-supportive (high score) or controlling (low score) on a 7-point scale with 1 being "strongly disagree" and 1 being "strongly agree" (examples: "I feel that my [target language] instructor provides me choices and options"; "My [target language] instructor tells me what to do all the time." [reversed]) using 30 items adapted from the Learning Climate Questionnaire (LCQ; Williams, Wiener, Markakis, Reeve, & Deci, 1994), and Assor, Kaplan, and Roth (2002).

Motivation for Language Learning. Reasons for learning a second language along the self-determination theory continuum were assessed using the Language Learning Orientation Scale (LLOS; adapted from Noels, et al., 2000) This scale measures amotivation ("Offhand, I can't think of any good reason for why I study [the target language]"), as well as external regulation, (3 items; "In order to have a better salary later on") and introjected regulation (5 items; "Because I would feel guilty if I didn't know a second language"), identified regulation(5 items, "Because it helps me to achieve goals that are important to me") integrated regulation (4 items; "Because I see myself as the kind of person who can speak [the target language]"), and intrinsic motivation ("For the enjoyment I experience when I grasp a difficult construct in [target language]."). These can be collapsed into 3 orientations: amotivation, controlled motivation (external and introjected), and autonomous motivation (intrinsic motivation, integrated regulation, and identified regulation; Deci & Ryan, 2000). Participants

rated how closely each reason corresponded to their reasons for studying the target language from 1 (“not at all”) to 7 (“exactly”).

Fundamental Need Satisfaction. 19 items adapted from the “Basic Need Satisfaction at Work” scale (Kasser, Davey, & Ryan, 1992) assessed satisfaction of the needs for autonomy, competence, and relatedness in the language classroom. These were rated along a 7-point scale from “not at all true” (1) to “very true” (7). Four items were used to assess autonomy (e.g. “I feel like I can make a lot of inputs to deciding how I learn [the target language],” α=.65 Canada, .77 Japan), 5 to assess competence (e.g. “I have been able to learn interesting new skills in my [target language] class.”), and 7 to assess relatedness in the language class (e.g. “I really like the people in my [target language] class,”). Satisfaction of the need for relatedness in the student's relationship with the instructor were also assessed using 10 items from Richer & Vallerand, 5 of which measured intimacy, and 5 of which measured acceptance (1998; example: “In my relationship with my [target language] instructor, I feel understood.”).

Classroom Language Use Anxiety. 10 items adapted from Horwitz, Horwitz, and Cope's (1986) FLCAS were rated on a 5-point scale (1= “strongly disagree” to 5=“strongly agree”) as a measure of anxiousness about using the target language in the classroom (example: “I get nervous when I am speaking in my [target language] class.”).

Academic Engagement. Academic engagement were assessed using 9 items adapted from Salmela-Aro and Upadaya’s (2011) schoolwork engagement

inventory, which includes three three-item subscales: energy (e.g. "I am enthusiastic about my [target language] studies."), absorption ("Time flies when I am studying [the target language]."), and dedication ("I find my [target language] coursework full of meaning and purpose.") rated along a 5-point scale from "never" (1) to "always" (5).

Intention to Continue. Intention to continue learning the target language was measured using 5 items adapted from Noels, Clement, and Pelletier (1999; "I want to continue to learn [the target language] after I finish this course."). Participants answered along a 5-point scale with 5 being "always" and 1 being "never."

Language Competence. Subjects evaluated their ability to read, write, speak, and understand the target language on a 5-point scale adapted from Clement and Baker (2001), with 1 being "not at all" and 5 being "very well." Previous research has shown that self-evaluation measures correlate moderately strongly with language proficiency test results (MacIntyre, Noels, & Clément, 1994; Kondo-Brown, 2005). Subjects also reported how many years they had been studying the target language and rated how they felt their proficiency compared to the other students in their class on a 5-point scale ranging from 1 ("below average") to 5 ("above average").

Students were also asked for permission to access their language course grades as an objective measure of language competence. 57.8% of Canadian students and 31% of Japanese students consented to this. Final course grades were

collected for 20.30% of the Japanese sample and 0% of the Canadian sample. Japanese students for whom course grades were available viewed their instructor as significantly less controlling than other students according to one-way analysis of variance ($F(1, 152)$=16.08 p<.001), but no other mean differences were observed. Course grades were uncorrelated with self-evaluated language competence.

Table 1
Means, Standard Deviations, and Cronbach α for the Full Instruments

		Canada			Japan		
		Mean	**SD**	**α**	**Mean**	**SD**	**α**
Secondary Control	Primary Control	3.91	0.65	0.73	2.99	0.73	0.80
	Positive Reappraisal	3.69	0.63	0.75	3.02	0.67	0.65
	Lowering Aspirations	2.62	0.79	0.76	2.86	0.60	0.55
	Vicarious Control	3.44	0.66	0.58	3.01	0.62	0.54
Instructor	Instructor Overall	5.21	0.77	0.85	4.70	0.64	0.82
	Intruding	5.44	0.92	0.78	4.94	0.91	0.79
	Supressing	6.09	1.08	0.60	5.83	1.15	0.86
Motivational Orientations	Amotivation	1.77	1.23	0.85	2.66	1.25	0.82
	External Regulation	3.16	1.62	0.77	4.22	1.38	0.76
	Introjected Regulation	2.64	1.33	0.86	3.23	1.19	0.86
	Identified Regulation	5.06	1.43	0.86	4.13	1.44	0.87
	Integrated Regulation	3.79	1.84	0.91	2.81	1.34	0.84
	Intrinsic Motivation	4.37	1.76	0.92	3.58	1.42	0.85
Need Satisfaction	Autonomy	5.01	1.04	0.65	3.26	1.10	0.77
	Competence	4.84	1.29	0.81	3.33	0.98	0.62
	Classroom Relatedness	4.92	1.19	0.87	3.91	0.96	0.76
	Instructor Intimacy	3.76	1.44	0.94	3.04	1.23	0.88
	Instructor Acceptance	5.59	1.02	0.91	3.66	1.24	0.89
Engagement	Anxiety	3.19	0.80	0.85	3.42	0.58	0.74
	Intention to Continue	3.89	1.13	0.95	3.13	1.07	0.89
	Engagement	3.14	0.97	0.94	2.81	0.84	0.91
	Energy	3.18	1.01	0.83	2.98	0.82	0.69
	Dedication	3.31	1.07	0.89	2.80	0.97	0.84
	Absorption	2.94	1.02	0.86	2.64	0.96	0.79
Language Competence	Self-evaluation	3.19	0.80	0.83	2.31	0.77	0.82
	Grade				80.62	6.57	

Results

Preliminary Analyses

Preliminary analyses were conducted to ensure that the scales used and constructs measured showed statistical validity cross-culturally. Confirmatory factor analyses to test cross-cultural measurement invariance were computed using Mplus (Muthén & Muthén, 2007). Measurement invariance testing can be used to statistically determine whether the scores on a scale are consistent in meaning across different cultures. To do this, a confirmatory factor analysis is first performed in each group to find a model that fits in each culture separately, then configural invariance is tested. This means that the factor structure (i.e. the number of latent factors and observed indicators) is constrained to be the same across groups. If this results in acceptable fit, metric invariance is next tested by constraining the factor loadings to be equal. If metric invariance is supported, this means that the construct manifests the same way across cultures and a change of 1.0 (for example) indicates the same amount of change in the construct across groups. If at least partial metric invariance (meaning that some factor loading can be constrained to equality) is supported, relations between variables can be compared across groups (Dimitrov, 2010).

Next, scalar invariance can be tested for by constraining the intercept of each indicator to be the same across groups. If scalar invariance is supported, individuals with the same level of the latent construct will have the same scores on the indicators across groups. At least partial scalar invariance, meaning that

some intercepts can be constrained to equality, is necessary for making mean comparisons across cultures (Dimitrov, 2010; Byrne, Shavelson, & Muthén, 1989). The strictest form of invariance is residual invariance, which means that the residual variances of the indicators can be constrained to equality across cultures. For the present study, only items and factors that showed at least partial metric invariance were included in the major analyses, and mean comparisons were conducted only for items that showed at least partial scalar invariance.

The chi-square and chi-square difference, root mean square error of approximation (RMSEA) and its confidence interval (CI), the comparative fit index (CFI), and the standardized root mean square residual (SRMR) are the fit statistics commonly used to assess confirmatory factor models (Kline, 2011). A nonsignificant χ^2provides sufficient evidence of fit, but because the χ^2 is often significant with large samples, the other fit statistics are used; a SRMR of ≤.08 and CFI of ≥.95 indicate acceptable fit, and a RMSEA of ≤.05 also shows good fit, but a larger RMSEA is acceptable if the upper bound of the confidence interval does not exceed .10 (Kline, 2011). Some researchers argue that a RMSEA of up to .06 and CFI above .90 are acceptable (Dimitrov, 2010). When testing successive nested models, as in invariance testing, a non-significant χ^2 difference test indicates that the nested model does not fit significantly more poorly than the previous model, and therefore should be retained (and invariance is supported; Kline, 2011).

Primary and Secondary Control

A four-factor solution with factors for primary control, secondary control via positive reappraisals, vicarious secondary control, and secondary control through lowering aspirations fit well in Canada but not in Japan, where the four-factor solution resulted in a covariance matrix that was not positive definite.

Only secondary control via positive reappraisals and a 4-item version of primary control showed full configural and metric invariance across the two cultures (see Tables 2 & 3). Primary control also showed full scalar and residual invariance, while partial scalar invariance was supported for positive reappraisals. This indicates that students in both cultures were responding to this scale in the same way; the factor structure, factor loadings, and intercepts could be constrained to be equal. This means that cross-cultural mean comparisons can be made for both of these subscales, but not for the others.

Table 2
Positive Reappraisals

	χ^2(df)	CFI	RMSEA [CI]	SRMR	χ^2 Difference
Canada CFA	6.34(4)	.95	.09 [0, .21]	.07	
Japan CFA	5.92(5)	.96	.05 [0, .17]	.05	
Configural	3.72(6)	1.00	0 [0, .08]	.02	
Metric	7.77(10)	1.00	0 [0, .072]	.04	4.05(4)
Scalar	22.53(12) *	.96	.08 [.02, .12]	.07	14.76(2)**
Partial Scalar	9.64(9)	1.00	.02 [0, .10]	.05	1.87(1)
Residuals	46.52(19)**	.90	.10 [.06, .13]	.18	23.99(7)**

**. χ^2 is significant at the 0.01 level (2-tailed).
*. χ^2 is significant at the 0.05 level (2-tailed).

Table 3
Primary Control

	χ^2 (df)	CFI	RMSEA [CI]	SRMR	χ^2Difference
Canada CFA	.03(1)	1.00	.00 [0, .112]	.00	
Japan CFA	.17(1)	1.00	0 [0, .16]	.00	
Configural	49.40(44)	1.00	.03 [0, .06]	.04	
Metric	52.51(47)	1.00	.03 [0, .06]	.04	3.11(3)
Scalar	58.15(50)*	1.00	.03 [0, .06]	.05	5.64(3)
Residuals	66.21(54)	.99	.04 [0, .07]	.05	8.06(4)

To elucidate the problems with vicarious secondary control and secondary control via lowering aspirations, an exploratory factor analysis with principal axis factoring and direct oblimin rotation was conducted on the lowering aspirations and vicarious control items. A 2-factor solution converged in both cultures, but the content of the two factors differed. An examination of the pattern matrix showed that in Canada, the 5 lowering aspirations items loaded onto the first factor with loadings greater than .30 and the top three vicarious control items (in terms of their factor loadings from the exploratory factor analysis reported in Appendix B) defined the other. In Japan, four items including “To avoid disappointments in my English studies, I don’t set my goals too high,” and “When things don’t go my way in my English studies, I try to fit in with the rest of the class more” defined one factor which seemed to reflect adjustment of the self. Three items loaded on the second factor, and these items seemed to have to do with acceptance of existing realities (e.g. "I have found that talking with other students who have had the same experiences studying English gives me a better sense that I can manage my life; When I encounter difficulties in my English studies, I accept that I can’t always do what I want to do; I try to make friends with other students in my English class who are ‘in the same boat’ as I am;" see Table 4). The correlation between the two factors was r=.39.

Table 4

Pattern Matrix for Exploratory Factor Analysis (EFA) of Lowering Aspirations and Vicarious Control items in Japan

	Factor	
	1	2

To avoid disappointments in my [target language] studies, I don't set my goals too high.	.76	
When things don't go my way in my [target language] studies, I try to fit in with the rest of the class more.	.66	
When I notice everyone in my [target language] class has a different opinion than me, I will reconsider my opinion.	.66	
Knowing that other students in [target language] have the same grades as I do gives me a comforting feeling of having something in common with others.	.46	
When it comes to my [target language] studies, I often remind myself that I can't do everything.		
When I can't get what I want in my [target language] studies, I assume my goals must be unrealistic.		
I have found that talking with other students who have had the same experiences studying [target language] gives me a better sense that I can manage my life.		.69
When I encounter difficulties in my [target language] studies, I accept that I can't always do what I want to do.		.60
I try to make friends with other students in my [target language] class who are ''in the same boat'' as I am.		.33
When my expectations are not being met in my [target language] studies, I lower my expectations.		

Extraction Method: Principal Axis Factoring.
Rotation Method: Oblimin with Kaiser Normalization.
a. Group = Japanese
b. Rotation converged in 5 iterations.

This seems to indicate that there is more to secondary control than just positive reappraisals, but that other aspects of the construct may not be directly comparable across cultures. In Canada, the construct appears to play out more or less in the terms outlined by Wrosch et al., (2000) and Hall et al., (2006), with a vicarious subtype and a subtype that involves the lowering of aspirations, while in Japan secondary control may fall out more along the lines of adjustment and acceptance as described by Morling and Evered (2006).

Instructor Autonomy-Support and Control

A 2-factor solution with one factor representing controlling behavior from the instructor and including most of the reversed items, and one factor describing teachers' autonomy-supportive behaviors fit well in both cultures. A 5-indicator measure of the instructor's controlling behavior showed configural, metric, and partial scalar invariance (meaning that the intercepts were constrained for only 3 of the 5 items; Table 5). A 6-indicator autonomy support factor also showed configural, metric, and partial scalar invariance (Table 6).

Table 5
Instructor Controllingness

	χ^2 (df)	CFI	RMSEA [CI]	SRMR	χ^2Difference
Canada CFA	7.75(5)	.96	.06 [0, .14]	.04	
Japan CFA	1.57(5)	1.00	0 [0, .05]	.02	
Configural	10.86(10)	1.00	.02 [0, .09]	.03	
Metric	16.01(14)	.96	.06 [.037, .09]	.06	5.15(4)
Scalar	40.80(18)**	.94	.09 [.05, .13]	.07	24.79(4) **
Partial Scalar	16.05(16)	1.00	.00 [0, .08]	.06	0.04(2)

Table 6
Instructor Autonomy-Support

	χ^2 (df)	CFI	RMSEA [CI]	SRMR	χ^2Difference
Canada CFA	11.72(8)	.98	.06(0, .12)	.03	
Japan CFA	7.91(8)	1.00	0 [0, .09]	.03	
Configural	19.63(17)	1.00	.03 [0, .08]	.03	
Metric	26.10(22)	.99	.04 [0, .08]	.06	6.47(5)
Scalar	41.73(27)*	.97	.06 [.016, .09]	.08	15.63(5)**
Partial Scalar	34.86(26)	.98	.05 [0, .08]	.07	8.76(4)
Residuals	50.59(32)*	.97	.06 [.03, .09]	.09	15.73(6)*

Motivational Orientations

A solution with each of the 6 orientations as separate factors did not fit well in either culture, so a simplified 2-factor solution with an autonomous motivational orientation and a controlled motivational orientation was used (See Table 7). This solution showed configural and metric invariance, but significant scalar noninvariance and a factor correlation of .56 in Canada and .83 in Japan.

Amotivation showed configural, partial metric (with one of the four factor loadings freed) and full scalar invariance (Table 8). This means that mean cross-cultural comparisons of amotivation can be made, but the autonomous and controlled motivational orientations can only be compared in terms of their relations to other variables within each culture.

Table 7
Motivational Orientations

	χ^2 (df)	CFI	RMSEA [CI]	SRMR	χ^2Difference
CFA Canada	225.86(107)**	.93	.09 [.07, .10]	.07	
CFA Japan	.190.60(108)**	.95	.07 [.05, .09]	.06	
Configural	472.24(217)**	.92	.09 [.08, .10]	.07	
Metric	490.07(230)**	.92	.09 [.08, .10]	.08	17.83(13)
Scalar	672.27(247)**	.87	.11 [.10, .12]	.12	182.2(17) **

Table 8
Amotivation

	χ^2 (df)	CFI	RMSEA [CI]	SRMR	χ^2Difference
CFA Canada	0.35(2)	1.00	0 [0, .09]	.01	
CFA Japan	1.18(2)	1.00	0 [0, .14]	.01	
Configural	1.52(4)	1.00	0 [0, .073]	.01	
Metric	21.05(7)*	.97	.11 [.06, .17]	.08	19.53(3)**
Partial Metric	4.15(6)	1.00	0 [0, .084]	.03	2.63(2)
Scalar	7.50(9)	1.00	0 [0, .079]	.04	3.35(3)
Residuals	21.78(13)	.98	.07 [0, .113]	.05	14.28(4)**

Fundamental Need Satisfaction and Intention to Continue

A 3-factor model of need satisfaction did not fit well due to excessive covariance between the latent factors for autonomy, competence, and relatedness. Using the mean of each need satisfaction subscale (autonomy, competence, and relatedness) to define a latent need satisfaction factor resulted in good fit in both cultures. Because this was a just-identified model, intention to continue (a single-factor construct) was modeled together with need satisfaction. Configural and

metric were found for these two measures (Table 9). Intention to continue showed full scalar invariance, while need satisfaction showed partial scalar invariance, with the intercept of autonomy free to vary across cultures.

For relatedness to the instructor, a 2-factor solution, with 5 items for intimacy with the instructor and 5 for feeling accepted by the instructor fit well in both cultures. The two factors were correlated at .64 in Canada and .97 in Japan. The intimacy factor showed configural and partial metric invariance with one factor loading freed, and partial scalar invariance with three freed intercepts. The support factor showed configural, full metric, and full scalar invariance.

Table 9
Need Satisfaction & Intention to Continue

	χ^2 (df)	CFI	RMSEA [CI]	SRMR	χ^2Difference
Canada CFA	43.90(19)**	.97	.09 [.06, .13)]	.05	
Japan CFA	28.23(18)	.98	.06 [0, .10]	.04	
Configural	55.70 (34)*	.99	.06 [.03, .09]	.04	
Metric	60.70(38)*	.99	.06 [.03, .09]	.07	5.00(4)
Scalar	71.83(42)**	.98	.07 [.04, .09]	.08	11.12(4)*
Partial Scalar	63.13(41)	.99	.06 [.03, .09]	.07	2.43(3)
Residuals	114.02(49)**	.96	.09 [.07, .12]	.11	50.89(8)**

Table 10
Relatedness to the Instructor

	χ^2 (df)	CFI	RMSEA [CI]	SRMR	χ^2Difference
CFA Canada	29.42(30)	1.00	0(0, .06]	.03	
CFA Japan	47.38(30)	.99	.06 [.02, .09]	.03	
Configural	76.80(60)	.99	.04(0, .07]	.03	
Metric	103.45(68)**	.99	.06 [.03, .08]	.07	26.65(8)**
Partial Metric	89.41(67)*	.99	.05 [.01, .07]	.06	12.61(7)
Scalar	205.52(75)**	.94	.11 [.09, .12]	.09	116.11(8)**
Partial Scalar	98.51(72)*	.99	.05 [.02, .07]	.07	9.1(5)
Residuals	143.97(82)**	.97	.07 [.05, .09]	.12	45.46(10)**

Anxiety

A single-factor model with 6 indicators fit well in Canada and Japan and showed configural, metric, and partial scalar invariance (Table 11).

Table 11

Anxiety

	χ^2 (df)	CFI	RMSEA [CI]	SRMR	χ^2Difference
Canada CFA	13.00(13)	1.00	.00 [0, .08]	.03	
Japan CFA	22.98(14)	.95	.06 [0, .11]	.05	
Configural	19.61(15)	.99	.05 [0, .09]	.03	
Metric	27.59(20)	.98	.05 [0, .09]	.06	7.98(5)
Scalar	75.90(25)**	.89	.12 [.09, .15]	.08	52.31(5)**
Partial Scalar	30.35(22)	.98	.05 [0, .09]	.06	2.71(2)

Engagement

A 1-factor solution was used because the 3-factor solution (with energy, dedication, and absorption as separate factors) did not fit well in Japan. Configural, metric, and partial scalar invariance were supported (Table 12).

Table 12
Engagement

	χ^2 (df)	CFI	RMSEA [CI]	SRMR	χ^2Difference
Canada CFA	32.78(23)	.99	.05 [0, .09]	.02	
Japan CFA	30.06(23)	.99	0 [.04, .08]	.03	
Configural	86.91(48)**	.98	.07 [.05, .10]	.03	
Metric	97.74(56)**	.98	.07 [.05, .09]	.06	10.83(8)
Scalar	220.61(64)**	.92	.13(.11, .14]	.09	122.87(8)**
Partial Scalar	101.71(59)**	.98	.07 [.05, .09]	.06	3.97(3)

Table 13
Means, Standard Deviations, and Cronbach α for Invariant Constructs

		Canada			Japan		
		Mean	SD	α	Mean	SD	α
	Primary Control	3.91	0.65	0.73	2.99	0.73	0.80
	Positive Reappraisal	3.69	0.63	0.75	3.02	0.67	0.65
Instructor	Autonomy Support	4.80	0.99	0.84	4.20	0.98	0.88
	Controllingness	2.12	0.59	0.81	2.45	1.08	0.83
Motivational Orientations	Amotivation	1.77	1.23	0.85	2.66	1.25	0.82
	Autonomous Motivation	4.54	1.46	0.93	3.74	1.35	0.93
	Controlled Motivation	3.02	1.32	0.79	3.78	1.17	0.79
Need Satisfaction	Instructor Intimacy	3.76	1.44	0.94	3.04	1.23	0.88

Instructor Acceptance	5.59	1.02	0.91	3.66	1.24	0.89
Need Satisfaction	4.93	0.98	0.77	3.50	0.81	0.71
Anxiety	3.19	0.8	0.85	3.42	0.58	0.74
Intention to Continue	3.89	1.13	0.95	3.13	1.07	0.89
Engagement	3.14	0.97	0.94	2.81	0.84	0.91
Anxiety	3.07	0.87	0.80	3.38	0.77	0.76

All constructs showed at least sufficient invariance for cross-cultural comparisons of within-culture relations to be made, and all except motivational orientation were invariant enough for means comparisons to be supported. All invariant constructs showed acceptable Cronbach α values, so these constructs are sufficiently reliable and valid to be used in the major analyses.

Major Analyses

Hypothesis 1: Cross-cultural differences in Instructor Controllingness

It was predicted that Japanese students would perceive their English instructors as more controlling compared to the Canadian students' instructor ratings. According to a 2x2 mixed model ANOVA with country (Japan vs. Canada) as the between-subjects factor and support (autonomy-supportive vs. controlling) as the within subjects factor, there was a main effect of perception of the instructor such that both Japanese and Canadians rated their instructors as more autonomy-supportive than controlling $F(1, 306)$=758.65, p<.001 η_p^2=.69. There was no main effect of culture, but the interaction effect was significant $F(1, 306)$=29.22, p<.001 η_p^2=.09. As hypothesized, post-hoc tukey tests comparing the

between-culture effects showed that Japanese students perceived their English instructors to be significantly more controlling and less autonomy-supportive than Canadian students rated their language instructors.

Cross-cultural differences in motivational orientation.

Because the autonomous and controlled motivational orientations showed scalar noninvariance, only the within-culture patterns of these orientations can be compared. Paired-samples t-tests revealed that these patterns differed significantly across cultures such Canadian students reported significantly higher levels of autonomous motivation (*M*=4.54, *SD*=1.46) than controlled motivation(*M*=3.02, *SD*=1.32; *t(153)*=12.91, *p*<.001), while the Japanese students reported equal amounts of autonomous (*M*=3.74, *SD*=1.35) and controlled (*M*=3.78, *SD*=1.17) reasons for language learning(*t(154)*=-.47 *p*=.64).

The Japanese students' amotivation was higher than the Canadian students' amotivation (*M*=2.66, *SD*=1.25 in Japan compared with *M*=1.77, *SD*=1.23 in Canada; one-way ANOVA *F(1, 307)*=39.67, *p*<.001). Feelings of relatedness to the instructor were also positively associated with controlled motivation in Japan but not Canada (see Table 14).

Hypothesis 2: Relations between Motivational Variables

The hypothesis that need satisfaction would correlate positively with autonomous motivation and negatively with amotivation in both cultures was fully supported in Canada and partially supported in Japan, where amotivation

was uncorrelated with need satisfaction and relatedness to the instructor and controlled motivation was positively correlated with these variables.

Table 14
Correlations between Fundamental Need Satisfaction and Motivational Orientations

Group		Need Satisfaction	Instructor Intimacy	Instructor Acceptance
Canada	Autonomous Motivation	.47**	.21**	.28**
	Controlled Motivation	-.01	-.01	-.03
	Amotivation	-.42**	-.08	-.22**
Japan	Autonomous Motivation	.63**	.22**	.34**
	Controlled Motivation	.35**	.24**	.31**
	Amotivation	-.14	.03	-.06

** = p<.01
* = p< 0.05

It was also expected that autonomous orientation would correlate negatively with anxiety and positively with all other outcome variables, while amotivation would show the opposite pattern. This hypothesis was generally supported, although anxiety was uncorrelated with motivational orientation in Japan and many of the negative correlations with amotivation were nonsignificant.

Table 15
Correlations between Motivational Orientations and Outcomes

		Autonomous	Controlled	Amotivation
Canada	Anxiety	-.19*	.00	.10
	Intention to Continue	.67**	.17*	-.61**
	Engagement	.69**	.15	-.53**
	Read	.42**	.15	-.08
	Write	.36**	.11	-.13
	Speak	.44**	.22**	-.08
	Understand	.42**	.29**	-.10
	Course Grade			
Japan	Anxiety	.06	.12	.02
	Intention to Continue	.77**	.42**	-.34**
	Engagement	.79**	.44**	-.25**
	Read	.27**	.13	-.23**

	Write	.29**	.09	-.08
	Speak	.36**	.09	-.14
	Understand	.39**	.17*	-.21**
	Course Grade	.46**	.21	-.34

Finally, need satisfaction and autonomous motivational orientation were expected to correlate positively with perceived autonomy-support from the instructor and negatively with perceived instructor controllingness, while the opposite pattern was expected for amotivation. The pattern for autonomy support was fully supported, but the pattern for controllingness was supported only in Canada. In Japan, although instructor controllingness was linked to increased amotivation, it was not significantly negatively correlated with autonomous motivation, need satisfaction, or relatedness to the instructor.

Table 16
Correlations of Perceptions of the Instructor with Motivational Orientations and Need Satisfaction

Group		Autonomy Support	Controllingness
Canada	Autonomous Motivation	.27**	-.18*
	Controlled Motivation	-.09	.10
	Amotivation	-.14	.33**
	Need Satisfaction	.34**	-.35**
	Instructor Intimacy	.46**	-.35**
	Instructor Acceptance	.60**	-.49**
Japan	Autonomous Motivation	.36**	-.06
	Controlled Motivation	.26**	-.03
	Amotivation	-.21**	.26**
	Need Satisfaction	.36**	.14
	Instructor Intimacy	.32**	.07
	Instructor Acceptance	.44**	-.06

Hypothesis 3: Cross-cultural Differences in Secondary Control

Japanese students were expected to report higher levels of secondary control than Canadians. Due to the noninvariance of the other two types of secondary control, only secondary control via positive reappraisals and primary control could be directly compared in the two cultures. Results of one-way analysis of variance showed that the hypothesis was not supported; the Japanese students were significantly lower than the Canadians in reported use of both positive reappraisals ($F(1,304)$=82.09, p<.001) and primary control ($F(1,303)$=134.96, p<.001). Within each culture, however, repeated measures analysis of variance showed that Canadians relied on primary control significantly more than secondary control via positive reappraisals ($F(1,153)$=24.63, p<.001, η_p^2=.14), while the Japanese students used both strategies equally ($F(1,150)$=.05, p=.83, η_p^2=.00).

Table 17
Correlations between Control and Fundamental Need Satisfaction

		Primary Control	Positive Reappraisal
Canada	Need Satisfaction	.40**	.37**
	Instructor Intimacy	.11	.16*
	Instructor Acceptance	.26**	.35**
Japan	Need Satisfaction	.47**	.26**
	Instructor Intimacy	.24**	.15
	Instructor Acceptance	.29**	.17*

Hypothesis 4: Primary and Secondary Control and Need Satisfaction

This hypothesis stated that primary control would correlate positively with autonomy in both Canada and Japan. Due to the noninvariance of the three-factor need satisfaction solution, the composite need satisfaction factor is used instead of

autonomy alone. Correlations between primary control and need satisfaction were significant and positive, as predicted (See Table 17). Primary control also correlated positively with relatedness in both cultures.

It was predicted that secondary control would be positively correlated with autonomy, classroom relatedness, and relatedness with the instructor in both Canada and Japan, and that the correlation with relatedness would be stronger in Japan. Secondary control via positive reappraisals generally followed the hypothesized pattern, correlating positively with need satisfaction and relatedness to the instructor, but the correlations with relatedness tended to be stronger in Canada than in Japan, though not significantly so, and in Japan reappraisals were not significantly positively correlated with intimacy in the relationship with the instructor (See Table 17).

Hypothesis 4: Control and Motivation

Primary control and secondary control via positive reappraisals were predicted to correlate positively with self-determined motivation (intrinsic motivation and integrated and identified regulation) in Canada and negatively with amotivation, external regulation, and introjected regulation. Primary control correlated positively with the autonomous motivational orientation and negatively with amotivation, but was uncorrelated with the two controlled regulations (see Table 18). Positive reappraisal was correlated positively with the autonomous regulations, but did not correlate significantly with the controlled orientation or amotivation.

Table 18

Correlations between control and motivational orientation

		Primary Control	Positive Reappraisal
Canadian	Autonomous Motivation	.37**	.26**
	Controlled Motivation	.06	-.00
	Amotivation	-.30**	-.14
Japanese	Autonomous Motivation	.51**	.27**
	Controlled Motivation	.28**	.08
	Amotivation	-.19*	-.12

** = p<.01
* = p< .05

In Japan, partial support for the hypothesis was found. Primary control and secondary control via positive reappraisals were positively correlated with autonomous motivation in Japan, but only primary control was significantly negatively correlated with amotivation. These relations were strongest with primary control (See Table 18). Secondary control via lowering aspirations correlated positively with amotivation and introjection only.

Hypothesis 5: Moderation by Secondary Control

Secondary control via positive reappraisals was predicted to moderate the relation between perceived control from the instructor and learning outcomes such that students high in secondary control experience more positive outcomes than those low in secondary control when the teacher is seen as controlling, but not when the teacher is autonomy-supportive. In Japan, this same relationship was predicted for all three types of secondary control. None of the three types of secondary control significantly moderated the relation between perception of the instructor and the motivational orientations, academic engagement, intention to

continue studying the target language, self-evaluated language competence, language-use anxiety, or need satisfaction in either culture.

Discussion

This study sought to examine how secondary control and motivation intersect among language students in different cultural contexts. Associations between secondary control via positive reappraisals and motivational factors were found in both Canada and Japan such that the more students were able to adjust their attitudes towards their situation, the more autonomous motivation, need satisfaction, and relatedness to the instructor they reported. Primary control, secondary control via positive reappraisals, motivational orientations, need satisfactions, and the various language learning outcomes were found to be acceptably invariant across the two cultures, which supports the idea that students have a similar understanding of the concepts, and therefore cross-cultural comparisons of these constructs in Japan and Canada are valid.

I also hoped to replicate the results of Chaffee et al. (2013) showing that secondary control (at least via positive reappraisals) buffered the negative effect of having a controlling instructor on motivational orientation and learning outcomes and extend these results to Japan, but significant moderation effects were not found. In the following I discuss the results having to do with the cultural differences in environmental control and personal control strategies, as well as how these constructs are related to motivational factors in the two cultures.

I will then discuss the applied implications of these results and limitations of the present study and possible future directions.

As expected, Japanese students experience more control from their language instructors than do Canadian students. Ambiguous results as far as the intercorrelations between the instructor's controllingness and other variables leave unresolved the question of whether Japanese students view the controlling behaviors of their instructors negatively. Because two of the three English instructors in our sample were researchers familiar with self-determination theory, it may be that these instructors, while more controlling than their Canadian counterparts, were less controlling and more autonomy-supportive than the Japanese students' instructors in other classes, leading the Japanese students to feel relatedness to the instructor and engagement in the course despite experiencing levels of control that might be considered high at a Canadian university. Also suggestive is the fact that feelings of relatedness to the instructor were positively associated with controlled motivation in Japan but not Canada. Though this finding may be attributable to the small number of instructors rated in the Japanese sample, it is possible that insofar as the controlling behaviors of the instructor help create a structured learning environment, Japanese students may find a certain amount of controllingness desirable.

Among the Canadian students, relationships between motivational orientation, fundamental needs, learning outcomes, and perceptions of the instructor supported what would be predicted under self-determination theory: namely, that need

fulfillment predicts self-determined motivation, and a self-determined motivational profile predicts positive learning outcomes. In Japan, these predictions were also mostly supported, with the exceptions that amotivation was not significantly associated with need satisfaction, although trends in the expected direction were found for need satisfaction and instructor acceptance. Controlled motivation, on the other hand, was positively associated with need satisfaction in Japan but not in Canada, which may indicate that feelings of introjection (guilt, shame, and obligation) may be more internalized for Japanese students than for Canadians (Miller et al., 2011). Additionally, the lack of a relation between language learning anxiety and motivational orientations for the Japanese suggests that Japanese students are uneasy about speaking English regardless of their learning motivation.

Troublingly, the finding that Japanese students endorsed lower levels of secondary control in the language classroom than Canadians is inconsistent with the prior research (Ashman et al., 2006; Kurman, Hui, & Dan, 2010; Morling, 2000; Morling et al., 2002; Tsai et al., 2007). This contrary result is especially surprising given that most of the primary and secondary control items used in the present study were also used by Ashman et al. (2006). The finding that Japanese students' controlled motivation was as high as their autonomous motivation, and their amotivation was high compared to levels generally found among Canadian language learners may help to explain why Japanese students showed lower levels of both types of control than Canadians. It is possible that some students may

have declined to pursue these types of control out of a sense of helplessness as a result of feeling controlled and apathetic (amotivated) in the language learning context. However, the relative endorsement of positive reappraisals compared to primary control supports prior claims that secondary control has greater relative importance for East Asians than for North Americans (Morling et al., 2002; Weisz et al., 1984). Although the Japanese students reported using less secondary control than the Canadians, they did claim to use primary control and secondary control strategies about equally, whereas primary control was the primary strategy of Canadian students.

It was expected that primary control, which involves exerting control over one's environment, might lead students to feel increased autonomy. This relation was found in that primary control was positively associated with need satisfaction. It makes sense that the successful exercise of primary control in the language class might make a student feel both autonomous and competent. More puzzling is the association with relatedness to the instructor, but this relation may be explained by the closely associated nature of all three fundamental needs. Alternatively, the fulfillment of the three fundamental needs might inspire students to exercise greater primary control. Positive reappraisals also showed the expected positive associations with fundamental need satisfaction and relatedness to the instructor.

Primary control correlated positively with autonomous motivational orientation (which included intrinsic motivation, integrated regulation, and

identified regulation) and negatively with amotivation in both cultures. However, positive reappraisals were correlated only with autonomous motivational orientation. Neither strategy correlated in the expected direction with controlled orientation; primary control and controlled orientation showed a small positive correlation in Japan, and all other relations with this orientation were nonsignificant. Although a negative relation was hypothesized, this is not surprising as introjection, which is included in this orientation, is at least somewhat internalized, and correlations tend to be stronger and more directionally consistent with amotivation and autonomous regulations than with controlled orientations (e.g. Chaffee et al., 2013). These patterns of correlations were generally similar to what was hypothesized. Whereas Chaffee et al. (2013) found that positive reappraisals tended to be the strongest predictor of autonomous motivational orientations, amotivation, and need satisfaction, in the present study primary control tended to show higher correlations than secondary control did. However, both primary control and secondary control via positive reappraisals are associated with more autonomous reasons for language learning and greater satisfaction for the fundamental needs for autonomy, competence, and relatedness in both Canada and Japan.

Unexpectedly, secondary control failed to moderate relationships between the instructor's autonomy-support or controllingness and outcome variables in Canada, and results in Japan were also nonsignificant. In Canada, the measures and methods of data collection used were almost identical to Chaffee and

colleagues (2013). The secondary control measure included an additional 12 items, but even when only the items from the 2013 study were included, the results did not change significantly from those reported here. Because data collection for Chaffee et al. (2013) was conducted mainly during the winter and spring semesters, while data for the present study were collected during the first half of the Fall semester, there was a relatively higher proportion of students (50.6% in the present sample as opposed to 23% in Chaffee et al., 2013) taking their first university-level language class in this sample. A study by Noels & Vargas-Lascano (2013) showed that causal relationships may not be evident early in the language class, so it is possible that the Canadian students in the present study had not yet settled into their language classes enough for their motivation to be affected by the instructor's style; the influences of secondary control may take a few months to become apparent.

Applied Implications

This data provides evidence that both primary control and positive reappraisals may help students to internalize their reasons for language learning. The positive correlations of secondary control via positive reappraisals with need satisfaction and autonomous motivation suggest that encouraging students to use secondary control via positive reappraisals in their language studies may have positive effects on their motivation. These results have implications for which students eventually become proficient users of the languages they are studying. It appears that it would be worthwhile to encourage language learners to adjust their

attitudes in the face of language learning difficulties and look at them instead as learning opportunities by using secondary control via positive reappraisals.

Previous literature on coping suggests a few ways this might be accomplished. Sentence-completion tasks in which people fill in missing letters to finish a positive sentence have been shown to increase positive reappraising (Woud, Holmes, Postma, Dalgleish, & Mackintosh, 2011), as have mantram repetition (Bormann & Carrico, 2009) and mindfulness (Garland, Gaylord, & Fredrickson, 2011). Mantra repetition and mindfulness meditation may be difficult strategies for language teachers to implement in their classrooms, but sentence writing is one of the four central skills involved in language learning. Word-completion tasks very similar to the ones used by Woud et al. (2011) could potentially be included as part of writing or vocabulary activities in lower-level language classes to encourage students' positive reappraisals. In more advanced classes, journal-writing activities could be used to promote positive reappraisals; students could be instructed to reflect on the things they have learned recently, including anything they have found difficult, but then encouraged to end each journal entry on a positive note.

Explicit instructions to positively reappraise have also been effective in some studies (e.g. Ehring, Tuschen-Caffier, Schnülle, Fischer, & Gross, 2010). It seems likely that such instruction would be more convincing coming from a peer than a teacher, particularly an authoritarian teacher. To this end, invited talks by researchers or former students in which speakers promote positive reappraisals or

discuss their own successful use of this strategy might also encourage students to engage in this type of thinking, thereby increasing their autonomous motivation.

Limitations and Future Directions

In Japan there were a few potential problems with the sample. Previous studies have linked mean levels of secondary control to interdependence (e.g. Ashman et al., 2006), and the proportion of males, who tend to be less interdependent than females (Cross & Madson, 1997), was much larger in the Japanese sample than the Canadian one. However, no mean gender difference was found for positive reappraisals in the present study, so it is unlikely that this affected the major findings. Additionally, though there were many different languages and instructors' courses represented in the Canadian sample, students in the Japanese sample had one of only 3 English instructors. The Japanese students nonetheless reported a range of values on the scales which asked about their perceptions of the instructor, and the distributions of means were generally normal. Although variability was not lacking on the instructor-related variables, this variability may have had less to do with the objective behaviors of the instructor in Japan than in Canada, and this may have affected how these variables related to other variables. Data collection in Japan was conducted during class time, and though instructors were asked to leave the room while students completed the questionnaire, the setting may have biased the results.

The fact that many Japanese students had to be dropped from the analyses due to suspiciously fast response times and strange response patterns indicates

that many of the students, who were getting no credit for their participation, were not taking the questionnaire seriously or paying full attention. Although the least engaged participants were removed, it is possible that a lack of investment among the remaining students may have led to random responding, making it more difficult to detect relationships between variables. Because of these factors and the inconsistencies of the present sample with the literature in terms of secondary control, the null results of the moderation effects for this group may not be conclusive.

Future studies utilizing other types of methodology can obviate these limitations (time to settle into the language learning setting, Japanese students feeling amotivated towards English, etc.). For instance, using an experimental manipulation in which students are made to feel controlled in the laboratory would allow causal interpretations. Tasks both related and unrelated to language learning could be used as dependent variables to investigate whether negative attitudes towards language learning affect the results, and using moderately enjoyable tasks should help to prevent students from being especially amotivated or becoming bored (as may have happened with the questionnaire used for the present study). This approach would clarify the role of secondary control strategies in controlling situations by ensuring that the students are experiencing different levels of actual environmental control and extending the findings beyond the language classroom. Experimental studies of motivation would also allow the effects of secondary control to be observed immediately instead of requiring that

students have had several months to settle into their language classes. Longitudinal studies could help to reveal at what point in the language class secondary control might begin to show moderating effects on motivation, and combining this design with more objective ratings of the instructor's controlling behavior would improve the validity of the findings. Studies of elective language classes in Japan (as opposed to English classes, which are usually required) might provide a better comparison point for establishing whether secondary control can interact with classroom factors there.

Conclusion

This study extended some of the findings of Chaffee and colleagues (2013) and Hladkyj and colleagues (1998) by investigating the relations between secondary control and academic motivation in two cultures. In language classes, Japanese students reported using only low levels of control strategies, but the relative levels of primary and secondary control made sense in light of prior research—in relative terms, secondary control appears less important to Canadians than Japanese in at least one type of academic context (the university language classroom). Though students tended to endorse the two strategies with different relative strength in different cultures, primary and secondary control were both related to a motivational profile that should lead to more effective language learning through increased need satisfaction and autonomous motivation; these results were similar for primary and secondary control, as well as for both Japanese and Canadian students. The relation of positive reappraisals to

motivational variables indicates that a tendency to use this strategy in the language class is a factor that is worth investigating in different cultures, as it has implications for foreign and second language proficiency.

Also important is the finding that although the factor structures for the self-determination theory constructs had to be simplified in order for statistical measurement equivalence to be achieved, all the constructs measured for this study appear to be statistically valid in both Japan and Canada. This means that these concepts can be compared across these two countries; most show sufficient invariance to support mean comparisons, and all show invariance at least sufficient for comparisons of within-culture patterns. Therefore secondary control via positive reappraisals can and should be studied as a factor that may affect motivation in multiple cultures.

References

Abuhamdeh, S., & Csikszentmihalyi, M. (2009). Intrinsic and extrinsic motivational orientations in the competitive context: an examination of person-situation interactions. *Journal of Personality*, *77*(5), 1615-35.

Ashman, O., Shiomura, K., & Levy, B. R. (2006). Influence of culture and age on control beliefs: the missing link of interdependence. *International Journal of Aging & Human Development*, *62*(2), 143-57.

Assor, A., Kaplan, H., & Roth, G. (2002). Choice is good, but relevance is excellent: Autonomy-enhancing and suppressing teacher behaviours predicting students' engagement in schoolwork. *The British Journal of Educational Psychology*, *72(2)*, 261–78. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/12028612

Baard, P. P., Deci, E. L., Ryan, R. M. (2004). Intrinsic need satisfaction: A motivational basis of performance and well-being in two work settings. *Journal of Applied Social Psychology*, *34*, 2045-2068.

Bao, X.-H., & Lam, S.-F. (2008). Who makes the choice? Rethinking the role of autonomy and relatedness in Chinese children's motivation. *Child Development*, *79*(2), 269–83. doi:10.1111/j.1467-8624.2007.01125.x

Boggiano, A. K., Main, D. S., & Katz, P. A. (1988). Children's preference for challenge: The role of perceived competence and control. *Journal of Personality and Social Psychology*, *54*(1), 134–141. doi:10.1037//0022-3514.54.1.134

Bormann, J. E., & Carrico, A. W. (2009). Increases in positive reappraisal coping during a group-based mantram intervention mediate sustained reductions in anger in HIV-positive persons. *International journal of behavioral medicine*, *16*(1), 74–80. doi:10.1007/s12529-008-9007-3

Byrne, B., Shavelson, R., & Muthén, B. (1989). Testing for the equivalence of factor covariance and mean structures: The issue of partial measurement invariance. *Psychological Bulletin, 105*(3), 456–466. Retrieved from http://psycnet.apa.org/journals/bul/105/3/456/

Chaffee, K. E., Noels, K. A., & McEown, M. S. (2013, January). *Accommodating to the learning environment: Secondary control, self-determined motivation, and academic engagement.* Poster presented at annual meeting of the Society for Personality and Social Psychology, New Orleans, LA.

Chirkov, V. I., & Ryan, R. M. (2001). Parent and teacher autonomy-support in Russian and U.S. adolescents: Common effects on well-being and academic motivation. *Journal of Cross-Cultural Psychology*, *32*(5), 618-635.

Chirkov, V. I., Lynch, M., & Niwa, S. (2005). Application of the scenario questionnaire of horizontal and vertical individualism and collectivism to the assessment of cultural distance and cultural fit. *International Journal of Intercultural Relations, 29*(4), 469–490. doi:10.1016/j.ijintrel.2005.05.014

Chirkov, V. I., Lynch, M., & Niwa, S. (2005). Application of the scenario questionnaire of horizontal and vertical individualism and collectivism to the assessment of cultural distance and cultural fit. *International Journal of Intercultural Relations*, *29*(4), 469–490. doi:10.1016/j.ijintrel.2005.05.014

Church, A. T., Katigbak, M. S., Locke, K. D., Zhang, H., Shen, J., Vargas-Flores, J. D. J., … Ching, C. M. (2012). Need Satisfaction and Well-Being: Testing Self-Determination Theory in Eight Cultures. *Journal of Cross-Cultural Psychology*. doi:10.1177/0022022112466590

Cross, S. E., & Madson, L. (1997). Models of the self: self-construals and gender. *Psychological bulletin*, *122*(1), 5–37. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/9204777

Csikszentmihalyi, M. (1997). *Finding Flow: The psychology of engagement with everyday life*. New York: Perseus Books. (pp. 1-34).

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11*, 227-268.

Deci, E. L., Eghrari, H., Patrick, B. C., & Leone, D. R. (1994). Facilitating internalization: The self-determination theory perspective. *Journal of Personality, 62,* 119-142.

Deci, E. L., Koestner, R.,& Ryan, R.M.(1999). A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin, 125,* 627–668.

Deci, E. L., Ryan, R. M., Gagne, M., Leone, D. R., Usunov, J., & Kornazheva, B. P. (2001). Need satisfaction, motivation, and well-being in the work organizations of a former eastern bloc country: a cross-cultural study of self-determination. *Personality and Social Psychology Bulletin*, *27*(8), 930-942.

Deci, E., & Ryan, R. (Eds.), (2002). *Handbook of self-determination research*. Rochester, NY: University of Rochester Press.

Dimitrov, D. M. (2010). Testing for Factorial Invariance in the Context of Construct Validation. *Measurement and Evaluation in Counseling and Development*, *43*(2), 121–149. doi:10.1177/0748175610373459

Ehring, T., Tuschen-Caffier, B., Schnülle, J., Fischer, S., & Gross, J. J. (2010). Emotion regulation and vulnerability to depression: spontaneous versus instructed use of emotion suppression and reappraisal. *Emotion (Washington, D.C.)*, *10*(4), 563–72. doi:10.1037/a0019010

Garland, E. L., Gaylord, S. A., & Fredrickson, B. L. (2011). Positive Reappraisal Mediates the Stress-Reductive Effects of Mindfulness: An Upward Spiral Process. *Mindfulness*, *2*(1), 59–67. doi:10.1007/s12671-011-0043-8

Garland, E., Gaylord, S., & Park, J. (2009). The role of mindfulness in positive reappraisal. *Explore (New York, N.Y.)*, *5*(1), 37–44. doi:10.1016/j.explore.2008.10.001

Heine, S. J., Kitayama, S., Lehman, D. R., Takata, T., Ide, E., Leung, C., & Matsumoto, H. (2001). Divergent consequences of success and failure in

Japan and North America: An investigation of self-improving motivations and malleable selves. *Journal of Personality and Social Psychology*, *81*(4), 599-615.

Hladkyj, S., Pelletier, S.T., Drewniak, E.P., and Perry, R.P. (1998, April). *Evidence for the role of secondary control in students' adaptation to college.* Paper presented at the American Educational Research Association annual meeting, San Diego, CA.

Holden, B., & Usuki, M. (1999). Learner Autonomy in Language Learning: A Preliminary Investigation. *Bulletin of Hokuriku University, 23,* 191-203

Horwitz, E., Horwitz, M. & Cope, J. (1986). Foreign language classroom anxiety. *The Modern Language Journal, 70,* 125-132.

Iyengar, S. S. (2002). Choice and its consequences: On the costs and benefits of self-determination. *American Psychologist,* 71-96. American Psychological Association.

Iyengar, S. S., & Lepper, M. R. (1999). Rethinking the value of choice: a cultural perspective on intrinsic motivation. *Journal of personality and social psychology*, *76*(3), 349-66.

Kage, M. (1991, September). The effects of evaluation on intrinsic motivation. Paper presented at the meetings of the Japan Association of Educational Psychology, Joetsu, Japan.

Kasser, T., Davey, J., & Ryan, R. M. (1992). Motivation, dependability, and employee-supervisor discrepancies in psychiatric vocational rehabilitation settings. *Rehabilitation Psychology, 37,* 175-187.

Kimura, Y., Nakata, Y., & Okumura, T. (2001). Language learning motivation of EFL learners in Japan: A cross-sectional analysis of various learning milieus. *JALT Journal, 23(1),* 47-68.

Kline, R. B. (2011). *Principles and practice of structural equation modeling* (3rd ed.). New York, NY: Guilford.

Kondo-Brown, K. (2005). Differences in language skills: Heritage language learner subgroups and foreign language learners. *The Modern Language Journal*, *89*(4), 563–581. doi:10.1111/j.1540-4781.2005.00330.x

Kurman, J., Hui, C. M., & Dan, O. (2010). Changing the world through changing the self: Understanding a new control strategy through self-reported coping plans in two cultures. *Journal of Cross-Cultural Psychology*, *43*(1), 15–22. doi:10.1177/0022022110388565

Lepper, M. R., Corpus, J. H., & Iyengar, S. S. (2005). Intrinsic and extrinsic motivational orientations in the classroom: age differences and academic correlates. *Journal of Educational Psychology*, *97*(2), 184-196

Lynch, M. F., La Guardia, J. G., & Ryan, R. M. (2009). On being yourself in different cultures: ideal and actual self-concept, autonomy support, and well-being in China, Russia, and the United States. *The Journal of Positive Psychology*, *4*(4), 290-304.

Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review, 98*, 224-253.

Masgoret, A.-M., & Gardner, R.C. (2003). Attitudes, motivation, and second language learning: A meta-analysis of studies conducted by Gardner and associates. *Language Learning, 53*, 123-163.

Matsuura, H., Chiba, R., & Hilderbrandt, P. (2001). Beliefs about learning and teaching communicative English in Japan. *Japan Association for Language Teaching Journal, 23*(1), 69–89. Retrieved from http://jalt-publications.org/archive/jj/2001a_JJ.pdf#page=66

McEown, M. S., & Takeuchi, O. (2012). Motivational strategies in EFL classrooms: How do teachers impact students' motivation*?*, *Innovation in Language Learning and Teaching*, 1–19. doi:10.1080/17501229.2012.741133

Miller, T. (1995). Japanese learners' reactions to communicative English lessons. JALT Journal, 17(1), 31–52.

Morling, B. (2000). "Taking" an aerobics class in the U.S. and "entering" an aerobics class in Japan: Primary and secondary control in a fitness context. *Asian Journal of Social Psychology*, *3*(1), 73-85.

Morling, B., & Evered, S. (2006). Secondary control reviewed and defined. *Psychological bulletin*, *132*(2), 269-96.

Morling, B., & Evered, S. (2007). The construct formerly known as secondary control: Reply to Skinner (2007). *Psychological Bulletin*, *133*(6), 917-919.

Morling, B., Kitayama, S., & Miyamoto, Y. (2002). Cultural Practices Emphasize Influence in the United States and Adjustment in Japan. *Personality and Social Psychology Bulletin*, *28*(3), 311-323.

Muthén, L. K., & Muthén, B. O. (2007). *Mplus user's guide.* Los Angeles: Muthén & Muthén.

Na, J., & Kitayama, S. (2011). Will people work hard on a task they choose? Social-eyes priming in different cultural contexts. *Journal of Experimental Social Psychology*. Elsevier Inc.

Noels, K. (2001). New orientations in language learning motivation: Towards a model of intrinsic, extrinsic, and integrative orientations and motivation. In Z. Dörnyei, & R. Schmidt (Eds.), *Motivation and Second Language Acquisition.* (pp. 43-68). Honolulu: University of Hawai'i Press.

Noels, K. A. (2013). Learning Japanese; learning English: Promoting motivation through autonomy, competence and relatedness. In Apple, M. T., Da Silva, D., Fellner, T (Eds.), *Language Learning Motivation in Japan* (15-34). Multilingual Matters.

Noels, K.A., Clément, R. and Pelletier, L.G. (1999). Perceptions of teachers' communicative style and students' intrinsic and extrinsic motivation. *The Modern Language Journal, 83*, 23–34.

Noels, K. A., Pelletier, L. G., Clément, R., & Vallerand, R. L. (2000). Why are you learning a second language? Motivational orientations and self-determination theory. *Language Learning, 50*, 57-85.

Vargas Lascano, D., & Noels, K.A,. (2013, June). *Modeling the motivational dynamics of learning another language*. Talk presented at the 5th International Conference on Self-Determination Theory, Rochester, NY, June 27-30, 2013.

Oyserman, D., Coon, H. M., & Kemmelmeier, M. (2002). Rethinking individualism and collectivism: Evaluation of theoretical assumptions and meta-analyses. *Psychological Bulletin, 128*(1), 3–72. doi:10.1037//0033-2909.128.1.3

Perry, R., Hall, N., & Ruthig, J. (2005). Perceived (academic) control and scholastic attainment in higher education. *Higher Education: Handbook of Theory and Research, Vol. 20*, 363–436. Retrieved from http://www.springerlink.com/index/J074468V70262326.pdf

Richer, S. F., & Vallerand, R. J. (1998). Construction et validation de l'Échelle du sentimentd'appartenance sociale. *Revue européenne de psychologie appliquée, 48*, 129–137.

Rothbaum, F., Weisz, J. R., & Snyder, S. S. (1982). Changing the world and changing the self: A two-process model of perceived control. *Journal of Personality and Social Psychology*, *42*(1), 5-37.

Ryan, R. M., & Deci, E. L. (2011). A self-determination theory perspective on social, institutional, cultural, and economic supports for autonomy and their importance for well-being. *Human Autonomy in Cross-Cultural Context*, 45–64. Springer.

Singelis, T. M., Triandis, H. C., Bhawuk, D. P. S., & Gelfand, M. J. (1995). Horizontal and vertical dimensions of individualism and collectivism: A

theoretical and measurement refinement. *Cross-Cultural Research*, *29*(3), 240–275. doi:10.1177/106939719502900302

Skinner, E. A. (2007). Secondary control critiqued: is it secondary? Is it control? Comment on Morling and Evered (2006). *Psychological bulletin*, *133*(6), 911-6; discussion 917-9.

Tsai, J. L., Miao, F. F., Seppala, E., Fung, H. H., & Yeung, D. Y. (2007). Influence and adjustment goals: sources of cultural differences in ideal affect. *Journal of personality and social psychology*, *92*(6), 1102-17.

Weisz, J. R., Rothbaum, F. M., & Blackburn, T. C. (1984). Standing out and standing in: The psychology of control in America and Japan. *American Psychologist*, *39*(9), 955-969.

Williams, G. C., Wiener, M. W., Markakis, K. M., Reeve, J., & Deci, E. L. (1994). Medical student motivation for internal medicine. *Journal of General Internal Medicine*, *9*, 327-333.

Woud, M. L., Holmes, E. A., Postma, P., Dalgleish, T., & Mackintosh, B. (2012). Ameliorating intrusive memories of distressing experiences using computerized reappraisal training. *Emotion (Washington, D.C.)*, *12*(4), 778–84. doi:10.1037/a0024992

Wrosch, C., Heckhausen, J., & Lachman, M. E. (2000). Primary and secondary control strategies for managing health and financial stress across adulthood. *Psychology and Aging*, *15*, 387-399.

Yeh, K.-H., & Yang, Y.-J. (2006). Construct validation of individuating and relating autonomy orientations in culturally Chinese adolescents. *Asian Journal of Social Psychology*, *9*(2), 148–160. doi:10.1111/j.1467-839X.2006.00192.

Appendix A: Measures

Primary and secondary control

Primary Control

1. When I encounter problems in my studies, I don't give up until I solve them.
2. In my studies, I rarely give up on something I am doing, even when things get tough.
3. When faced with a bad situation in my studies, I do what I can do to change it for the better.
4. When it comes to my studies, even when I feel I have too much to do, I find a way to get it all done.
5. When I am met with a difficult task in my studies, I muddle through and do the best I can.
6. *When the teacher tells me what to do in my class, I try to follow his/her goals for me.*
7. *When things don't go according to my plans in my studies, my motto is, "Where there's a will, there's a way."*
8. *I find I usually learn something meaningful from a difficult situation in my studies.*

Secondary Control via Lowering Aspirations (Predictive)

1. To avoid disappointments in my studies, I don't set my goals too high.

2. When my expectations are not being met in my studies, I lower my expectations.
3. When I encounter difficulties in my studies, I accept that I can't always do what I want to do.
4. When I can't get what I want in my studies, I assume my goals must be unrealistic.
5. When it comes to my studies, I often remind myself that I can't do everything.
6. *When things aren't going as I would like in my studies, I try to adjust my expectations and attitudes to fit the situation better.*
7. *When things don't go how I want in my studies, I go with the flow.*

Vicarious Secondary Control

1. I try to make friends with other students in my class who are ''in the same boat'' as I am.
2. I have found that talking with other students who have had the same academic experiences gives me a better sense that I can manage my life.
3. Knowing that other students in have the same grades as I do gives me a comforting feeling of having something in common with others.
4. When things don't go my way in my studies, I try to fit in with the rest of the class more.
5. When I notice everyone in my class has a different opinion than me, I reconsider my opinion.

6. *When test grades are posted in my class, I make a point of seeing how many other students got the same mark as I did.*

Secondary Control via Positive Reappraisals (Interpretive)

1. Even when everything seems to be going wrong in my studies, I can usually find a bright side to the situation.
2. In my studies, I can find something positive, even in the worst situations.
3. When things don't go how I want in my studies I try to be patient.
4. When things don't go my way in my studies, I am able to adapt to the situation.
5. When I am faced with a bad situation in my studies, it helps to find a different way of looking at things.
6. *If I can't change something in a class, I change my attitude towards it.*

See Appendix B for more information about this scale.

Instructor autonomy-support and controllingness

1. I feel that my [target language] instructor provides me choices and options.
2. My [target language] instructor listens to how I would like to do things.
3. My [target language] instructor tries to understand how I see things before suggesting a new way to do things.
4. My [target language] instructor asks us which topics we would like to study more and which we prefer to study less.
5. My [target language] instructor encourages me to work in my own way.

6. My [target language] instructor talks about the connection between what we study in school and what happens in real life.
7. It is important for my [target language] instructor that I would learn things that interest me.
8. My [target language] instructor explains why it is important for us to study certain subjects in school.
9. My [target language] instructor talks to us about how we feel concerning the subjects we study.
10. My [target language] instructor provides me a lot of freedom while remaining available.
11. My [target language] instructor asks how students feel about an assignment, due date, or discussion topic.

Reversed Items (Controllingness)

12. My [target language] instructor tells me what to do all the time.
13. My [target language] instructor does not allow me to work at my own pace.
14. My [target language] instructor interrupts me in the middle of activities that interest me.
15. My [target language] instructor is strict about me doing everything her/his way.
16. My [target language] instructor stops me in the middle when I write or read interesting things.

17. My [target language] instructor stops me in the middle before I finish to say what I wanted.
18. Sometimes I want to work on one topic, and my [target language] instructor forces me to move to another topic.
19. Sometimes I want to move to a new topic and my [target language] instructor forces me to keep dealing with the 'old' topic.
20. When I choose a topic for a paper, my [target language] instructor tries to influence my choice too much.
21. My [target language] instructor is not willing to acknowledge her/his mistakes.
22. My [target language] instructor acts in a vindictive way toward students who oppose her/his opinions.
23. My [target language] instructor is willing to listen only to opinions that fit her/his opinion.

Motivation for language learning

Amotivation

1. Offhand, I can't think of any good reason for why I study [target language].
2. Honestly, I don't know; I truly have the impression of wasting my time in studying [target language].
3. I don't know; I can't come to understand what I am doing studying [target language].
4. I probably once had good reasons for studying [target language], but I can't think of many good reasons now.

External Regulation

5. In order to get a more prestigious job later on.
6. In order to have a better salary later on.
7. Because I have the impression that it is expected of me.
8. Because want to pass this course and get the course credits.

Introjected Regulation

9. Because I would feel ashamed if I couldn't speak to certain people in [target language].
10. Because I would feel guilty if I didn't know a second language.
11. To show myself that I am a good citizen because I can speak a second language.
12. Because I would feel embarrassed or ashamed if I didn't know [target language].
13. Because there is social pressure to learn [target language]
14. Because I want to make a good impression on others.
15. Because I want others to think highly of me.

Identified Regulation

16. Because I choose to be the kind of person who can speak more than one language.
17. Because I think it is good for my personal development.
18. Because I choose to be the kind of person who can speak [target language].
19. Because I think it's a good idea to know some [target language]

20. Because it helps me to achieve goals that are important to me.

Integrated Regulation

21. Because knowing [target language] is a part of who I am and what I do.
22. Because it is a part of my identity.
23. Because it is important part of how I define myself.
24. Because I see myself as the kind of person who can speak [target language].

Intrinsic Motivation

25. For the enjoyment I experience when I grasp a difficult construct in [target language].
26. For the satisfaction I feel when I am in the process of accomplishing difficult exercises in [target language].
27. For the pleasure I experience when surpassing myself in my [target language] studies.
28. For the pleasure I experience as I get to know [target language] better.

Fundamental need satisfaction

Autonomy

1. I feel like I can make a lot of inputs to deciding how I learn [target language].
2. I feel like I can pretty much be myself in my [target language] class.
3. I feel pressured to learn [target language]. (Reversed)
4. When I am in my [target language] class, I have to do what I am told. (Reversed)

5. I am free to express my ideas and opinions in my [target language] class

Competence

6. I do not feel very competent when I am in my [target language] class. (Reversed)
7. People in my [target language] class tell me I am good at [target language].
8. When I am in my [target language] class I often do not feel very capable. (Reversed)
9. I have been able to learn interesting new skills in my [target language] class.
10. Most days I feel a sense of accomplishment from learning [target language].
11. In my [target language] class I do not get much of a chance to show how capable I am. (Reversed)

Relatedness in the classroom

12. My feelings are taken into consideration in my [target language] class.
13. I pretty much keep to myself when I am in my [target language] class. (Reversed)
14. I consider the people in my [target language] class to be my friends
15. People in my [target language] class care about me.
16. I get along with people in my [target language] class.
17. I really like the people in my [target language] class.
18. There are not many people in my [target language] class that I am close to. (Reversed)

19. The people in my [target language] class do not seem to like me much. (Reversed)

Relatedness to the instructor

In my relationship with my [target language] instructor, I feel…

Intimacy

20. like a friend.
21. close-knit.
22. attached to her/him.
23. bonded with her/him.
24. close to her/him.

Acceptance

25. safe.
26. supported.
27. listened to.
28. valued.
29. understood.

Classroom language use anxiety

1. I never feel quite sure of myself when I am speaking in our [target language] class.
2. It embarrasses me to volunteer answers in our [target language] class.

3. It worries me that other students in my class seem to speak [target language] better than I do.
4. I get nervous when I am speaking in my [target language] class.
5. I am sometimes anxious that the other students in class will laugh at me when I speak [target language].
6. I don't get anxious when I have to answer a question in my [target language] class. (Reversed)
7. I feel confident when asked to speak in my [target language] class. (Reversed)
8. I am calm whenever I have to speak in my [target language] class. (Reversed)
9. I don't understand why other students feel nervous about speaking [target language] in class. (Reversed)
10. Students who claim to get nervous in [target language] classes are just making excuses. (Reversed)

Academic engagement

Energy

1. In my [target language] studies I am bursting with energy.
2. I feel strong and vigorous when I am studying [target language].
3. I feel like going to my [target language] course.

Dedication

4. I find my [target language] coursework full of meaning and purpose.
5. I am enthusiastic about my [target language] studies.
6. My [target language] coursework inspires me.

Absorption

7. Time flies when I am studying [target language].
8. When I am working in my [target language] studies, I forget everything else around me.
9. I feel happy when I am working intensively at [target language] study.

Intention to Continue

1. I would like to give up learning [target language]. (Reversed)
2. I intend to study [target language] again in the future, even if it's not required by my job or program of study.
3. I intend to stop learning [target language] as soon as I can. (Reversed)
4. I want to keep on learning [target language] as long as possible.
5. I want to continue to learn [target language] after I finish this course

Appendix B: Results of Factor Analysis on Primary and Secondary Control

The final scale to be used in the study will be based on an exploratory factor analysis conducted using a sample of 2468 undergraduates who completed a questionnaire for credit in an introductory psychology course. The sample consisted of 60.9% females, 37.7% males, and 35 individuals who did not specify their sex. Ages ranged from 16 to 46 with a mean of 19.0 years (*SD*=2.33). Of the participants, 67.7% reported speaking only English as their native language, and an additional 18.7% indicated that they had been raised bilingually in English and another language.

Participants responded to a questionnaire that included 14 items from Wrosch, Heckhausen, and Lachman (2000), four items from Hall et al. (2006), and 12 items from Chaffee, Noels, and McEown (2013). Results were analyzed through principal axis factoring with oblimin rotation. The scree plot indicated a four-factor solution. All items from Chaffee et al. loaded onto the existing subscales from Wrosch et al. (2000) measuring primary control, secondary control through positive reappraisals, and secondary control via lowering aspirations, and the vicarious secondary control subscale from Hall et al. (2006). One item (a positive reappraisal item from Wrosch et al.) loaded onto an unexpected factor, but the factor loading for the item in question was less than .4, so this item was dropped. All four subscales included at least five items with loadings greater than .4. The

five items with the highest loadings in each factor were used for subsequent confirmatory factor analyses (reported in the main body of this dissertation).

Table 19a
Pattern Matrix for Exploratory Factor Analysis (EFA) of Primary and Secondary Control Scale

	Factor			
	Primary Control	Lowering Aspirations	Vicarious Control	Positive Reapp.
When I encounter problems in my studies, I don't give up until I solve them.	.73			
In my studies, I rarely give up on something I am doing, even when things get tough.	.72			
When faced with a bad situation in my studies, I do what I can do to change it for the better.	.70			
When it comes to my studies, even when I feel I have too much to do, I find a way to get it all done.	.62			
When I am met with a difficult task in my studies, I muddle through and do the best I can.	.56			
When things don't go according to my plans in my studies, my motto is, "Where there's a will, there's a way."	.52			
When the teacher tells me what to do in my class, I try to follow his/her goals for me.	.49			
I find I usually learn something meaningful from a difficult situation in my studies.	.39			
To avoid disappointments in my studies, I don't set my goals too high.		.66		
When my expectations are not being met in my studies, I lower my expectations.		.65		
When I encounter difficulties in my studies, I accept that I can't always do what I want to do.		.60		
When I can't get what I want in my studies, I assume my goals must be unrealistic.		.58		
When it comes to my studies, I often remind myself that I can't do everything.		.53		
When things aren't going as I would like in my studies, I try to adjust my expectations and attitudes to fit the situation better.		.51		
When things don't go how I want in my studies, I go with the flow.		.39		

I try to make friends with other students in my class who are ‘‘in the same boat’’ as I am.	.61	
I have found that talking with other students who have had the same academic experiences gives me a better sense that I can manage my life.	.49	
Knowing that other students in have the same grades as I do gives me a comforting feeling of having something in common with others.	.47	
When things don't go my way in my studies, I try to fit in with the rest of the class more.	.45	
When I notice everyone in my class has a different opinion than me, I reconsider my opinion.	.41	
When test grades are posted in my class, I make a point of seeing how many other students got the same mark as I did.	.39	
Even when everything seems to be going wrong in my studies, I can usually find a bright side to the situation.		-.87
In my studies, I can find something positive, even in the worst situations.		-.67
When things don't go how I want in my studies I try to be patient.		-.58
When things don't go my way in my studies, I am able to adapt to the situation.		-.54
When I am faced with a bad situation in my studies, it helps to find a different way of looking at things.		-.48
If I can’t change something in a class, I change my attitude towards it.		-.40

Note: Only loadings above .30 are reported.
Extraction Method: Principal Axis Factoring.
Rotation Method: Oblimin with Kaiser Normalization

Table 19b
Factor Correlation Matrix

Factor	Primary Control	Lowering Aspirations	Vicarious Control
Lowering Aspirations	-.20		
Vicarious Control	.18	.39	
Positive Reappraisal	-.41	-.20	-.08

Appendix C: Supplementary Analyses with Additional Secondary Control Subtypes

Consistent with Chaffee et al. (2013), secondary control via lowering aspirations appeared to be maladaptive in Canada, but in Japan the exploratory factor analysis indicated that secondary control has different subtypes than it does in Canada. Although the noninvariance of the construct precludes comparisons between cultures, the fact that secondary control via lowering aspirations showed positive correlations with amotivation and introjection, but also with autonomy indicates that secondary control's other subtypes are likely less problematic for Japanese students than Canadians.

Table 20a
Canadian Subscales with Need Satisfaction

	Lowering Aspirations	Vicarious Control
Autonomous Motivation	-.30**	-0.03
Controlled Motivation	.03	.17*
Amotivation	.34**	.22**

Table 20b
Japanese Subscales with Need Satisfaction

	Adjustment	Acceptance
Autonomous Motivation	-.07	.42**
Controlled Motivation	.08	.25**
Amotivation	.22**	-.04

Table 21a
Canadian Subscales with Orientations

	Lowering Aspirations	Vicarious Control
Need Satisfaction	-0.44**	-0.13

Instructor Intimacy	-0.13	-0.02
Instructor Acceptance	-0.28**	-0.07

Table 21b
Japanese Subscales with Orientations

	Adjustment	Acceptance
Need Satisfaction	-0.06	.264**
Instructor Intimacy	0.12	0.11
Instructor Acceptance	0.07	0.12

Appendix D: Horizontal and Vertical Individualism and Collectivism

Although Ashman et al. (2006) found that interdependent self-construal mediated cultural differences in secondary control, Chaffee et al. (2013) found few significant correlations with self-construals. However, collectivistic values (of which interdependent self-construals are an aspect) may be an important determinant of secondary control, and values related to hierarchy may also be an important consideration when studying authoritarian classroom environments. Singelis, Triandis, Bhawuk, and Gelfand (1995) suggested that societies exist not just along a continuum from individualist to collectivist, but also from horizontal to vertical. Collectivist societies are group-oriented; social relationships, helping others, and interdependence are valued. Individualist societies, on the other hand, place value on independence, freedom, personal goals and personal uniqueness. Vertical societies are characterized by hierarchy, while horizontal societies are more egalitarian and involve values like equality. Although East Asian societies have long been considered collectivistic compared to North American ones, a meta-analysis by Oyserman, Coon, and Kemmelmeier (2002) found that Japan was less individualistic than the U.S. and Canada, but not more collectivistic. Chirkov, Lynch, and Niwa (2005), on the other hand, found that East Asian international students considered their home academic institutions to be more collectivistic and lower in horizontal individualism than North Americans considered their own schools.

Thus it was predicted that on the horizontal and vertical individualism and collectivism scale (Chirkov et al, 2005; Cronbach αs ranged from .60-.72 in Canada and .60-.73 in Japan), the Japanese students would report their universities to be less individualistic and more vertical than the Canadians.

Measurement Invariance of Horizontal and Vertical Individualism and Collectivism

A 4-factor solution with each value orientation defined by 4 parcels of 3 items each fit well in both cultures. All orientations except for horizontal collectivism showed full configural and metric invariance. Horizontal collectivism showed only partial metric invariance, with the factor loading of one parcel freed to vary. The values showed only partial metric invariance, with 25-50% of intercepts freed per factor. This is nonetheless sufficient for making comparisons of within-culture patterns as well as cross-cultural mean comparisons.

Table 22
Horizontal and Vertical Individualism and Collectivism

	χ^2 (df)	CFI	RMSEA [CI]	SRMR	χ^2Difference
Canada CFA	113.36(93)	.96	.04 [0, .06]	.06	
Japan CFA	114.52(89)*	.95	.04 [.01, .06]	.06	
Configural	222.97(179)**	.96	.04 [.02, .06]	.06	
Metric	244.66(191)**	.95	.04 [.02, .06]	.08	21.69(1)*
Partial Metric	230.42(190)**	.96	.04 [.02, .05]	.08	7.45(11) NS
Scalar	502.87(202)**	.71	.10 [.09, .12]	.13	272.45(3)**
Partial Scalar	238.04(195)**	.96	.04 [.02, .05]	.08	7.62(5) NS

Table 23
Factor Correlations for Horizontal and Vertical Individualism and Collectivism

		Horizontal Individualism	Vertical Individualism	Horizontal Collectivism
Canada	Vertical Individualism	.37		
	Horizontal Collectivism	.54	.39	
	Vertical Collectivism	.17	.67	.44
Japan	Vertical Individualism	.50		
	Horizontal	.56	.40	

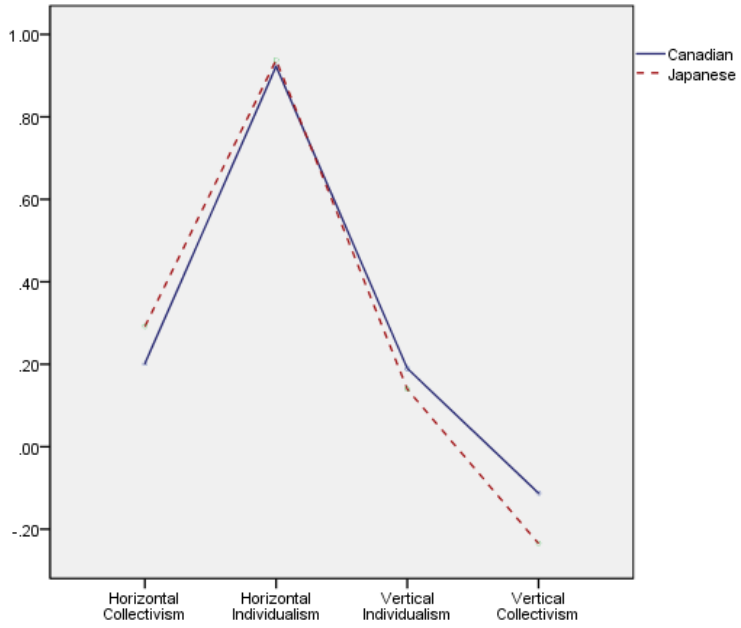
Collectivism			
Vertical Collectivism	.25	.57	.72

Results of Analysis of Horizontal and Vertical Individualism and Collectivism

A 4x2 multivariate analysis of variance with cultural value orientation (4 levels: Horizontal collectivism, vertical individualism, and vertical collectivism) as a within-subjects factor and country (2 levels: Canada and Japan) as the between-subjects factor was computed using standardized scores because Canadians agreed slightly more with all statements on the scale. The main effects of country $F(1,309)=27.81$, $p<.001$ $\eta_p^2=.08$ and value $F(3,927)=693.97$, $p<.001$, $\eta_p^2=.69$ were both significant, as was the interaction effect $F(3,927)=6.66$, $p<.001$, $\eta_p^2=.02$.

Post-hoc tukey tests showed that in both cultures, students endorsed horizontal individualism the most highly, followed by horizontal collectivism, which was endorsed slightly more than vertical individualism, and vertical collectivism was the least endorsed (see Figure 1). The only difference between the two cultures was that Canadian students showed significantly higher vertical collectivism than Japanese.

Figure 1
Horizontal and Vertical Individualism and Collectivism by Culture



These results do not support the prediction that Japanese students would see their universities as more vertical and more collectivistic than Canadians. The pattern shown by the Canadian students, with horizontal individualism strongly preferred and vertical collectivism the least endorsed, are in line with previous findings (Chirkov et al., 2005), but the Japanese students also followed the same pattern. This may indicate that our Japanese sample was atypically individualistic and less vertical than would be expected given the typical teaching style in language classes and the findings with regard to instructor controllingness.