ABSTRACT

Title of Dissertation: A MIXED-METHODS STUDY OF PERCEIVED ACADEMIC AUTONOMY IN JAPANESE STUDENTS AND ITS RELATIONS TO THEIR MOTIVATION

Stephen J. M. Tonks, Doctor of Philosophy, 2006

Dissertation directed by: Professor Allan Wigfield
Department of Human Development

Numerous studies link intrinsic motivation to positive outcomes such as increased cognitive engagement, task persistence, achievement, and creativity (Ryan & Deci, 2000a). In Self-Determination Theory (SDT), Ryan and Deci (2002) propose that high autonomy, or perceiving that one is the origin of one's own behavior, is a necessary component of high intrinsic motivation. Significantly, in SDT, this relation is claimed to be universal. Studies in Western cultures show that when teachers support students' autonomy, the students show higher intrinsic motivation and achievement (Reeve, 2002). This study investigated academic autonomy in Japanese children, as little work has been done in different cultures to test the claim that autonomy is universal. Some research contradicts the universality notion by suggesting that in Japan autonomy may not be an important factor in students' motivation (e.g., Markus & Kitayama, 1991). The current study uses a mixed-methods design to address this issue.

Initially, interviews were conducted with 30 5th and 6th grade Japanese students to address the validity of the *Self-Regulation Questionnaire-Academic Domain* (SRQ-A; Ryan & Connell, 1989), a frequently used measure of perceived autonomy that asks students why they do academic activities. Japanese students mentioned several reasons that were not on the SRQ-A. Therefore, new items were developed to create the *Japanese SRQ-A* (J-SRQ-A). Next, 179 Japanese 5th and 6th grade students completed the SRQ-A and 208 completed the J-SRQ-A. Exploratory factor analyses showed that the degree of autonomy associated with reasons for certain academic behaviors may be different for Japanese than western students, raising questions about the universality of autonomy. Confirmatory factor analyses showed that a respecified model using the J-SRQ-A provided the best model fit when compared to models using the original SRQ-A, providing further evidence that the structure of autonomy is not universal. Correlations among scales representing differing levels of autonomy were similar to those found in previous research. Positive correlations between autonomy and intrinsic motivation were similar in strength to those in previous research, indicating some support for the SDT claim that autonomy's benefits are universal.

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by

Stephen J. M. Tonks

Dissertation submitted to the Faculty of the Graduate School of the
University of Maryland, College Park in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
2006

Advisory Committee:

Professor Allan Wigfield, Chair
Professor Mariam J. Dreher
Professor John T. Guthrie
Professor Judith Torney-Purta
Professor Kathryn R. Wentzel

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ACKNOWLEDGEMENTS

Allan Wigfield has been the ideal mentor, and I cannot imagine this whole experience without him. I thank Allan for motivating me and for becoming my friend. I look forward to our colleagueship and friendship growing for many years to come. I thank John Guthrie for being an excellent advisor in professional and personal matters of all kinds. I also appreciate Judith Torney-Purta and Kathryn Wentzel for their support and advice over a full six years.

As for my family and friends in Japan, I thank my parents-in-law Saichi and Hideko Seino for offering support in the form of encouragement, editing, research funds, transportation, baby-sitting, and much more. I thank Hiroshi Usui for advice regarding study design and data collection, as well as immense help with translation, editing, and data collection in Sapporo. The administrators, teachers and students from Sapporo and Nishiaizu deserve special acknowledgement for their cooperation. In particular, I thank Hirotsugu Yamaguchi (mayor of Nishiaizu), Takao Hasegawa (superintendent of Nishiaizu schools), and Yuji Takeda (principal of a Sapporo school). 日本でのデータ収集にあたりお世話になった皆様に、心から感謝の意を表します。ありがとうございました。

For providing much advice and assistance throughout the dissertation process, I thank Eileen Kramer. Becky Lippy offered excellent help with input of data. I thank my fellow students and friends from Human Development: Ana, Cassie, Chris, Deep, Kathy, Laurel, Lisa, Marcy, and Wendy. We shared offices, coffee, ideas, troubles, successes, teaching, and beer; I treasure my unique experiences with each of them.

I thank my mother and brother Doug for editing the document and assuring me that my writing was better than I thought it was. And I thank my father and brother Kenny for many late nights of encouragement, particularly during the last three years of graduate school.

Special thanks must go to my wife, Mayumi, for pushing me to apply to graduate school in the first place, for convincing me that she was willing to live on a student's salary for the duration, and for using her skills as my interviewer and data collection coordinator. None of this would have been possible without her, and I will always cherish her love and respect, as well as her dedication to our family. Finally, I thank Spencer and Ian for being my inspiration. Their cries of "Daddy, don't go to school!" constantly pushed me to complete my work so I could hurry home to them.

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Chapter 1

Introduction

Research clearly shows that students with higher motivation have higher academic achievement (Aronson, 2002; Wigfield & Eccles, 2002a), and this is particularly true for students with high intrinsic motivation to learn. Research has also demonstrated that intrinsic motivation promotes engagement in school, which then promotes achievement (Fredricks, Blumenfeld, & Paris, 2004). Many theories have been developed to explain students' motivation (see Wigfield & Eccles), and some have been applied successfully to increase motivation in classrooms (see Stipek, 2002). One such theory is Self-Determination Theory (SDT; Ryan & Deci, 2000b; 2002). In SDT, students' perceived autonomy is said to play a major role in their intrinsic motivation. In a review of studies in North America that look at autonomy in educational settings, Reeve (2002) concluded that when students are autonomously motivated, they thrive in school in many ways, and when teachers support students' autonomy, students benefit in numerous ways such as improved achievement and higher competence.

Further, in SDT, autonomy is hypothesized to be one of three universal psychological needs. However, most of the research on SDT has been done in western cultures, while little work has been done across cultures to test the claim of universality. Therefore, in this study, I will investigate autonomy and the role it plays in the motivation of Japanese elementary school students. This is a particularly interesting locale for such a study because some literature contradicts the idea of universality by suggesting that in Japan autonomy may not be an important factor in students' motivation (e.g., Markus & Kitayama, 1991; Shimizu, 1998).

Self-Determination Theory

Self-Determination Theory is a multifaceted psychological theory based on the premise that humans are inherently active and growth-seeking (Ryan & Deci, 2000b; 2002). Ryan and Deci proposed that in pursuit of positive development and self-regulation, humans everywhere strive to fulfill three basic, innate psychological needs: autonomy, competence, and relatedness (see Chapter 2 for a detailed discussion of basic needs in SDT). Fulfillment of these needs has been related to increased motivation, positive wellbeing, and optimal psychological functioning, while a deficiency in filling of needs has been related to decreased motivation, ill-being, and pathology.

An important assumption in SDT is that the three basic psychological needs are universal, or essential to humans in all cultures (Deci & Ryan, 2000; Ryan, 1995). This implies that the benefits gained from the fulfillment of autonomy, competence, and relatedness will be experienced by people everywhere. In the case of academic motivation, students in all cultures who perceive that their needs are being met will be more highly motivated in school. However, because the vast majority of the research forming the basis for SDT has been conducted in North America, there is little direct evidence testing whether the needs indeed are universal. Of the needs in SDT, autonomy is the most controversial with respect to universality, partly because most researchers can more readily accept the notions of competence and relatedness being universally important. Therefore, this study will focus on autonomy in children from a culture outside of North America.

Self-Determination Theory and Autonomy

Self-determination theorists define autonomy as “being the perceived origin or source of one’s own behavior” (Ryan & Deci, 2002, p. 8) or an "internal perceived locus of causality" of behavior (Ryan & Deci, 2000b, p. 70). High autonomy refers to the source being internal, whereas low autonomy denotes behavior being controlled by forces outside the individual. Students’ autonomy in learning situations has been the focus of a growing number of basic research and intervention studies in North America. A review by Reeve (2002) showed that autonomous learners thrive in many ways, including higher achievement, competence, and creativity.

In addition, self-determination theorists believe autonomy underlies whether motivation is intrinsic or extrinsic. Intrinsically motivated behavior is accompanied by full autonomy, while extrinsically motivated behavior is characterized by low autonomy. Ryan and Deci (2000b; 2002) have proposed the self-determination continuum, which models intrinsic and extrinsic motivation along a continuum of autonomy (see Figure 1 in Chapter 2). At one end of the continuum is amotivation, characterized by no autonomy over one’s behavior. At the other end is intrinsic motivation, characterized by full autonomy. In the middle of the continuum is extrinsic motivation characterized by varying degrees of autonomy. Extrinsic motivation is further divided into three types of behavior regulation. The first type is external regulation, characterized by very low autonomy, such that behaviors are controlled by forces external to the self. Second, introjected regulation entails somewhat higher autonomy in which actions are controlled by one’s own guilt or shame. The third type of extrinsic motivation is identified regulation, which is characterized by high autonomy. Under identified regulation, one

behaves because one values the activity and finds it important. Self-determination theorists hypothesize that adjacent constructs on the continuum, such as external and introjected regulation, are more highly related to each other theoretically than non-adjacent constructs, such as external and identified regulation.

The primary means that SDT researchers use to study autonomy and the self-determination continuum as applied to learning in elementary school children has been the *Self-Regulation Questionnaire-Academic Domain* (SRQ-A; Ryan & Connell, 1989). The SRQ-A consists of items that ask students about possible reasons for performing academic behaviors, such as homework and trying to do well in school. These reasons are categorized into four scales representing the three types of regulation (external, introjected, and identified) and intrinsic motivation. The scales and the categorization of reasons into the scales are determined by researchers, a priori. For each scale, students receive a mean score, which represents the strength of the corresponding regulation type or motivation. As empirical evidence for the existence of the self-determination continuum, Ryan and Connell computed the intercorrelations between these four scales. According to the hypothesis, scales representing adjacent constructs on the continuum (e.g., external and introjected) should exhibit higher correlations than non-adjacent constructs (e.g., external and identified), and that is what Ryan and Connell and others have found in research done in the United States (this work is described in more detail in Chapter 2).

Cross-Cultural Studies of Autonomy

Some studies have used adaptations of the SRQ-A to investigate autonomy and the self-determination continuum cross-culturally. First, a number of studies presented

correlation patterns that emerged when participants in various countries, including Japan, Russia, and Taiwan, completed translated or adapted versions of the SRQ-A (Chirkov & Ryan, 2001; d'Ailly, 2003; Hayamizu, 1997; Yamauchi & Tanaka, 1998). The patterns, similar to ones found in U. S. studies, led researchers to conclude that the self-determination continuum exists in those countries as well. Second, some investigators have found positive relations between students' autonomy and other aspects of motivation in other cultures, such as Taiwan (d'Ailly, 2003) and Korea (Kim, 2002). Third, one study found that autonomous actions related positively to wellbeing regardless of culture (Chirkov, Ryan, Kim, & Kaplan, 2003). This research provides initial support for the application of SDT across cultures and is discussed in detail in Chapter 2.

In contrast, some researchers have argued against the claim that autonomy's benefits are universal (Iyengar & Lepper, 1999; Oishi, 2000). These researchers claim that while autonomy may be important psychologically in individualistic cultures such as the United States, it does not play as important a role in collectivistic cultures such as Japan where individuals are generally interdependent with other group members. Indeed, multiple studies document the numerous psychological differences between Eastern cultures and Western cultures, with a prominent one being greater independence of individuals in the West and greater interdependence in the East (see Fiske, Kitayama, Markus, & Nisbett, 1998; Markus & Kitayama, 1991). For example, Iyengar and Lepper showed experimentally that personal choice (i.e., high personal autonomy) is highly motivating to Anglo American elementary students, but not to Asian Americans, who are more motivated when choices are made by their mothers or close peers. The proposed

study will shed light on this theoretical debate by extending the literature on autonomy in different cultures through interviews and questionnaires with Japanese students.

Student Autonomy in Japan

Compelling research and writings on Japanese psychology and education on topics such as interdependence (Markus & Kitayama, 1991) and the downplaying of individual differences (Shimizu, 1998) could lead one to believe that autonomy plays little or no role whatsoever in Japanese students' motivation. Much literature on the psychology of the Japanese people has described the Japanese as highly interdependent in their relationships and as valuing harmony over autonomy (e.g., Doi, 1973; Yamaguchi, 2001). Moreover, the Japanese case has been used to refute universal assumptions of Western psychology (LeVine, 2001).

Despite such literature on topics related to autonomy, only three scientific studies (Hayamizu, 1997; Tanaka & Yamauchi, 2000; Yamauchi & Tanaka, 1998) have examined Japanese students' autonomy, as it is defined in SDT. In contrast to the view that Japanese motivation differs greatly from the motivation of Western students, these studies found similarities regarding the role of autonomy in Japanese elementary, junior high and university students' motivation and achievement. For example, in a study of Japanese fifth and sixth grade students, Yamauchi and Tanaka found that perceived control related negatively with external regulation (low autonomy), and positively with intrinsic regulation (high autonomy). The correlations went up as the degree of autonomy increased, consistent with SDT. However, one can only draw tentative conclusions based on just three studies and clearly more research is needed to understand the autonomy of Japanese students.

Methodological Issues in the Cross-Cultural Literature on Autonomy

There are three methodological problems with the current literature on autonomy in Japan and other cultures that need to be addressed in future studies. First, some studies (d'Ailly, 2003; Hamilton, Blumenfeld, Akoh, & Miura, 1989; Hayamizu, 1997; Iyengar & Lepper, 1999; Kim, 2002; Sheldon, Elliot, Kim, & Kasser, 2001; Tanaka & Yamauchi, 2000; Yamauchi & Tanaka, 1998) did not sufficiently ensure the construct equivalence of autonomy between cultures. Because the studies did not attempt to discern the meaning of autonomy as perceived by their subjects, they did not show that autonomy has the same meaning in the target culture as it does within SDT. Second, these same studies did not sufficiently check for comparability of data between cultures. Other studies (Chirkov et al., 2003; Chirkov & Ryan, 2001; Deci, Ryan, et al., 2001; Levesque, Zuehlke, Stanek, & Ryan, 2004) used advanced statistical techniques such as structural equation modeling to check for equivalence of constructs and data across cultures. However, with these techniques comes another set of questions, such as whether statistical methods are sensitive enough to capture subtle differences in meaning between constructs or items across cultures. Some researchers have suggested the importance of using interviews with students in order to address these two methodological issues (e.g., Bempechat & Boulay, 2001). This dissertation study will incorporate interviews as suggested.

The third methodological problem with these studies is that they simply translated questionnaires developed in North America and transported them to other cultures, which can lead to problems of construct and data equivalence. For example, d'Ailly (2003) attributed discrepancies she found in a Chinese sample of students on a Chinese-language version of the SRQ-A to translation difficulties. This problem can be addressed by

creating measures from within cultures rather than merely transporting measures between cultures. Kim, Koh, and Ryan (2004) recently noted that such a procedure represents the new direction in methods to solve problems of construct comparability in cross-cultural research. The proposed study will develop an adapted version of the SRQ-A for Japanese students (the Japanese Self-Regulation Questionnaire-Academic Domain or J-SRQ-A), by basing new items on actual reasons for academic behavior given in interviews by Japanese children.

Purpose and Significance of the Present Study

In sum, investigations using self-determination theory have linked autonomy to other positive aspects of students' motivation in North America. Self-determination theorists claim that this link is universal, and some cross-cultural studies provide evidence for this link. However, other researchers argue that autonomy is largely a trait in individualistic cultures and would not motivate students in collectivistic countries such as Japan. The three Japanese studies presented herein suggest that autonomy may be important to the motivation of Japanese students, but these studies could be improved methodologically.

Thus the present study accomplished three goals. First, this study improved on previous cross-cultural studies of autonomy by addressing important methodological issues. Interviews with Japanese children probed students' perceived autonomy for doing activities for school such as classwork and homework. In order to address problems that arise from administering translated measures to students from different cultures, I developed the J-SRQ-A, an adapted version of the SRQ-A for Japanese students, based on answers from the interviews. Second, using a mixed-methods approach, this study

extended our knowledge of autonomy in Japanese students. An interview protocol was used to ask students about their reasons for engaging in academic behaviors in order to ascertain how autonomous the students perceive these behaviors to be. Further, using data from student questionnaires, this study related students' autonomy to other aspects of their motivation, namely perceived control and their intrinsic and extrinsic motivation, as previous studies (e.g., d'Ailly, 2003; Ryan & Connell, 1989) have related autonomy to these aspects. These results were then compared to findings from North American studies, which increased our understanding of similarities and differences in academic motivation across cultures. Third, by investigating autonomy in Japanese students, this dissertation study added to the corpus of studies providing evidence for or against the claim that autonomy is universally beneficial to students' motivation. Evidence for or against this claim emerged from multiple parts of the study, including analyses of the autonomy questionnaires and relations between autonomy and other aspects of students' motivation. Following are the specific research questions that were addressed.

Research Questions

The first set of questions were answered through qualitative analysis of interview data:

1. a. What reasons for engaging in academic behaviors do Japanese students give that are not included in the SRQ-A?
   b. Can these reasons be classified into a regulation category within the self-determination theory framework?

c. For reasons that cannot be classified, can the degree of autonomy for academic behavior be determined based on additional information provided by the students?

The next set of questions were addressed through quantitative analyses:

2. a. How do the psychometric properties of the translated SRQ-A compare to those of a modified SRQ-A (the J-SRQ-A) in a sample of Japanese students?
   b. How similar are the correlations among regulation types in the two measures?
   c. How similar are the factor structures of the two measures?
3. How does the perceived autonomy of Japanese students relate to other aspects of their motivation, namely perceived control and intrinsic and extrinsic motivation?

Chapter 2

Review of the Literature

In this chapter, I review the theoretical and research literatures on self-determination theory and the nature of autonomy in different cultures, in order to show how the current study will contribute to the existing literature. First, as a framework for the current study, I present a summary of self-determination theory. Second, the meaning of autonomy as it is used in SDT and the broader literature is clarified, and the meaning of universality is discussed. Third, I present a critical review of cross-cultural work on autonomy, followed by a discussion of methodological shortcomings in this literature, such as comparability of constructs and measures, and the adaptation of autonomy measures to other cultures. Finally, I evaluate the state of current evidence that relates to the universality of autonomy.

Self-Determination Theory

In self-determination theory, Ryan and Deci (2000b; 2002) propose that when the three basic psychological needs of autonomy, competence, and relatedness are fulfilled, humans are more motivated and have higher well-being. When these needs are not fulfilled, decreased motivation and ill-being result. To explicate the role of autonomy and internalization of values in human motivation, Ryan and Deci developed the self-determination continuum, which represents all levels of motivation, from extrinsic motivation to intrinsic motivation, which are opposite poles of this continuum. Autonomy and internalization increase as one goes from extrinsic to intrinsic. It should be noted that many mini-theories comprise SDT. This study is concerned primarily with two mini-theories, described by Ryan and Deci (2002): basic needs theory, which attempts to

clarify the basic psychological needs and their relations to motivation, well-being and mental health; and organismic integration theory, which focuses on the practical importance of extrinsic motivation, by explicating the self-determination continuum and internalization.

Basic Psychological Needs in SDT

Deci and Ryan (2000) trace the roots of the basic psychological needs included in SDT to early needs theories of Hull (1943) and Murray (1938). Hull explained behavior and motivation through reactions to deficits of innate physiological needs for air, water, food, and the like. From Hull, Deci and Ryan write that they borrow the concept of needs being "innate organismic necessities" (p. 229), which are necessary for the health and well-being of individuals, except that in SDT, needs are psychological rather than physiological. Murray outlined a number of psychogenic needs (e.g., achievement, recognition, aggression, affiliation), which he considered to be secondary to viscerogenic (e.g., air, water, food, sex, and harm avoidance) needs. Murray wrote that he did not suppose that these psychogenic needs are fundamental, although some may be innate—he did not however expand on which ones may be innate nor on why. From Murray, Deci and Ryan borrow the idea that humans have psychological as well as physiological needs. They point out, however, that Murray's psychogenic needs are not necessarily essential to the optimal functioning of humans, nor are they necessarily innate, and so are very different from the psychological needs in SDT.

The concept of psychological needs in SDT can be compared to physiological needs, such as hydration (Deci & Ryan, 2000), because both types of needs relate to the ability of humans to persist and thrive. Whereas fulfillment of physiological needs is

essential to physical growth and development, fulfillment of human psychological needs is essential to mental growth and development. Psychological needs can be thought of as "necessary conditions for the growth and well-being of people's personalities and cognitive structures" (Ryan & Deci, 2002, p. 7), while physiological needs are the necessary conditions for physical development.

Among modern theories of motivation, SDT is unique in its inclusion of basic psychological needs. One rationale for including basic needs in psychological theories such as SDT is that needs can provide unity to broad diversities of behavior by specifying focal points around which behavior can be organized (Sheldon et al., 2001). Needs are defined by Deci and Ryan (2000) as "*innate psychological nutriments that are essential for ongoing psychological growth, integrity, and well-being*" (p. 229, italics in original source). Specific requirements for deciding that a construct can be called a need are implicit in this definition but include the following principles. First, a need is innate and universal, so that every person, regardless of culture necessarily needs to feel competent, related, and autonomous. Second, being an essential nutriment means that the satisfaction of the needs leads to positive consequences but also that the failure to satisfy any of the three needs necessarily leads to negative consequences; only constructs that show both of these patterns in empirical studies can be considered basic psychological needs. In addition, Ryan and Brown (2003) state that a need must not be a derivative of any other more basic construct. That is, a need must be "the basic 'satisfier' responsible for the functional advantage regarding growth, integrity or well-being" (p. 73).

Ryan and Deci (2002) comment that because the criteria just named are so restrictive, competence, relatedness, and autonomy are thus far the only psychological

constructs that qualify as basic needs in SDT. Other than the construct of positive self-esteem, it is not evident that psychological constructs have been put to the test of being called a need. Ryan and Brown (2003) argue specifically against calling self-esteem a need. They argue that if attaining and maintaining a high self-esteem becomes the main motivation behind one's interpersonal and achievement behaviors, then one's three basic needs are not being met. Kernis (2003) states than such an individual has a fragile high self-esteem that requires frequent validation and is vulnerable to threats. In contrast, a secure high self-esteem emerges naturally when one's three basic needs are being met. Such an individual is not overly concerned about her self-esteem and does not need frequent validation to maintain her high self-esteem. Therefore, if one has a need for high self-esteem, then it is not a basic or primary need, but a derivative or secondary need, stemming from lack of fulfillment of the three basic needs.

According to Deci and Ryan (2000), a practical implication of including needs in SDT enables researchers and practitioners to specify the necessary environmental conditions that lead to motivation, well-being, and psychological health; these conditions are ones that support a person's competence, relatedness and autonomy. For instance, in classrooms teachers can actively set up environments that support the fulfillment of students' needs, thus supporting motivation (see Reeve, 2002). Another implication is that the three needs help us understand the content or the *what* of goal pursuits and the process or the *why* of goal pursuits (Deci & Ryan). The content denotes what a person is trying to attain, such as financial success or personal growth. The process refers to whether the goal is pursued for internal or autonomous versus external or non-

autonomous reasons. A goal with the same content can be pursued for more or less autonomous reasons.

A third implication of the basic needs is that they facilitate the interpreting and organizing of diverse empirical data concerning psychological well-being and motivation (Deci & Ryan, 2000; Ryan & Deci, 2000b). An example is the explanation for the broad literature showing that extrinsic rewards undermine intrinsic motivation (for reviews see Deci, Koestner, & Ryan, 1999; 2001). The reason given for this decrease is that when one receives an extrinsic reward for completing an activity, the person's autonomy for that activity decreases, which then decreases intrinsic motivation. To explain why a decrease in autonomy has the effect of decreasing motivation, self-determination theorists assume that humans have a need for greater autonomy, and when the need is not fulfilled, negative consequences such as decreased motivation ensue.

In studying the three basic needs, SDT researchers have related need satisfaction to three types of outcome variables: well-being, mental health, and motivation, both academic and in the workplace. Because the focus of the current study is autonomy as an aspect of academic motivation, this chapter only covers studies that are relevant to one or both of these constructs. (For reviews of studies looking at well-being, mental health, and workplace motivation as outcomes and competence and relatedness as predictors, see Deci & Ryan, 2000; Ryan & Deci, 2002). I now briefly discuss each need in succession.

Need for Competence

In SDT, the need for competence refers to a need to feel confident and effective in one's activities (Ryan & Deci, 2002). It denotes a feeling of competence or perceived competence rather than an objective measure of ability. Since White's (1959)

introduction of competence to motivation theory through his construct of effectance motivation, many prominent models of motivation have included feeling competent or a highly-related construct such as self-efficacy as a critical determinant of motivation (e.g., Bandura, 1997; Harter, 2003; Wigfield & Eccles, 2002b). In students, the need for competence translates to a desire to feel confident in one's abilities to accomplish academic activities, such as reading assignments or math homework. In order to maintain a high level of perceived competence, Ryan and Deci maintains that students will seek challenges that are in accordance with their capacities.

Need for Relatedness

The need for relatedness concerns the need for a "psychological sense of being with others in secure communion or unity" (Ryan & Deci, 2002, p. 7). This conceptualization includes feeling connected with both other individuals and with one's community. Some work on relatedness has been done by SDT researchers in the field of education. Skinner and Belmont (1993) found that children's perceptions of their teachers' involvement predicted the children's subsequent engagement in class, such that "when children experience teachers as warm and affectionate, children feel happier and more enthusiastic in class" (p. 578). Other research has shown that relatedness with parents and teachers positively predicts students' self-reported motivation in school (Ryan, Stiller, & Lynch, 1994). Wentzel (1997) found that students' perceptions of their teachers as caring predicted students' academic motivation even after taking into account students' control beliefs, reports of psychological distress, and prior motivation.

Need for Autonomy

The third construct considered to be a psychological need, and the focus of this study, is autonomy. Two definitions given by Ryan and Deci are "being the perceived origin or source of one's own behavior" (Ryan & Deci, 2002, p. 8) and "volition and self-endorsement" (Ryan & Deci, 2003, p. 266). The former of these definitions can be traced directly to writings of previous theorists (i.e., de Charms, 1968; Heider, 1958) and describes a cognitive judgment as to where one's behavior originates; while the second contains two synonyms for autonomy within the SDT framework. However, these definitions represent just one of many meanings for autonomy in the psychological literature, and this can cause confusion when trying to synthesize writings on autonomy by different researchers. Fortunately, when focusing on literature looking at autonomy and education, the problem is less severe due to the relatively small amount of research done in this area. Refer to Table 1 for samples of definitions of autonomy and related terms from popular dictionaries, SDT researchers and other researchers.

Table 1

Autonomy-Related Terms and their Meanings in Various Sources

Term	Source	Meaning
Popular Dictionaries		
Autonomy	The American Heritage Dictionary of the English Language (2000)	independence; self-government or the right of self-government; self-determination
Self-determination	The American Heritage Dictionary of the English Language (2000)	determination of one's own fate or course of action without compulsion; free will
SDT Researchers		
Self-determination	Deci (1980)	"the process of utilizing one's will," where "will is the capacity of the human organism to choose how to satisfy its needs" (p. 26)

Autonomy-Related Terms and their Meanings in Various Sources

Term	Source	Meaning
Self-determination	Deci & Ryan (1985)	"the experience of an internal perceived locus of causality" (p. 38) "the capacity to choose and to have those choices, rather than reinforcement contingencies, drives, or any other forces or pressures, be the determinants of one's actions" (p. 38)
Autonomy	Deci & Ryan (1987)	"Autonomy connotes an inner endorsement of one's actions, the sense that they emanate from oneself and are one's own" (p. 1025)
Autonomy	Ryan & Deci (2000b)	"internal perceived locus of causality" (p. 70)
Autonomy	Ryan & Deci (2002)	"being the perceived origin or source of one's own behavior" (p. 8)
Autonomy	Ryan & Deci (2003)	"volition and self-endorsement" (p. 266)
Autonomy	Ryan & Brown (2003)	"the experience of volition, ownership, and initiative in one's own behavior" (p. 73).
Relative autonomy	Ryan & Connell (1989)	perceived locus of causality

Autonomy-Related Terms and their Meanings in Various Sources

Term	Source	Meaning
Autonomous behavior	Chirkov et al. (2003)	behavior that is willingly enacted and fully endorsed by the person; also includes a full endorsement of the values expressed by such behavior
Heteronomy	Chirkov et al. (2003)	antonym of autonomy; the perception that one's actions are being controlled by forces that are alien to the self
Independence	Chirkov et al. (2003) Reeve, Deci, & Ryan (2004) Ryan (1993)	an absence of reliance on others for support, help, or supplies
Autonomous dependence	Chirkov et al. (2003)	choosing to be dependent on or rely on another person for help or resources
<u>Other Researchers</u>		
Autonomy	Pintrich & Schunk (2002)	choices students have, such as what tasks to perform, and when and how to perform them
Personal causality	Heider (1958)	source of behavior perceived as internal to self
Impersonal causality	Heider (1958)	source of behavior perceived as external to self

Autonomy-Related Terms and their Meanings in Various Sources

Term	Source	Meaning
Personal causation	de Charms (1968)	"the desire to be the master of one's fate" (p. 270)
Internal locus of causality	de Charms (1968)	same as personal causality
External locus of causality	de Charms (1968)	same as impersonal causality
Origin	de Charms (1968)	someone who perceives that she chooses her own behavior
Pawn	de Charms (1968)	someone who perceives that her behavior is determined by external forces, beyond her control

Historical precursors to SDT's autonomy construct. Autonomy in SDT is most directly related to the writings of Heider (1958) and de Charms (1968). Heider is given credit for first writing about the idea of locus of causality (de Charms; Deci & Ryan, 1985). In his words, Heider wrote that *personal causality* denotes that the cause of an action emanates from within the person. His concern was how people attribute actions and intentions either to the person or environment when relating to others. The personal causality construct very much resembles autonomy, defined as an internal locus of causality in SDT. Deci and Ryan extend Heider's ideas by applying autonomy to situations beyond interpersonal relations and designating it as a basic psychological need (Ryan & Deci, 2000b).

De Charms's (1968) concept of *personal causation* also bears great similarity to autonomy in SDT. De Charms claimed that behavior was a function of not only physical events but also personal causes, which went against behaviorism, the prevailing school of thought at the time. He referred to personal causation as "the desire to be the master of one's fate" (p. 270), which greatly resembles the need for autonomy as conceptualized in SDT. Further, de Charms hypothesized that "when a man perceives his behavior as stemming from his own choice he will cherish that behavior and its results; when he perceives his behavior as stemming from the dictate of external forces, that behavior and its results, although identical in other respects of behavior of his own choosing, will be devalued" (p. 273).

De Charms (1968) gave Heider (1958) credit for the idea that *locus of causality* for behavior can be internal or external. Deci (1975) first introduced this concept into his writings when trying to account for why extrinsic rewards decrease intrinsic motivation.

He postulated that when an extrinsic reward is introduced, one's perceived locus of causality shifts from internal to external. Self-determination theorists then permanently adopted this terminology and now use it to define autonomy.

Self-determination theorists extend de Charms's (1968) work by taking the internal versus external locus of causality idea and expanding it into a continuum with gradations (Ryan & Connell, 1989; Ryan & Deci, 2000b). SDT attempts to account for various degrees of autonomy between the extremes of internal and external loci of causality. For example, a student who pressures herself into completing homework in order to avoid feelings of guilt may perceive her behavior to have an internal cause, but at the same time perceives that her behavior is being controlled, albeit by somewhat internal forces, and so does not fully endorse the behavior. Such perceptions would fall somewhere between the extremes on an autonomy or self-determination continuum (see below for a fuller discussion of the self-determination continuum).

Meaning of autonomy in SDT. Various descriptions of autonomy in SDT seem all to center around the core technical definition of autonomy in SDT, which is derived directly from Heider (1958) and de Charms (1968): an internal perceived locus of causality (Ryan & Connell, 1989; Ryan & Deci, 2000b). Ryan and Deci (2002) expressed this same meaning in less technical language when they define autonomy as "being the perceived origin or source of one's own behavior" (p. 8). In this sense, autonomy involves whether one perceives that a behavior or action originated from within the self or from a source external to the self.

Self-determination theorists also describe the nature of autonomy with other terms and language, in order to explicate its meaning in SDT. These include initiative, volition,

ownership of one's behavior, and self-endorsement of one's actions and the values expressed by those actions (Chirkov et al., 2003; Deci & Ryan, 1987; Ryan, 1993; Ryan & Brown, 2003; Ryan & Deci, 2003). Additionally, Deci and Ryan write, "Autonomous action is thus chosen…. When autonomous, people experience themselves as initiators of their own behavior; they select desired outcomes and choose how to achieve them. Regulation through choice is characterized by flexibility and the absence of pressure" (p. 1025). This definition uses the term *choice* many times, but Deci and Ryan write that they do not mean choice in its sense of cognitive "decisions among between behavioral options" (p. 1025). The sense of choice they refer to seems to be a more general self-perception of freedom to choose one's behavior. This distinction is important, because other researchers have used empirical studies on cognitive choice to refute the claims of SDT (e.g., Iyengar & Lepper, 1999; see below).

In an attempt to clarify their specific usage of autonomy and differentiate it from other related terms such as independence and individualism, SDT researchers have further explicated their usage of autonomy. They write that the opposite of autonomy is heteronomy or the perception that one's actions are being controlled by forces that are alien to the self. Further, many authors taking the SDT perspective (e.g., Chirkov et al., 2003; Reeve et al., 2004; Ryan, 1993) are very specific that autonomy is not the same as independence, which they define as an absence of reliance on others for support, help, or supplies. Individuals can be quite connected to others yet still be autonomous or in control of their own behavior. These researchers' definition allows for autonomy to be important to intrinsic motivation and psychological well-being even in collectivistic cultures: "[W]hen autonomy is conceived of in terms of volition and self-endorsement, it

is then a concern applicable to the practices and beliefs of all cultures" (Deci, Ryan, et al., 2001, p. 940). This definition also allows for the somewhat counterintuitive idea of autonomous dependence in which one is choosing to be dependent on or rely on another person for help or resources (Chirkov et al.; Ryan).

Some authors make special points in their articles to distinguish autonomy from control (Patrick, Skinner, & Connell, 1993; Skinner, 1996; see also Deci & Ryan, 1985). They define autonomy as the connection between volition and action, whereas they define control as the connection between behaviors and outcomes, and specifically how capable people feel that they can produce desired events and prevent undesired events. In other words, autonomy has to do with initiating an act or behavior, while control has to do with producing outcomes. As noted above, the opposite of autonomy is heteronomy, which denotes behavior originating from a source external to the self. The opposite of control is helplessness or believing that one is unable to produce outcomes. For example, let us consider a student reading a book for an assignment in school. Autonomy would refer to the student's perception that she is reading the book for internal reasons (e.g., she is interested in the topic) rather than external reasons (e.g., the teacher is making her read the book). Said another way, autonomy is the student's sense that she is choosing to read the book rather than being forced to read it. Control, on the other hand would refer to the student's beliefs about outcomes related to reading the book. In this case, possible outcomes include finishing the book on time or getting a good grade on the corresponding assignment. The issue of control is whether the student feels capable that she can finish the book on time or get a good grade on the assignment. Thus autonomy is

concerned with the origin of the action of reading the book, whereas control is concerned with outcomes associated with reading the book.

One linguistic issue that is potentially confusing concerning this conceptual distinction is that according to SDT, the opposite of *autonomy support* is controlling a person's behavior (Deci & Ryan, 1987; see also Patrick et al., 1993). In this sense, the term control deviates from the definition just outlined and instead refers to one person causing another person's behavior. To avoid such confusion, Patrick et al. used coercive as the opposite of autonomy support in their study on autonomy and perceived control.

Finally, Ryan (1993) distinguishes between the concepts of autonomy and self-efficacy. He discusses the differences between autonomy as defined by SDT and Bandura's (1989) conception of self-efficacy in social cognitive theory. Ryan asserts that in social cognitive theory, motivation for an activity boils down to one's self-efficacy for that activity, or belief that one can accomplish that activity. One acts and therefore exercises agency based solely on one's self-efficacy. Ryan argues that such an explanation of agency and motivation is too simplistic in that it leaves out the question of why one might engage in the activity in the first place. Feeling capable of performing an action does not guarantee that one will engage in it; one must also have a compelling reason to do so (Eccles & Wigfield, 2002). Ryan believes that volition and an internal perceived locus of causality are missing from Bandura's model, and that these concepts are captured in SDT's autonomy construct. This also is the main reason for distinguishing competence and autonomy in this model. For example, a child that does not enjoy reading could still feel very self-efficacious about reading. This child may only read when compelled by parents or a class assignment. When this child does read, it is self-

efficacious action, but it is neither volitional nor autonomous, as the reason for reading is external to the child.

Alternative meanings of autonomy. As is the case with all technical terminology, and especially so in the field of academic motivation (Murphy & Alexander, 2000), it is important to be precise about the specific meaning and usage of terms. Precision is particularly salient in the debate on the universality of autonomy, because of the wide range of definitions ascribed to autonomy in popular usage and within psychological literature.

Popular use of autonomy equates it with independence, a word found along with self-determination in many common dictionary definitions for autonomy. Some writings in psychological literature also use autonomy synonymously with independence. For example, Markus and Kitayama (1991) write that similar labels for their independent construal of the self include, "*individualist, egocentric, separate, autonomous, indiocentric,* and *self-contained*" (p. 226), thus pointing out the similarity of all of these constructs. Oishi (2000) used the terms autonomy and independence interchangeably when arguing against the SDT prediction that autonomy correlates positively with well-being across cultures. Yamaguchi (2001) uses autonomy to denote independence and self-sufficiency in a review of control orientations and culture. Because of the greater role that many motivation researchers have afforded autonomy recently, some have attempted to define it more specifically. Unfortunately, this has yielded a myriad of definitions that differ to a greater or lesser degree from one another.

In their textbook on academic motivation, Pintrich and Schunk (2002) define student autonomy in terms of the choices students have, such as what tasks to perform,

and when and how to perform them. They write that affording students greater autonomy in the classroom can "enhance intrinsic motivation because it takes individuality into account and provides students with a measure of control" (p. 346). This definition overlaps with Ryan and Deci's (2000b) meaning in that choice implies an internal perceived locus of causality. However, it differs in that the SDT definition does not include individuality because it is possible for one to choose a course of action that others are also choosing. In such a case, one would be making one's own choice, and perceiving high autonomy, but the choice would be the same as others' choices, and therefore would not distinguish one as an individual. Pintrich and Schunk's definition also mentions control, although it is not clear whether this means control of one's own behaviors, which is consistent with an internal perceived locus of causality, or control of outcomes, which is not consistent with the SDT definition. In other sections of their book, the authors virtually equate control over causes of behavior and control over outcomes, so control in the above definition may refer to both of these.

It is clear from the differing definitions of autonomy that the construct is somewhat nebulous, even when we look at relatively limited domains relating to behavior and academic achievement. These various definitions pose methodological problems when summarizing research on autonomy. It is difficult to make conclusions about the role of autonomy in motivation if researchers are not explicit in using and defining the term. Further, these problems are exacerbated when the research is cross-cultural in nature. However, it is only SDT theorists that have made claims that the need for autonomy is universal (e.g., Ryan, 1995; Ryan & Deci, 2000b, 2002). This author knows of no one who has claimed universal existence of a need for independence or a need for

individualism, which research suggests are more Western in nature (Markus & Kitayama, 1991; Oishi, 2000; Yamaguchi, 2001). Therefore, to judge the SDT hypothesis that the need for autonomy is universal, we must use a definition that is consistent with the hypothesis. It makes no sense to refute their claim while defining autonomy differently, such as when Oishi claimed that autonomy, meaning independence, does not predict well-being in cultures where it is not salient, such as in Eastern cultures. Therefore, in this study I adopt the SDT definition of being the perceived origin or source of one's own behavior. Autonomy in this sense is not consistent with independence, individualism, selfishness or separateness (Reeve et al., 2004).

An interesting point to consider is why the word autonomy was chosen to represent such a specific construct, especially considering its myriad of uses in the English language. Perhaps SDT theorists intended to avoid muddying the motivation waters by making up their own word, or perhaps they did not foresee others misinterpreting their definition and subsequently their claims. Simply put, in popular usage, autonomy connotes numerous meanings that Deci and Ryan did not intend. It is not unreasonable for the casual reader to associate the term autonomy with independence and individualism, consistent with its dictionary definition and popular usage.

Universality of Needs

Judging universality. One of the more controversial aspects of the three needs in SDT is the claim that they are universal (Ryan, 1995; Ryan & Deci, 2000b). Simply stated, with respect to SDT, universality means that people in all cultures act to fulfill their needs to feel competent, related to others, and autonomous in their behavior and that the fulfillment of these basic needs results in healthy human growth. Humans everywhere

should experience the benefits associated with fulfillment of the needs and the detriments resulting from their deprivation.

Regarding the question of just how one judges the universality of needs, SDT theorists have written relatively little. Researchers studying the universality of other constructs in psychology and anthropology have used the criterion that the construct be documented in a great number and wide variety of cultures. For example, evidence for the universality of facial expressions and emotions is based mainly on empirical studies in which subjects from different cultures judge the emotions of people in photographs (Ekman, 1989). The evidence for the universality of facial expressions of six emotions (happiness, anger, fear, sadness, surprise, and disgust) is considered strong due to the abundance and variety of cultures tested and replications performed. In reviewing the literature on the need to belong, very similar to the need for relatedness in SDT, Baumeister and Leary (1995; see below) state that for this need to be considered universal, it should "be found to some degree in all humans in all cultures" (p. 499), which is consistent with Ekman's criterion.

Brown (1991) has compiled a number of human universals from evidence in the anthropological literature. He writes about different types of universals, including behaviors (e.g., use of fire), tastes (e.g., preference for sweets), and psychological constructs (e.g., choice making; see Pinker, 2002, for a list of these universals). To be considered universal, a phenomenon must have been documented in multiple cultures and cannot have been shown to be not universal. Four related ways in which anthropologists have demonstrated universality are as follows: a) stating that there is no convincing reason why a universal should not be universal; b) theoretical arguments that disprove

evidence refuting a certain universal; c) performing an extensive review of anthropological literature, in which one does not find an exception to a proposed universal; and d) finding evidence for a universal in at least two ethnographic observations. Brown writes that although one cannot prove universality because it is impossible to perform exhaustive enumeration to show that a phenomenon exists in every known individual, society, culture, or language, researchers can make an argument for or theorize about universality based on limited evidence. Brown adds that taking a more conservative approach by concluding that a phenomenon is a near-universal still makes that phenomenon a significant part of human nature.

Somewhat counterintuitively, some have specified that even when a given construct is deemed universal, it may differ to a degree across cultures. To their definition of a universal need, Baumeister and Leary (1995) add that "naturally one would expect there to be individual differences in strength and intensity, as well as cultural and individual variations in how people express and satisfy the need" (p. 499). This leaves room for a universal need to be more or less important depending on culture. On this issue, Ryan and Deci (2002) write, "There can, however, be considerable variability in the values and goals held within different cultures, such that the means through which people satisfy basic needs will differ among cultures. In other words, the relations between specific behaviors and satisfaction of underlying needs may be different in different cultures because the behaviors come to have different meanings in accord with culturally endorsed values and practices" (p. 26). This allowance for cross-cultural variation makes it more likely to find evidence for universality but also more difficult to prove that what has been found in different cultures is the same construct or need. If in

fact the expression of a need differs across cultures, then at what point does one accept that certain expressions in one culture indicate the same need as different expressions in another culture? If the expressions overlap, as they may in two similar cultures such as the Swedish and Norwegian cultures, then it may be clear that the expressions signify the same need. However, if the expressions do not overlap, as may occur between two disparate cultures such as Swedish culture and Japanese culture, then it becomes more difficult to prove that the dissimilar expressions indicate the same underlying need.

At this point, except for the study by Chirkov et al. (2003), studies have provided few examples of this phenomenon. One might conjecture that the need for competence is satisfied differently in Japan and the United States based on Heine, Kitayama, and Lehman's (2001) findings that Japanese are motivated by a self-improvement orientation, whereas U.S. subjects are more focused on a self-enhancement orientation. Perhaps the underlying difference here is that in Japan the need for competence is satisfied by the awareness that one is trying to improve on a task, whereas in the United States it is satisfied by successful performance on a task.

Evidence for the universality of competence. Only a few studies have investigated the need for competence cross-culturally. Levesque et al. (2004) found that perceived academic competence significantly predicted well-being in a similar way in German and U.S. university students. Both of these studies were interpreted by their respective authors as initial evidence that the need for competence is universal. However, the measures used did not seem to distinguish the *need for* competence from perceived competence. The authors theoretically assumed that humans need to feel competent, but *need* per se was not assessed. Sheldon et al. (2001) found that perceived competence was

felt strongly in personally satisfying events in both the United States and South Korea, which they interpreted as indicative that the need for competence is important in both cultures.

Many studies have examined constructs such as self-perceived competence and self-efficacy cross-culturally, primarily by giving questionnaires developed in the West to participants in different cultures and then seeing if the factor structure of responses is similar. For example, Hau, Kong, and Marsh (2003) found similar factor structures of children's perceptions of their ability in Hong Kong as in previous Australian studies (e.g., Marsh, 1990). In a sample of fifth-grade students from Taiwan, Stigler, Smith, and Mao (1985) used Harter's (1982) Perceived Competence Scale for Children and replicated the factor structures for perceived competence found in previous U.S. samples. Further, Kwok and Lytton (1996) found consistent patterns of associations between perceived scholastic competence and math achievement in groups of fourth graders in Canada and Hong Kong. Although these studies do not characterize perceived competence as a need per se, they do provide evidence that it has a similar factor structure and plays a role in psychological functioning in a variety of cultures.

Regarding universality, there is little controversy surrounding the importance of competence to motivation, despite a lack of empirical evidence. Perhaps this is because it does not sound unreasonable to assume that humans everywhere need to feel competent, although the degree and expression may differ cross-culturally. While cross-cultural differences have been found regarding the meaning of ability in different cultures (Holloway, 1988; for discussion, see Wigfield, Tonks, & Eccles, 2004), the fact that

competence universally plays some role in psychological functioning and motivation has not been disputed.

Evidence for the universality of relatedness. Baumeister and Leary (1995) conducted a broad review of research from psychology, anthropology, and other fields, and concluded that the need to belong (or the need for relatedness) is a fundamental human motivation that is powerful and pervasive. The authors outlined a number of criteria necessary for a motivation to be considered fundamental, one of which was that it must be innate and universal. However, the only research evidence the authors found regarding universality of the need to belong was in the area of brain research and evolutionary psychology. The authors wrote, "Several patterns seem consistent with evolutionary reasoning. It remains plausible (but unproven) that the need to belong is part of the human biological inheritance. If so, the case for universality and nonderivativeness would be strong. At present, it seems fair to accept these hypotheses as tentative working assumptions while waiting for further evidence" (p.519). In other words, there is little evidence to support the proposition that the need to belong is universal, but Baumeister and Leary were still ready to conclude that it is. Nine years later, there is still very little work being done in this area, but there are no voices of dissent either. This is perhaps because it is reasonable to assume that human beings everywhere have some degree of need to build relationships, feel a sense of attachment to others, and belong to groups (Levesque et al., 2004).

Other research on the universality of relatedness has centered on the relationship between an infant and caregiver, which is seen as a universal developmental task, but one that differs across cultures (Greenfield, Keller, Fuligni, & Maynard, 2003). It ensures

survival for the infant as well as initiates the infant into a specific culture. Attachment theory (Bowlby, 1982) in particular has been controversial because of its claims of universality (e.g., Gjerde, 2001; Posada & Jacobs, 2001; Rothbaum, Weisz, Pott, Miyake, & Morelli, 2000; 2001). In traditionally independent cultures such as the United States, attachment theory characterizes the mother-infant relationship well. However, Rothbaum et al. (2000) maintain that cross-culturally, some core assumptions of attachment theory do not necessarily hold, because the measures emphasize the Western sense of individuation, which biases them toward Western values and meanings. For example, the "sensitivity hypothesis" says that secure attachment is dependent on, among other things, how well the mother sensitively responds to the infant's signals. Rothbaum et al. (2000) argue that the meaning and expression of sensitive differs cross-culturally. In Japan, rather than responding to the infant's signals, the mother tries to anticipate problems before the infant needs to signal. Moreover, the same behavior that constitutes sensitive caregiving in Japan has been characterized as insensitive when observed in the United States. Still, although attachment theory may not best capture the infant-caregiver relationship in all cultures, no one has argued that this relationship is not essential to humans.

Evidence for the universality of autonomy. Cross-cultural research evidence for the existence of autonomy has been provided from various countries, again primarily by looking at relations between autonomy and certain outcome variables in different countries. Studies in Russia and Turkey have found similar relationships between autonomy and well-being as research in the United States (Chirkov & Ryan, 2001; Chirkov et al., 2003). In Japan, research on perceived autonomy in elementary school and

university students shows patterns between autonomy and academic motivation that are similar to patterns found in the United States (Hayamizu, 1997; Tanaka & Yamauchi, 2000; Yamauchi & Tanaka, 1998). Finally, Kim (2002) found similar patterns among autonomy, motivation and well-being with Korean students. These investigations suggest that autonomy is universally salient, but as with the need for competence, they do not address the question of whether humans have a *need* for autonomy. I further describe and critically evaluate these studies below.

Some researchers have suggested that autonomy is culture-bound and that the relationships between autonomy and positive outcomes such as well-being are not universal (Iyengar & Lepper, 1999; Oishi, 2000). Markus, Kitayama, and Heiman (1996) write that because motivation and agency are closely connected to the self, which is highly dependent on one's culture, autonomy is a necessary precursor to well-being and motivation in only some people, those from Western cultures, where most research on SDT has been conducted. Responses to such critiques by self-determination researchers are twofold. First, Markus et al. equate autonomy with independence, and therefore define it differently from SDT researchers. Second, autonomy can be expressed and conceived of differently depending on culture (Ryan & Deci, 2002), and SDT researchers have begun to test this notion (Chirkov et al., 2003). These issues are discussed in more detail below.

In sum, researchers seem to agree on the basic content of the main criterion for judging universality of psychological needs and constructs: evidence of existence of a phenomenon in multiple cultures. Methods for bolstering an argument include showing a lack of evidence against universality and making theoretical arguments in favor of

universality. However, this agreement does not preclude debate on how much evidence is sufficient. Individuals must make their own decisions regarding the universality of each specific phenomenon, based on the number of cultures, research methods used, and strength of supporting arguments. SDT researchers explicitly state that there can be cultural diversity in the expression and satisfaction of the needs. This can lead to difficulty in demonstrating that the need exists in the diverse cultures. Regarding evidence for the universality of specific needs, despite little cross-cultural empirical evidence, few authors have taken issue with the claims that the needs for competence and relatedness are universal, perhaps because the claims are not unreasonable to accept. It should be noted that in all likelihood, the field accepts competence and relatedness as universally important constructs, although calling them needs may be less widely accepted. Some authors have disputed the universality of the need for autonomy, claiming that autonomy is more prevalent in cultures considered to be individualistic as opposed to collectivistic. This discussion now moves to another major part of self-determination theory, the self-determination continuum, which helps explicate intrinsic and extrinsic motivation and thus connects SDT to academic achievement motivation.

Self-Determination Continuum

Ryan and Deci (2000b, 2002) conceptualize motivation along a continuum that is based upon the perceived autonomy (or self-determination) of a behavior, or the extent to which one feels the behavior originated within the self. In various places, this continuum has been called the "self-determination continuum" (Deci & Ryan, 2000; Ryan & Deci, 2000b, 2002), the "relative autonomy continuum" (Ryan & Deci, 2003), and the "internalization continuum" (Chirkov et al., 2003; Deci & Ryan, 1985).

Why are there so many names for the same idea? First, the constructs are very closely related and self-determination theorists sometimes use them interchangeably. In their oft-cited work on self-determination and intrinsic motivation, Deci and Ryan (1985) use the terms autonomy and self-determination synonymously. Ryan and Grolnick (1986) use "self-determination" to clarify "sense of autonomy" (p. 550). Also, Chirkov et al. (2003) write "internalization (or relative autonomy)" (p. 102) in a heading for clarification purposes. Second, these various names indicate that these constructs all increase together along the continuum, which will be discussed further. In reference to the continuum, I will use self-determination continuum, simply to minimize the use of the word autonomy.

Deci and Ryan (1985) believe that the degree of autonomy associated with a behavior is directly related to how internal the motivation for that behavior is. When a behavior is low in autonomy, the locus of causality is external, and the motivation for that behavior is also external. When a behavior is high in autonomy, the locus of causality is internal, and the motivation is also internal or intrinsic. Based on this, Ryan and Deci (2000b, 2002) conceptualized the self-determination continuum (see Figure 1). At the extreme left side is amotivation, characterized by an absence of autonomy, and at the extreme right is intrinsic motivation, characterized by full autonomy. In the middle is the category of extrinsic motivation, which can have varying degrees of autonomy, from low to high.

Another construct that is central in the self-determination continuum because of its close relationship to autonomy is internalization or the degree to which a behavior has been internalized (hence the alternative name mentioned above, "internalization

continuum"). Ryan (1995) defines internalization as the acquisition of culturally relevant social behaviors and values. The more internalized values and behaviors are, the more autonomous people perceive their associated actions to be. In discussions of culture, internalization is extremely relevant, for it is through the process internalization that cultural transmission occurs. By way of socialization agents, such as families and schools, young people of a society internalize social rules, which they then pass on to subsequent generations (Inghilleri, 1999). Following is a more detailed description of the self-determination continuum in terms of autonomy and internalization, starting with the two poles of amotivation and intrinsic motivation, and then moving to extrinsic motivation.

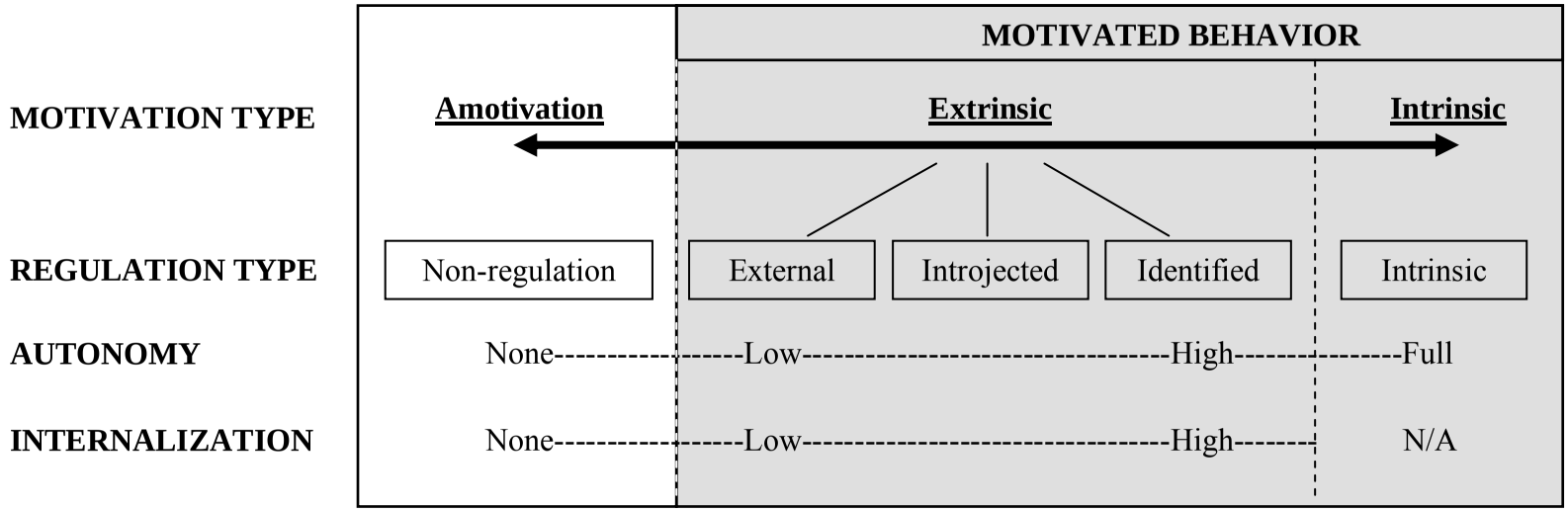
As can be seen in Figure 1, at the left pole of the continuum is amotivation or the absence of an intention to act, which falls outside the realm of motivated behavior (Ryan & Deci , 2002). When amotivated, people do not have a sense of purpose and do not perceive a relation between their behavior and its consequences, resulting in non-regulation of behavior (Deci & Ryan, 1985; Vallerand & Ratelle, 2002). Amotivation may result in no action or in acting passively: people acting "with no sense of intending to do what they are doing" (Ryan & Deci, p. 17). In amotivation, no autonomy or internalization of behaviors and values is present. Although some studies have included amotivation (e.g., Vallerand & Bissonnette, 1992; Vallerand, Fortier, & Guay, 1997), because it is considered outside the realm of motivated behavior, it will not be discussed further in the present study.

At the right pole is intrinsic motivation. When acting out of pure intrinsic motivation, people find the activities themselves interesting or enjoyable (Ryan & Deci,

2000a). Full autonomy is perceived, and it is assumed that internalization of values is not necessary because the enjoyment one experiences is inherent, caused by an innate propensity for the activity,

Figure 1

Self-Determination Continuum of the Academic Domain[1]



Notes

[1]Figure adapted from various sources (Ryan & Deci, 2000a, 2000b, 2002).

manifest in curiosity and interest (Ryan, Connell, & Grolnick, 1992). Intrinsic motivation is seen as a prototype of motivation in SDT because many things that people must do everyday do not provide them with inherent satisfactions. So, unless a student finds an assignment inherently satisfying or enjoyable, intrinsic motivation will not be operating. For example, a student who is an avid reader of fiction might experience intrinsic motivation when assigned the task of reading a novel of her choosing that she enjoys. In this case, she would experience satisfaction and enjoyment from reading the book and would not be concerned about being evaluated or obtaining any sort of reward.

Between the two poles of intrinsic motivation and amotivation falls extrinsic motivation, defined in SDT as acting for any reason that is separable from the activity or task (Ryan & Deci, 2000a, 2000b). Some extrinsic motivation is characterized by low autonomy, such as when a student does homework so as not to be punished by teachers or parents. SDT posits that highly autonomous extrinsic motivation exists as well, such as when one acts because one values an activity for one's future success. In extrinsic motivation, internalization is also found to varying degrees and it is positively related to autonomy. The more internalized a culturally relevant behavior is, the more autonomous a person feels when enacting that behavior.

In the academic domain, Ryan and Connell (1989) presented three categories of extrinsic motivation and provide reasons students might give when behaving under each category. The categories are labeled according to the type of regulation that accompanies them. In order of least to most autonomous, their labels are external regulation, introjected regulation, and identified regulation.

The least autonomous form of extrinsic motivation is labeled *external regulation*, in which behavior is perceived to be mostly controlled by external forces. This category exemplifies the definition of extrinsic motivation when viewed as the dichotomized opposite of intrinsic motivation. External regulation is characterized by low autonomy and low internalization of behaviors and values. Examples include behaving in order to follow rules, avoid punishment, or receive a reward.

Moving toward intrinsic motivation, we come to *introjected regulation*, which is characterized by higher autonomy and internalization than external regulation. Students with introjected regulation might be trying to win the approval of others or increase their self-approval. Or, they may be trying to avoid the guilt and anxiety of disapproval from others or themselves. Sample reasons students might give for introjected regulation include feeling ashamed about not doing the task, wanting peers or the teacher to like them, or wanting others to think they are smart.

Identified regulation is the most autonomous form of extrinsic motivation, and internalization of cultural values is high in this category. When acting out of identified regulation, students place high self-value on the activity. They identify closely with the activity in such a way that they find it personally important. In SDT, behaviors in this category fall under extrinsic motivation because although they are highly internalized, no innate propensity for them exists as is the case with intrinsically motivated behaviors. Sample reasons in this category for doing assignments include wanting to understand the subject, wanting to learn new things, and thinking the assignment is important. Note that many researchers such as Harter (1981) and Gottfried (1990) would place this behavior within the realm of intrinsic motivation.

Research on highly autonomous extrinsic motivation has found that it is beneficial to students and can be supported by teachers (Grolnick & Ryan, 1989; Grolnick, Ryan, & Deci, 1991; Deci, Eghrari, Patrick, & Leone, 1994). A student acting out of such motivation may not have a penchant for reading fiction and may not ever read fiction by choice; therefore she may not experience intrinsic motivation during a novel reading assignment. However, if the student is regulated by identification, then the student personally values doing the assignment, because it will help the student be a better reader or succeed in the future. The student may therefore be highly motivated and may enjoy the assignment. However, the rewards are separable from the activity of reading the novel.

Empirical support for the self-determination continuum was first documented by Ryan and Connell (1989), who developed what came to be called the *Self-Regulation Questionnaire- Academic Domain* (SRQ-A) to measure students' perceived autonomy in the academic domain. Most of the studies considered in this review also used some form of this questionnaire to measure perceived autonomy. The SRQ-A is a closed-ended questionnaire and was developed with children in grades three to six in the United States. It asks students about the reasons they do four academic activities: homework, classwork, answer hard questions in class, and try to do well in school. Children rate reasons using Likert-type scales from 1 "Not at all true" to 4 "Very true." The reasons are grouped into scales based on the four different types of regulation (i.e., external, introjected, identified, and intrinsic), that vary in their degree of autonomy. An example of an external reason is "Because I'll get in trouble if I don't." An introjected reason is "Because I want the teacher to think I'm a good student." An identified reason is "Because it's important to

me to do my homework." Finally, an example of an intrinsic reason is "Because I enjoy doing my homework." A score for each scale is calculated for each respondent. These scores represent the strength of the corresponding regulation types. For example, a student who has high scores (e.g., around three or four) on the identified and intrinsic scales is assumed to perform academically for highly autonomous reasons. A student with high scores on the external and introjected scales is presumed to do academic work for reasons that are low in autonomy or extrinsic. For the sake of brevity, from this point on, I refer to the scales measuring the different types of regulation as the external scale, the introjected scale, the identified scale, and the intrinsic scale.

Results from the SRQ-A are the primary source of empirical support for the existence of the self-determination continuum in elementary school-aged children. Because the four types of regulation are highly related, both theoretically and empirically, a factor analysis did not yield four clean factors in the Ryan and Connell (1989) study, but rather two, one representing high autonomy or intrinsic motives, and the other representing low autonomy or extrinsic motives. Therefore, in order to test whether the four types of motivation do form a continuum, Ryan and Connell looked for a simplex pattern of correlations or ordered correlation structure among the concepts, such that regulation types adjacent along the continuum (e.g., external and introjected) would be more highly correlated than types distant along the continuum (e.g., external and intrinsic).

The simplex pattern of correlations is based on Guttman's (1954) radex theory. When correlations are aligned in this ordered fashion, "it manifests the inherent, underlying parameter along which they are arranged" (Ryan & Connell, 1989, p. 751). In

the case of the self-determination continuum, the regulation types are represented by self-perceived reasons for acting and the underlying parameter is autonomy. Factor analytic approaches tend to separate these reasons into only two factors, internal reasons and external reasons. The simplex approach helps one to see what is between those poles. Table 2 shows a simplex pattern of correlations from the Ryan and Connell study. They found such patterns in three different samples of children and interpreted them as evidence of the theoretical self-determination continuum.

Table 2

Sample Simplex Pattern of Correlations between Regulation Types from Ryan and Connell (1989)

Regulation Type	1	2	3
1. External	--		
2. Introjected	.35*	--	
3. Identified	-.13	.46*	--
4. Intrinsic	-.30*	.07	.51*

* $p < .001$

It should be noted that Ryan and Connell (1989) investigated two domains, academic and social. In the academic domain, they found evidence for the existence of three types of extrinsic regulation and for intrinsic motivation. In the social domain, they found evidence for a fourth type of extrinsic motivation, integrated regulation, and it is included in the general self-determination continuum (Ryan & Deci, 2000a, 2000b). However, integrated regulation and identified regulation were empirically

indistinguishable in the academic domain, and therefore not included in the academic version of the self-determination continuum.

Another questionnaire that has been used to test for the self-determination continuum is the *Academic Motivation Scale* (AMS; Vallerand et al., 1992; 1993). The AMS was originally developed in French with samples of French-Canadian university students. It is similar to the SRQ-A, in that its subscales are derived from the regulation types of the self-determination continuum. In addition to the subscales on the SRQ-A (external, introjected, identified, and intrinsic), the AMS includes an amotivation subscale. Also, instead of just one intrinsic subscale, the AMS includes three subscales representing distinct aspects of intrinsic motivation: intrinsic motivation to know, to accomplish things, and to experience stimulation. Some studies have reported support for the simplex pattern of correlations between the AMS subscales (e.g., Vallerand & Bissonnette, 1992). In contrast, Fairchild, Horst, Finney, and Barron (2005) did not find support for the simplex pattern using the AMS. In their study, over 1400 college students completed the AMS. To evaluate for the simplex pattern, the authors examined correlations between latent factors computed through confirmatory factor analyses. They reported that the resulting matrix evidenced many deviations from the simplex pattern. For example, the correlation between the extrinsic and identified factors (.71), was stronger than the correlations between extrinsic and introjected (.48), and introjected and identified (.56). If the matrix reflected a simplex pattern, then the correlation between extrinsic and identified should be weaker than the latter two. Thus more research is needed to assess the nature of the relations of the different aspects of motivation in SDT.

In summary, SDT posits that autonomous motivation is key to being motivated and achieving in school. It can take the form of intrinsic motivation or autonomous extrinsic motivation, and these are explicated in the self-determination continuum. Empirical support for the self-determination continuum is limited to patterns of related correlations based on responses to two questionnaires: the SRQ-A and the AMS. Research done primarily in the United States shows that when students' basic need for autonomy is met, we see benefits such as higher academic achievement and higher competence beliefs (see Reeve, 2002 for a review).

Cross-Cultural Studies on Autonomy

In this section, I review cross-cultural studies on autonomy, with the ultimate goal of making a preliminary judgment on the universality of autonomy based on extant research. First I give an overview of the studies under consideration. Next, I discuss how culture was treated in this group of studies. Then in the following section, I evaluate the studies with regard to how each study dealt with ensuring the comparability of constructs and measures, a problem that can jeopardize the equivalence of data across cultural groups (Van de Vijver, 2001; Van de Vijver & Hambleton, 1996).

Studies in this Review

This review includes studies that meet two criteria. First, they must include autonomy as a variable, and autonomy must be defined consistently with self-determination theory, as the perceived source of one's behavior. Studies defining autonomy differently, such as ones that equate it with independence or individualism are not considered as evidence for or against the universality of autonomy, as Ryan and Deci (2002, 2003) have defined it. Also, I included one study (Hamilton et al., 1989) that does

not specifically name autonomy as a variable, but does employ an early version of the SRQ-A (Ryan & Connell, 1989) to measure what is essentially the same as autonomy as defined in SDT. The second criterion is that in order to be considered cross-cultural, the studies must focus at least in part on cultures, nations, or ethnicities outside of middle-class North American samples. Studies focusing solely on North American samples are not considered in this review, because I consider them to be part of the corpus of studies on which SDT is based, and those studies are considered in the above review of SDT.

I found 12 studies that met these criteria (see Table 3). All except one of the studies appeared in peer-reviewed journals, although the journals varied as to their selectivity. The one exception, Kim (2002), was presented at a major academic conference. It was included because it is germane to the topic at hand and also because it underwent a peer-review process. All of the studies are quantitative: Searches for qualitative studies meeting the three criteria were not fruitful. One study (Hamilton et al., 1989), however, did use interviews and open-ended questionnaires as a data collection technique. Eight of the studies included measures related to education, such as academic achievement or autonomy for academic behaviors (Chirkov & Ryan, 2001; d'Ailly, 2003; Hamilton et al.; Hayamizu, 1997; Kim; Levesque et al., 2004; Tanaka & Yamauchi, 2000; Yamauchi & Tanaka, 1998). One of the studies related autonomy to psychological well-being (Chirkov et al., 2003), and two studies related autonomy to both well-being and academic measures (Chirkov & Ryan; Levesque). Iyengar and Lepper (1999) related choice to intrinsic motivation but made conclusions regarding autonomy in SDT. Finally, Sheldon et al. (2001) compared autonomy with a number of other possible psychological needs and did not have an outcome variable per se.

Ten of the 12 studies (Chirkov & Ryan, 2001; Chirkov et al., 2003; Deci, Ryan, et al., 2001; d'Ailly, 2003; Hayamizu, 1997; Kim, 2002; Levesque et al., 2004; Sheldon et al., 2001; Tanaka & Yamauchi, 2000; Yamauchi & Tanaka, 1998) worked within the framework of SDT. That is, they espoused definitions of autonomy that are consistent with SDT: namely, being the perceived source of one's behavior (Ryan & Deci, 2002). The Hamilton et al. (1989) study used an early version of the SRQ-A (Ryan & Connell, 1989), and although the authors did not use the term autonomy, their discussion of reasons for achievement in Japanese and U.S. children is highly related to autonomy and the present review. The Iyengar and Lepper (1999) study investigated choice but equated it with self-determination and intrinsic motivation, constructs very similar to autonomy. Asking students about their reasons for engaging in academic behavior has been the primary means of measuring perceived academic autonomy (e.g., Ryan & Connell; Vallerand et al., 1992).

For purposes of discussion, I divide the studies into three groups, based on their major findings. The first group of studies presents evidence for the existence of autonomy in different cultures. The second group presents data that support the cross-cultural existence of autonomy, as well as data that show that autonomy differs across cultures. The study in the third group (Iyengar & Lepper, 1999) argues that autonomy is not a universal construct.

Table 3

Cross-Cultural Studies of Autonomy

Study	Sample			Variables	Autonomy Measure
	Culture	Size	Age		
Studies Reporting Support for Universality					
Chirkov & Ryan (2001)	Russia United States	120 116	14-17 years 14-19 years	-Autonomy -Well-being -Parental autonomy support -Teacher autonomy support	SRQ-A
d'Ailly (2003)	Taiwan Students Teachers	 806 50	 Grades 4-6	-Autonomy -Perceived control -Effort -Academic achievement -Teachers' motivating style -Teacher autonomy support -Parental autonomy support -Students' intrinsic vs. extrinsic orientation	Chinese translation of SRQ-A
Hayamizu (1997)	Japan	483	Grades 7-8	-Autonomy -Teacher ratings of student motivation -Causal attributions -Coping behaviors for failure	SMS, based on SRQ-A and AMS

Cross-Cultural Studies of Autonomy

Study	Sample			Variables	Autonomy Measure
	Culture	Size	Age		
Levesque, et al. (2004)	Germany		Mean:	-Autonomy	SRQ-A: shortened 16 item version
	Phase 1	156	24 years	-Competence	
	Phase 2	379	25 years	-Well-being (self-esteem, life satisfaction)	
	US				
	Phase 1	339	20 years	-Positive environmental feedback	
	Phase 2	415	21 years	-Environmental pressure	
Sheldon, Elliot, Kim, Kasser (2001)	South Korea			-10 candidate universal needs	3 items asking how subject felt after satisfying event
	Study 1	---	University		
	Study 2	200	students		
	Study 3	---			
	US				
	Study 1	322			
	Study 2	152			
	Study 3	233			
Tanaka & Yamauchi (2000)	Japan	121	18-21 years	-Autonomy -Perceived control -Achievement goal orientations	Japanese adaptaton of SRQ-A

Cross-Cultural Studies of Autonomy

Study	Sample			Variables	Autonomy Measure
	Culture	Size	Age		
Yamauchi & Tanaka (1998)	Japan	356	Grades 5-6	-Autonomy -Perceived control -Self-esteem -Causal attributions -Achievement goal orientations	Japanese adaptaton of SRQ-A
Studies Reporting Support for Universality and Cross-Cultural Differences in Autonomy					
Chirkov, Ryan, Kim, & Kaplan (2003)	Russia South Korea Turkey United States	159 111 94 195	18-25 years 18-27 years 18-37 years 18-44 years	-Autonomy of cultural practices -Subjective well-being	Self-Regulatory Questionnaire of Cultural Practices
Deci, Ryan, Gagne, Leone, Usunov, & Kornazheva (2001)	Bulgaria US	431 128	Adults	-Need satisfaction for autonomy, competence, relatedness -Autonomy support at work -Work engagement -Anxiety -General self-esteem	7-item scale
Hamilton, Blumenfeld, Akoh, & Miura (1989)	Japan United States	399 184	Grade 5	-External & internal reasons for academic behavior (autonomy)	Adaptation of early version of SRQ-A

Cross-Cultural Studies of Autonomy

Study	Sample			Variables	Autonomy Measure
	Culture	Size	Age		
Kim (2002)	South Korea	209	Grade 5	-Autonomy	K-SRQ-A, based
		239	Grade 8	-Academic self-efficacy	on SRQ-A and
		226	Grade 11		SMS
Study Reporting Evidence Against Universality					
Iyengar & Lepper (1999)	Asian American		Grades 2-5	-Who made choice (e.g., self or other)	Experimental
	Study 1	52		-Intrinsic motivation	manipulation of
	Study 2	47		-Task performance	choice condition
	Anglo American				
	Study 1	53			
	Study 2	41			

Notes. SRQ-A refers to the Self-Regulation Questionnaire-Academic Domain (Ryan & Connell, 1989). AMS refers to the Academic Motivation Scale (Vallerand et al., 1992). SMS refers to the Stepping Motivation Scale (Hayamizu, 1997).

Studies Reporting Support for Universality

The seven studies in the first group all present some degree of evidence for the existence of autonomy as a correlate to motivation or well-being in countries outside of North America. Some of them document the simplex pattern of correlations between the different types of motivation documented in North America by Ryan and Connell (1989) and Vallerand and Bissonnette (1992) among others. The simplex pattern can be interpreted as indicating that the self-determination continuum exists across cultures. Some of the studies show autonomy correlating with other motivation constructs or well-being in a similar fashion as they do in U.S. studies.

The first study (Chirkov & Ryan, 2001) compared Russian and U.S. high school students on perceptions of autonomy support from teachers and parents, perceived autonomy, intrinsic motivation, and psychological well-being (measured by U.S. scales of self-esteem, depression, self-actualization, and satisfaction with life). Students completed the SRQ-A (Ryan & Connell, 1989) to measure perceived autonomy. Analyses included statistical tests of construct comparability, structural equation modeling to predict students' perceived autonomy and well-being from parental and teacher autonomy support, and mean-level comparisons of the constructs. Regarding construct comparability, this study employed mean and covariance structures analysis (MACS; Little, 1997), an extension of structural equation modeling, to test the measurement equivalence of constructs between Russia and the United States.

In MACS, "measurement equivalence addresses whether the constructs' operational definitions (i.e., the reliable components of the measurement space) are the same in two or more samples" (Little, 1997, p. 57), but does not specifically address the

theoretical definitions of constructs. Specifically, MACS compares the factorial invariance of each variable's loading and intercept parameters in a cross-cultural data set. Strong factorial invariance is interpreted as an indication that the constructs are the same (i.e., interpreted equivalently) across groups, and therefore comparable. Although only operational definitions are addressed, it seems implicit in studies using MACS that based on these analyses, theoretical meanings are also deemed equivalent. Based on MACS analyses, Chirkov and Ryan (2001) deemed the constructs under study as equivalent and comparable and thus pursued between-group mean-level comparisons and further SEM analyses.

Significant relations between perceived parental and teacher autonomy support and the outcome variables were equivalent in the Russian and U.S. samples. In both cultures, perceptions of parental autonomy support significantly predicted psychological well-being (regression coefficient = .83, $p < .01$), whereas teacher autonomy support did not. Based on the SRQ-A data, parental autonomy support predicted identified regulation (regression coefficient = .34, $p < .01$) and negatively predicted external regulation (regression coefficient = -.20, $p < .05$). Teacher autonomy support positively predicted identified regulation (regression coefficient = .30, $p < .01$) and intrinsic motivation (regression coefficient = .57, $p < .01$). Chirkov and Ryan (2001) took these findings to indicate the relevance of autonomy to students in two diverse cultures. Other notable findings included mean-level differences showing that the Russian sample reported significantly lower perceived autonomy and lower autonomy support from parents and teachers. The researchers speculated that these differences can be attributed to Russia's traditional authoritarian and moderately collectivistic culture.

Notably, Chirkov and Ryan (2001) did not discuss explicitly whether simplex patterns of correlations were evident in the two groups. They did however display tables of correlations among regulation types for each group. The Russian correlations seem to partially support a simplex pattern. Consistent with a simplex pattern, the three adjacent regulation types were significantly correlated: external and introjected correlated at r = .70, introjected and identified correlated at r = .39, and identified and intrinsic correlated at r = .74. The deviation from the simplex pattern was found in the correlation between introjected and intrinsic, r = .40. This was not lower than the introjected-identified correlation and so did not follow the simplex pattern.

The U.S. correlations deviated even more from the simplex pattern. Specifically, the external-introjected correlation of r = -.05, which should be one of the largest in the matrix, was not significant. External was significantly negatively related to identified (r = -.37) and intrinsic (r = -.26), although in a simplex pattern, the external-intrinsic correlation should be the smaller of the two. The other two adjacent correlations of identified-introjected and intrinsic-identified showed the highest correlations, typical of a simplex pattern and were significant at r = .38 and r = .36. Finally, the introjected-intrinsic correlation seemed also to be consistent with a simplex pattern at r = .22.

In the second study of this group, d'Ailly (2003) studied fourth to sixth grade students and their teachers in Taiwan. Autonomy was measured by a directly translated Chinese language version of the SRQ-A (Ryan & Connell, 1989). Other variables in this study included teacher and parental autonomy support as perceived by students and teachers' reports of their motivating style as controlling or autonomy-supportive. D'Ailly reported that the four regulation types measured in the SRQ-A correlated in a simplex

pattern. Indeed the correlations do look similar to those from Ryan and Connell with minor deviations. The introjected-external and intrinsic-identified correlations are actually higher in Taiwan: D'Ailly found .52 and .63, compared to Ryan and Connell's .35 and .51 respectively. The larger deviation however is the low correlation found in Taiwan between introjected and identified: D'Ailly found .15, compared to .46 in Ryan and Connell. While still statistically significant at $p < .01$, the strength is large enough to wonder why, although d'Ailly did not address this point.

Further, d'Ailly (2003) found positive relations between autonomy and other motivation-related constructs that are similar to previous findings in North America (e.g., Grolnick et al., 1991; Ryan & Connell, 1989). More specifically, mastery motivation, as measured by Harter's (1981) scales of independent mastery, preference for challenge, and curiosity, correlated positively with the identified ($r = .49$, $p < .01$) and intrinsic ($r = .51$, $p < .01$) scales from the SRQ-A, and negatively with the external ($r = -.30$, $p < .01$) and introjected ($r = -.08$, $p < .05$) scales. Also, perceived teacher and maternal autonomy support and maternal involvement were positively but weakly related to identified and intrinsic regulation, as regressions showed that taken together these three predictors accounted for less than 10 percent of the total variance in each. Based on such relations, d'Ailly (2003) concluded that among Chinese children, autonomy as a construct has "ecological validity in the Chinese population" (p. 94), suggesting that among Chinese children, autonomy plays a role in academic motivation that is consistent with its definition and conceptualization in SDT.

One important discrepancy between d'Ailly's (2003) findings and those from North America is that teachers' reported motivating style related neither to students'

perceptions of teacher autonomy-support nor to other student measures. This differs from North American research that shows a positive relation between autonomy-oriented teachers and students' intrinsic motivation (Deci, Schwartz, Sheinman, & Ryan, 1981). To account for this, d'Ailly hypothesizes that some teacher behaviors perceived as controlling in North America and thus detrimental to autonomy might be seen as caring among Chinese students and therefore not be detrimental to autonomy. This could mean that Chinese students experience autonomy differently from North American students.

In the third study of the first group, Hayamizu (1997) set out to investigate the self-determination continuum in a sample of seventh- and eighth-grade Japanese students. Variables in this study included autonomy, causal attributions, and behaviors for coping with failure. To measure autonomy in this age group, Hayamizu created the Stepping Motivation Scale (SMS), which he based on Ryan and Connell's (1989) SRQ-A, originally designed for elementary school students, and the Academic Motivation Scale (Vallerand & Bissonnette, 1992), which was originally designed for university students. Similar to the SRQ-A and the AMS, the SMS measured students' autonomy in the four types of regulation: external, introjected, identified, and intrinsic. One difference between this measure and the SRQ-A is that the SMS asks students about their reasons for studying science, whereas the SRQ-A taps more general school behaviors, such as doing homework and classwork.

There are many differences between the measures at the item level. Hayamizu (1997) included many items on the SMS that are not on the SRQ-A and also deleted many items from the SRQ-A. It appears as if Hayamizu is more concerned with capturing only the essence of autonomy in the SMS than with staying true to the original SRQ-A.

The following examples come from a comparison of Hayamizu's English translation of the SMS with the SRQ-A. First, on the external scale, three items appear on the SMS and the SRQ-A. Hayamizu added three items mentioning parents and one stating that the modern social system compels students to study. From this scale, he deleted three items, including one about studying in order to receive a reward. Next, on the introjected scale, the SMS overlaps with the SRQ-A to a greater extent. Hayamizu added two items: "Because I don't want my parents to feel sad because of my poor achievement," and "Because I don't want my friends to dislike me because I am a dull student." Also, he deleted an item about feeling "really proud of myself if I do well."

Regarding the identified scale, three items on the SMS and SRQ-A overlap. To this scale, Hayamizu (1997) added an item about entrance exams, which reads, "Because I think it is necessary to study as part of life," and a third about studying science because it will be useful in the future. The SRQ-A's identified scale includes three items conveying that it is "important" to do academic activities. For the SMS, Hayamizu retained one of these and deleted the other two, as well as the item, "To find out if I'm right or wrong." Finally, the intrinsic scales on the two measures look quite different, with only one item overlapping. All seven intrinsic items on the SRQ-A include either "fun" or "enjoy" in them. Of the six items on the SMS, three include fun, while the others use "like," "interesting," "get pleasure" for this purpose.

Although Hayamizu (1997) does not discuss reasons why the scales were altered, some items seem to be tailored to Japanese culture. For example, the item added to the external scale, "Because the modern social system is such that one must study" perhaps deliberately reflects the emphasis that Japanese place on the welfare of the group and

society as a whole. The item about children not wanting their parents to feel sad reflects a common form of communication between Japanese parents and their children. Parents often tell their children that if they act out, then the parents will feel sad, appealing to the children's emotions to control behavior. Many other items on the SMS also mention parents as reasons for achieving, as opposed to the SRQ-A and AMS, neither of which mentions parents at all. This perhaps relates to the Japanese interdependent self discussed by many authors (e.g., Markus & Kitayama, 1991), in that one's parents make up part of the self. One question that arises with the alteration of scales is whether the same construct is being measured. In this case, in light of the many differences in the items, are the SRQ-A and SMS all measuring the same underlying construct of autonomy, or are they measuring different constructs?

Based on his findings, Hayamizu (1997) reported that autonomy plays a role in the motivation of Japanese middle school students. A simplex pattern of correlations between the different types of regulation on the self-determination continuum was evident, although it looks somewhat different from that reported in Ryan and Connell (1989) shown in Table 2. The external-introjected correlation (r = .58) and the identified-intrinsic correlation (r = .62) were both higher than the corresponding results reported by Ryan and Connell. Another difference is the relative strength and the positive signs of the external-identified (r = .21), external-intrinsic (r = .05), and introjected-intrinsic (r = .28) correlations. Although these relations do seem to conform to a simplex pattern, none of the correlations are negative, and compared with the Ryan and Connell results, they are generally stronger.

Findings regarding causal attributions and coping behaviors were mixed. For example, high scores in external and introjected regulation correlated positively with attributions to external causes and maladaptive coping behaviors. On the other hand, high introjection scores also correlated positively with active coping behaviors and attributions to controllable causes. Self-determination theory would likely predict that external attributions and maladaptive coping behaviors are typical in students with external and introjected regulation, while internal controllable causal attributions and active coping behaviors are more typical of students with identified and intrinsic regulation. In sum, the results from this study indicate that autonomy plays a role in Japanese students' motivation and that it can be characterized by the self-determination continuum. However, less clear are the relations between autonomy and other motivational constructs.

Levesque et al. (2004), the fourth study in the first group, used SEM to examine the role of perceived autonomy and competence as they relate to well-being in groups of students from two German universities and two U.S. universities. They measured perceptions of environmental pressures and positive informational feedback as two aspects of the respective settings. The hypothesized model consisted on environmental pressures and feedback each predicting both perceived autonomy and competence. In turn, perceived autonomy and competence each predicted well-being, as measured by scales of self-esteem and satisfaction with life. Autonomy was measured by an abbreviated version of the SRQ-A, which had been previously translated into German. Instead of analyzing the individual regulation types, these researchers calculated composite scores by summing items from each regulation scale. These composites

represent a student's degree of autonomous motivation. Equivalence of the data between the cultural groups was analyzed statistically using the MACS procedure (Little, 1997), and the authors concluded that all of the data and thus the constructs were comparable across the cultures.

Major findings included general support for the hypothesized structural equation model. Results from an SEM analysis that included data from all four groups of university students showed that environmental pressure was negatively related to perceived autonomy (γ = -.20) and competence (γ = -.30), and feedback was positively related to perceived competence (γ = .17). The path from feedback to perceived autonomy was not consistent across groups. Further, perceived competence predicted well-being (γ = .58), although perceived autonomy consistently predicted well-being through competence, but not directly. Levesque et al. interpreted the findings to mean that autonomy and competence play similar roles in relation to well-being among U.S. and German university students.

Mean level analyses showed that the German students perceived significantly greater autonomy than the U.S. students, which the authors attributed to the greater freedom to guide one's own studies coupled with the lack of ongoing evaluations in German universities. In addition, the German students reported lower academic competence than the U.S. students, which is consistent with the view that U.S. students tend to overestimate their capabilities in comparison to students from other cultures (Kitayama, Markus, Matsumoto, & Norasakkunkit, 1997). Overall, this study provided strong evidence of relations between students' environment, autonomy and competence, and well-being. One weakness was the lack of discussion of whether autonomy is

perceived and expressed similarly between the U.S. and Germany. Levesque et al. (2004) seemed to take for granted that autonomy is similar in the two countries, perhaps due to the similarity of the cultures and their shared cultural history.

The fifth study in the first group, Sheldon et al. (2001), used a different approach to investigate autonomy cross-culturally. University students in South Korea and the United States were asked what was satisfying about a personally satisfying event. They were instructed to recall a recent satisfying event and then rate 10 candidate needs in response to the phrase: "During this event I felt…." The ten candidate needs were autonomy, competence, relatedness, self-actualization-meaning, physical thriving, pleasure-stimulation, money-luxury, security, self-esteem, and popularity-influence.

The three items that comprised the autonomy scale reflected various aspects of SDT's definition of autonomy and were as follows: a) "That my choices were based on my true interests and values," b) "Free to do things my own way," and c) "That my choices expressed my 'true self.'" Although this scale captures autonomy in a way that is consistent with SDT, it is very different from measuring reasons for behavior as the SRQ-A does. It is difficult to judge the scale's appropriateness however, because the only psychometric data provided were the factor loadings from a principal-components analysis performed on all of the items representing the ten candidate needs in a sample of U.S. university students. Moreover, no psychometric properties of any of the measures were presented from the South Korean sample, which makes it even more difficult to judge the appropriateness in that culture. In addition to the autonomy scale, subjects completed a measure of positive and negative affect in relation to the same satisfying event. Analyses of data included rank-ordering the ten candidate psychological needs

based on subjects' mean responses and regressing the affect variables on the candidate needs.

Students in both South Korea and the United States rated autonomy among the top three needs felt during their recent satisfying experiences. In the U.S. sample, self-esteem was rated highest, and autonomy, relatedness, and competence all tied for second place and did not differ significantly from each other. Among South Koreans, relatedness was ranked highest, self-esteem was second, and autonomy and competence tied for third and did not differ from each other. The main conclusion the authors drew from these data were that the three needs from SDT, along with self-esteem were most salient in both cultures. Also, in a regression where positive affect was the dependent variable, the three SDT needs all accounted for significant variance in the U.S. and South Korean samples (βs for the U.S. and South Korea, respectively, were as follows: competence, .44 and .46; autonomy, .30 and .25; relatedness, .15 and .17). Sheldon et al. (2001) took this as support for the existence of the universal needs posited in SDT.

Regarding cultural differences, Sheldon et al. (2001) pointed to the result that relatedness was rated highest in South Korea, indicative of the group-oriented, collectivistic nature of Korean culture (Triandis & Gelfand, 1998). To reconcile this finding with the findings that support universality, the researchers stated that "both universalist and cross-culturalist perspectives concerning fundamental psychological needs may be correct, in different ways" (p. 336). The set of salient needs is similar in the two cultures, but the order of importance within the set can differ, depending on what is most valued and emphasized in the respective cultures. This raises a larger point of

whether the basic psychological needs can differ in importance or whether they are equally fundamental to humans in any culture. I return to this point below.

The next two studies in this first group are by Japanese researchers who looked at how autonomy related to students' values concerning learning, goal orientations, and perceived control beliefs in Japanese students. Yamauchi and Tanaka (1998) tested these relations in a group of fifth- and sixth-grade children by using Japanese versions of several self-report measures. The measure of autonomy was an adapted version of the SRQ-A, and the scales representing the four types of regulation generally resembled those from the original SRQ-A (Ryan & Connell, 1989). Some deviations can be seen however, and unfortunately the researchers did not state reasons for these changes. For example, one reason for behaving on the external scale referred to someone at home getting angry if the student does not try to get high grades on tests. Further, an item concerning getting compliments from the teacher was included on Yamauchi and Tanaka's introjected scale, whereas wanting "the teacher to say nice things about me" is considered external regulation on Ryan and Connell's scale. One big difference concerns the question stems. Instead of using the four stems on the SRQ-A, Yamauchi and Tanaka used eight different stems, possibly trying to cover a greater range of academic behaviors. The full range of items can be seen in Appendix A.

Results from the Yamauchi and Tanaka (1998) study supported the self-determination continuum by documenting the simplex correlation structure between the four regulation types. This pattern of correlations closely resembled the Hayamizu (1997) correlations, differing only in that the correlations were .02 to .06 larger than the Hayamizu correlations. Yamauchi and Tanaka also correlated the four regulation types

with students' values concerning learning, goal orientations, and perceived control beliefs and found patterns consistent with SDT: Low autonomy showed low or negative correlations, while high autonomy showed high correlations. In the order of external, introjected, identified, and intrinsic, correlations between the autonomy scales and other motivation constructs were as follows: values concerning learning, -.02, .24, .49, and .58; learning goal orientation, .15, .37, .58, and .62; perceived control beliefs, -.05, .16, .37, and .41.

Tanaka and Yamauchi (2000) gave similar measures to Japanese university students and specifically targeted the domain of learning English. Their analyses proceeded differently from the Yamauchi and Tanaka (1998) study, in that they first created four clusters of students based on scores from the autonomy scale. They did not report correlations among the regulation types or correlations between autonomy and other motivational aspects. The four clusters varied on autonomy, from low to high, and the researchers compared the means of the cluster groups on other constructs. For mastery goal orientation, the low autonomy cluster scored the lowest, and the high autonomy cluster scored the highest, with the other two clusters in between. All of the means differed significantly from each other, in that order. For perceived control beliefs, the lowest autonomy cluster scored significantly lower than the two middle clusters, which were significantly lower than the high autonomy cluster. For achievement in English, the low autonomy cluster scored significantly lower than the other three clusters, which did not differ statistically. The order of these means are consistent with SDT, in that students perceiving low autonomy report lower motivation and achievement, and students with high autonomy show higher motivation and achievement.

These two studies extend Hayamizu's (1997) findings that autonomy plays a role in Japanese students' motivation by testing two different age-groups, elementary school and university students, and by investigating a different set of constructs. It is not clear from these studies how the role of autonomy might differ between the age groups studied, or how this might differ from autonomy's role among U.S. students. In addition, these studies did little to study the meaning or expression of autonomy among Japanese students. Research that first tackles the question of how autonomy as a construct differs in Japan, both at the meaning level and the expression, is needed. The current study will address this question through interviews with Japanese students and factor analyses of questionnaire data.

Studies Reporting Support for Universality and Cross-Cultural Differences in Autonomy

The next four studies comprise the second group because they present both evidence for the existence of autonomy in multiple cultures and data suggesting that autonomy differs to some extent across cultures. These studies specifically pointed out differences in autonomy that may exist between cultures. Although findings from the studies in the previous group may also suggest cross-cultural difference in autonomy, the authors of those studies did not focus on or specifically discuss the differences.

Chirkov et al. (2003) attempted to refute claims that autonomy is beneficial to well-being only in individualistic countries, such as the United States (e.g., Iyengar & Lepper, 1999; Oishi, 2000). They assessed relations of autonomy and well-being among university students in Russia, South Korea, Turkey, and the United States, countries which differ with respect to Triandis and Gelfand's (1998) cultural distinctions of vertical individualism, horizontal individualism, vertical collectivism, and horizontal

collectivism. In vertical individualism (VI), individuals want to stand out from the group and acquire status. In horizontal individualism (HI), people want to be different from the group but do not need to acquire status. In vertical collectivism (VC), the focus is on the in-group, and people will sacrifice personal goals for group goals and submit to authority. Finally, in horizontal collectivism (HC), group goals are emphasized but people do not easily submit to authority. Based on previous research, Chirkov et al. classified the countries in the following way: the United States is high in VI and HI and low in VC; Korea is high in HC and VC; Russia and Turkey are "somewhat mixed model cultures" (p. 100). These cultural distinctions were measured in this study by asking participants how they perceive others in their nation and themselves personally. Results showed the United States as relatively individualistic, Korea as relatively collectivistic, and Russia as a mixed model. Unfortunately incomparability of the Turkish data precluded analyses.

University students in each country completed measures of well-being and autonomy. The well-being scales, all Western in origin, tapped self-esteem, self-actualization, satisfaction with life, and depression. The measure of autonomy was the newly created *Self-Regulatory Questionnaire of Cultural Practices*, which varies greatly from the SRQ-A. It measures the degree to which participants had internalized cultural practices typical of VI, HI, VC, and HC. For example, in the VI category, subjects rated their internalization, or autonomy, of six practices such as striving "to do one's job better than others" and being "annoyed when other people perform better than you." The HC category included practices such as helping "a relative, if the relative has financial problems" and maintaining "harmony within any group that one belongs to." For each cultural practice, participants rated four items, representing four regulation types, or four

types of extrinsic motivation (external, introjected, identified and integrated) on a five-point Likert scale. Unlike the SRQ-A, an intrinsic category was not measured because it does not represent internalized behavior, and the practices measured were all assumed to be internalized. The greatest difference between this scale and the SRQ-A are the target behaviors being measured. Whereas the SRQ-A asks students about academic behaviors, this measure asks participants about cultural practices. A summary score for VI, HI, VC, and HC was calculated, indicating the degree to which each participant had internalized practices of each category.

Results indicated that in all four cultures, the degree to which the students internalized practices typical of their own culture related positively to well-being. That is, students who autonomously behaved consistently with their own cultures had higher well-being than students who reported low autonomy for practices typical of their own culture. This was interpreted as evidence that autonomy is similar in the different cultures and thus lends support to its universality. The most important implication of this study is the fact that different cultural practices were internalized depending on the country suggests that the experience of autonomy can differ across cultures. Therefore, on the surface, different practices are internalized, yet the construct of autonomy underlies them in all countries. This finding constitutes the strongest empirical support to date of the SDT contention that autonomy is universal.

The next study in this group is by Deci, Ryan, et al. (2001), who investigated motivation at work among adults in Bulgaria and the United States. This study employed SEM to test a proposed model based on SDT in which perceived managerial autonomy

support predicts intrinsic need satisfaction, which then predicts motivation and well-being.

Intrinsic need satisfaction was a latent variable composed of three indicators: satisfaction of the needs for autonomy, competence, and relatedness. These indicators were measured by the *Basic Need Satisfaction at Work Scale*, a previously validated measure used to assess the extent to which workers feel their basic psychological needs have been satisfied. The subscale measuring the need for autonomy contains seven items, such as "I feel like I can make a lot of inputs to deciding how my job gets done" and "I am free to express my ideas and opinions on the job." This scale is unique among the autonomy measures in this review in that it measures need satisfaction, rather than perceived autonomy. As a result it measures a construct more akin to perceived autonomy support.

Results supported the proposed model in both the United Stated and Bulgaria such that perceived managerial autonomy support predicted need satisfaction, which related to the outcomes of motivation and well-being. However, the relations were much stronger in the United States sample. Also, some mean level differences were found. For example, Bulgarians perceived greater satisfaction of their need for autonomy. Deci, Ryan, et al. (2001) concluded that support for the model suggested that needs are important in both countries, but the differences found could mean that needs may require different kinds of support in different cultures.

Another study in this group, by Hamilton et al. (1989), analyzed Japanese and U.S. fifth-grade children's reasons for achieving, which is exactly how the SRQ-A (Ryan & Connell, 1989) taps autonomy. This study is unique because it used both open-ended

and closed-ended questions and because the researchers analyzed the targets of children's reasons for achieving: whether children mentioned parents, teachers, peers, or themselves in their answers. This is the only study that has used open-ended questions to tap children's perceived autonomy. Another unique aspect is that researchers asked children about both their action-related reasons (e.g., "Why is it important to do well on a test?") and their feelings-related reasons (e.g., "Why do you feel good [bad] if you do well on a test?") for achieving. Due to unforeseen circumstances, the open-ended and closed-ended measures took different forms in the two groups, which I now discuss in further detail.

For the closed-ended questions, Hamilton et al. (1989) cite an early version of the SRQ-A as basis for their instrument. Although they did not use current SDT terminology and say that the reasons represent autonomy, they in effect did measure autonomy in a nearly identical way to Ryan and Connell (1989) by measuring children's reasons for academic behavior. Regarding changes, to both the U.S. and Japanese versions of the measure, items concerning parents were added (e.g., "So the teacher will be pleased" and "So the teacher won't be upset") and for the sake of brevity, the intrinsic scale was dropped. The Japanese investigators changed their version more substantially by expanding the measure by 16 items. Namely, they added items concerning reactions of teachers and peers parallel to the parent-related items.

In the U.S., children were interviewed, but in Japan, students wrote answers to open-ended questions because the Japanese students were not allowed to leave class. Reasons given by children for doing academic work were coded as internal or external, corresponding to high autonomy and low autonomy respectively. The closed-ended questionnaire was based on an early version of the SRQ-A (Ryan & Connell, 1989),

which only included scales for internal and external motivation and left out introjected and identified motivation types. Results from the open-ended and closed-ended measures indicated that U.S. children's action reasons for achieving academically were more external than Japanese children's. In SDT terms, U.S. children's reasons for acting were less autonomous and Japanese children's more autonomous. The authors noted that this is consistent with the view that Japanese education generates more internal or autonomous motivation to achieve (e.g., Stevenson et al., 1990).

The second interesting aspect of the Hamilton et al. (1989) study is the coding of reasons with respect to their targets. In their open-ended reasons for achieving, Japanese children mentioned authority figures such as parents or teachers significantly more often than U.S. students. An example in response to why the student feels good about doing well on a test is "Because my parents will be proud." Such an answer would be coded as external or low in autonomy according to SDT, because it is considered to be in the category of external regulation in that the student is satisfying the external demand of making her parents proud. Perhaps the high incidence of such external targets in Japanese children's reasons helps explain another finding, also exemplified by the above example, that Japanese students expressed more external feelings reasons for achieving than did U.S. students. Hamilton et al. interpreted this to mean that Japanese children have internalized reasons for achieving but also identify with reactions of adults regarding their achievement. Japanese children may answer that they try hard in school to learn a lot and at the same time say that they feel good after getting a good grade because their parents will be pleased.

The authors conclude that identification with adult authority figures, such as parents and teachers, plays a larger role in socialization for learning among Japanese than among U.S. children. They note that the resulting motivation may be internalized, although it originally flows from authority figures. As a result, it is possible that such reasons are felt as more autonomous in Japan than in the United States. The implications of this point to SDT are critical, in that in Japan, mentioning parents or teachers in one's reasons for academic behavior may not imply external regulation, as SDT seems to assume. Rather, such reasons may fall into a more autonomous category such as identified regulation. I discuss this point further below.

One shortcoming of this study is that poor consistency between U.S. and Japan data collection methods brings into question comparability of the data from the different cultures. Another is that because the closed-ended questionnaire was an early form of the SRQ-A (Ryan & Connell, 1989), the items were fewer and the categories of motivation types included only internal and external, leaving out introjected and identified. The current study improves on these methods by using similar open-ended and closed-ended questionnaires that measures all four of the regulation types.

The final study in this group is by Kim (2002), whose goal was to create and validate a Korean version of the SRQ-A (Ryan & Connell, 1989). She based her autonomy measure, the K-SRQ-A, on the SRQ-A as well as on Hayamizu's (1997) SMS and then performed item analyses to increase reliability and validity of the measure in Korea. This resulted in a final version that deviates widely from Ryan and Connell's SRQ-A. Similar to the SMS, the K-SRQ-A included many items involving parents. The K-SRQ-A initially included a scale representing integrated regulation, which falls

between identified and intrinsic regulation on the self-determination continuum. Ryan and Connell found that measuring integrated regulation in relation to academic behaviors was difficult, and therefore integrated regulation is normally not included in studies of academic autonomy. After preliminary analyses, Kim (2002) found the integrated and identified scales statistically indistinguishable and ultimately combined them into one scale, which she referred to as the identified+integrated scale. The full range of items is displayed in Appendix B.

Kim (2002) administered this new questionnaire as well as an academic self-efficacy measure to fifth, eighth, and eleventh grade students in South Korea. Correlations between the autonomy scales from the K-SRQ-A and academic self-efficacy were consistent with SDT, such that the more autonomous the scale, the higher the positive correlation with academic self-efficacy. Intrinsic correlated most highly (r = .56), followed by identified+integrated (r = .39), introjected (r = .15), and external (r = -.24). Less consistent with SDT are two other findings. First, when Kim (2002) investigated the simplex correlation pattern between the different regulation scales, the simplex pattern was only partly supported. For the most part, higher correlations were found between the adjacent regulation types, and low correlations between non-adjacent regulation types. However, the intrinsic and introjected scales correlated at .42, which was slightly (although not significantly) higher than the .40 correlation between the intrinsic scale and the identified+integrated scales, indicating deviation from the simplex pattern. Second, Kim noted that one parent-related item, “Because it’s important to me not to disappoint my parents,” loaded highest with her identified+integrated regulation scale. According to SDT (Ryan & Deci, 2000b), this item fits best under introjected regulation because it

denotes behavior done to avoid a negative psychological consequence and is therefore characterized by low autonomy. Kim writes that in Korea, parent-child bonds are strong and pervasive, and this causes parental expectations to influence students' values.

It is difficult to speculate based on just one study about the cause of these deviations from previous SDT research. It is possible that the simplex pattern would hold up and that the item under question would load with the introjected scale in subsequent studies. However, it is also possible that these findings signify that the self-determination continuum cannot be applied in its current form universally and that it must somehow be adapted to different cultures. The current study will shed light on these discrepancies by inquiring whether the self-determination continuum in its present form can apply to Japan or whether adaptation is necessary.

Research Evidence Against Universality

Finally, comprising a group by itself, is an experimental study by Iyengar and Lepper (1999), who tried to refute the claim that the need for autonomy is universal. This is the third of the three studies in this review not employing the SRQ-A to measure autonomy. Actually, Iyengar and Lepper did not investigate autonomy per se, but choice and its effect on intrinsic motivation in two samples of second to fifth graders: 52 Asian Americans and 53 Anglo Americans. The authors report that the Asian American sample consisted of "children who spoke their respective Asian languages of Japanese or Chinese at home with their parents" (p. 351) in order to decrease the possibility that these children were totally assimilated into American culture. The theoretical foundation for this study rested in the authors' interpretation of SDT, which, in their words, "virtually equates intrinsic motivation with individual choice and personal self-determination" (p. 349).

These constructs are however much more differentiated within SDT than this statement seems to imply.

Children were placed in one of three choice conditions and given an anagram task (Study 1) or a computer math task (Study 2). The choice conditions were personal choice, choice made by an in-group member (mother or classmate), and choice made by an out-group member (experimenter or children at another school). Intrinsic motivation was measured by length of time spent on the task in free-choice time and by self-reported liking of the task. Results showed that personal choice of activity was most motivating to Anglo Americans, who are presumed to possess an independent model of the self, but not to Asian Americans, who are presumed to possess an interdependent model of the self (Markus & Kitayama, 1991). More motivating to the Asian American children was a choice made by their mothers or their classmates.

To explain how making personal choices affects intrinsic motivation, Deci and Ryan (1985) theorize that making choices increases feelings of autonomy, thereby enhancing intrinsic motivation. Iyengar and Lepper (1999) argue that because the provision of personal choice did not affect the two cultural groups in the same way, autonomy is not a universal need. However, a counterargument from an SDT perspective might be that when in-group members are making choices, one can autonomously accept that choice and therefore still feel ownership over it. Such an assertion has not been investigated but would be an intriguing line of research.

In summary, studies in the first group provided evidence that autonomy does exist in diverse cultures and it is important to motivation and well-being in these cultures in a manner that is consistent with SDT. Evidence for this includes positive relations between

autonomy and other constructs such as academic performance and subjective well-being. Studies in the second group present similar evidence but also show that autonomy differs depending on culture. Examples of such differences are the practices that represent (e.g., Chirkov et al., 2003) or support autonomy (e.g., d'Ailly, 2003) in different cultures. Finally, Iyengar and Lepper (1999) argued against the universality of autonomy by showing that personal choice does not motivate students to the same extent in a non-Anglo-American group. This section treated each investigation separately and made few generalizations across the studies. The next section considers the studies as a group by focusing on methodological issues in cross-cultural research.

Cross-Cultural Research Issues Germane to the Research on Autonomy

There are several issues that have emerged in cross-cultural research that are germane to the cross-cultural research on autonomy discussed in this paper. These include ensuring comparability of constructs and measures between the groups, statistically testing for data comparability, and adapting measures developed in one culture to other cultures. I discuss each of these issues in turn.

Ensuring Comparability of Constructs and Measures

Van de Vijver (2001) wrote about the importance of ensuring that constructs are equivalent in the different cultural groups when doing cross-cultural research. Constructs may not be equivalent when the psychological constructs being tested are not defined identically in the different cultures, when the meanings of the construct or the words standing for the construct are not identical, or when the sets of behaviors associated with the construct are not identical across groups. A second issue is that of data equivalence between cultural groups. In their chapter on methodology in cross-cultural psychology,

Lonner and Adamopoulos (1997) identified measurement and procedural problems of ensuring that data are equivalent across cultures as an extremely important problem in cross-cultural research.

The five single-culture studies of autonomy (d'Ailly, 2003; Hayamizu, 1997; Kim, 2002; Tanaka & Yamauchi, 2000; Yamauchi & Tanaka, 1998) faced issues of construct equivalence because their measures, and hence the constructs, were all translated from other languages and adapted from other cultures. In such studies the challenge is to ensure that the construct meanings are valid in the target cultures. Of these studies, d'Ailly and Kim directly addressed the issue of construct equivalence. D'Ailly related data from her Chinese version of the SRQ-A to other motivational constructs from the United States and found that perceived autonomy correlated with mastery motivation (Harter, 1981) as North American studies would predict. This finding, combined with the simplex pattern of correlations, psychometric properties of the instruments that resembled North American findings, and a decline of motivation with age in Chinese elementary students, led d'Ailly to conclude that the construct of autonomy as defined by SDT is equivalent in China or has "ecological validity in the Chinese population" (p. 94). Kim attempted from the outset to create a measure of autonomy based on SDT that is meaningful in the Korean culture and was able to form a Korean SRQ-A that formed distinct factors in her sample of Korean students. The downside of her goals and method is that the resulting measure differs greatly from the original SRQ-A, which makes comparing results between the two measures problematic.

Regarding the other three single-culture studies, Hayamizu (1997) did not address construct equivalence per se, but he did conclude that the simplex pattern of correlations

he found was evidence for validity of his autonomy measure, the SMS, because the pattern was similar to the one found with the SRQ-A in U.S. studies. It appears that Hayamizu assumed that autonomy as a construct was equivalent in Japan, and he therefore only investigated whether the SMS measured it well. Tanaka and Yamauchi (2000) performed confirmatory factor analyses in order to validate their autonomy measure. They reported the fit indexes, and although they did not comment specifically, seemed to deem them acceptable and thus proceeded with further analyses. Unfortunately they did not discuss how similar the factor structure was compared to other studies. Yamauchi and Tanaka (1998) did not address construct validity at all.

Overall, then, the greatest limitation of all five of the single-culture studies is that they did not address the issues of construct equivalence regarding autonomy. That is, none addressed whether the meaning of autonomy differs between the target cultures and North America, where the measures originated. Several of the researchers obtained similar empirical relations in different cultures, but none dealt with the more fundamental issue of equivalence of theoretical constructs across cultures. One reason for this is that the constructs often were operationalized using measures developed in North America.

Multiple-culture studies face issues of construct equivalence as well as data equivalence when a goal of the studies is to do between-culture comparisons. The Chirkov et al. (2003), Chirkov and Ryan (2001), Deci, Ryan, et al. (2001), and Levesque et al. (2004) studies all discussed issues of data and construct equivalence across cultures and tested both with MACS analyses (Little, 1997) or similar techniques. In each study, quantitative analyses of closed-ended questionnaire data showed that the measurement model fits were equivalent across the different cultures, with the exception of some

Turkish data in the Chirkov et al. study. Conclusions across the studies were generally similar to this statement from Deci, Ryan, et al. that "the constructs are meaningful in each culture and that the translation of questionnaires was successful in preserving the psychological constructs" (p. 939). This implies that the meaning of the constructs were deemed equivalent across the cultures. Recall that MACS addresses operational definitions, not necessarily theoretical definitions, yet all of these studies implied that theoretical meanings were also equivalent based on MACS analyses.

Three multiple-culture studies did not address issues of data or construct equivalence. Perhaps Iyengar and Lepper (1999) did not address data comparability because their study took place in the United States and they did not think that data comparability between Anglo Americans and Asian Americans was an issue. Also, their measures were largely behavioral, and it is possible that the constructs are not as susceptible to bias as self-report measures. Sheldon et al. (2001) seemed to analyze their data under the assumption that all subjects in both the South Korean and U.S. samples understood the items in the same way. Simple back-translation procedures were used in translating the measures, and no attempt to ensure that the participants understood the items similarly was discussed. This seems particularly imprudent given that one autonomy item refers to the "true self," a possibly confusing term, especially across cultures. Hamilton et al. (1989) did not discuss data or construct equivalence, which is especially unfortunate due to the multiple issues they had with data collection between the groups.

In summary, despite its great importance in cross-cultural research, these studies gave too little attention to the issue of ensuring that the data and constructs were

equivalent across groups. Except for Chirkov et al. (2003) and Hamilton et al. (1989), none of the studies directly tackled the issue of whether the expression of autonomy differs between the cultures tested. Chirkov et al. did address the different expressions of autonomy across cultures, and based on the findings of Hamilton et al., we can speculate about differences in the expression of autonomy in Japan, such as the role that parents may play. The current study will address the expression of autonomy in Japan by asking students in interviews about the degree of autonomy associated with academic behaviors. None of the studies in the review directly addressed whether or how the meaning of autonomy might differ across cultures. That is, however, not surprising given that for the most part these studies worked from an SDT perspective that assumes the need for autonomy is universal. In the current study, students' answers from the interviews will be analyzed for clues as to whether the meaning of autonomy differs in Japan. Finally, four of the studies statistically tested for equivalence of data and extrapolated to the construct meanings as well, techniques which are now discussed in more detail.

Statistically Testing for Data Comparability

While techniques such as confirmatory factor analysis and MACS are statistically robust, some researchers have concerns that quantitative techniques are not necessarily adequate for catching subtle differences in the meanings of constructs under investigation (e.g., Bempechat & Boulay, 2001; Bempechat & Drago-Severson, 1999). These researchers suggest that students' own voices must be heard in order to understand how individuals and under-researched groups conceive of and characterize their own learning, achievement, and motivation. Specifically, qualitative methods, such as in-depth interviews, should be used to understand students' perspectives. These techniques could

also help us discover subtle differences in meaning that inevitably exist between words and constructs across cultures, differences that statistical techniques performed on closed-ended measures cannot detect. This section looks more closely at problems inherent with the statistical techniques in the studies under review that are used to confirm data equivalence and generalize to construct equivalence.

All of the statistical techniques mentioned here employ latent variables. One basic assumption about latent variables is that if items load similarly on a certain factor and thus share variance, then those items represent a certain underlying construct (Kim & Mueller, 1978). For example, if in a U.S. study, a group of items designed to measure autonomy formed a latent factor, one could name the latent factor autonomy. One would assume that the items making up the autonomy factor represent the construct of autonomy reasonably well among the respondents. This does not mean, however, that these items represent the total range of meaning of autonomy to these respondents. It is inevitable that with researcher-defined items, some meanings will not be captured by this particular scale. Hence, there exists an indeterminable portion of autonomy that was "un-captured" by the autonomy scale. Depending on the length of the scale and range of meanings of its items, the un-captured portion could be small or large.

Suppose that one were to translate this autonomy scale from English to another language and administer it to respondents from another culture. One might find that the items all load highly on the same factor in this new culture as well, which one could interpret as an indication that this scale is an accurate representation of autonomy in this new culture. However, just as in the United States, it is inevitable that this particular scale would not represent the full range of meaning of autonomy in this new culture either, and

again there would exist an un-captured portion of autonomy. Most importantly, it is possible, due to cultural differences, that the un-captured portion of autonomy in the United States and the un-captured portion in the new culture do not overlap. This problem would be confounded by the fact that the creator of the original U.S. scale created it with specifically U.S. culture in mind. Further, the importance and salience of the captured and un-captured portions of autonomy may differ between the United States and the new country. Indeed, Katz, Kanat-Maymon, Assor, and Sheva (2003) found that choice is as an important part of autonomy in individualistic countries but not in collectivistic countries.

Therefore, at best, when a cross-cultural study reports results of factor analyses or MACS (Little, 1997) as evidence of data equivalence across cultures, we can assume that some of the meaning of the construct in question overlaps between the two groups. Regarding autonomy, although a U.S.-based scale of autonomy may look similar in the factor analyses of the United States and another country, there are likely portions of autonomy not captured by the scale, and the un-captured portions may differ in meaning and importance between the cultures.

The question as to whether one should accept arguments for data and construct equivalence based solely on statistical evidence is largely a theoretical one. Researchers ascribing to cross-cultural psychology methods would likely accept quantitative techniques as evidence that the constructs have the same meaning across cultures. In contrast, researchers in the cultural psychology camp would likely not be inclined to accept such techniques, as they believe that because culture has such a profound influence on psychology—indeed they are inseparable—it is naïve to assume that words

in different languages could possibly have the exact same meaning (Adamopoulos & Lonner, 2001). The studies in this review all use cross-cultural psychology methods and therefore accept, even if implicitly, the possibility that the meaning of a construct can be similar enough among people of different cultures to warrant comparability.

The addition of qualitative techniques to quantitative ones strengthens the argument for claiming data equivalence and comparability in cross-cultural studies. Therefore, the current study will use interviews modeled after the SRQ-A. An interviewer will ask students open-ended questions about why they do the behaviors included in the SRQ-A (i.e., homework, classwork, answer hard questions in class, and try to do well in school). Then, with follow-up questions, the interviewer will ask about the degree of autonomy students associate with their reasons. This method will improve upon previous cross-cultural studies of autonomy by allowing a more informed decision about the comparability of autonomy in Japan with SDT research from North America.

Adapting Measures Developed in One Culture to Another Culture: The Case of the SRQ-A

Issues regarding the use of adapted and translated versions of the SRQ-A (Ryan & Connell, 1989) are relevant here. Eight of the studies of autonomy under review used the SRQ-A or adaptations of it (see Table 3), and the results of four of them raise important issues about the cross-cultural application of autonomy in SDT. D'Ailly (2003) found two items on her Chinese-language version of the SRQ-A that did not fit with their respective scales. Also, Hayamizu (1997), Kim (2002), and Yamauchi and Tanaka (1998) included items concerning parents, which are not on the original SRQ-A.

In her direct translation of the SRQ-A, d'Ailly (2003) found that two of the items had detrimental effects on the internal consistency scores of their respective scales. For that reason, "Because I will feel bad about myself if I don't do it" was excluded from the introjected scale and "Because that's what I'm supposed to do" was excluded from the external scale. Both items correlated more highly with the identified and intrinsic scales than with their respective scales. D'Ailly (2003) attributed both discrepancies to translation differences but also stated that the students' motivation orientation was more identified and intrinsic than external and introjected when answering these items. One explanation not noted by d'Ailly is that the particular items are perceived as more autonomous among Chinese students. In particular with the item "Because I will feel bad about myself if I don't do it," which is part of the introjected scale on the original SRQ-A, it is possible that such regulation is felt more autonomously in Taiwan and is less removed from the self.

Hayamizu's (1997) SMS, Kim's (2002) K-SRQ-A, and the measure of autonomy used by Yamauchi and Tanaka (1998) all differ somewhat from the original SRQ-A, as they were constructed for use in Japan and Korea. They contained many items that referred to parents, which do not appear on the original SRQ-A (Ryan & Connell, 1989). This perhaps indicates the researchers' views that parents play more important roles in their children's education in East Asian cultures (Stevenson & Stigler, 1992). All of the researchers placed the bulk of these parent references in the external and introjected scales, which is consistent with SDT. It is not, however, consistent with the view that a parent is actually a part of his or her child's self in Japan and Korea (De Vos, 1973; Markus & Kitayama, 1991). Therefore, doing one's homework because one's parents will

be happy may be a more autonomous behavior in Japan and perhaps should be grouped with the identified regulation category. The Hamilton et al. (1989) study provides support for this point in that a high percentage of the Japanese children mentioned their parents in their reasons for achieving. In explaining the finding that one parent-related item loaded more highly with the identified+integrated scale than with the introjected scale in her study, Kim (2002) supported this view. She suggested that because of the strong parent-child bonds in Korea, parental expectations more strongly influence students' academic goals and values and thus should not be considered introjected regulation as in Western culture, but a more autonomous form. More research is needed to further document such phenomena, as well as to understand the level of autonomy that Koreans and Japanese associate with parent-related reasons for academic behavior.

Another feature of the parent items in the external scale on the autonomy measures of Hayamizu (1997), Kim (2002) and Yamauchi and Tanaka (1998) is that they all involved parental behaviors that involve punishment and reward, such as parents getting angry, administering punishment, or giving rewards. These behaviors are associated with external motivation and would tend to foster low autonomy in students. Perhaps the external qualities of the behaviors, and not the fact that parents were named, caused the researchers to place these items in the low autonomy categories. It would be interesting to include parent-related items that include less external behaviors, such as "Because my parents value education," or "Because it makes my parents happy when I study hard." Based on the theory of differences across cultures in the extent to which people have independent or interdependent selves (Markus & Kitayama, 1991), U.S. students might perceive these statements as less autonomous due to the inclusion of

parents, whereas East Asian students might perceive them as more autonomous because parents are perceived as part of the self.

Ryan and Connell's (1989) SRQ-A consists of reasons for academic behavior that represent varying degrees of autonomy, from little or no autonomy (external regulation) to high autonomy (identified and intrinsic regulation). The degree of autonomy assigned to each category of reasons was decided a priori by U.S. researchers, most likely based on North American research in motivation, well-being, and other areas, as well as on the researchers' experiences and views. In light of possible cultural differences suggested by the discussion above, this study will examine the categories represented on the SRQ-A in two ways. First, based on data from the interviews, this study will attempt to identify reasons not represented on the original SRQ-A that are important to include on a measure of perceived autonomy for Japanese students. Second, it will address whether the reasons mentioned in the SRQ-A match their pre-assigned categories in a sample of Japanese students. For example, do Japanese students perceive higher autonomy in the item regarding feeling bad about oneself, such that the item fits better in a more autonomous category, as an alternative interpretation of the d'Ailly (2003) study might suggest is true for Chinese students?

Universality: Does SDT Differ Across Cultures?

The question of whether SDT is universal is a multi-faceted and complex one. This chapter only touches on a few of the issues that come into play when attempting to answer this question. The remainder of this chapter addresses three topics concerning SDT and universality that are informed by the studies reviewed. The first concerns universal application of the self-determination continuum. The second deals with how

autonomy differs across cultures. The third speaks to one focus of this study, the universality of autonomy.

Universality of the Self-Determination Continuum

One crucial claim of SDT theorists is that the self-determination continuum is universal. When considering universality of the continuum, two questions should be asked. First, does autonomy underlie a continuum of motivation universally? And second, can the regulation categories contained in the self-determination continuum be applied universally? Regarding the first question, five of the studies reviewed (Chirkov & Ryan, 2001; d'Ailly, 2003; Hayamizu, 1997; Kim, 2002; Yamauchi & Tanaka, 1998) presented data that allegedly support the existence of a continuum based on autonomy in four cultures. Their evidence consists of correlations among the regulation types that form simplex patterns or partial simplex patterns. D'Ailly, Hayamizu, and Yamauchi and Tanaka claim that their data fully support the simplex pattern of correlations observed in studies done in the west. Kim reported that her data partially support the pattern. Finally, Chirkov and Ryan report correlations from a Russian sample that seem to partially follow the simplex pattern, yet they also report data that show the simplex pattern is not supported in the U.S. group. Only Hayamizu used significance testing to show statistical differences between the various correlations. Thus overall, the evidence for autonomy underlying the motivation continuum universally is mixed.

One problem with the simplex analysis technique is that it is unclear how strong the pattern must be to conclude that a simplex pattern similar to those found in Western studies is in evidence. Ryan and Connell (1989) note that Guttman (1954) relied on an "eyeball" technique to identify a simplex pattern. This becomes a problem when multiple

researchers use the technique to identify the same underlying parameter of autonomy but with varying measures in various cultures. Another problem is deciding how to interpret simplex patterns that partially replicate the pattern found in Western studies. For example, does partial support mean that in general autonomy underlies the continuum, except in the places that do not conform to the pattern? Or, might the partial support have resulted from inadequacies in the measure or sample? The answers to these questions are by and large subjective.

Based on the data in these studies, the evidence is not very strong in support of a motivation continuum underlain by autonomy. Clearly, much more research is needed to judge the universality of the self-determination continuum. On the other hand, contrary evidence also does not exist, so we have little basis to conclude that the continuum is not universal. Future studies investigating this simplex pattern should be more rigorous in their verification of the existence of the pattern. Rigor is especially important because the simplex pattern is the major piece of evidence for the cross-cultural existence of an otherwise theoretical self-determination continuum. Therefore the current study, in addition to analyzing for the simplex pattern of correlation, will employ confirmatory factor analysis as a more rigorous test of the relations between the regulation types and the existence of the self-determination continuum.

Regarding the second question that addresses universality of the regulation categories making up the self-determination continuum, one key issue is whether the same behaviors necessarily are marked by the same amount of autonomy across cultures. In the present group of studies, parent-related items seemed to act differently in certain groups of respondents than SDT would predict. Discrepancies relating to items

mentioning parents were found among Korean (Kim, 2002) and Chinese students (d'Ailly, 2003). Also, Hayamizu (1997) and Yamauchi and Tanaka (1998) included such items in versions of the SRQ-A adapted for Japanese students.

It is possible that cultural differences in how the self incorporates parents (Hamilton et al., 1989; Markus & Kitayama, 1991) can explain these dissimilarities among Asian students. Perhaps studying "because it makes one's parents happy" may be perceived as more internal and autonomous to Asian students than to U.S. students. If one's parents make up part of the self, as is more so the case in Asia, then acting to make them happy is akin to acting to make oneself happy, and thus more autonomous. In contrast, if parents are perceived as separate from one's self, as is more characteristic of independent selves, then such a behavior would be more detached from the self, and therefore less autonomous. This implies that the same behaviors could be more autonomous in certain cultures, those in which people tend to be more interdependent, than in others, where people tend to be more independent.

Even if a certain behavior is considered external in one culture, such as acting to please one's parents in the United States, if it is more integrated into the self in another culture, then it should be considered more autonomous and be placed within a more autonomous regulation category. Integration of behaviors into the self is the essence of internalization and autonomy according to SDT (Ryan & Deci, 2000b; 2003). Because the regulation categories were defined a priori by U.S. researchers, they are likely to be more appropriate for U.S. students. Research should be conducted in other cultures in order to name and define the categories and associated behaviors that best represent high and low autonomy in those cultures. Toward this end, qualitative interviews will be used

in the current study to identify behaviors that represent varying degrees of autonomy in Japan.

How Autonomy Differs Across Cultures

Using examples from the studies in this review, from other lines of research, and from Japanese education, we can provide many instances of how autonomy differs across cultures. Specifically, autonomy is expressed differently, supported differently, and perceived differently. First, regarding expression of autonomy, Chirkov et al. (2003) found that autonomous enactment of culturally appropriate behaviors related to well-being across cultures, and the appropriate behaviors differed by culture. In other words, the more that individuals had internalized practices appropriate to their culture, the higher their well-being. For example, the Russian participants tended to internalize practices such as sacrificing one's interests to take care of one's family, whereas United States participants tended to internalize practices such as depending on oneself rather than on others. Although these behaviors are different, higher internalization or autonomy of these practices in the respective countries related positively to well-being. This difference in behaviors is an example of the expression of autonomy differing by culture. Note that this study was undertaken by self-determination researchers aiming to show that autonomy positively relates to well-being across cultures, although the behaviors representing autonomy can differ between cultures.

A second way in which autonomy may differ across cultures is in how it is supported. Iyengar and Lepper (1999) provide a possible example of this. In this study, personal choice was the strongest motivator among the Anglo American group, whereas in the Asian American group, choices by their mothers or classmates were most

motivating. One could interpret this to mean that the degree of importance or salience of individual choice (not autonomy) is dependent on culture. Perhaps among the Asian Americans in this study, having their mother choose for them fulfilled their need for autonomy because they willingly trusted their mother to make the best choice for them. For that matter, perhaps the decision by the mother also fulfilled their need for relatedness which, according to SDT, should also increase their motivation.

Iyengar and Lepper (1999) theorized that different socialization processes accounted for the different roles of choice in their study. The authors did not consider the possibility that because of these socialization processes, choice is conceived of differently in East Asian cultures. Results from pilot diary studies described by Iyengar and Lepper support this notion. The authors reported that Americans were much more aware of choices than Japanese when recording choices they noticed during a regular day. Although the authors did not attempt to explain those findings, one possible explanation is that choice is conceived of differently by these two groups. Perhaps there are certain choices that East Asians would not notice even when Americans do, indicating a possible difference in the salience of choice in the different cultures.

Another explanation could be the importance that choice and autonomy play in the different cultures. Perhaps the need for autonomy is not as important as the need for relatedness in East Asian cultures. Sheldon et al. (2001) write that, although they agree with the SDT assumption that the set of the needs for competence, relatedness and autonomy are universally fundamental, the order of relative importance of the needs may differ depending on culture. Their findings suggest that relatedness is more important than autonomy or competence in South Korea, but that the relative importance of the

three needs is the same in the U.S. To my knowledge, Deci and Ryan have not written about whether SDT allows for ranking of the needs within cultures, or whether certain needs can be more important in one culture compared to another. Clearly more research is needed to answer these questions. In regard to autonomy specifically, research modeled after the Iyengar and Lepper (1999) pilot study might help us understand the relative salience and importance of autonomy in different cultures.

Theorizing about why Japanese teachers do not provide many choices to their students can provide another example of autonomy being supported differently across cultures. Japanese elementary school teachers feel a responsibility to choose activities for children according to their interests and therefore do not give many choices to students (H. Usui, personal communication, August 12, 2004). Perhaps students trust their teachers to make good choices for them and their learning and thus willingly let their teachers make choices. So, although children in Japan likely are not afforded the same choices in school as children in the United States, they may not need the affordance of choice to feel autonomous in their learning.

A third way that autonomy may differ across cultures is in how individuals perceive it. By that I mean that similar behaviors may be perceived as more or less autonomous, depending on culture. Self-determination theorists do not seem to make allowances for classifying the same behavior under different regulation types depending on culture. For example, one way in which the interdependent self (Markus & Kitayama, 1991), typical in many East Asian countries, differs from the independent self, typical in Western countries, is that the interdependent self includes closely related others, such as one's parents. It follows then that if a student with a more interdependent self tries hard

in school because her parents value learning, then it is very similar to her valuing the learning as well, and she may perceive it as such. To an independent self, acting because the student's parents value learning versus acting because the student herself values learning are two very separate reasons, with differing degrees of autonomy. This is consistent with SDT. If the student herself values learning, she would be behaving autonomously. If she tries hard in school because her parents value learning, then SDT would consider this introjection. To an interdependent self, the degree of autonomy is likely more similar between these two reasons, because the parents are part of the self. Both of these reasons may be considered highly autonomous. If this is, in fact, the case, then it would explain why the parent-related items discussed above may fit better under identified regulation in East Asian cultures.

Judging the Universality of Autonomy

Eleven studies (Chirkov & Ryan, 2001; d'Ailly, 2003; Hayamizu, 1997; Tanaka & Yamauchi, 2000; Yamauchi & Tanaka, 1998) provided evidence for the existence of autonomy in diverse cultures and evidence that autonomy relates positively to other aspects of motivation and academic performance similarly across cultures. On the one hand, according to criteria for judging universality found in anthropological literature (Brown, 1991), these studies actually provide fairly strong evidence in that they document the importance of autonomy in eight diverse countries: Bulgaria, Germany, Japan, Russia, South Korea, Taiwan, Turkey, and the United States. In addition, Vallerand et al. (1997) has documented similar results in French-speaking Canada. On the other hand this is a relatively small number of studies on which to make more than preliminary judgment. While this list of countries is diverse, it still only represents a

fraction of the cultures in the world, and perhaps near-universality is a more prudent conclusion at this point. Addressing another of Brown's criteria, some researchers have argued against the universality of autonomy (Iyengar & Lepper, 1999; Oishi, 2000), but most of their arguments can be discounted because they rely on definitions of autonomy that differ from that in SDT. The current study will enhance this discussion by assessing autonomy as it is strictly defined in SDT, in Japan, and improving on the methodology of existing studies.

After examining differences in autonomy across cultures, it is important to ask: If autonomy is supported, experienced, and expressed differently in different cultures, then is it really the same construct across cultures? Full consideration of this question would fill many more pages than this chapter, but its importance warrants a brief mentioning. One's first answer might be that the cross-cultural differences in autonomy are numerous and discrepant enough that one label cannot be used to encompass the discrepant phenomena. However, recall what SDT researchers write about universality. They suggest in numerous writings that the basic psychological needs may be expressed and satisfied differently in different cultures (e.g., Chirkov et al., 2003; Ryan & Deci, 2002). The latitude afforded by this position coupled with the extremely specific definition of autonomy as no more than an internal locus of causality increase the probability of autonomy being universal. When self-determination theorists posit that the need for autonomy is universal, they are only saying that this need for an internal locus of causality is present in all cultures, nothing more, nothing less. Despite the cultural differences I have discussed and lack of sufficient empirical evidence, the simplicity of SDT's definition ensures that the proposition of universality remains viable. It is also that

simplicity, however, that makes the proposition very challenging to assess, because it is difficult to know if we are measuring the same construct across cultures. For this reason, the mixed-methods approach to be used in the current study is especially appropriate in that the qualitative component, which will precede quantitative analyses, will address the issue of whether autonomy is similar or different in Japan as compared to its conceptualization in SDT.

The Current Study

The current study will contribute to existing research on autonomy and academic motivation in methodological, theoretical, and educationally relevant ways. Methodologically, studies that have looked at autonomy cross-culturally have mostly ignored issues of construct and data equivalence. One reason for this is that they have transported measures from other cultures rather than developing measures from within the target cultures. Based on answers from Japanese students, this study will develop the J-SRQ-A, a measure of perceived autonomy adapted from the SRQ-A specifically for Japan as a first step toward developing a more valid measure of autonomy for students there. Moreover, this study will be the only study, aside from Hamilton et al. (1989), to employ a mixed-methods research design to study autonomy from an SDT perspective.

Theoretically, this study will add to the corpus of studies that provides evidence for or against the claim made by self-determination theorists that autonomy's benefits to motivation are universal. It will contribute to existing cross-cultural research that has attempted to support this claim and, in so doing, will inform the literature on how a major theory of motivation developed in the United States applies in Japan. Evidence for or against this claim will emerge from multiple parts of the study, including analyses of the

perceived autonomy questionnaires and relations between autonomy and other aspects of students' motivation. Second, it will contribute to our theoretical understanding of student autonomy and its role in academic motivation in a culture outside of middle-class North America, as much of our knowledge in this field is based on North American samples.

From an educational standpoint, this study will be significant because of the central role that motivation to learn plays in students' academic achievement. Findings from this study will increase our understanding of similarities and differences in academic motivation between Japanese and North American students. Thus the findings will help us understand whether practices to boost student autonomy shown to be effective in North American schools, such as choice and promotion of independent learning, are likely to be effective in Japanese schools as well.

Chapter 3

Method

Overview

In this study, I investigated Japanese elementary school students' perceived autonomy for academic behaviors, and also examined relationships between students' perceived autonomy and other aspects of their motivation. Data collection proceeded in two stages. In Stage I, qualitative interviews with students about their autonomy for academic behaviors were conducted. Data from these student interviews were used to modify the original SRQ-A (Ryan & Connell, 1989) to form a questionnaire measure of autonomy for Japanese students, the J-SRQ-A. In Stage II, questionnaires were administered to students in their classrooms. Students' responses to these questionnaires were analyzed to investigate the factor structure of children's autonomy beliefs, interrelations of the regulation types defined by Ryan and Connell (1989), and relations between children's autonomy and other aspects of their motivation, namely perceived control and intrinsic and extrinsic motivation in school.

Participants

The sample consisted of Japanese students in grades five and six. Grade to age correspondence in Japanese schools is very similar to that in U.S. schools. Therefore, the age range of fifth and sixth graders is 10 to 12 years. This age range was chosen for four reasons. First, it enables comparison with existing studies, as past studies of autonomy, both in the U.S. and abroad have used late elementary school children (d'Ailly, 2003; Ryan & Connell, 1989; Yamauchi & Tanaka, 1998). Second, in Japan, the fifth and sixth grades are part of elementary school, so students will participate before they transition to

middle or junior high school. This means that they have not yet faced the challenges brought by school transitions (see Wigfield & Eccles, 2002c, for review). Third, students have not yet faced the pressures of high school entrance exams, which begin to influence Japanese students' lives as early as seventh grade. Finally, data from pilot interviews indicated that this age group is old enough to be able to discuss their academic behavior and motivation.

Table 4 shows a breakdown of the sample. In Stage I of the study, 30 students (11 girls and 19 boys) participated in interviews. In Stage II of the study, 179 students (90 girls and 89 boys) completed the SRQ-A and 208 (92 girls and 116 boys) completed the J-SRQ-A. All 387 students completed measures of perceived control and intrinsic and extrinsic motivation.

Table 4

Breakdown of Sample

		Stage II: Questionnaires		
	Stage I: Interviews	SRQ-A	J-SRQ-A	Total
Nishiaizu				
Gr 5	13	25	34	59
Gr 6	17	39	40	79
Sapporo				
Gr 5	0	62	74	136
Gr 6	0	53	60	113
Total	30	179	208	387

Drawing participants from multiple locations decreases the chances that responses are dependent on local factors, and hence enables greater generalizability of the findings. Therefore, questionnaire participants were drawn from public elementary schools in two different locations in Japan, one rural and one urban. Due to practical considerations, interviews were conducted only in the rural location. Through connections to school administrators in each location, I was able to gain access to public schools, and I received excellent cooperation from teachers, students, and administrators.

The rural location, Nishiaizu, is a traditional farming town, located in a mountainous region of Fukushima Prefecture in the north of Japan's main island. It has a population of 8,645 and there are 2940 households. A total of 905 households generate at least a portion of their income through family farming, and farming is the sole source of income for 230 of these households. In Nishiaizu, 51 households receive financial public assistance due to low income levels. Regarding education, there are 415 students in Grades 1 through 6 attending five elementary schools in Nishiaizu. In Japan, high school (analogous to Grades 10-12 in the United States) is not mandatory, and last year 96.7% of eligible students entered high school in Nishiaizu. A total of 138 fifth and sixth grade students from all five elementary schools in Nishiaizu participated in the current study. All of the fifth and sixth grade students in the town were solicited, and all participated, excepting for fewer than 10 students who were absent from school when data was collected. Of this total, 30 students participated in interviews during Stage I of the study, and all of these students completed questionnaires in Stage II of the study. For practical purposes, the interviewees consisted of all fifth and sixth graders from one school. This particular school was chosen because it provided a sufficient number of students to

interview and it was the closest school to where the interviewer resided during data collection.

The urban location, Sapporo, is located on the northern island of Hokkaido and has a population of approximately 1.8 million, which is 170 times larger than it was 100 years ago. Hokkaido is made up of mostly of immigrants from Japan's other islands, the first native Japanese having moved there in the 1850's. It is perceived as more progressive than the rest of Japan, with the people willing to embrace change more quickly than their southern counterparts. A total of 249 students from two different elementary schools in Sapporo completed questionnaires for Stage II of the study. These schools were chosen through connections between a colleague of mine and the principals of the schools. Children in these two elementary schools are predominantly from lower middle class to middle class families. One school likely has lower average SES than the other due to the large number of public housing units in its neighborhood.

Design

The study uses a sequential mixed methods design that occurs in two stages. According to Johnson and Onwuegbuzie (2004), this study follows a QUAL→QUAN design, which indicates that the qualitative component (Stage I) precedes the quantitative (Stage II), and the two components are equally important to the study's objectives.

Procedure

Interviews

The student interview (see detailed description below) was conducted according to the standardized open-ended format (Patton, 1990). In this format, interview topics are focused, which allows for the efficient use of interview time. Interviews lasted from

approximately 15 to 30 minutes, and were administered to students during the school day or immediately after school. One interviewer administered all of the interviews, thereby reducing variability that can occur with multiple interviewers. The interviewer was a native speaker of Japanese who has experience in Japanese schools and working with children. She was trained on the interview protocol and the goals of the interview.

Translation of Questionnaire Measures

Each participant received a packet of questionnaires containing three measures: A measure of autonomy, either the SRQ-A or the J-SRQ-A; a measure of perceived control, and a measure of academic intrinsic and extrinsic motivation. With the exception of some items on the J-SRQ-A, all of these measures were originally created in English. The measures were translated into Japanese using a back-translation procedure. First, a Japanese professor of educational psychology, who is fluent in English, translated the measures into Japanese. Next, a native-English speaker, who is fluent in Japanese, and is unrelated to this study, translated the measure back into English. Then, I compared the back-translated English version to the original English version. Any discrepancies in meaning were resolved through discussions with the Japanese educational psychologist. In addition, the resulting Japanese measure was shown to Japanese native speakers, and some wordings were adjusted to sound more natural in Japanese. Eight new items were added to the SRQ-A to form the J-SRQ-A, and these were taken directly from the students' interview responses, and were thus created in Japanese. For reporting purposes, these items were translated in English (see Appendix E).

Questionnaire Measures

Students completed the questionnaire measures in 35 to 45 minutes. Questionnaires were administered to whole classes of students during one regular class period. Prior to administration, I met with the school principal and one or more of the class teachers to explain administration procedures, to discuss the objectives of the research project, and to work out an administration schedule. In each questionnaire packet, the perceived autonomy measure (either the SRQ-A or the J-SRQ-A) was presented first, followed by the measure of perceived control and the intrinsic-extrinsic motivation measure.

Variables and Measures

Academic Autonomy Interview

In order to obtain Japanese students' perspectives on their autonomy for engaging in academic behaviors, one-on-one interviews were conducted. The interviewer asked all children a specific set of required questions, as well as follow-up questions for the purposes of clarifying and probing students' answers. The interviewer drew follow-up questions from a prescribed list of possible follow-up questions, as well as from her own thoughts about how best to draw out relevant information from the students. The interview questions are presented in Appendix C.

The goals of the interview were twofold. The first goal was to generate a list of reasons for engaging in academic behavior stated by Japanese students themselves. This was achieved by asking children the reasons they do specific academic activities (i.e., homework, classwork, try to answer hard questions in class, and try to do well in school). This procedure was modeled after the procedures described in Ryan and Connell (1989)

and Hamilton et al. (1989). In addition, questions regarding children's play, reading at home, and doing other activities they enjoy were interspersed among the academic questions in order to elicit highly autonomous reasons for behavior. Answers to the interview questions were compared to the list of reasons for engaging in academic behaviors found on the original SRQ-A. The most salient reasons that were not represented on the original SRQ-A were added to the SRQ-A to form the J-SRQ-A.

The procedure for creating the J-SRQ-A was as follows. All reasons given by the students were listed and grouped into categories based on similarity. Then, the number of times each reason occurred across the thirty interviews was counted. Next, I added the three most salient reason categories to the SRQ-A to form the J-SRQ-A. Three items were created for two of the answer categories, and two items were created for the other category, resulting in a total of eight new items. I discussed the three new reasons with an expert in the field of motivation in the United States, as well as with a Japanese educational psychologist. We came to agreement on which three reasons to include in the J-SRQ-A, how to classify the new reasons, and the wording of the new items. The J-SRQ-A contained all 32 items from the SRQ-A plus the eight items that were added based on the interviews. The decision was made to add only eight new items because we had committed to completing the questionnaire administration in one forty-five minute class period, and adding more items might have risked going over this time limit.

The second goal of the interview was to understand the degree of autonomy associated with each reason for academic behavior offered by Japanese students. To address this goal, the interviewer asked follow-up questions to discern how autonomous the reasons were to the children. Previous research has not included such probes, nor has

it tried to elicit such information from students. Recall that specific reasons were assigned to regulation categories a priori by Ryan and Connell (1989). Japanese children's answers to follow-up questions were analyzed and compared to Ryan and Deci's (2002) self-determination continuum. Specific reasons given by students were assigned a regulation category (i.e., external, introjected, identified, or intrinsic) that is consistent with SDT. Then, I examined students' answers for evidence that confirmed or disconfirmed this category assignment. I also assigned each of the three new reasons added to form the J-SRQ-A to a regulation category. All category assignments were checked and confirmed by a Japanese educational psychologist.

A pilot study was conducted with six Japanese students in the sixth grade during the fall of 2004. Because students seemed to understand the interviewer's questions without difficulty and provided answers of reasonable length, I concluded that the questions were clear and meaningful to the children. From the answers provided by the six students, three reasons emerged that were not included in the SRQ-A. The first reason concerns future-related statements, such as "Because I think studying is important for the future." Five of six students mentioned this reason at least once. The second and third reasons were mentioned by one student each, and involved wanting to work as hard as one can and working hard because the child's mother said that it would be important for the future. These preliminary results indicated that at least three reasons not on the SRQ-A were likely to emerge from interviews with 30 children.

Perceived Autonomy

Perceived autonomy was measured with the *Self-Regulation Questionnaire-Academic Domain* or SRQ-A (see Appendix D), originally developed by Ryan and

Connell (1989). Note that because the individual items were not presented in the Ryan and Connell article, I used the version that is available for download from the self-determination theory website (Self-Regulation Questionnaire-Academic Domain, 2003). This is the only measure of perceived autonomy, as defined in SDT, that has been used in North American studies of autonomy for students in elementary school. This questionnaire assesses students' reasons for engaging in academic behaviors because Ryan and Connell explain, "(a) they are phenomenally accessible, and (b) they represent the primary basis by which people typically account for their own behavior" (p. 750). Ryan and Connell distinguished stated reasons from actual causes or motives for behavior. The main focus of this study, similar to Ryan and Connell's, is students' perceived autonomy or perceived locus of causality, and therefore it is appropriate to measure students' perceptions of their own behavior.

As detailed in Chapter 2, the SRQ-A consists of items that ask students about the reasons they engage in four academic activities. Each stem question asks about a different activity, and the questions are as follows: "Why do I do my homework?" "Why do I work on my classwork?" "Why do I try to answer hard questions in class?" and "Why do I try to do well in school?" Following each stem are possible reasons for doing these activities. The reasons under each stem come from a scale based on the four types of regulation (i.e., external, introjected, identified, and intrinsic), which vary in their degree of autonomy. The external scale (e.g., "Because I might get a reward if I do well") contains nine items; the introjected (e.g., "Because I will feel really proud of myself if I do well") also contains nine items; the identified scale (e.g., "Because it's important to me to try to do well in school") and the intrinsic scale (e.g., "Because I enjoy doing my school work

well") are each made up of seven items. Children rate reasons using Likert-type scales from 1 "Not at all true" to 4 "Very true."

A mean score for each regulation scale is calculated for each respondent. In the initial study by Ryan and Connell (1989), whose subjects were third to sixth graders, Cronbach's alpha reliabilities ranged from .62 to .82 for the four categories. In another U.S. study using third through sixth graders, reliabilities ranged from .75 to .88 (Grolnick & Ryan, 1989). Finally, in a study using third through sixth graders, Patrick et al. (1993) reported alpha reliabilities for each scale: External, $\alpha = .78$; introjected $\alpha = .75$; identified, $\alpha = .61$; and intrinsic, $\alpha = .85$.

To assess the extent to which perceived autonomy relates to other aspects of motivation, Ryan and Connell (1989) examined correlations between the regulation scales and three other measures: a mastery motivation composite, made up of three scales, those of challenge, curiosity, and mastery, from Harter's (1981) Intrinsic Versus Extrinsic Orientation in the Classroom; perceived control over outcomes in the cognitive (school) domain from Connell's (1985) Multidimensional Measure of Children's Perceptions of Control; and ratings of children's motivation by mothers, fathers, and teachers. The mastery motivation composite related highly with intrinsic ($r = .54$) and identified ($r = .50$), very low with introjected ($r = .04$) and negatively with external ($r = -.41$). This reflects a graded pattern of correlations that is consistent with SDT. Perceived control showed somewhat mixed results, the highest correlations found with identified and introjected in two different samples. Correlations with teachers' and mothers' ratings of children's motivation reflected a graded pattern similar to the correlations with

mastery motivation. Finally, fathers' ratings of motivation showed a somewhat similar pattern, except that the correlation with identified was slightly higher than with intrinsic.

Japanese Perceived Autonomy Measure

The format of the *Japanese Self-Regulation Questionnaire-Academic Domain* (J-SRQ-A) was identical to the SRQ-A. The stem questions remained the same as in the original SRQ-A. The difference between the two questionnaires was that the J-SRQ-A contained eight additional items, based on the Japanese students' interview responses (see Appendix E). The original SRQ-A was created based on reasons for engaging in academic behaviors given by U.S. children in an informal interview study (Ryan & Connell, 1989). Basing the additional items on Japanese students' responses helped to fulfill the goal of creating a questionnaire for Japanese students that reflects their own perceptions of autonomy more than the original SRQ-A. In addition, the J-SRQ-A is an improvement over the measure used by Yamauchi and Tanaka (1998) in that the items on their adaptation of the SRQ-A were based solely on researcher-defined reasons rather than student-generated reasons.

Perceived Control

To measure perceived control over outcomes, I used the control expectancy scale from the Japanese version of the Control, Agency and Means-Ends Interview (CAMI; see Appendix F). This scale was chosen because it is an established measure of perceived control over outcomes in school, which has been used and validated in numerous countries, including Japan, the United States, and Germany (Little, Oettingen, & Baltes, 1995). According to these researchers, control expectancy refers to the student's "general judgement of the likelihood that s/he is able to achieve school success (e.g., good school

grades) and avoid failure (e.g., bad school grades)" (p. 6). The scale contains four items, and an example is, "If I want to do good in school, I can." Students answer items on a four-point Likert-type scale from Never (1) to Always (4).

Little et al. (1995) reported good reliability for this scale in U.S. (α = .70) and Japanese (α = .77) samples of second through sixth graders. Validation was shown by Karasawa et al. (1997) in a sample of children from grades two through six. They used a form of SEM to confirm a theory-based hypothesized structure of the entire CAMI measure. The hypothesized structure displayed good fit statistics, and was invariant across gender and age. These researchers concluded that the expected structure of the CAMI generalizes to Japanese children. Identical methods have been used to validate the CAMI in a range of cultures, including the United States (Little et al.).

Intrinsic and Extrinsic Motivation

Harter's (1981) *Intrinsic Versus Extrinsic Orientation in the Classroom* (see Appendix G), which was created for elementary and junior high school age students, was administered to measure students' intrinsic and extrinsic motivation in school. This measure contains five subscales, and each contains an intrinsic and an extrinsic pole: The challenge subscale (preference for challenge versus preference for easy work), the curiosity subscale (curiosity and interest versus pleasing the teacher and getting grades), the mastery subscale (independent mastery versus dependence on the teacher), the judgment subscale (independent judgment versus reliance on teacher's judgment), and the criteria subscale (internal criteria versus external criteria). Respondents first choose one pole on each item which is most like them. Each pole, one on the left and one on the right, is represented by one statement and two boxes. Then, respondents rate how much

like them that pole is by choosing one of the two boxes. Items are scored on a four-point scale, with a score of one always being the most extrinsic and four being the most intrinsic. See Appendix G for instructions to students. Harter (1981) reports good internal consistency in U.S. samples of students from grades three to nine: for the challenge, curiosity, mastery, judgment, and criteria subscales, reliabilities ranged from .78 to .84, .68 to .82, .70 to .78, .72 to .81, and .75 to .83, respectively.

This measure was chosen because past studies have evaluated correlation patterns between its subscales and perceived autonomy. Ryan and Connell (1989) found that a *mastery motivation* composite of the challenge, curiosity and mastery subscales correlated in a graded fashion with the regulation scales on the SRQ-A (see above). D'Ailly (2003) showed very similar results in a group of fourth through sixth graders from Taiwan. Following d'Ailly, participants in this study completed all five of the subscales. There is no information available reporting the use of this measure in Japanese samples.

Chapter 4

Results

The analyses proceeded in the order of the research questions. Questions 1a through 1c were investigated through analyses of the student interviews, and results are reported according to the order of research questions. In addition, these results informed the creation of the J-SRQ-A, which I next report. Data from both the J-SRQ and the J-SRQ-A questionnaires were analyzed quantitatively using correlational and factor analytic methods. Finally, research questions 2a through 3 were addressed with various quantitative statistical analyses.

Qualitative Analyses

Research Question 1a

Research question 1a asked which of the reasons Japanese children gave for engaging in academic behaviors are not already included in the SRQ-A. To address this, I analyzed children's answers to the academic open-ended questions regarding reasons for doing homework, doing class work, trying to answer hard questions in class, and trying to do well in school. A total of 138 reasons for engaging in academic behavior were coded from the 30 students. The minimum number of reasons given by a student was 2, the maximum 10, and the mean number of reasons given per student was 4.60. Students' reasons were assigned a code based on similarity of meaning. For example, when a student's reason included a statement about the student's future as a reason for engaging in academic behavior, the reason was placed in the *Future/long-term* reason group. Statements falling into this category included, "For the sake of my future" and "If I don't try my hardest to learn it, when I become an adult I will suffer."

A total of 14 reason groups emerged, as well as an "other" group made up of isolated statements that did not fit well into any of these 14 reason groups. I then compared the emergent reason groups with items on the SRQ-A in order to create three higher-order classifications of these groups based on whether or not they were represented on the SRQ-A. Table 5 displays the reason groups, examples of student answers, and the number of students who mentioned each reason. The first six reason groups displayed in Table 5 are not found on the SRQ-A (*Future/long-term*, *Someone tells student*, *Useful for school in near future*, *Become smart*, *Makes happy*, *Competition*). These six are followed by four reason groups that are similar to reasons represented on the SRQ-A (*To learn (without "want to"), Enjoy a challenge, Duty/responsibility, Embarrassment*). An example of a reason group that is similar to reasons on the SRQ-A is the *Embarrassment* reason group. The SRQ-A does include two items using the word "ashamed" but contains no items using "embarrassment," and no Japanese student actually used "ashamed" or "shame" in their answers. A native Japanese speaker and I concluded that the embarrassment referred to in the students' answers is conceptually similar to the "ashamed" items on the SRQ-Q, although not precisely the same. Finally, there are four reason groups that are represented exactly on the SRQ-A (*Not get in trouble, Intrinsic, Want to learn, Praise/reward*). For these groups, items on the SRQ-A closely resembled students' answers to the interview questions.

Figure 2 displays the fourteen reason groups in order of the number of students who mentioned each. Reason groups that are not found on the original SRQ-A are represented by the patterned columns, while reason groups that have similar or exact corresponding reasons on the SRQ-A are shown in white. It is clear from this figure that

four of the five top reasons for academic behaviors given by students are not represented on the original SRQ-A, which is an initial indication that the SRQ-A may not completely capture reasons for Japanese students' academic behaviors.

Table 5

Reasons for Engaging in Academic Behavior Given by Students in Interviews

Reason	Example Student Answers	No. of Students	Category*
Reason Group Not on Original SRQ-A			
Future/long-term	*For my future; So I won't have problems when I'm an adult. [To get into a] good high school and good university.*	14	ID
Useful in near future	*I think I'll use it for the next activity.*	10	ID
Someone tells student**	*My mother tells me to do it. My teacher assigned it.*	10	EX
Become smart	*I want to become smarter. So that I don't become stupid.*	9	ID
Makes happy	*It makes me happy when I understand. It makes me happy when I can do it.*	5	IN
Competition	*I want to become smarter than everybody else.*	2	IJ
Similar Reason Group Represented on Original SRQ-A			
To learn (without "want to")	*So I don't forget. To learn*	12	U
Enjoy a challenge	*I want to solve problems. I get excited when I try to solve a hard problem.*	7	IN

Reasons for Engaging in Academic Behavior Given by Students in Interviews

Reason	Example Student Answers	No. of Students	Category*
Duty/responsibility	*It's one's responsibility; One has to do it*	5	EX
Embarrassment	*It's embarrassing if you can't do it; I don't like how I feel when someone has to show me how*	3	IJ
Exact Reason Group Represented on Original SRQ-A			
Not get in trouble	*I'll get in trouble if I don't*	6	EX
Intrinsic	*It's fun; It's interesting; I like it*	5	IN
Want to learn	*I want to learn; I want to understand*	5	ID
Praise/reward	*I'm happy when I receive a stamp (on an assignment); I like compliments from my friends*	3	EX
*Other****			
Various	*I can't relax until I get the answer; If there's no one to play with, I might try and learn a few Chinese characters.*	20	V

Notes . n = 30; EX = External, IJ = Introjected, ID = Identified, IN = Intrinsic, V = Various, U = Unclear

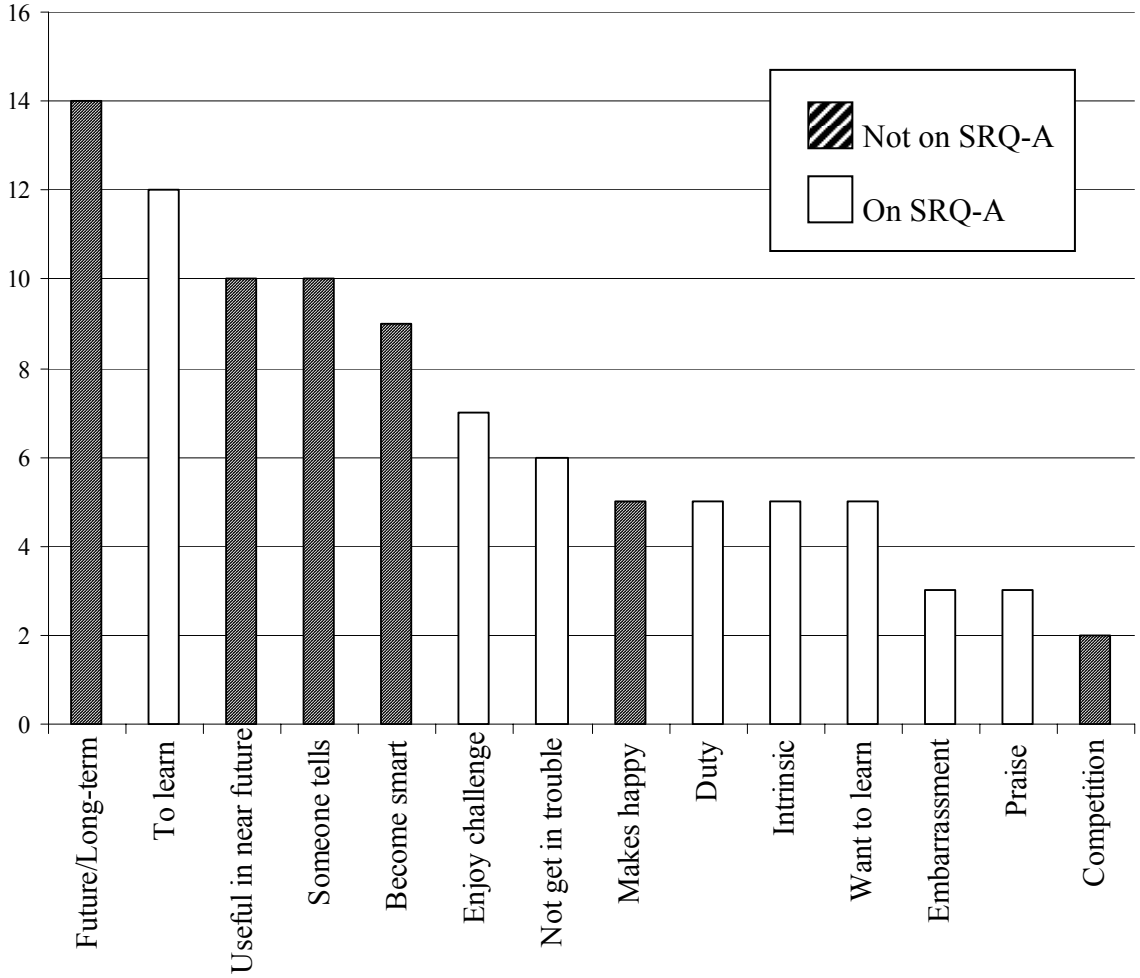
*Regulation categories were assigned in such a way that is consistent with self-determination theory.

**To assign regulation categories to these reason groups, student answers to follow-up questions were analyzed.

***This answer group consisted of 20 isolated statements that did not fit into other categories.

Figure 2

Number of Students Who Gave Various Reasons for Academic Behavior



Research Question 1b

To address research question 1b, which asked whether the students' reasons for engaging in academic behavior can be classified into a regulation category within the SDT framework, I analyzed the six reason groups (the first six rows in Table 5) that are not represented on the SRQ-A and classified them into the four regulation categories. In addition, I discussed category assignments with a motivation researcher during each step of this process. The results of these analyses can be seen in the last column of Table 5. For five of the reason groups, there was a good fit between students' answers and the definitions for each regulation category given by Ryan and Deci (e.g., 2000b; 2002). I classified the first reason group, *Future/long-term*, in the identified regulation category because high utility value is implied in the students' answers. Ryan et al. (1992) write that if something is pursued for "its centrality to future goals" (p. 171) then it is regulated by identification, and this reason group is clearly consistent with such an explanation.

Another reason group, *Useful in near future*, also fits into identified regulation for similar reasons. The students seem to hold utility value for academic behaviors. Somewhat questionable with this reason group is the level of autonomy associated with varying end goals represented in individual statements. For example, when students discussed why they write notes in response to the question about working on classwork, one answered, "When I don't understand, if I look at these [notes], then I'll understand again." Two others mentioned using their notes for future tests. While these answers can be grouped together because of their utility value, the end goals of understanding and test performance may cause the level of perceived autonomy to differ. It is plausible that trying hard for understanding is more autonomous than trying hard so that one will do

well on a test. In this case, the self-determination continuum does not allow for this level of scrutiny of children's reasons.

The third reason group that was readily classified, *Become smart*, consisted of reasons related to the student becoming smarter by doing homework or trying hard in school. This reason group also fits well into the identified regulation category because it concerns gaining knowledge, and the students seem to value this. Gaining knowledge is, however, a reward that is separable from pure enjoyment from the task and is thus not intrinsic, but a reward that does not fit well into the introjected or external categories. The *Makes happy* reason group consists of statements such as "Because I become happy" and "It makes me happy when I understand." The word "happy" very much resembles "enjoyment" and "fun," which are the two terms used in items from the intrinsic regulation category on the original SRQ-A. Therefore, this group was classified as intrinsic. I classified the fifth reason group, *Competition*, into the introjected category because the reasons can be seen as examples of "attaining ego enhancements such as pride" (Ryan & Deci, 2000b, p. 72). The two student answers in this category were "I want to become smarter than everybody else" and "I don't want to lose," and both of these denote "regulation by contingent self-esteem" (p. 72).

The remaining reason group not represented on the SRQ-A, *Someone tells student*, did not clearly fit into a specific regulation category. Based purely on SDT, this group might be placed in the external regulation category. However, when one considers research claiming that Japanese people have interdependent selves (Markus & Kitayama, 1991), the presence of a third party (i.e., parent or teacher) in these reasons could mean that Japanese students perceive these reasons as more autonomous because the

interdependent self includes such trusted individuals. Therefore it is unclear given that the subjects are Japanese whether reasons in this group should be classified as external, as SDT would suggest, or as more autonomous, as other research suggests. I address this issue under research question 1c.

Research Question 1c

This research question asks whether the degree of autonomy for academic behavior can be determined based on additional information provided by the students for reasons that cannot be classified into one of SDT's regulation categories. All of the reason groups except for the *Someone tells student* reason group were classified based on theoretical reasons while analyzing data for research question 1b. Therefore only *Someone tells student* reasons were considered when addressing question 1c. Analysis consisted of systematically analyzing students' answers to the follow-up questions that tapped the degree of autonomy of this reason. I rated the degree of autonomy from 1 (low) to 3 (high). Table 6 displays examples from the interviews of each rating (see Appendix H for full set of ratings and interview excerpts). Out of 12 answers to follow-up questions, there were 8 rated as low autonomy, 2 rated as medium autonomy, 1 rated as high autonomy, and 1 statement was inaudible. This yielded an average over the eleven scores of 1.36, and I interpreted this as evidence that overall the students' statements indicated low autonomy associated with this reason. Therefore, this reason group was classified in the external regulation category.

Creation of the Japanese Self-Regulation Questionnaire-Academic Domain

Recall that a major goal of creating the J-SRQ-A was to try and create a questionnaire that reflected more closely Japanese students' perceived autonomy, and is

thus a more valid questionnaire of perceived autonomy for Japanese students. Therefore, the interviews just reported were the primary source of possible reason groups to add to the original SRQ-A. The creation of the J-SRQ-A proceeded as follows. First, it was decided that due to constraints in

Table 6

Examples from the Interviews for Each Autonomy Rating

Rating	Example Student Answers
High Autonomy	I: Who decides that you will study at home or do your homework? Do you, Kazuma, decide on your own? Or do you do it because your teacher or your mom or your dad tells you to? S: I do it on my own. I: When you do it on your own, why do you think you decide to study at home? S: If I review, then I'll be able to better understand problems that appear on the test.
Medium Autonomy	I: After you finish your homework, you go and play? S: If there's no one to play with, I might try and learn a few Chinese characters. I: Do you learn a few [kanji] because you thought to do it? S: Yes.
Low Autonomy	I: If the teacher didn't assign it, would you do other studying? S: I don't think so.
Low Autonomy	I: Who decides that you do your homework? S: I guess the teacher.

Notes . I = Interviewer S = Student

time allowed us to administer questionnaires in schools, only eight items would be added to the J-SRQ-A. The total questionnaire packet already contained a total of 66 items, including the perceived control and intrinsic versus extrinsic motivation measures. We had promised school administrators and teachers that we would complete all of our measures within 45 minutes from start to finish. Therefore, adding eight items would increase the total to 74 items, and we did not want to risk having to skip items at the end of the questionnaire.

Next it was decided to add three reason groups and divide them among the eight new items so that two reason groups received three new items and one reason group received two new items. The rationale for using multiple items from a reason group was to precede each with a different stem. For example, in the original SRQ-A, three items use similar wording about having the teacher(s) "think I'm a good student," but they follow the different stem questions of doing homework, doing classwork, and trying to do well in school. Because the stem is different, the items are considered different, although all three use very similar wording. The different stems tap different aspects of students' academic lives. Therefore, when adding new items to form the J-SRQ-A, we placed new items from the same reason group under different stems.

In order to choose which three reason groups would be included, I and another expert rater looked at the reason groups that emerged from the interviews that were not on the original SRQ-A (seen in Table 5 and Figure 2). Four reason groups stood out in salience from the rest, as can be seen in Figure 2, because they made up four of the top five reasons mentioned by Japanese students in response to open-ended questions. They were *Future/Long-term*, *Someone tells*, *Useful in near future*, and *Become smart*.

Because the *Future/Long-term* group and the *Useful in near future* group were the most conceptually similar, in that they both are related to the utility value of academic behavior and because they both fall under the identified regulation category, we decided to use only the *Future/Long-term* reason group, as it was the most prevalent answer in the interviews. Thus we decided to add three items from the *Future/Long-term* and the *Someone tells* reason groups, and two items from the *Become smart* reason group, as it was the least mentioned reason of the three. Based on self-determination theory and student statements, the *Future/Long-term* and the *Become smart* reason groups were assigned to the identified regulation category, and the *Someone tells* reason group was assigned to the external regulation category (see above).

In order to create the most authentic items possible, we created the items based on actual student statements from the interviews. We created the *Future/Long-term* items from three separate long-term goals mentioned by the students and then placed them each under a different stem. The resulting items were as follows: "I do it so that I won't have problems when I'm a junior high school student or high school student" was presented under the classwork stem; "I do my homework so that I won't have problems when I'm an adult" came after the homework stem; and "For my future" was presented under the stem that concerns trying to do well in school.

For the *Someone tells* reason group, we chose wordings based on who tells the student to do the corresponding academic behavior. In the interviews, students mentioned teachers, mothers, and parents, so we chose to include one item about each. The new items were as follows: We placed "Because I am told 'do your homework' by my mother" under the homework stem; "Because I am told to do it by my teacher" followed

the classwork stem; and "I am told by my parents that I should try my hardest" was presented under the stem concerning trying to do well in school. Finally, we created two items for the *Become smart* reason group: Students responded to "I think I'll become smarter if I do it" after reading the homework stem; and they rated "So that I'll become smarter" under the stem concerning trying to do well in school. We did not place any new items after the stem concerning answering hard questions in class because during the interviews this question yielded the least answers from students and had to be explained by the interviewer more than the other questions. Therefore, in case there was something inherently wrong with the wording of this question, we did not want to increase the problem by having students respond to more items under this stem than necessary.

The resulting J-SRQ-A included all 32 of the items on the SRQ-A as well as the 8 new items described above for a total of 40 items. The external scale contained 12 items (9 from the SRQ-A and 3 new); the introjected, 9 items (all from the SRQ-A); the identified, 12 items (7 from the SRQ-A and 5 new); and the intrinsic, 7 items (all from the SRQ-A). The first four columns of Table 7 display the items of the SRQ-A and the J-SRQ-A, as well as their corresponding stems and regulation categories.

Quantitative Analyses of Questionnaire Data

The next set of research questions (2a through 3) were answered through quantitative analyses conducted on data from the SRQ-A and the J-SRQ-A. Results of the quantitative analyses are presented in the order of the research questions. Previous studies employing the SRQ-A (e.g., Ryan & Connell, 1989; d'Ailly, 2003) have reported analyses done on theoretically derived scales for the regulation categories. That is, they did not report data reduction techniques in creating their scales. Therefore, to be

consistent with previous research, I first addressed research questions 2a and 2b using the complete scales exactly as they appear in the downloadable version (Self-Regulation Questionnaire-Academic Domain, 2003) of the SRQ-A that was translated for the purposes of this study. For the SRQ-A scales, items were assigned to external, introjected, identified or intrinsic a priori by Ryan and Connell (1989). To determine scale assignments for the new J-SRQ-A items, I used my own classifications according to reason groups shown in the "SDT a priori Model" column of Table 7 (respecified models will be explained below). Means and standard deviations for the theoretical scales can be seen in Table 8.

Table 7

Theoretically Derived Scales and Scales from Respecified Models of the SRQ-A and J-SRQ-A

Var. No.	Stem	Item	SDT a priori Model	Respecified SRQ-A Model**	Respecified J-SRQ-A Model
V1	HW	Because I'll get in trouble if I don't.	EX	EX	EX
V2	HW	Because that's what I'm supposed to do.	EX	OMIT	ID
V3	HW	Because I am told "do your homework" by my mother.	EX*	--	EX
V4	CW	So that the teacher won't yell at me.	EX	EX	EX
V5	CW	Because that's the rule.	EX	EX	ID
V6	CW	Because I am told to do it by my teacher.	EX*	--	EX
V7	AQ	Because that's what I'm supposed to do.	EX	OMIT	OMIT
V8	AQ	Because I want the teacher to say nice things about me.	EX	IJ	IJ
V9	TW	Because that's what I'm supposed to do.	EX	ID	ID
V10	TW	Because I will get in trouble if I don't do well.	EX	EX	EX
V11	TW	Because I might get a reward if I do well.	EX	OMIT	IJ
V12	TW	I am told by my parents that I should try my hardest.	EX*	--	OMIT
V13	HW	Because I want the teacher to think I'm a good student.	IJ	IJ	IJ
V14	HW	Because I will feel bad about myself if I don't do it.	IJ	ID	ID
V15	CW	Because I want the teacher to think I'm a good student.	IJ	IJ	IJ
V16	CW	Because I'll be ashamed of myself if it didn't get done.	IJ	OMIT	OMIT
V17	AQ	Because I want the other students to think I'm smart.	IJ	IJ	IJ

Theoretically Derived Scales and Scales from Respecified Models of the SRQ-A and J-SRQ-A

Var. No.	Stem	Item	SDT a priori Model	Respecified SRQ-A Model**	Respecified J-SRQ-A Model
V18	AQ	Because I feel ashamed of myself when I don't try.	IJ	EX	IJ
V19	TW	So my teachers will think I'm a good student.	IJ	IJ	IJ
V20	TW	Because I'll feel really bad about myself if I don't do well.	IJ	ID	ID
V21	TW	Because I will feel really proud of myself if I do well.	IJ	OMIT	OMIT
V22	HW	Because I want to understand the subject.	ID	ID	ID
V23	HW	Because it's important to me to do my homework.	ID	ID	ID
V24	HW	I think I'll become smarter if I do it.	ID*	--	ID
V25	HW	I do my homework so that I won't have problems when I'm an adult.	ID*	--	ID
V26	CW	Because I want to learn new things.	ID	ID	ID
V27	CW	Because it's important to me to work on my classwork.	ID	ID	ID
V28	CW	I do it so that I won't have problems when I'm a junior high school student or high school	ID*	--	ID
V29	AQ	To find out if I'm right or wrong.	ID	OMIT	ID
V30	AQ	Because it's important to me to try to answer hard questions in class.	ID	ID	ID
V31	TW	Because it's important to me to try to do well in school.	ID	ID	ID
V32	TW	So that I'll become smarter.	ID*	--	ID
V33	TW	For my future.	ID*	--	ID
V34	HW	Because it's fun.	IN	IN	IN
V35	HW	Because I enjoy doing my homework.	IN	IN	OMIT
V36	CW	Because it's fun.	IN	IN	IN

Theoretically Derived Scales and Scales from Respecified Models of the SRQ-A and J-SRQ-A

Var. No.	Stem	Item	SDT a priori Model	Respecified SRQ-A Model**	Respecified J-SRQ-A Model
V37	CW	Because I enjoy doing my classwork.	IN	IN	IN
V38	AQ	Because I enjoy answering hard questions.	IN	IN	IN
V39	AQ	Because it's fun to answer hard questions.	IN	IN	IN
V40	TW	Because I enjoy doing my school work well.	IN	IN	IN

Notes. HW = Why do I do my homework? CW = Why do I work on my classwork? AQ = Why do I try to answer hard questions in class? TW = Why do I try to do well in school? EX = External, IJ = Introjected, ID = Identified, IN = Intrinsic * Scales for the items only appearing on the J-SRQ-A were determined according to SD student interviews. **Blank cells indicate newly developed items that only appeared on J-SRQ-A.

Research Question 2a

Question 2a concerns the psychometric properties of the translated SRQ-A compared to those of the J-SRQ-A. For these analyses, I compared reliability of the scales across the two measures using Cronbach's Alpha measure of internal consistency (see "Theoretical Scales" in Table 8). Across all of the scales and both measures, the alpha coefficients ranged from .70 to .92, indicating adequate to good internal consistency in these scales. Of note is the difference between the SRQ-A External scale ($\alpha = .71$) and the J-SRQ-A External scale ($\alpha = .83$), in which case internal consistency seemed to benefit from adding items based on the interviews. When investigating whether deleting items from any scale would increase its alpha coefficient, I found only two items across all eight scales that would have any effect, and these were so miniscule (deleting either item would increase the alpha coefficient by only .01), that I decided to keep the full theoretical scales and not delete the items.

I also analyzed the item-total correlations for each scale and found that on the SRQ-A scales only one correlation was below .30 and that was for the external item, "Because I might get a reward if I do well," which correlated at .22 with the scale. Item-total correlations for three other items on the external scale were under .40 and the remaining were between .40 and .52. The item-total correlation for one item on the introjected scale was below .40 and the others ranged from .47 to .76. For the other SRQ-A scales, ranges for the item-total correlations were .49 to .75 for the identified, and .66 to .81 for the intrinsic. Regarding the J-SRQ-A, the external scale had the lowest item-total correlations, ranging from .37 to .61. The introjected scale

Table 8

Means, Standard Deviations and Cronbach's Alpha Coefficients for Scales of the SRQ-A and J-SRQ-A

	SRQ-A			J-SRQ-A		
	M (*SD*)	α	No. Items	*M* (*SD*)	α	No. Items
Theoretical Scales						
External	2.29 (.50)	.71	9	2.35 (.54)	.83	12
Introjected	2.28 (.61)	.85	9	2.36 (.59)	.85	9
Identified	3.03 (.67)	.87	7	3.14 (.59)	.91	12
Intrinsic	2.40 (.80)	.91	7	2.51 (.73)	.90	7
Respecified Scales						
External	2.18 (.63)	.70	5	2.09 (.71)	.83	5
Introjected	1.85 (.73)	.92	5	1.99 (.63)	.87	7
Identified	3.06 (.64)	.88	9	3.09 (.56)	.92	17
Intrinsic	2.40 (.80)	.91	7	2.53 (.75)	.88	6

Notes. SRQ-A Group n = 179; J-SRQ-A Group n = 208

correlations ranged from .44 to .70, the identified from .58 to .69 and the intrinsic from .66 to .81.

Research Question 2b

Research question 2b asked about the similarity of the correlations among regulation category mean scores in the SRQ-A and the J-SRQ-A. That is, do the correlation matrices of the scale means on each measure look similar, specifically focusing on the simplex structure of each matrix. Table 9 presents the correlation matrices for the theoretical scales of the SRQ-A and the J-SRQ-A. In both matrices, all correlations are positive and significant at $p < .01$. The simplex pattern can be seen in both matrices, such that the largest correlations are found on the diagonal or between adjacent categories on the self-determination continuum. The second diagonal contains the next strongest correlations, and the weakest correlation is the one between the external and intrinsic scales, the extremes of the continuum. The fact that all correlations in both matrices are positive is interesting in that they differ from the correlations seen in the matrix from Ryan and Connell (1989) shown in Table 2. Also, the Ryan and Connell correlations were generally weaker than the ones in the current study. The strength and direction of these correlation matrices more closely resemble those of other studies of Japanese students' perceived autonomy (Hayamizu, 1997; Yamauchi & Tanaka, 1998).

Following Hayamizu (1997), to conduct a more rigorous test of the simplex structure, I analyzed for significant differences between the correlations within each matrix. In the SRQ-A matrix, the differences generally support the existence of a simplex pattern. The three correlations on the diagonal (.68, .59, and .62) did not differ from each other but did differ from all of the other correlations (at $p < .001$ or .01) with the

exception of .59 and .47, which did not differ from one another. In the second diagonal .47 differed from .28 at $p < .05$, and from .20 at $p < .01$. The pattern of significant differences among correlations from the J-SRQ-A matrix supports the conclusion that they form a simplex structure. All correlations between adjacent categories do not significantly differ from one another, and all correlations from non-adjacent categories do differ from one another (at $p < .001$ to $p < .05$). Following are analyses based on research question 2c, which asks about the factor structures of the SRQ-A and J-SRQ-A. After presenting those results, I will re-address research questions 2a and 2b with respect to any empirically derived scales.

Table 9

Correlations Between Mean Scores of Theoretically Derived Scales for the SRQ-A and J-SRQ-A

	1	2	3
SRQ-A (*n* = 179)			
1. External	-		
2. Introjected	.68**	-	
3. Identified	.28**	.59**	-
4. Intrinsic	.20**	.47**	.62**
J-SRQ-A (*n* = 208)			
1. External	-		
2. Introjected	.71**	-	
3. Identified	.48**	.64**	-
4. Intrinsic	.28**	.49**	.63**

Notes. ** $p < .01$

Research Question 2c

Preliminary Exploratory Factor Analysis

Research question 2c asks about the similarity of the factor structures of the SRQ-A and the J-SRQ-A. In order to compare the factor structures across measures, it was necessary to find factor models of each measure that fit the data well. First, exploratory factor analyses (EFA) were used for preliminary purposes in order to find out if individual items loaded on to the theoretically hypothesized factors corresponding to the four regulation types of external, introjected, identified and intrinsic. More specifically, data from each measure were analyzed in SPSS version 14 with a principal axis factor analysis set to extract four factors. Because self-determination theory posits that the regulation types are related along a continuum (Ryan & Deci, 2000b), I used direct oblimin rotation, an oblique rotation technique, which allows resulting factors to correlate (G. R. Hancock, personal communication, March 30, 2006). This contrasts with orthogonal rotation, which forces factors to be independent, thus lowering the correlations between them.

Using the factor pattern matrices as a guide (see Appendices I and J), new scales were specified for both the SRQ-A and the J-SRQ-A. Items that loaded with an absolute value of .40 or higher were retained and items that did not load on any factor at an absolute value of .40 or higher were omitted from further analyses. Based on the results of this EFA, respecified versions of the SRQ-A and J-SRQ-A were developed. The middle and far right columns of Table 7 present the respecified models of each, and show which items were omitted. A total of six items were omitted from the SRQ-A, and five items were omitted from the J-SRQ-A. Three of these items were omitted from both the

SRQ-A and the J-SRQ-A, indicating that these items do not fit well into any of the regulation categories. All except one of the items omitted from the SRQ-A and one from the J-SRQ-A were originally on the theoretical external or introjected scales.

A total of five items from the SRQ-A loaded on scales other than their theoretically assigned scales. Four of these moved to a more autonomous scale, either from external to introjected, external to identified, or introjected to identified. The other item moved from introjected to external. None of the items that were classified a priori to the identified or intrinsic scales moved to other scales. A similar pattern was observed for the J-SRQ-A. All of the J-SRQ-A items that loaded on scales other than their theoretically assigned scales moved from external to introjected, external to identified, or introjected to identified.

When specific item wordings were examined across both the SRQ-A and the J-SRQ-A, some patterns were observed. The three items from the original SRQ-A containing "supposed to" were either omitted or loaded onto a more autonomous scale. The two items containing "feel bad about" moved from the introjected to the more autonomous identified scale on both the SRQ-A and the J-SRQ-A. Finally, the item "Because I want the teacher to say nice things about me" moved from external to introjected on both measures.

Comparison of Models with Confirmatory Factor Analysis

The next step in finding factor models of the SRQ-A and J-SRQ-A that fit the data well was done using confirmatory factor analysis (CFA) with EQS 6.1 software (Byrne, 2006). With CFA, researchers can test the fit between a theoretical model of the relations among the items and the observed indicators of the items by using goodness-of-

fit indices. First, the researcher specifies the theoretical model and then runs this specified model on the data collected from participants. I now describe each process in more detail as it pertains to the present study.

In specifying the theoretical models of the factor structures of the SRQ-A and J-SRQ-A, I first specified that each item may load only on its corresponding factor, and I then set all other factor loadings to zero (Byrne, 2006). As per standard CFA procedure, the variance of one factor loading per factor was set to one and the others were free to vary. I also specified that there would be four factors corresponding to the categories in the self-determination continuum in the academic domain most consistent with the SDT literature (e.g., Ryan & Connell, 1989; Ryan & Deci, 2000a; 2000b; 2002). These factors represented external, introjected, identified and intrinsic regulation. Items were set to load only on their corresponding factor or regulation category based on the results of the preliminary EFA described above. In addition, the four factors were allowed to covary, consistent with the notion that the regulation categories relate to each other in the self-determination continuum. Furthermore, based on theoretical considerations (e.g., similarity of item wordings) I allowed some error terms that were associated with items from the same scale to covary. Specifying error covariances is justified when there is reason to believe that individual items may relate to each other above and beyond their individual relations to the latent factor (Brown, 2006). For example, in the respecified models of both the SRQ-A and the J-SRQ-A, two items had the same exact wording, "Because I want the teacher to think I'm a good student," but appeared under different stems, homework and classwork, and thus were allowed to covary. Some error covariances were set prior to running the model based purely on theoretical reasons. After

running preliminary models, additional error terms were set to covary based on a combination of theoretical considerations and results of the LaGrange Multiplier (LM) Test. The LM Test suggests additional parameters that if allowed to covary will improve model fit. Results of the LM Test were analyzed for pairs of error terms that met two criteria: First, there must be a clear theoretical relation between the items associated with the error terms (i.e., similarity of wordings); second, allowing the errors to covary should improve model fit substantially.

Multiple model evaluations and comparisons were carried out. Model evaluations consisted of examining fit indices to judge model fit. EQS 6.1 provides a variety of fit indices that can be used to judge model fit. Hu and Bentler (1999) recommend using the standardized root mean-square residual (SRMR) in conjunction with either the Comparative Fit Index (CFI) or the root mean squared error of approximation (RMSEA) when judging the acceptability of a model. Recommended cutoff criteria are as follows: SRMR should be less than .08; CFI should be .95 or above, and RMSEA should be less than .06. Because multivariate kurtosis was high in both the SRQ-A and J-SRQ-A data (i.e., the normalized estimate was greater than 3.0), the Satorra-Bentler (S-B) scaling procedure was used to calculate the chi-square, CFI, and RMSEA by requesting the "robust" method in EQS 6.1 (Finney & DiStefano, 2006). This contrasts with the usual maximum likelihood (ML) estimation procedures. The S-B scaling procedure corrects the ML-based chi-square and other fit indices for non-normal data by incorporating the kurtosis of the variables. When computing the SRMR, maximum likelihood estimation procedures were used because it is not affected by the S-B scaling procedure (G. R. Hancock, personal communication, March 30, 2006).

I first evaluated the four-factor models of both the SRQ-A and the J-SRQ-A in isolation, using the respecified factor patterns shown in Table 7. Figures 3a, 3b, 4a, and 4b display schematics of these models and Table 10 displays a summary of the fit indices of these models (standardized parameter estimates, correlations between factors, and error correlations are displayed in Appendices K, L, M, and N). As described above, in order to increase the fit of each of these models, error covariances were added based on theoretical considerations and on LM Test results from initial runs of the models. The final respecified four-factor SRQ-A model (Model 6 in Table 10) included six error covariances. Regarding fit indices, Model 6 has an SRMR of .09, a CFI of .93, and an RMSEA of .06, which are close but do not meet Hu and Bentler's (1999) cutoff criteria. The final respecified four-factor J-SRQ-A model (Model 12 in Table 10) included 13 error covariances and two of the three fit indices meet the cutoff criteria. The SRMR (.07) and the RMSEA (.05) meet Hu and Bentler's standards, but the CFI (.91) falls short of the mark.

Model comparisons were conducted next. The main reason for comparing models in CFA is that any given model represents only one possible representation of the data, and it is judicious to compare alternative models. These alternative models are considered to be "nested" in one another because one model contains a subset of the free parameters of the other model (Brown, 2006). In Table 10, Model 5 (the nested model) is nested within Model 6 (the parent model) because Model 5 contains a subset of the free parameters of Model 6. If one is testing nested models such as these, then direct statistical tests of the differences in model fit can be performed. A standard way this is done is to compare the differences in the sizes of the chi-squares of the models. Non-nested models

cannot be directly compared statistically, in which case fit indices described above were examined and the Akaike Information Criterion (AIC) was used. The AIC, a popular index for comparing non-nested models, takes into account model fit and adjusts for the complexity or parsimony of a model (Brown, 2006). A general rule is that the model with the lowest AIC is judged to fit the data better.

Table 10

Goodness-of-Fit Indices for the SRQ-A and J-SRQ-A

Model	$\chi 2$	*df*	SRMR	CFI	RMSEA	AIC
Theoretical SRQ-A						
1. Independence model	3146.85 *	496				
2. Four-factor model	1120.84 *	458	.12	.15	.09	204.84
Difference between Model 1 and Model 2	2026.01 *	38				
Respecified SRQ-A						
3. Independence model	2642.23 *	325				
4. Respecified one-factor model	1180.76 *	294	.13	.62	.13	592.76
Difference between Model 3 and Model 4	1461.47 *	31				
5. Respecified two-factor model	765.02 *	293	.10	.80	.10	179.02
Difference between Model 4 and Model 5	415.74 *	1				
6. Respecified four-factor model	449.20 *	288	.09	.93	.06	-126.80
Difference between Model 5 and Model 6	315.82 *	5				

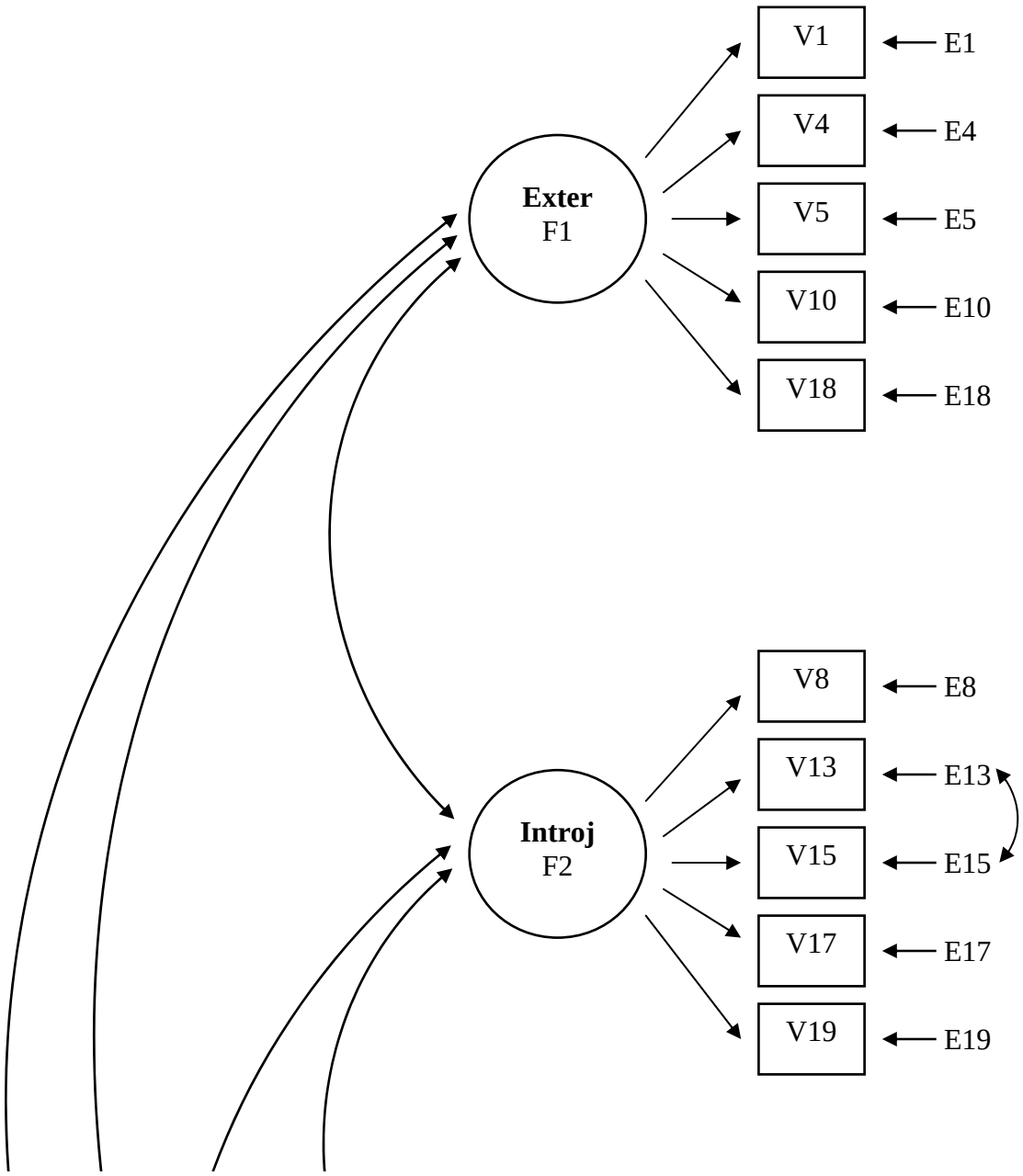
Goodness-of-Fit Indices for the SRQ-A and J-SRQ-A

Model	$\chi 2$	*df*	SRMR	CFI	RMSEA	AIC
Theoretical J-SRQ-A						
7. Independence model	4383.43 *	780				
8. Four-factor model	1742.88 *	734	0.11	0.72	0.08	274.88
Difference between Model 7 and Model 8	2640.55 *	46				
Respecified J-SRQ-A						
9. Independence model	3654.08 *	595				
10. Respecified one-factor model	1442.24 *	547	.11	.71	.09	348.24
Difference between Model 9 and Model 10	2211.84 *	48				
11. Respecified two-factor model	1082.05 *	546	.09	.83	0.07	-9.95
Difference between Model 10 and Model 11	360.19 *	1				
12. Respecified four-factor model	814.00 *	541	.07	.91	.05	-268.02
Difference between Model 11 and Model 12	268.05 *	5				

Notes. *$p < .001$. SRMR = Standardized root mean-square residual; CFI = Comparative Fit Index; RMSEA = Root mean squared error of approximation; AIC = Akaike Information Criterion; All fit indices have been corrected with the S-B scaling procedure, except for SRMR, for which the S-B scaling procedure does not differ from the ML methods.

Figure 3a

Factor Model of the Respecified SRQ-A: External and Introjected Factors

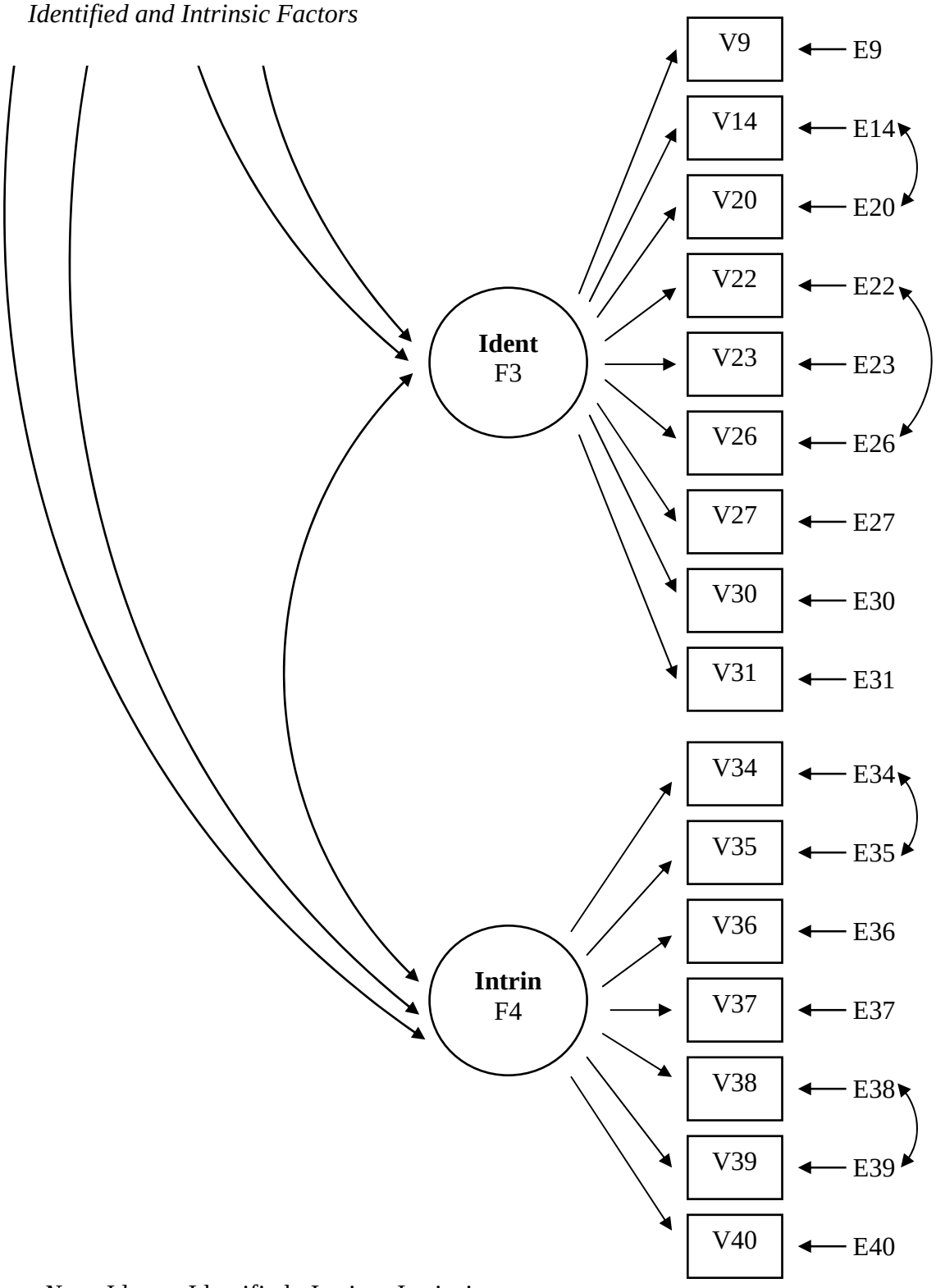


Note. *$p < .05$ Extern = External; Introj = Introjected

Figure 3b

Factor Model of the Respecified SRQ-A:

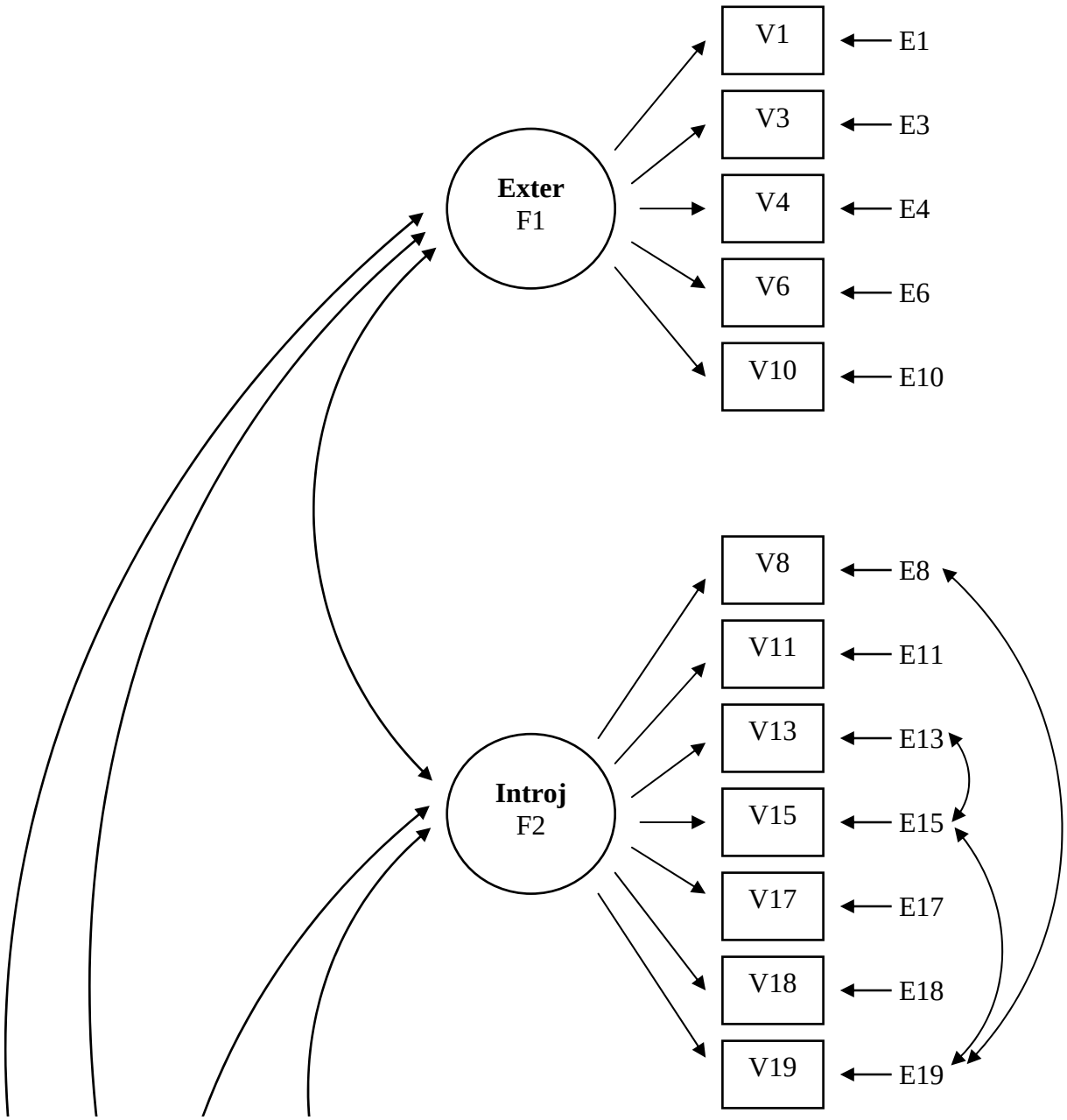
Identified and Intrinsic Factors



Note. Ident = Identified; Intrin = Intrinsic

Figure 4a

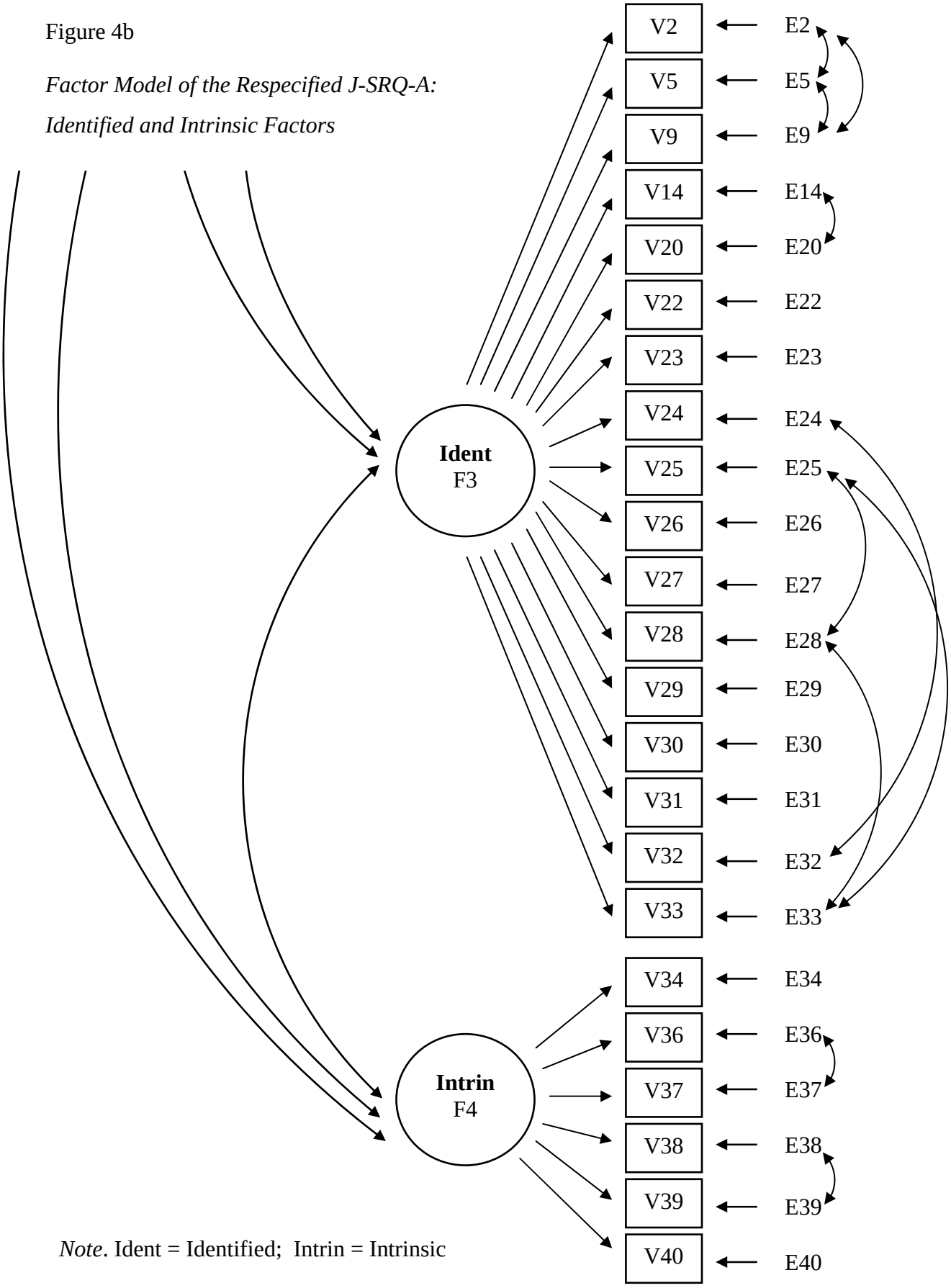
Factor Model of the Respecified J-SRQ-A: External and Introjected Factors



Note. *$p < .05$ Extern = External; Introj = Introjected

Figure 4b

Factor Model of the Respecified J-SRQ-A: Identified and Intrinsic Factors



Note. Ident = Identified; Intrin = Intrinsic

Two kinds of comparisons were made. First, the overall fits of the respecified models of the SRQ-A and the J-SRQ-A were compared to the fits of their corresponding models based on the original SRQ-A scales (referred to in Table 10 as the theoretical SRQ-A model and the theoretical J-SRQ-A model). Second, for both the SRQ-A and J-SRQ-A, several models were specified for comparison purposes. The primary comparisons were between the four-factor models for each measure with two-factor models and one-factor models in which all items were specified to load on just one factor (the rationale for these models is presented below). In addition, as is common in the literature a null (or independence) model was specified that states there are no relations among the items. These models are all nested, and so chi-square difference tests were used to assess the differences in fit.

The first set of comparisons concern the SRQ-A, and specifically whether Model 6, the respecified four-factor model fits the data better than Model 2 (theoretical four-factor model), Model 4 (respecified one-factor model), and Model 5 (respecified two-factor model). These comparisons specifically test whether the respecified four-factor SRQ-A model is the best SRQ-A model. In order to make the first comparison between Model 6 and Model 2, I considered the SRMR, CFI and RMSEA. These models are not nested and therefore cannot be directly compared statistically. Examination of the fit indices for Model 2 indicated that none met the cutoff criteria. As stated above, the SRM, CFI, and RMSEA for Model 6 also do not meet the cutoff criteria. However, the AIC for Model 6 (-126.80) is much smaller than the AIC for Model 2 (204.84). I concluded that although Model 6 does not meet Hu and Bentler's (1999) standards, it does fit the data better than Model 2.

Next, I compared the respecified four-factor SRQ-A model (Model 6) with the respecified two-factor (Model 5) and one-factor (Model 4) models. The two-factor model posits that the external and introjected items load onto one factor representing low autonomy and the identified and intrinsic items load onto the other factor that represents high autonomy. There is some precedent for this model, in that Ryan and Connell's (1989) exploratory factor analyses yielded such results. In their model however, many of the introjected and identified items cross-loaded and were dropped. In this study, the two-factor model is nested within the four-factor model, and thus the chi-square difference can be used to determine the significance of the difference of the fit between the two models. Table 10 shows a significant chi-square difference ($\Delta\chi^2 = 315.82$, $df = 5$, $p < .001$) between Model 6 and Model 5, indicating that Model 6 fits significantly better. The respecified one-factor model (Model 4) specifies that all items load onto one factor. The significant chi-square difference between Model 5 and Model 4 ($\Delta\chi^2 = 415.74$, $df = 1$, $p < .001$) indicates that the two-factor model fits the data significantly better than the one-factor model. By default then, Model 6 also fits better than Model 4. Finally, results indicate that the respecified one-factor model fits significantly better than the independence model, which specifies that there are no relations among the items.

Parallel comparisons were done on the set of J-SRQ-A models and analogous results were obtained. First, in comparing the respecified four-factor J-SRQ-A model (Model 12) with the theoretical four-factor model (Model 8), as noted above, Model 12 shows adequate fit based on the fit indices. In contrast, none of the fit indices for Model 8 meet Hu and Bentler's (1999) criteria. Also, the AIC for Model 12 (-268.02) is much lower than the AIC for Model 8 (274.88), indicating superior fit for Model 12.

Concerning the alternative respecified J-SRQ-A models, Model 12 is the only one with acceptable fit indices. Further, looking at the chi-square differences, Model 12 fits the data better than the two-factor model (Model 11), which fits better than the one-factor model (Model 10), which in turn fits better than the independence model (Model 9).

The final comparison using CFA was the comparison between the best-fitting SRQ-A model (Model 6) and the best-fitting J-SRQ-A model (Model 12). Because these models are non-nested, I examined their respective fit indices and compared the AIC values to judge better fit. As noted above, none of the fit indices for Model 6 met Hu and Bentler's (1999) cutoff criteria. Model 12 on the other hand did fit the data well according to Hu and Bentler's recommendations. In addition, the AIC of Model 12 is lower than the AIC of Model 6, which further supports the conclusion that Model 12 has the best fit of all models tested.

The finding that the respecified four-factor models of the SRQ-A and J-SRQ-A had better fit than the corresponding theoretical models is an important one. Results of the EFA showed that some of the items should be omitted and some items should be moved to different scales. One interpretation of this is that the respecified models more accurately represent the autonomy of the Japanese students in our sample. If this is the case, then one implication is that analyses of research questions 2a and 2b should be redone using scales from the respecified models, and results should be compared to results from the theoretical scales. Analyses done on the theoretical scales represent a replication of methods found in previous literature, while analyses done on scales from the respecified models represent a possible improvement on the methods of previous studies. Comparison of the two sets of results may be informative.

Therefore, I conducted analyses of questions 2a and 2b using scales based on the respecified factor models. The second half of Table 8 presents psychometric properties of the respecified scales of the SRQ-A and J-SRQ-A. The means, standard deviations, and Cronbach's alpha coefficients show no clear pattern of differences when compared to the corresponding data from the theoretical scales.

Table 11 displays the correlation matrices based on the scales from the respecified models. When comparing the correlations of the respecified scales to the correlations of the theoretically derived scales in Table 9, the respecified ones appear to be generally weaker. One striking finding in both the SRQ-A and the J-SRQ-A matrices is the near zero correlation between the external and intrinsic categories in the correlation matrices of the respecified models. This is in contrast to the significant correlations found in the correlation matrices based on the theoretically derived scales. Only in the J-SRQ-A matrix do the external-intrinsic correlations (r = .28 and r = .08) actually differ significantly from each other ($p < .05$).

Research Question 3

Research question 3 asks how the perceived autonomy of Japanese students relates to perceived control and a measure of intrinsic motivation in order to assess construct validity of the perceived autonomy measures. Table 12 displays means, standard deviations and Cronbach's alpha coefficients for perceived control and the challenge, curiosity and mastery subscales from Harter's (1981) Intrinsic Versus Extrinsic Orientation in the Classroom. Generally all four scales yielded acceptable internal consistency scores, with the exception of the curiosity subscale. In both the SRQ-A and J-SRQ-A groups, the alpha coefficient was improved by deleting two of the six

items. Specifically, one of the items concerned doing extra projects either for better grades or so that one can learn about things that interest them. This item had very low item-total correlations on the SRQ-A and J-SRQ-A, $r = .09$, $r = .08$, respectively. One reason for this could be that Japanese children do not get the opportunity to do extra projects in school and so could not relate to the question. The other item that was deleted concerned working hard to get good grades as opposed to working hard to learn things. This item's item-total correlations on the SRQ-A and the J-SRQ-A, when just the four remaining items were included, were $r = .23$ and $r = .18$, respectively. Perhaps in Japan, many children have both of these goals when working hard. This could also account for the low final alpha for the curiosity scale. In addition, with all of the items, poor translation could be a factor in the low internal consistency.

Table 11

Correlations Between Mean Scores of Scales from the Respecified Models of the SRQ-A and J-SRQ-A

	1	2	3
SRQ-A (*n* = 179)			
1. External	-		
2. Introjected	.42**	-	
3. Identified	.19*	.43**	-
4. Intrinsic	.03	.38**	.56**
J-SRQ-A (*n* = 208)			
1. External	-		
2. Introjected	.51**	-	
3. Identified	.28**	.47**	-
4. Intrinsic	.08	.42**	.60**

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

Table 12

Means, Standard Deviations and Cronbach's Alpha Coefficients of Perceived Control and Mastery Motivation

	SRQ-A Group			J-SRQ-A Group		
	M (*SD*)	α	No. Items	*M* (*SD*)	α	No. Items
Perceived Control	2.61 (.69)	.78	4	2.74 (.62)	.75	4
Challenge	2.76 (.80)	.87	6	2.78 (.74)	.84	6
Curiosity	3.16 (.55)	.56	4	3.24 (.48)	.49	4
Mastery	3.12 (.57)	.70	6	3.03 (.54)	.68	6

Notes. SRQ-A n = 179; J-SRQ-A n = 208

Following previous studies of perceived autonomy (d'Ailly, 2003; Ryan & Connell, 1989), I formed a mastery motivation composite by combining the challenge, curiosity, and mastery subscales from Harter's (1981) measure of motivation in the classroom. In Table 13, correlations among the four regulation categories, perceived control, and mastery motivation are presented. A pattern consistent with SDT would form a graded pattern of correlations between control or mastery motivation and the regulation categories, such that perceived control and mastery motivation relate more strongly to the more intrinsic regulation categories.

Starting at the top of the table, it is evident that the perceived control correlations with the theoretical SRQ-A and J-SRQ-A are not showing such a pattern. Only the external correlation looks different from the other three correlations, which are all quite strong. The correlations between the theoretical scales and mastery motivation do show more of the graded pattern, and more so with the J-SRQ-A scales. Looking next at the respecified scales, the correlations between the external category and perceived control has disappeared, while the perceived control correlations have remained by and large the same. The mastery motivation correlations with the respecified scales do appear to fall in line with predictions consistent with SDT, in that they form graded patterns. The respecified J-SRQ-A is the only measure to show strong evidence of this graded pattern. Each correlation in this row is significantly different from its adjacent categories at $p <$ .02.

Table 13

Correlations of Perceived Control and Mastery Motivation Scales with Regulation Category Scales of the Theoretical and Respecified SRQ-A and J-SRQ-A

	External	Introjected	Identified	Intrinsic
		Theoretical SRQ-A		
Perceived Control	0.31 **	0.48 **	0.50 **	0.48 **
Mastery Motivation	0.05	0.32 **	0.65 **	0.62 **
		Theoretical J-SRQ-A		
Perceived Control	0.23 **	0.43 **	0.42 **	0.46 **
Mastery Motivation	-0.03	0.18 **	0.47 **	0.60 **
		Respecified SRQ-A		
Perceived Control	0.08	0.41 **	0.51 **	0.48 **
Mastery Motivation	-0.08	0.23 **	0.57 **	0.62 **
		Respecified J-SRQ-A		
Perceived Control	0.10	0.40 **	0.41 **	0.46 **
Mastery Motivation	-0.15 *	0.09	0.42 **	0.61 **

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

The final set of analyses to report concern possible differences between students in the urban location versus the rural location. In order to test for differences, I computed the correlations among the four regulation categories as well as among the regulation categories, perceived control, and mastery motivation, and present them in Table 14. Because results reported above have established that the J-SRQ-A is the best among the four models presented on the basis of content validity and model fit, I only analyzed for differences in the respecified model of the J-SRQ-A. Tests of statistical differences between two correlations were carried out for each corresponding pair of correlations in the upper and lower matrices of Table 14. Only one difference was found and this was between the two correlations of intrinsic regulation and perceived control, such that the correlation in the urban group (r = .39) was significantly weaker than the correlation in the rural group (r = .61) at $p < .05$. Otherwise, corresponding pairs of correlations did not differ statistically. Therefore, it is reasonable to conclude that based on the correlational analyses from the current study, there exist no stark differences between the urban and rural groups of students.

Table 14

Correlations Among Perceived Control, Mastery Motivation, and Regulation Category Scales of the Respecified J-SRQ-A, by Location

	External	Introjected	Identified	Intrinsic
	Respecified J-SRQ-A: Urban (n = 134)			
External				
Introjected	0.49 ***			
Identified	0.24 **	0.43 ***		
Intrinsic	0.04	0.40 ***	0.61 ***	
Perceived Control	0.05	0.34 ***	0.44 ***	0.39 ***
Mastery Motivation	-0.10	0.13	0.49 ***	0.62 ***
	Respecified J-SRQ-A: Rural (n = 74)			
External				
Introjected	0.53 ***			
Identified	0.30 *	0.52 ***		
Intrinsic	0.11	0.44 ***	0.53 ***	
Perceived Control	0.18	0.49 ***	0.38 **	0.61 ***
Mastery Motivation	-0.26 *	0.03	0.30 **	0.61 ***

Notes. *$p < .05$ **$p < .01$ ***p < .001

Chapter 5

Discussion

There were three major goals of this dissertation. The first goal was to improve upon the methodology used in previous cross-cultural research on autonomy by using students' interview responses to develop an initial version of a perceived autonomy questionnaire for Japanese students. As a preliminary attempt, the current study was successful to that end. Interviews uncovered multiple reasons for engaging in academic behavior given by Japanese students that were not represented on the Self-Regulation Questionnaire-Academic Domain, a measure of perceived autonomy developed for U.S. children (Ryan & Connell, 1989). The resulting questionnaire, the J-SRQ-A, which contained eight new items representing three new groups of reasons, had higher content validity for Japanese students than the original SRQ-A. In addition a respecified model of the factor structure of children's autonomy beliefs based on data from the J-SRQ-A showed good fit to the data according to confirmatory factor analyses.

The second goal of this study was to extend our knowledge of autonomy in Japanese students. This study accomplished the goal in three main ways. The first involved utilizing students' own answers from interviews regarding their academic motivation to ascertain if there were additional categories of reasons for engaging in academic behaviors not represented on the original SRQ-A. Findings indicated that there indeed are such reasons, which implies low content validity of the SRQ-A in a Japanese population. Also, the reason for learning expressed by the most students in the interviews concerned future or long-term goals, a finding that has not been well documented in English-language literature on Japanese students' motivation. Analyses of the level of

autonomy associated with children's reasons judged according to SDT and students' answers showed a range of autonomy levels. Second, results from factor analyses indicate how Japanese students' autonomy may differ from conceptions of autonomy in self-determination theory as well as empirical findings based in SDT. Third, correlational analyses of autonomy and other aspects of academic motivation indicated similarities and differences to previous research on autonomy using the SDT framework.

The third major goal of the current study was to add to the corpus of studies providing evidence for or against the SDT claim that autonomy is universally beneficial to students' motivation by investigating autonomy in a non-Western population, Japanese students. Three contributions were made to that end. The first was an analysis of whether the reasons for engaging in academic behavior match up with their predicted regulation categories based on SDT, which relates to the universality of the self-determination continuum. The second also relates to the continuum and specifically addresses the simplex pattern of correlations among regulation categories. The third contribution was an examination of relations between autonomy and other aspects of motivation in a culture outside of North America. Following is a discussion in greater detail of findings relevant to each goal of the current study, and the relations with and implications for existing research on academic autonomy.

Methodological Contributions

When conducting studies on autonomy outside of North America, it is crucial to consider the methodological difficulties faced by cross-cultural researchers in general, which include ensuring comparability of constructs and measures between different cultures, and adapting measures developed in one culture to other cultures (Van de

Vijver, 2001; Van de Vijver & Hambleton, 1996). In this dissertation study, I attempted to improve upon existing cross-cultural research on autonomy in three specific ways. First, using students' responses from the interviews, I identified reasons for learning that were not represented on the original SRQ-A and are important to include on a measure of perceived autonomy for Japanese students. Second, I addressed whether the reasons for engaging in academic behavior that are included in the SRQ-A match their pre-assigned categories in a group of Japanese children. Third, based on the reasons identified in the interviews, I created a preliminary version of the J-SRQ-A, an adapted measure of perceived autonomy for Japanese students, and compared it with a close Japanese translation of the SRQ-A. These three improvements in methodology helped fulfill the first goal of the study.

The first methodological contribution of this study involved analyzing interview answers in order to find out whether the reasons for engaging in academic behaviors found on the original SRQ-A represent the full range of reasons Japanese children give when asked why they do their homework, why they do their classwork, and so on. Findings indicated that many reasons students gave for their academic behavior were not included in the original SRQ-A (see below for explication of these reasons). In fact, four out of the five most frequently expressed reasons are not represented on the SRQ-A. This finding suggests that the SRQ-A has low content validity with Japanese students, because the SRQ-A does not ask Japanese students about the most salient reasons they engage in academic behaviors. This inadequacy in the SRQ-A for Japanese groups also relates to the notion of construct equivalence in cross-cultural research. Van de Vijver (2001) writes that construct equivalence can be in question when sets of behaviors associated

with a certain construct are not identical across groups. In this case, if the most salient reasons are left out, it may be more difficult to obtain an accurate picture of Japanese students' autonomy. This is a strong indication that the measure should be adapted for use in Japan.

Second this study contributes methodologically by testing whether reasons for engaging in academic behaviors from the original SRQ-A fit into their pre-assigned, regulation categories from the self-determination continuum when using data from Japanese children. This was achieved through factor analyses of data from the SRQ-A. Results from a factor analysis on SRQ-A data by Ryan and Connell (1989) indicated that a two-factor solution emerged, one factor representing high autonomy, and the other, low autonomy. They report that many of the items from the introjected and identified scales showed cross-loading patterns. Ryan and Connell interpreted these findings to mean that the regulation categories are highly related, adjacent categories more so than non-adjacent ones, and that factor analysis is not likely to yield four clean factors. Nevertheless, in this dissertation study, four meaningful factors were obtained in preliminary exploratory factor analysis. However, on the SRQ-A, five items did load onto factors representing regulation categories other than their pre-assigned ones. Six other items were dropped from the measure because they did not load adequately on any of the four factors. I discuss the items that loaded onto different factors and the dropped items in more detail below. In light of the significant number of items that moved scales, EFA proved to be an important test that should be included in future studies of autonomy using the SRQ-A. Even in the United States, such a test would be useful to confirm that the reasons fit with their categories assigned a priori by researchers.

The third methodological contribution of this study was the development of the J-SRQ-A, a questionnaire of perceived autonomy for Japanese elementary school students. Previous researchers of autonomy in non-Western cultures have not described in detail how they developed items for their measures of perceived autonomy (e.g., Yamauchi & Tanaka, 1998). Yamauchi and Tanaka used an adapted Japanese version of the SRQ-A that deviated from the SRQ-A in terms of additional reasons for academic behavior and additional question stems. Ryan and Connell (1989) mentioned pilot interviews with elementary school students that formed the basis of their items, but did not document this process in detail. For his Stepping Motivation Scale, T. Hayamizu (personal communication, May 31, 2004) created items based on definitions of the regulation categories from SDT, but without conducting student interviews. This study attempted to avoid potential difficulties of administering directly translated questionnaires by creating an initial version of an autonomy questionnaire, the J-SRQ-A, from within the Japanese culture. One potential difficulty that this approach addressed is whether the SRQ-A, developed in the United States, provides an appropriate measure of autonomy in a group of Japanese students. I based new items on reasons for academic behaviors expressed by children in interviews, and then compared the results of the J-SRQ-A with results of the SRQ-A, which was administered to a different group of students. Basing items on interviews with Japanese students increases the likelihood that the items are salient and meaningful to the students, which increases the construct validity of the measure in this group.

Throughout Chapter 4, results of four versions of the measure of perceived autonomy are presented: The original, SDT-based models of the SRQ-A and the J-SRQ-

A, and the respecified models of the SRQ-A and J-SRQ-A. For two reasons, I have chosen to focus the rest of the discussion on one measure, the respecified model of the J-SRQ-A. First, I established that the J-SRQ-A has better content validity than the SRQ-A due to the addition of items based on interviews with Japanese students. In EFA, only one of eight items was dropped because it did not load onto any factor. The other seven items were retained in the respecified model and the scales in the respecified model had high internal consistency scores as measured by Cronbach's Alpha coefficients. Second, of the four J-SRQ-A models presented in Table 10, the respecified four-factor model fits the data better based on the chi-square difference test and goodness-of-fit indices. Therefore, for the remainder of the discussion, I discuss only the results for the respecified four-factor model of the J-SRQ-A.

Autonomy in Japanese Students

The second goal of this dissertation study was to extend our knowledge of Japanese students' autonomy and motivation, and it does so in two main ways. The first set of research questions revealed interesting reasons why students in Japan study, and addressed the degree of autonomy associated with those reasons. The second set of research questions addressed the relations among the regulation categories as well as the factor structure of two versions of a perceived autonomy questionnaire in Japanese students.

Japanese Students' Reasons for Engaging in Academic Behaviors

The first research question of this study involves the content validity of the SRQ-A, and asks specifically whether Japanese students express reasons for engaging in academic behaviors that are not on the SRQ-A. Results of interviews with 30 Japanese

fifth and sixth grade students indicated that they did express six types of reasons for engaging in academic behaviors that are not represented on the SRQ-A. These reasons for studying included: (1) for the purpose of future or long-term goals, (2) for a purpose in the near future, (3) because someone told the student to study, etc., (4) for the purpose of becoming smarter, (5) because it makes the student happy, and (6) for competitive reasons (see Table 5 and Figure 2). These reasons were four out of the five most frequent reasons given by students. As noted above, this is then an indication that among Japanese students, the original SRQ-A has low content validity because its items do not represent the most salient reasons for academic behavior among Japanese students. It is important to include reasons that are relevant and salient to Japanese students in order to get a comprehensive picture of their autonomy.

The reasons mentioned in the interviews span different topics (students' futures, usefulness of studying, being told to study, feeling happy, etc.) and show that these reasons represent varying levels of autonomy. For example, the reason most mentioned by students, *Future/long-term*, fits into identified regulation which is highly autonomous. Conversely, one of the third most mentioned reasons, that someone tells the student to study, fits into the external regulation category, which is characterized by low autonomy. The corpus of reasons expressed by students in the present study extends findings of a similar study by Hamilton et al (1989) that looked at Japanese and U.S. students' reasons for doing school-related activities.

Hamilton et al.'s (1989) study, which is partly based on SDT, is the only existing study to elicit Japanese children's responses as to why they engage in academic behaviors. In a cross-cultural study, the authors compared open-ended written

questionnaires from Japanese children to interview responses of American children. Comparisons of the Japanese students' answers to the interview results of the current study prove interesting. Hamilton et al.'s categorization of children's reasons differed from the current study in that they only used three categories, internal, external and empathic, rather than the four regulation categories from SDT used in the present study. This resulted in similar reasons being coded in different ways, which unfortunately decreases the comparability of the two studies. For example, they report classifying the reason "I'd feel ashamed of myself" as internal because it is a self-affect. Doing so groups it together with statements that according to SDT are intrinsic or identified. In contrast, self-determination theorists would classify that statement as introjected regulation, which has a lower level of autonomy than intrinsic or identified. Nevertheless, Hamilton et al. found that Japanese children gave less external reasons than U.S. children and interpreted this as confirmation that education in Japan generates internal motivation in students found by Stevenson et al. (1990) for example. Although similar analyses were not the focus of the current study, it is possible to analyze Figure 2 to compare to the Hamilton et al. study. In this study, four out of six of the reasons not represented on the SRQ-A were classified in the identified or intrinsic categories, also suggesting relatively internal answers. When we look at the answers that are represented on the original SRQ-A, we can see the intrinsic or identified reasons of *To learn*, *Enjoy challenge*, *Intrinsic*, and *Want to learn*. Extrinsic or introjected categories include *Not get in trouble*, *Duty*, *Embarrassment*, and *Praise*. In total, eight of fourteen of the categories can be classified as intrinsic or identified. Furthermore, five of these eight are on the left side of the figure,

indicating that more students mentioned them. These results lend support to the findings of Hamilton et al. that Japanese students are motivated more for internal reasons.

The reason mentioned by the most students in the interviews concerned future or long-term goals or plans. Included in this group were statements that mentioned getting into high school or college, getting a job as an adult, and having few problems as an adult. Because future goals are explicitly included in the identified regulation category (Ryan et al., 1992), this reason group was classified as identified. Results of the exploratory factor analyses of the J-SRQ-A data supported this classification as well in that the three new *Future/Long-term* items that were added to the J-SRQ-A loaded highest on the identified factor (see Appendix I). There is an established body of research that pertains to future goals and their relation to motivation. It is called *Future Time Perspective* (FTP) *Theory* (for reviews of various perspectives on FTP, see Phalet, Andriessen, & Lens, 2004, and Simons, Vansteenkiste, Lens, & Lacante, 2004), and it posits that when students hold future goals, among other benefits, they are more intrinsically motivated, expend more effort and engage in deeper learning, given that the goals are intrinsic as opposed to extrinsic and that students hold positive outlooks toward the future. FTP theory also provides a cognitive-motivational explanation for these positive relations to motivation. When one has a long FTP, then one is able to anticipate future goals in the present, and thus ascribes higher utility value to present activities related to those future goals. From expectancy-value theories of motivation (e.g., Wigfield & Eccles, 1992), we know that holding high utility value for a task relates positively to motivation for the task.

Results from the current study are an interesting addition to the FTP literature for two main reasons. First, no other research has investigated future goals of Japanese students in relation to their academic motivation. Regarding culture and FTP, Phalet et al. (2004) reviewed studies investigating FTP across Western cultures and ethnicities and concluded that the positive relationship between holding future goals and motivation does have cross-cultural generalizability, but that the cognitive-motivational explanation for this relationship has not been validated across cultures. Furthermore, McInerney (2004) comments that there is a lack of research on FTP in non-Western cultural groups. By uncovering the prevalence of future goals in the lives of the Japanese students in this study, the current study opens up a potential avenue to help fill this void in the FTP literature.

McInerney (2004) further writes that just as motivation is deeply rooted in the sociocultural background of an individual, so too is one's future goals. Differences in FTP across cultural groups might include the length of individuals' FTP and at what age individuals begin to articulate a future, which brings us to the second contribution of this finding to the FTP literature. The current study documents fifth and sixth graders articulating future goals that are related to their present academic behaviors. It is generally believed among FTP researchers that students this young would not express goals this far in the future (J. Husman, personal communication, April 8, 2006). Consequently, most of the research on FTP begins around middle school and many researchers focus on students at the high school or university level, and very little research has focused on children this young. It is possible that children in the West would be less likely to express future goals as a reason for their academic behaviors, in which

case culture could explain the difference to some extent. It is important to note that SDT does not consider FTP beyond mentioning that future-oriented reasons fall into the identified category (Ryan et al., 1992). A similar interview study in the U.S. or other Western culture with elementary school students is warranted to investigate this. Based on the results of this study, future studies of identified regulation in different cultures should include items tapping future goals.

Findings from a large international study of motivation and achievement conducted by OECD (2004) stand somewhat in contrast to the future time perspective findings of the current study. The Programme for International Student Assessment (PISA) gave a survey and assessments of achievement to15 year olds in Japan and 40 other countries. The survey included a construct called instrumental motivation, made up of items that resemble those in future time perspective theory. Students answered items on a four-point scale from strongly agree to strongly disagree. Results showed that Japanese students scored low in instrumental motivation compared to the other countries. For example, 52 percent of Japanese 15 year olds agreed or strongly agree with the statement that "School has taught me things which could be useful in a job" whereas the international average was 70 percent. Also, under 50 percent of Japanese students agreed or strongly agreed with statements about whether the math they learn in school will help them get a job or help them in their future studies, whereas international averages for these statements were also near 70 percent. Perhaps there are developmental differences in future time perspective between elementary school students and high school students, which suggests that follow-up research on future time perspective in Japan should include students from a wide range of ages.

A total of 10 students mentioned reasons about learning being useful in the near future. For example, many students stated reasons they write notes in their notebooks and various occasions when they might use such notes, such as for future assignments, when they do not understand something, and for upcoming tests. These goals are more proximal than the long-term goals of the first reason group. However, they are similar to the future goals, in that they are a type of utility value in expectancy-value models of motivation (Wigfield & Eccles, 1992, 2002b). In the SDT framework, this reason type also falls into the identified regulation category because of this utility value.

Ten students also mentioned reasons stating that someone tells the student to do homework, classwork, etc. This reason type is potentially interesting in Japan because of the implied relatedness with others. Self determination theorists would likely place these reasons in the external regulation category because other people are mentioned in the reasons, which implies that actions are being controlled by an outside source. However, theories on independent and interdependent selves (Markus & Kitayama, 1991; see Chapter 2) imply that because these Japanese students live in a culture where interdependent selves are more the norm, reasons for behaving that involve one's parents would be perceived as more autonomous. Therefore, it was unclear as to whether these items should be classified as external or in the more autonomous category of introjected regulation.

Answers to follow-up questions were coded to infer the degree of autonomy associated with reasons concerning others. Results indicated that these reasons best fit into the external regulation category, because students' answers reflected low autonomy (see Table 6 and Appendix H). Three new items representing this reason group were

created for the J-SRQ-A and results from the factor analyses show that two of the three items loaded on the external scale. The other item was omitted from the questionnaire because it did not load highly onto any scale. These findings seem then to lend support to the self-determination continuum and its classifications of reasons. However, they seem to not lend support to Hamilton et al.'s (1989) interpretation of identification with adult authority figures, and my hypothesizing in Chapter 2 that parent-related items discussed above may fit better under identified regulation in East Asian cultures. One explanation might be that in the interviews these reasons often involved commands, which are in and of themselves controlling. The controlling nature of the statements then was more important to students' perceived autonomy than the fact that a close other was mentioned. Item 3 in Table 7, "Because I am told 'do your homework' by my mother" is a good example of this. Because "do your homework" is a controlling statement, the person who said it may be irrelevant to the child's perceived autonomy. The controlling nature of these statements are consistent with parent-related items included in previous forms of the SRQ-A given to Asian students (Hayamizu, 1997; Kim, 2002; Yamauchi & Tanaka, 1998). In those previous studies, items mentioning parents involved the external themes of parents getting angry and administering punishments or rewards.

Reasons related to learning in order to become smarter were mentioned by nine students. The frequency of this answer may reflect the focus on effort as opposed to innate ability in Japanese culture that has been cited by researchers (Stevenson et al., 1990). Students that mentioned this reason seem to believe that intelligence is changeable, which according to Dweck and Leggett (1988), means these children hold an incremental view of intelligence. Eight of these students used the word *atamaii*, which means smart or

intelligent, in their answers. The other student used its antonym *atamawarui*, which translates to not smart or stupid. Stating that one wants to become smart indicates a belief in the incremental view. These findings lend some support for Wigfield et al.'s (2004) speculation that previous research on students' attributions across cultures (e.g., Holloway, 1988; Stevenson et al.) "may suggest that Asian students take a more incremental view of their ability than do students in the West, given their focus on effort as essential to their achievement" (p. 187). One study actually shows U.S. students holding incremental views of intelligence, relative to their peers in England and Russia. Hufton, Elliott, and Illushin (2002) conducted a cross-cultural interview study that included questions about conceptions of intelligence with adolescents in the three countries, and concluded that American students believed that smartness can be increased by effort. This contrasted with beliefs in England, where students viewed intelligence as relatively less changeable, and Russian students expressed having talent or not having talent in a subject area. Clearly, more in depth studies of this nature are warranted to better understand the complex views held by students from various cultures and ethnicities. Not only might we find cross-cultural differences, but wide variance within cultures as well.

The next reason type, mentioned by five students concerned students feeling happy when they learned something. This seems very similar to reasons in the intrinsic regulation category of the self-determination continuum. On the SRQ-A, intrinsic motivation is represented by either "fun" or "enjoy." In one sense, the use of "happy" could be seen as another way to express the same positive emotional experience when completing an enjoyable task. The different word would be an artifact of language usage

patterns in that to convey a similar meaning, different words and phrases are used by speakers of different languages. Such an explanation assumes that the underlying motivation is perceived and experienced similarly, but simply expressed differently. Another explanation that does suggest the presence of possible cultural differences in motivation or the perception of motivation is that Japanese students do feel happy when they gain knowledge. Perhaps the emotion of happiness is experienced by Japanese students when they perform academic behaviors. Similar interview studies done in Western cultures could investigate whether this finding is unique to Japanese culture.

The last reason group, competition-related reasons, was mentioned only by two students. Competition is seen as an exemplary category of extrinsic motivation in SDT (Ryan & Deci, 2000a) as well as in other theories of extrinsic motivation (e.g., Harter, 1981). One of the students' answers was "For example in math, I really don't want to lose," which implies that the student sees math achievement as a competition. The other statement recorded in the interviews was "I want to become smarter than everybody else…I want to look like the smartest by becoming smart in Japanese." This is quite similar to the item "I like being the best at reading" found on the competition subscale of the extrinsic motivation on the Motivation for Reading Questionnaire (Wigfield & Guthrie, 1997), used to study reading motivation in the United States.

Overall, if an identical mixed-methods study were done with U.S. children, it is not difficult to imagine their giving reasons for why they study that are similar to the ones the Japanese students gave, which raises the question as to why these reasons are not represented on the original SRQ-A. The SRQ-A was based originally on "pilot interviews" that were not discussed in the Ryan and Connell article (1989). Is it the case

that too few students mentioned these reasons in the pilot interviews, and thus they were not included? Or were these reason categories left off the final versions of the SRQ-A for some other reason, perhaps because the focus was the autonomy level of reasons for studying, and not to create an exhaustive list of children's reasons? Similar mixed-methods studies with U.S. children are warranted to see if the SRQ-A should be modified to include other reasons for studying that may be related to children's autonomy in this country.

Factor Structure of Children's Reasons for Engaging in Academic Behavior

A second way in which this study extends our knowledge of autonomy in Japanese students is through analysis of the factor structure of measures of perceived autonomy. First, exploratory factor analyses of scores from the SRQ-A and the J-SRQ-A were conducted to assess the structure of these data and to create scales that best represent the different regulation types in this sample of Japanese students for further analyses. Then, confirmatory factor analyses were conducted to test which models of the factor structure of both the SRQ-A and the J-SRQ-A best fit the data. An important assumption in these analyses is that each regulation category on the self-determination continuum is represented by an underlying distinct latent factor. Or, each latent factor represents one level of perceived autonomy from low (external) to high (intrinsic). Another assumption concerning the SRQ-A and J-SRQ-A is that each item designates a reason for a certain academic behavior and each reason is assumed to represent a certain degree of autonomy.

With respect to the exploratory factor analyses, interesting findings resulted from comparing the items that make up the scales from the theoretical models defined a priori

with the items that make up corresponding scales of the respecified models. Some items loaded onto scales that are different from expectations based on SDT, and some items were omitted altogether because they did not load highly onto any scale. When items load with other scales, it is interpreted as meaning that the degree of autonomy represented by that item differs from the level of autonomy hypothesized by SDT researchers a priori.

Interestingly, no items from the theoretically derived scales of identified and intrinsic loaded onto other scales, neither on the SRQ-A nor on the J-SRQ-A. This indicates that, overall, children answered these items as was hypothesized based on SDT. Therefore the definitions and operationalization of these highly autonomous regulation categories seem valid among Japanese children. Second, a general pattern was observed on both the SRQ-A and the J-SRQ-A of items moving from less autonomous to more autonomous scales. This was evidenced by items that moved from the external scale to either the introjected or identified scales, and from the introjected scale to the identified scale. This may be an indication that some reasons for acting generally thought to be less autonomous by SDT researchers may fit better in more autonomous categories among Japanese children.

When specific item wordings are examined, some interesting patterns become apparent. Three items contained “supposed to” on both the SRQ-A and the J-SRQ-A, and all were either omitted from the respecified scales or moved to the identified scale. Perhaps among Japanese students doing something because one is supposed to has been more internalized and is thus more autonomous than would be predicted in SDT. This finding may indicate that adhering to cultural norms is more internalized among Japanese children than it is in the West. Lewis (1995) explains how this might come to be the case

in Japanese early elementary school: “When Japanese teachers talked about classroom rules and routines, their central concern seemed to be children's autonomy: how to introduce rules and norms without imposing them on children” (p. 108). Thus it is possible that because Japanese teachers actively support children’s internalization of norms, when students study because they are supposed to, it is a more autonomous action.

Two other items moved from the theoretically derived introjected scales to the respecified identified scales of both the SRQ-A and the J-SRQ-A: “Because I will feel bad about myself if I don’t do it” and “Because I’ll feel really bad about myself if I don’t do well.” The Japanese word *koukai* was used to convey the notion of feeling bad. Possible English meanings for *koukai* include feeling guilty, regret, and remorse, which are similar in meaning to feeling bad, and thus suggest introjection. These items grouped with more autonomous items than would be expected according to SDT. Interestingly, in her study with Taiwanese elementary school students, d’Ailly (2003) reported dropping “Because I will feel bad about myself if I don’t do it” from the introjected scale because it correlated more highly with the identified and intrinsic scales than with the introjected scale. Perhaps perceiving this item as more autonomous is not unique to Japan, but characteristic of other Asian cultures as well. Although self-determination theorists would not likely predict that an introjected reason would relate highly to intrinsic motivation, the identified category is adjacent to the introjected category on the self-determination continuum, which means that they relate highly to each other (Ryan & Connell, 1989). With that in mind, it is not so difficult to believe that Japanese students perceive feeling bad about not doing their homework as slightly more autonomous than SDT would predict.

The final item that loaded onto a scale that was different from its theoretically derived scale is “Because I want the teacher to say nice things about me.” On the respecified models of both the SRQ-A and the J-SRQ-A, this item loaded with the introjected scale as opposed to the external scale, where it was assigned theoretically. This move seems to lend support for the hypothesis that Japanese students would perceive as more autonomous reasons mentioning close others, in this case the teacher. Hamilton et al.’s (1989) notion that Japanese children identify closely with adult authority figures may explain this move. In contrast to the other items on the J-SRQ-A that mentioned close others, yet seemed controlling and thus were perceived as external, this item does not contain a controlling element, and so is judged as more autonomous.

Taken together, these results indicate that the structure of autonomy of Japanese children differs somewhat from the hypothesized structure based on SDT. Among the items that loaded onto scales that were different from their theoretically derived scales, the general pattern indicated that items hypothesized as being external and introjected loaded on categories described as more autonomous. Among Japanese students, reasons such as: a) having the teacher say nice things about oneself; b) doing what one is supposed to do; and c) feeling bad about oneself if one does not try seem to fit better in the more autonomous regulation categories of introjected and identified. An important implication of these findings is that in order to apply SDT to Japanese students, the regulation categories would need to be adapted to better match the structure of autonomy of Japanese students.

Universality of Autonomy

The final goal of the current study was to provide a partial test of the SDT claim that autonomy is universally beneficial to students' motivation. As noted in Chapter 2, although one cannot prove universality because showing that a phenomenon exists in every known individual, society, or culture is impossible, one can argue for or theorize about universality based on limited evidence (Brown, 1991). In that vein, the present study makes three contributions. First, examination of the factor structure of the SRQ-A and J-SRQ-A enabled an exploration of whether reasons students gave for doing homework, classwork, and so on, match up with the same degree of autonomy as would be predicted by SDT. Second, this study attempted to replicate the simplex correlation patterns among regulation categories that have been found in numerous cultures. Such patterns have been interpreted as signifying the existence of the self-determination continuum. Third, this study extended previous research on autonomy outside of North America by addressing relations between autonomy and other aspects of students' motivation.

Differences in the Factor Structures of Children's Reasons

I examined the factor structures of both the SRQ-A and the J-SRQ-A to investigate whether reasons for doing homework, classwork, and so on, represent the same degree of autonomy in Japan as would be predicted by SDT. This is one way to explore the question of whether the regulation categories are similar or different in Japan, as compared to SDT, which gives us clues as to their universality. Results from the EFAs in this study point to some differences, as indicated by items moving to scales that are different from their hypothesized ones. Two examples are the introjected items related to

feeling bad about oneself that moved to the identified scale. One interpretation is that Japanese children perceive these behaviors to be more autonomous, which may indicate that the structure of autonomy in Japanese students differs somewhat from the theorized structure according to SDT. One possible conclusion of this is that in order to apply SDT to Japanese students, the regulation categories might need to be adapted to better match the structure of autonomy of Japanese students.

Alternatively, such a difference could be an example of the expression of autonomy being different across cultures, which researchers have addressed in theoretical writings (Baumeister & Leary, 1995; Ryan & Deci, 2002) and research studies (Chirkov et al., 2003). Baumeister and Leary write that cultural and individual variation in how basic psychological needs are expressed should be expected. Ryan and Deci specify more succinctly that "relations between specific behaviors and satisfaction of underlying needs may be different in different cultures" (p.26). One must question whether such allowances apply to the relations between reasons for academic behavior and degrees of autonomy in this study. If they do apply to my findings from the factor analyses, then all of the instances of items moving to different scales in this study would be examples of differential expression of autonomy Japan, rather than reflections of underlying differences in the structure of autonomy in Japanese students. I should note here that in the original Ryan and Connell (1989) study, however, the factor structure also did not match up with the predicted structure in that they only found two clean factors, one representing external, the other, internal. More research is needed in both cultures before conclusions can be made regarding differences in factor structures. Concerning the universality of autonomy, one could conclude that because reasons for behavior do not

match up with the same degree of autonomy across cultures, then it is possible that autonomy may differentially relate to motivation depending on culture. However, if one accepts the argument that these findings represent differences in the expression of autonomy, then the claim of universality is not disputed.

Simplex Pattern of Correlations

The second source of evidence bearing on the issue of universality is the patterns of correlations between regulation categories. Looking for a simplex pattern addresses the issue of whether a theoretical continuum of autonomy underlies students' motivation. Evidence taken to support the existence of the self-determination continuum in cultures outside of North America consists of the similarities of the simplex or ordered patterns of correlations among the regulation types found in four cultures: Japan (Hayamizu, 1997; Yamauchi & Tanaka, 1998), Korea (Kim, 2002), Russia (Chirkov & Ryan, 2001), and Taiwan (d'Ailly, 2003). In each of these cultures the correlations of the regulation categories show a pattern such that adjacent categories on the continuum (e.g., intrinsic and identified) correlate more highly with each other than do non-adjacent categories (e.g., intrinsic and external). The pattern of correlations among regulation categories from the respecified J-SRQ-A in the current study (see Table 11) resemble patterns found in Japan by previous researchers, characterized by no negative correlations among the categories, and generally stronger correlations of the different categories than those presented by Ryan and Connell (1989). In addition, analyses of significant differences between correlations generally supports the simplex structure, in that differences were found between non-adjacent categories but not between adjacent categories. Thus results from the current study generally support the notion that regulation categories lie along a

continuum of autonomy. The study extends previous findings in that the measure of autonomy was created expressly for Japanese children and based on interviews. The J-SRQ-A retained most of the items from the SRQ-A, and thus overlaps highly with the measure given by Ryan and Connell.

Relations Among Autonomy, Mastery Motivation and Perceived Control

This study extended previous research on autonomy outside of North America by addressing relations between autonomy and other aspects of students' motivation, namely perceived control and mastery motivation. Both Ryan and Connell (1989) and d'Ailly (2003) correlated scores of these two motivation constructs and the regulation categories. The goal was to check for correlational patterns that are in line with SDT. Based on SDT, one would predict that low control and low mastery motivation would correlate negatively or not correlate at all with the external scale. High control and mastery motivation would have a high positive correlation with the intrinsic scale. Finally, correlations between the introjected and identified scales with control and mastery motivation would fall in the middle somewhere. Regarding mastery motivation, two studies have documented such a pattern (Ryan & Connell; d'Ailly). Results from correlations between regulation categories of the respecified J-SRQ-A and mastery motivation confirm those results. This pattern of concurrent correlations indicates that among Japanese children, autonomy relates to mastery motivation in ways that are similar to children in North America.

The correlations with perceived control were not so clear cut, however. Using the results for the respecified model of the J-SRQ-A, the current study shows no relation between external regulation and perceived control, but moderately strong relations (r =

.40 to r = .46) between control and the other three categories, which does not resemble patterns in any previous studies. The relations between control and the high-autonomy categories are consistent with predictions of SDT. They indicate that students who believe that they can achieve academic outcomes tend to be autonomous in their academic behavior. The lack of relation between control and external regulation is also consistent with SDT. However, the relation between introjected regulation and control indicates that students who act for reasons of lower autonomy also tend to believe that they can achieve academic outcomes. This result coupled with the moderate strength of all three correlations suggest that autonomy and perceived control as measured only by the control-expectancy scale of the CAMI (Little et al., 1995) may be somewhat independent of each other. A closer look at the items on this scale indicates that each consists of a statement about one's belief in one's capacity for control over a general academic outcome (e.g., "I can learn it") along with a qualifying statement that denotes willingness or lack of willingness (e.g., "If I want to" and "If I decide to"). It is easy to imagine a student believing that she could achieve an outcome (e.g., doing well in school) if she wanted to, and at the same time doing schoolwork for introjected reasons (e.g., wanting the teacher to think she is a good student). Perhaps such a pattern of behavior is not unusual in Japan. Further studies should probe this issue further to see if replication is possible.

In sum, the claim by self-determination theorists that autonomy's benefits to motivation should be experienced by all humans regardless of cultures is a bold one that begs to be evaluated. Because no one study can actually test the universality of a construct, I have attempted to synthesize findings of the current study that bear upon the

universality of autonomy in some way. Consider again the narrowly defined nature of autonomy in SDT: an “internal perceived locus of causality” (Ryan & Deci, 2000b, p. 70) or “being the perceived origin or source of one's own behavior” (Ryan & Deci, 2002, p. 8), and then consider the sources of evidence in this study. First, the differences found between the factor structures in this study and those predicted by SDT seem to raise questions about the universality claim. However, the strict definition of autonomy in SDT does not consider the reasons that match up with different regulation categories or different degrees of autonomy. SDT would predict that regardless of the specific reason considered, perceptions of higher autonomy should relate to higher internal motivation. If feeling bad about oneself is perceived as more highly autonomous in Japan than it is in the West, then in Japan such feelings should be more highly related to internal motivation than in the West.

Second, this study found simplex patterns of correlations among the scores from the four regulation categories that appear similar to findings of previous studies done in Japan (Hayamizu, 1997; Yamauchi & Tanaka, 1998). Such patterns have been interpreted by SDT researchers as evidence of the existence of the self-determination continuum in different cultures (e.g., Chirkov & Ryan, 2001; d’Ailly, 2003). Such interpretations should be made with caution, however, in light of studies that did not find clear simplex patterns (e.g., U.S. data from Chirkov & Ryan; Kim, 2002). Third, the relations between autonomy and mastery motivation found in this study are in line with predictions based on SDT, adding to evidence of the existence of such relations in different cultures (d’Ailly; Hayamizu; Yamauchi & Tanaka), which lends some support to the claim of universality. The relations between autonomy and control, however, are somewhat

mixed, in that the relation between perceived control and introjected regulation did not clearly follow a pattern in line with SDT.

Limitations and Directions for Future Research

Although the current study makes many strides toward our understanding of academic autonomy in Japanese children, some limitations should be considered when interpreting and generalizing the findings. First, numerous issues regarding methodology should be mentioned. In developing the J-SRQ-A, length was a concern due to constraints of administration time. I had committed to administering questionnaires within a 45-minute class period, and the questionnaire packet containing the SRQ-A was already fairly long. Consequently, I could add only a limited number of items to the questionnaire in order to stay within the prescribed time limit. This then constrained the number of reasons for engaging in academic behavior that I could add to the J-SRQ-A. The resulting J-SRQ-A included three new reason groups and eight new items. This is especially unfortunate in that six new reason groups emerged from the student interviews, and adding more of them to the questionnaire would further increase content validity of the measure. A follow-up study including items representing all of the new reason groups would likely yield interesting results.

Another limitation inherent to the SRQ-A is that all of the items assume that children do in fact perform the target behaviors of doing homework, classwork, trying to answer hard questions, and try to do well in school. Because these item stems begin with "Why," they do not allow for the possibility that one does not, for example, do her homework. In this study, combining the written questionnaire with semi-structured interviews resulted in the advantage that the interviewer could ask the students if they do

their homework, for example when children did not readily answer a question such as "Why do you do your homework?" Indeed such occasions did arise in the interviews, although only a few times. Each time the children assured the interviewer that in fact they did engage in the target behavior. Future studies should build in items that allow students to express that they do not do the target behaviors. Such additions would expand the research into amotivation as well, a category that was neglected in the current study, because the regulation of students who do not perform the target behaviors falls into the amotivation category.

Regarding the interviews, a future study could use interview data to analyze the degree of autonomy associated with each reason stated in the interviews. The current study used such a technique only when category assignments based on SDT of students' reasons were in question. This occurred only with the *Someone tells* reason group. Analyses of students' answers to follow-up questions yielded the intriguing result that these reasons were by and large characterized by low autonomy. Such an analysis of all reasons given by students might prove equally intriguing.

Another limitation of the interview portion of this study is that all of the interviews were conducted in a rural location, so that no comparisons across locales were possible. The most frequently cited reason for engaging in academic behavior was for the purpose of future or long-term goals. It is possible that this reason reflects the value system in the rural location, such that students are taught to study for their future, and that such a value is not as prevalent in an urban location. Additional interviews in an urban location and in other parts of Japan could help us understand such possible differences.

It should be noted that all of the autonomy measures in this study measured students' perceptions of their autonomy for academic behaviors, and not their *need* for autonomy. This is also the case with most of the studies reviewed in Chapter 2. An implicit assumption in most articles by self-determination researchers is the existence of the three psychological needs. Consequently, evidence that autonomy, relatedness, and competence are in fact needs is not often sought. Recall the requirements for a construct to be called a need outlined in Chapter 2. Basic psychological needs are innate and universal. When needs are satisfied, positive consequences necessarily ensue, and when they are not satisfied, negative consequences necessarily result (Deci & Ryan, 2000). In addition, needs are not derivatives of other more basic constructs (Ryan & Brown, 2003). These requirements are difficult to test empirically. Evidence for innateness, universality, and being a non-derivative construct often boils down to philosophical arguments and subjective decisions based on available evidence. The strongest evidence for the existence of the psychological needs consists of research relating the satisfaction of needs to positive consequences. Additional evidence comes from relating negative outcomes to instances when needs are not satisfied. Researchers should develop innovative and creative techniques to generate stronger, more direct evidence of the existence of the basic psychological needs. Because psychological needs are so central to SDT, stronger evidence for their existence might help garner wider acceptance of the theory.

Because the main purpose of this study was to investigate the academic autonomy of Japanese students, the measures of perceived autonomy, the SRQ-A and the J-SRQ-A were the focus throughout. Consequently, the other measures of motivation, the control

expectancy scale from the Japanese version of the Control, Agency and Means-Ends Interview (Little, Oettingen, & Baltes, 1995) and Harter's (1981) Intrinsic Versus Extrinsic Orientation in the Classroom and received too little attention. This particular control scale was used because it had been validated previously for use in Japan. Also, its items resembled those used on the control measures in previous studies of autonomy (d'Ailly, 2003; Ryan & Connell, 1989). Although the individual items very much resemble items that might tap self-efficacy, these items fit with Skinner's (1996) definition of control beliefs: "Beliefs about the extent to which an agent can produce desired events and prevent undesired events" (p. 567). Also, they fall under her control construct of agent-ends, wherein the means of achieving an end are not considered. Perhaps the greatest limitation of this measure is that it only covers one of three control constructs in Skinners' framework, the other two being agent-means and means-ends. Including measures that tap these additional constructs of control would allow us to better capture the multidimensional aspects of perceived control and its relations with autonomy.

Regarding Harter's (1981) measure of intrinsic motivation, this study constitutes the first documented use of a faithfully translated version with a Japanese sample. Yamaguchi & Harano (1991) reported using a Japanese version of this measure. However an examination of their translation revealed many discrepancies in meaning between the original English items and the translated Japanese items. In addition, they did not employ Harter's rating system, but rather a five-point Likert scale. Therefore, validation analyses should be conducted for the version translated in this current study.

A further limitation regarding the measures is that all of the items in the questionnaires are domain general. That is, the question stems ask the students about their autonomy and motivation for homework and classwork in general, as opposed to within a specific domain such as math. The current study was done in a domain-general fashion in order to compare findings with existing research on perceived autonomy, which has all been done at a domain-general level. However, work in the field of motivation indicates that children's motivation can differ across domains (e.g., Eccles, Wigfield, Harold, & Blumenfeld, 1993; Gottfried, 1990). For example, a child might have high intrinsic motivation in math, but low intrinsic motivation in social studies. To extend this phenomenon to autonomy, it is it is easy to imagine that a student does her English homework for the external reason of getting a good grade, does her math homework for the identified reason that she wants to be an engineer, and does her art homework because it is intrinsically satisfying. Because autonomy is important to an individual's intrinsic motivation, this students' intrinsic motivation would differ across these domains as a result of the differing degrees of autonomy associated with her reasons for behavior. However, in the current study, the autonomy questionnaires and interview could not capture this complex phenomenon because they were domain general. Students whose perceived locus of causality differs across domain, such as the example above, might find it difficult to answer items that refer to homework or classwork in general. Domain specific questionnaire and interview items would capture a more accurate portrait of such students' academic autonomy. Future measures of perceived autonomy should incorporate both domain-specific and domain-general questions in order to more fully portray students' autonomy in school.

This study investigated links between Japanese children's perceived autonomy and other aspects of their motivation using a correlational design, which rules out addressing causal inferences between autonomy and perceived control for example. Data was collected at only one point in time, which means we have no indication of the development of the children's autonomy or related processes. Also, only the children's perspectives were tapped, so that we have no clues as to the parents' and teachers' perspectives regarding Japanese children's autonomy and motivation.

Thus future research should examine how students' sense of autonomy develops, and whether diverse socialization processes from different cultures differentially affect students' sense of autonomy. SDT researchers do not focus on development of autonomy in connection with specific ages or stages because autonomy is seen as an innate need that is important to babies as well as adults (Grolnick, Gurland, Jacob, & Decourcey, 2002). They discuss development of autonomy in terms of internalizing values and behaviors sanctioned by one's culture (Grolnick, Deci, & Ryan, 1997). Higher autonomy for these values and behaviors reflects greater internalization and vice versa. They note that "parents and teachers face the important challenge of how to mobilize, facilitate, and support a child's natural tendency to internalize cultural values, attitudes, and behaviors" (p. 135). Concerning academics, many educators aim towards creating lifelong intrinsic motivation in their students, which is the same as having students internalize positive values and behaviors associated with learning. Lifelong intrinsically motivated learners would necessarily have high autonomy for learning, and as a result autonomous motivation.

One way in which diverse socialization processes might differentially affect students' autonomy is by causing levels of perceived autonomy associated with similar behaviors to differ across cultures. Take as an example the finding in the current study that the reason of having the teacher say nice things about me loaded with more autonomous reasons in factor analyses. Perhaps the socialization experiences of these students account for this apparent deviation from self-determination theory. By combining interview techniques with measures such as the J-SRQ-A, perhaps processes such as these can be looked at over time. Results would inform us on the stability of perceived autonomy in school over time.

Another interesting question to investigate would be what effects the school system has on autonomy. Some research suggests that the Japanese school system becomes less engaging as students progress through the grades. Research on the elementary school grades in Japan paints a picture of engaging classrooms where teachers work hard to motivate their students through interesting themes and activities (Stevenson & Stigler, 1992). In high school, the level of engagement depends highly on whether students are university bound or not. Students in the university-track classes tend to be engaged, whereas many students in the non-university-track classes are not engaged (Shimizu, 1998). In both types of tracks, many high school classes are lecture format, and it is left up to the students to decide whether or not they are attentive in class and study outside of class. Personal observations of elementary school classrooms show teachers providing some support for the three psychological needs of SDT. In contrast, it is difficult to see such support during similar observations of many high school classrooms. Longitudinal research on academic autonomy would allow us to look at whether these

different school environments affect students' autonomy in school, and in turn their academic motivation. Additionally, gathering data from parents and teachers would lead to a better understanding of the role that they play in the development of students' academic autonomy.

A further methodological limitation is that cross-validations of the respecified models of the SRQ-A and the J-SRQ-A were not conducted on an independent sample of students. Because respecification of the models was essentially based on post-hoc analyses based on EFA, cross-validation is needed to ensure that the model fit and relations within the model are not dependent on the current datasets. A follow-up study is thus warranted to fulfill this task.

In addition to future directions suggested by the limitations above, the results bring to light numerous directions for potential study. Because this study was a first attempt at developing a measure of perceived autonomy for Japanese elementary school students, much further work is needed to both improve and validate the J-SRQ-A with Japanese students. Investigations in other parts of Asia would help determine whether the current findings are unique to Japan or might be applicable to other Asian countries as well. It should not be assumed that the findings automatically generalize to other Asian countries, even those countries whose people are considered to be collectivistic or interdependent. Further, as mentioned above, the respecified J-SRQ-A models need cross-validation in different groups of students.

One question that this study raises is of the content validity of the SRQ-A in the United States. Finding from the interviews in the current study revealed reasons for studying that are salient to Japanese students that are not included in the SRQ-A.

However, in reflection, it seems reasonable that students in the United States might voice many of the same reasons. At present, one can only compare findings from the current study with the theoretical assumptions of SDT, and not with previous interview findings with U.S. students, because no such study exists. On a similar note, analyses of students' answers to probes in the interviews helped to classify the *Someone tells* reason group into the external regulation category. In contrast, all of the classifications of reasons into categories on the original SRQ-A were decided by researchers, without regard to how students might actually perceive the reasons. Conducting interview studies similar to the current one in the United States and other locations would help to confirm or disconfirm the researchers' classifications.

Additionally, studies applying factor analytic techniques to the SRQ-A should be done in the United States and other locations for validation purposes and clarification of regulation categories. Some studies have reported conducting confirmatory factor analyses using the Academic Motivation Scale, a measure of perceived autonomy developed for use with university students (Fairchild et al., 2005; Vallerand et al., 1992). However, with the exception of the EFA conducted by Ryan and Connell (1989), no study has reported factor analyses of the original SRQ-A.

In regards to other constructs to consider measuring in future studies, two variables would make valuable additions: amotivation and achievement. On the self-determination continuum, amotivation lies to the left of extrinsic motivation, and is characterized by an absence of autonomy. Although the Academic Motivation Scale (Vallerand et al., 1992) measures amotivation, the construct has received little attention, especially in younger students. Inclusion of amotivation in further studies of elementary

school students could shed light on the beginnings of disengagement in school. Adding achievement as an outcome variable to the current set of variables would help to better ground the study in the literature on achievement motivation that often includes grades or test scores in its models.

Although a major theoretical focus of this study was to address some aspects of SDT's claim that autonomy is innate and universal, it is important to mention an alternative perspective on the nature of autonomy, that of interactionism. One justification for carrying out this study in Japan was to add to the evidence for or against the claim that autonomy has benefits for motivation universally. However, as Ridley (2003) points out, human universals, or traits common to humans everywhere, were pursued by Darwin, and in modern times it is an outdated pursuit. The more up-to-date question should be how autonomy and other innate, genetically determined needs, interact with environmental factors in affecting the expression of these needs. Cross-cultural research similar to the current study should investigate how diverse cultures influence the expression of autonomy and how autonomy shapes the environment of those in the culture. Such investigations would further expand the already extensive range of work being done using self-determination theory.

Regarding educational implications, the questionnaire findings confirm past research conducted in Japan showing that autonomy relates to other aspects of Japanese students' motivation (Hayamizu, 1997; Tanaka & Yamauchi, 2000; Yamauchi & Tanaka, 1998). Students answered closed-ended measures of academic autonomy and motivation in ways similar to results found in previous research on Western students. The use of interviews extends this work by tapping students' own thoughts on why they do work for

school. Students' answers provided content for items that were added to an adapted measure of Japanese students' autonomy. In addition, the specific finding that future goals have been internalized in fifth and sixth grade students may be an indication that students in Japan are generally receptive to the idea that studying now will help them in the future. Teachers in Japan could harness this receptiveness and encourage students to see the future utility value of current activities as a way to motivate students for long-term projects and more immediate activities. A further implication gained from the quantitative results in this study concerns the correlations among autonomy and other motivational aspects. That these correlations were positive suggests that in Japan students with greater autonomy have stronger motivation. Therefore teachers should work to develop students' autonomy in Japan, as it has been suggested they do in the United States.

This study raised a number of questions about the relative importance of autonomy to Japanese students' motivation and achievement. As has been discussed in this dissertation, autonomous motivation, often referred to as intrinsic motivation by theorists such as Gottfried and colleagues (e.g., Gottfried, Fleming, & Gottfried, 2001), and Harter (e.g., Harter, 1981), is generally thought of as the preferred type of motivation to help students achieve academically, as numerous studies have linked it to positive outcomes in students, such as increased cognitive engagement, longer persistence in a task, and creativity (see Ryan & Deci, 2000a). SDT theorists claim that the reason for the benefits of autonomous motivation is that people have a basic need for their actions to be autonomous or self-determined. While self-determination theorists have made a good case in favor of this explanation, the supporting research comes in large part from the

West, and thus the evidence is biased towards a Western perspective. We are only beginning to learn whether these claims hold in non-Western cultures as well.

Appendix A

Items on Yamauchi and Tanaka's (1998) Autonomy Measure

Stems

I study at home…
I do my homework…
I try to answer hard questions…
* I raise my hand to speak…
* I try not to lose things…
* I ask the teacher questions…
* I try hard to listen to what my teacher says…
* I want to get good grades on my tests…

External Reasons (10 items)

Because one is supposed to… (1)
Because I'm supposed to… (1)
Because one is not supposed to… (1)
Because I'll get in trouble if I don't… (1)
Because the teacher will get angry at me… (1)
* Because I am told that I have to… (4)
* Because someone at home will get angry at me… (1)

Introjected Reasons (10 items)

Because I want the teacher to think I'm a good student. (1)
Because I will feel bad about myself if I don't… (1)
Because I want the other students to think I'm smart. (3)
Because I'll be ashamed of myself if I… (1)
* Because if I don't _____ I will have problems later (2)
* Because I want the teacher to compliment me. (1)

Identified Reasons (10 items)

To find out if I'm right or wrong. (1)
Because I want to understand… (2)
Because I think it's important to… (3)
Because I want to learn… (2)
* Because I think I have to try and understand… (1)
* Because it's bad to… (1)

Intrinsic Reasons (10 items)

Because it's fun to… (5)
Because it's interesting to… (3)
* Because I hate… (1) (e.g., I try not to lose things because I hate losing things.)
* Because I'm happy when I understand… (1)

Notes. Slight wording differences between these items and the SRQ-A (Ryan & Connell, 1989) due to translation are not assumed to be equivalent items. Because the stems are so different between this measure and the SRQ-A, stem differences are not counted as different. Numbers in parentheses represent the number of items using this reason. There were 40 items total.

* Not on original SRQ-A

Appendix B

Items of the Korean Academic Self-regulation Questionnaire

Stem: The reason why I do academic work is . . . . .

External Reasons

* Because if I don't, my parents would have a fit.
* Because if I don't, my parents get angry.
Because at least, my teacher won't yell at me.
* Because my parents check up on me.
** Because my parents will give me rewards (such as, allowance, presents, praise, etc.).
* Because if I don't get good scores, my parents will punish me.

Introjected Reasons

Because if I don't, I feel ashamed of myself.
Because I want my teachers to think of me as a good student.
** Because I want my friends to think I'm smart.
* Because I don't want to be disrespected by my friends.
Because if I don't, I'll feel bad.
** Because if I get good grades, I will be proud of myself.

Identified+Integrated Reasons

* Because studying is a necessary part of life.
* Because studying will be useful to my future.
Because studying is important to me.
* Because studying has great value in my life.
* Because I believe I will need it to get the job I want.
* Because it's important to me not to disappoint my parents.
* Because I will need it to live the life I want.

Intrinsic Reasons

Because I enjoy studying.
* Because I gain happiness from difficult challenges.
* Because it's fun to increase my knowledge.
* Because it's fun to overcome my mistakes and failures.
Because studying is fun.
* Because I like to think.

Notes. These items reprinted from Kim (2002). Slight wording differences between these items and the SRQ-A (Ryan & Connell, 1989) due to translation or stem differences are not assumed to be equivalent items.
* Not on original SRQ-A
** Similar but not identical item appears on SRQ-A

Appendix C

Interview Protocol

Introduction to Interview

I am interested in your thoughts and feelings about school and doing schoolwork. I will ask you a number of questions, and there are no right or wrong answers. Your parents and your teachers will not see your answers, so please think about how you feel, and answer as honestly as you can.

Activities in School

1. Can you just name some different things you do in school, and for school?

Reasons for Doing Things

Now I will ask you some reasons why you do things in school and at home. Please tell me all of the reasons you can think of.

2. Do you ever play with friends? Why do you do it?
3. When you do homework, why do you do it?
4. Do you ever read at home for fun? Why do you do it?
5. When you do your class work, why do you do it?
6. Now, name something you like to do. Why do you do it?
7. When you try to answer hard questions in class, why do you do it?
8. When you try to do well in school, why do you do it?

Possible Follow-Up Questions

1. Do you decide to [do that, do your homework, try to do well, etc.] on your own?
2. Is it your choice to [do your homework, try to do well, etc.]?
3. Who decides [decided] that you [would] do that?
4. Do you decide by yourself whether to do that or not?
5. Who decides whether you do that or not?

Appendix D

A. Self-Regulation Questionnaire-Academic Domain

Name: _____ Grade: _____

Birthdate: _____ Check: BOY☐ GIRL☐ Teacher: _____

These questions are about the reasons you do things. Different kids have different reasons. There are no right or wrong answers and your responses are confidential. We want to know how true each of these reasons is for you.

A. Why do I do my homework?

1. Because I want the teacher to think I'm a good student.

   Very true Sort of true Not very true Not at all true

2. Because I'll get in trouble if I don't.

   Very true Sort of true Not very true Not at all true

3. Because it's fun.

   Very true Sort of true Not very true Not at all true

4. Because I will feel bad about myself if I don't do it.

   Very true Sort of true Not very true Not at all true

5. Because I want to understand the subject.

   Very true Sort of true Not very true Not at all true

6. Because that's what I'm supposed to do.

   Very true Sort of true Not very true Not at all true

7. Because I enjoy doing my homework.

   Very true Sort of true Not very true Not at all true

8. Because it's important to me to do my homework.

   Very true Sort of true Not very true Not at all true

B. Why do I work on my classwork?

9. So that the teacher won't yell at me.

Very true Sort of true Not very true Not at all true

10. Because I want the teacher to think I'm a good student.

Very true Sort of true Not very true Not at all true

11. Because I want to learn new things.

Very true Sort of true Not very true Not at all true

12. Because I'll be ashamed of myself if it didn't get done.

Very true Sort of true Not very true Not at all true

13. Because it's fun.

Very true Sort of true Not very true Not at all true

14. Because that's the rule.

Very true Sort of true Not very true Not at all true

15. Because I enjoy doing my classwork.

Very true Sort of true Not very true Not at all true

16. Because it's important to me to work on my classwork.

Very true Sort of true Not very true Not at all true

C. Why do I try to answer hard questions in class?

17. Because I want the other students to think I'm smart.

Very true Sort of true Not very true Not at all true

18. Because I feel ashamed of myself when I don't try.

Very true Sort of true Not very true Not at all true

19. Because I enjoy answering hard questions.

Very true Sort of true Not very true Not at all true

20. Because that's what I'm supposed to do.

Very true Sort of true Not very true Not at all true

21. To find out if I'm right or wrong.

Very true Sort of true Not very true Not at all true

22. Because it's fun to answer hard questions.

Very true Sort of true Not very true Not at all true

23. Because it's important to me to try to answer hard questions in class.

Very true Sort of true Not very true Not at all true

24. Because I want the teacher to say nice things about me.

Very true Sort of true Not very true Not at all true

D. Why do I try to do well in school?

25. Because that's what I'm supposed to do.

Very true Sort of true Not very true Not at all true

26. So my teachers will think I'm a good student

Very true Sort of true Not very true Not at all true

27. Because I enjoy doing my school work well.

Very true Sort of true Not very true Not at all true

28. Because I will get in trouble if I don't do well.

Very true Sort of true Not very true Not at all true

29. Because I'll feel really bad about myself if I don't do well.

Very true Sort of true Not very true Not at all true

30. Because it's important to me to try to do well in school.

Very true Sort of true Not very true Not at all true

31. Because I will feel really proud of myself if I do well.

Very true Sort of true Not very true Not at all true

32. Because I might get a reward if I do well.

Very true Sort of true Not very true Not at all true

Appendix E

Items Unique to the
Japanese Self-Regulation Questionnaire-Academic Domain

A. Why do I do my homework?

9. I think I'll become smarter if I do it.
10. I do my homework so that I won't have problems when I'm an adult.
11. Because I am told "do your homework" by my mother.

B. Why do I work on my classwork?

20. I do it so that I won't have problems when I'm a junior high school student or high school student.
21. Because I am told to do it by my teacher.

D. Why do I try to do well in school?

38. So that I'll become smarter.
39. For my future
40. I am told by my parents [literally "someone at home"] that I should try my hardest.

Appendix F

B. Control Expectations

These questions are about how you feel. There are no right or wrong answers and your responses are confidential. Think about each question, and answer it honestly.

1. When I sit myself down to learn something really hard, I can learn it. C1

   Never Seldom Often Always

2. If I decide not to get any bad grades, I can really do it. C2

   Never Seldom Often Always

3. If I decide not to get any problems wrong (like on a spelling paper), I can really do it. C3

   Never Seldom Often Always

4. If I want to do good in school, I can. C4

   Never Seldom Often Always

Appendix G

Intrinsic vs. Extrinsic Orientation in the Classroom

INSTRUCTIONS TO THE CHILD

We have some sentences here and, as you can see from the top of your sheet where it says “In the Classroom,” we are interested in what kinds of things you like to do in school. This is not a test. There are no right or wrong answers. Since kids are very different from one another, each of you will be putting down something different.

First let me explain how these questions work. There is one sample question at the top, marked (a). Please follow along with me. (Examiner reads sample question.) This question talks about two kinds of kids.

(1) What I want you to decide first is whether you are more like the kids on the left side who would rather watch movies, or whether you are more like the kids on the right side who would rather watch sports. Don't mark anything down yet, but first decide which kind of kid is most like you, and go to that side.

(2) Now, the second thing I want you to think about, now that you have decided which kind of kid is most like you, is whether that is only sort of true for you, or really true. If it's only sort of true, then put an X in the box under sort of true; if it’s really true for you, then put an X in that box, under really true.

(3) For each sentence you only check one box. Sometimes it will be on one side of the page, and other times it will be on the other side of the page, but you can only check one box for each sentence. Do you have any questions?

(4) OK, that was just for practice. Now we have some more sentences which I'm going to read out loud. ***For each one, just check one box***, the one that goes with what is true for you, what you are most like.

C. Intrinsic vs. Extrinsic Orientation in the Classroom

	Really True for Me	Sort of True for Me	SAMPLE SENTENCE			Sort of True for Me	Really True for Me	
a)	☐	☐	Some kids like to watch movies.	BUT	Other kids would rather watch sports.	☐	☐	
								1a
1.	☐	☐	Some kids like hard challenging work.	BUT	Other kids like to do work that is easier.	☐	☐	
								1b
2.	☐	☐	Some kids like to work difficult problems in school.	BUT	Other kids like to work easier problems.	☐	☐	
								1c
3.	☐	☐	Some kids like to learn as much as they can.	BUT	Other kids are happy with what they know.	☐	☐	
								1d
4.	☐	☐	Some kids like to go on to new work that's at a more difficult level.	BUT	Other kids would rather stick to the assignments that are pretty easy to do.	☐	☐	
								1e
5.	☐	☐	Some kids like hard school subjects.	BUT	Other kids would rather take easy subjects.	☐	☐	
								1f
6.	☐	☐	Some kids find difficult work interesting.	BUT	Other kids think it's interesting to do easier work.	☐	☐	

	Really True for Me	Sort of True for Me				Sort of True for Me	Really True for Me	
7.	☐	☐	Some kids like to learn how to solve hard problems.	BUT	Other kids would rather do problems they know how to solve.	☐	☐	2a
8.	☐	☐	Some kids like to find out things they want to know.	BUT	Other kids like to find out things so they can get a higher grade.	☐	☐	2b
9.	☐	☐	Some kids read out of interest.	BUT	Other kids read because the teacher tells them to.	☐	☐	2c
10.	☐	☐	Some kids ask questions to learn.	BUT	Other kids ask questions to get a good grade.	☐	☐	2d
11.	☐	☐	Some kids do extra projects so they can get better grades.	BUT	Other kids do extra projects because they learn about things that interest them.	☐	☐	2e
12.	☐	☐	Some kids work to learn new things.	BUT	Other kids work to get good grades.	☐	☐	2f
13.	☐	☐	Some kids like to figure out things for themselves.	BUT	Other kids like the teacher to explain things to them.	☐	☐	3a
14.	☐	☐	When some kids make a mistake, they like to figure it out by themselves.	BUT	Other kids like to ask the teacher to help them with a mistake.	☐	☐	3b

	Really True for Me	Sort of True for Me				Sort of True for Me	Really True for Me	
								3c
15.	☐	☐	Some kids try and do hard problems on their own.	BUT	Other kids try and get help with hard problems.	☐	☐	
								3d
16.	☐	☐	Some kids make their own plans about their learning.	BUT	Other kids like the teacher to make plans for them.	☐	☐	
								3e
17.	☐	☐	When some kids get stuck on a problem they ask the teacher for help.	BUT	Other kids keep trying to figure out the problem on their own.	☐	☐	
								3f
18.	☐	☐	Some kids always do their schoolwork without help.	BUT	Other kids like getting help from someone to do their schoolwork.	☐	☐	
								4a
19.	☐	☐	Some kids like to hear the teacher's ideas about their classwork.	BUT	Other kids like their own ideas best.	☐	☐	
								4b
20.	☐	☐	Some kids like to stick to their own opinion about their schoolwork.	BUT	Other kids prefer to hear their teacher's opinions.	☐	☐	
								4c
21.	☐	☐	Some kids like to let their teacher decide what they learn.	BUT	Other kids like to learn things that interest them.	☐	☐	
								4d
22.	☐	☐	Some kids think their opinions are important.	BUT	Other kids think the teacher's opinions are more important.	☐	☐	

	Really True for Me	Sort of True for Me				Sort of True for Me	Really True for Me	
								4e
23.	☐	☐	Some kids think the teacher should decide what work to do.	BUT	Other kids think they should have a say in what work they do.	☐	☐	
								4f
24.	☐	☐	Some kids let the teacher decide when they work.	BUT	Other kids feel it's best when they decide themselves when to work.	☐	☐	
								5a
25.	☐	☐	Some kids know when they've made mistakes without checking with the teacher.	BUT	Other kids need to check with the teacher to know if they've made a mistake.	☐	☐	
								5b
26.	☐	☐	Some kids know whether or not they're doing well in school without grades.	BUT	Other kids need to have grades to know how well they are doing in school.	☐	☐	
								5c
27.	☐	☐	Some kids need to see their report card to know if they're failing or not.	BUT	Other kids know whether they're failing without a report card.	☐	☐	
								5d
28.	☐	☐	Some kids know if they've passed a test before they get it back from the teacher.	BUT	Other kids have to wait until the paper is passed back to know.	☐	☐	
								5e
29.	☐	☐	Some kids know if they're succeeding in school before the teacher tells them.	BUT	Other kids need the teacher to tell them if they're succeeding.	☐	☐	
								5f
30.	☐	☐	Some kids need the teacher to tell them	BUT	Other kids know how good their work is when they turn it in.	☐	☐	

Appendix H

Interview Excerpts and Autonomy Ratings for "Someone Tells" Reasons

Autonomy Rating	Interview Excerpts
High	I: Why do you do your homework? S: So that everyone will understand me, I guess. Also, I do it because I am told to do it by my teacher or my parents [literally *people at home*]. I: Who decides that you will study at home or do your homework? Do you, Hiroshi*, decide on your own? Or do you do it because your teacher or your mom or your dad tells you to? S: I do it on my own [by myself]. I: When you do it on your own, why do you think you decide to study at home? S: If I review, then I'll be able to better understand problems that appear on the test.
Medium	I: What kinds of things do you do when you go home from school? S: Because I am told by my mother "do your homework right away" as soon as I get home, I do my homework and then I play. I: Do you do anything else besides [assigned] homework, such as prepare for class or review or study at home? S: Sometimes I prepare for class. I: After you finish your homework, you go and play? S: If there's no one to play with, I might try and learn a few kanji (characters). I: Do you learn a few [kanji] because you thought to do it? S: Yes.

Autonomy Rating	Interview Excerpts
Medium	I: Why do you do homework and study at home? S: So that I'll become smart. I: Do you ever study on your own at home? S: Yes… I: Do you do it because someone told you to? S: Nobody tells me to. I: You think to do it on your own? S: Yes. I: Why do you decide to do it? S: [Laughs] I: The same as before? To become smarter? S: Because I'm told to do it by the teacher.
Low	I: If the teacher didn't assign it, would you do other studying? S: I don't think so.
Low	I: Why do you do your homework? S: Uh, I do it because I am told to by my teacher. I: If you don't do your homework before coming to school, then how do you feel? Do you ever not do your homework? S: That never happens. I: You're told by your teacher… S: So I do it, yeah.
Low	I: Why do you write in your notebook [in class]? S: Because my teacher will look in it later and think "he hasn't written anything." I: Do you ever look at what you've written on your own? S: Occasionally. I: When? S: My teacher will say "Let's have a look," and if I haven't written he'll think "he hasn't written anything."

Autonomy Rating	Interview Excerpts
Low	I: Do you do any studying at home besides homework? S: Occasionally, very occasionally. I: What kind of things do you do? S: For example I do math problems or kanji. I: Who decides that you study at home? S: My teacher. He says something like "Because you're 5th graders now, make sure you do some studying at home." [*Interviewer noted: "it seems more like he studies because he's told to, rather than choosing to do it himself."*]
Low	I: Do you do any studying at home besides doing homework everyday? S: I don't really do that kind of thing. I have the type of personality that won't do something if I'm not told to. I: You do homework if you have it. S: Yes. I: Do you ever not do it? S: Occasionally, if I forget. I: Why do you do your homework? S: My parents [literally, "someone at home"] says "You're smart, so do your homework, and well." TELLS Didn't understand the next part. I: Who decides that you do your homework? S: I guess the teacher. I: How do you feel when you're doing your homework? S: I wish this would end.
Low	I: Why do you try to do your best in school? S: Because I have to study. I: Who decides that you have to study? Do you do it on your own. or does the teacher decide it? S: I have to do it because I'm told "If you don't do it, you'll have trouble in the future." TELLS I: Are you told that by the teacher? S: Yes. I: By your father, mother? S: Occasionally they say it. I'm told "Because you're smart, and so on and so forth" and they go on and on. I: How do you feel when you're told that? S: I think, don't put so much pressure on me.

Autonomy Rating	Interview Excerpts
Low	I: Why do you do your homework? S: Because the teacher assigned it. I: If the teacher didn't assign it, would you do other studying? S: I don't think so.
Low	I: Do you write in your notebook? S: I write something when the teacher tells us to write something. But I don't write anything if the teacher says we don't have to. I: Afterwards, do you ever look at what you wrote in your notebook? S: Hardly ever.

Notes . I = Interviewer S = Student *Name has been changed

Appendix I

Factor Pattern Matrix for the SRQ-A

Var. No.	Stem	Item	1 IDENT	2 INTROJ	3 INTRIN	4 EXTERN
V31	TW	Because it's important to me to try to do well in school.	.818			
V27	CW	Because it's important to me to work on my classwork.	.805			
V23	HW	Because it's important to me to do my homework.	.715			
V14	HW	Because I will feel bad about myself if I don't do it.	.659			
V30	AQ	Because it's important to me to try to answer hard questions	.637			
V20	TW	Because I'll feel really bad about myself if I don't do well.	.627			
V26	CW	Because I want to learn new things.	.529			
V22	HW	Because I want to understand the subject.	.491			
V9	TW	Because that's what I'm supposed to do.	.440			
V2	HW	Because that's what I'm supposed to do.				
V7	AQ	Because that's what I'm supposed to do.				
V19	TW	So my teachers will think I'm a good student.		.859		
V15	CW	Because I want the teacher to think I'm a good student.		.850		
V8	AQ	Because I want the teacher to say nice things about me.		.846		
V13	HW	Because I want the teacher to think I'm a good student.		.785		
V17	AQ	Because I want the other students to think I'm smart.		.704		
V39	AQ	Because it's fun to answer hard questions.			-.933	

Var. No.	Stem	Item	1 IDENT	2 INTROJ	3 INTRIN	4 EXTERN
V38	AQ	Because I enjoy answering hard questions.			-.842	
V37	CW	Because I enjoy doing my classwork.			-.690	
V36	CW	Because it's fun.			-.686	
V40	TW	Because I enjoy doing my school work well.			-.684	
V34	HW	Because it's fun.			-.586	
V35	HW	Because I enjoy doing my homework.			-.541	
V29	AQ	To find out if I'm right or wrong.				
V21	TW	Because I will feel really proud of myself if I do well.				
V10	TW	Because I will get in trouble if I don't do well.				.646
V1	HW	Because I'll get in trouble if I don't.				.620
V5	CW	Because that's the rule.				.514
V4	CW	So that the teacher won't yell at me.				.444
V18	AQ	Because I feel ashamed of myself when I don't try.				.415
V16	CW	Because I'll be ashamed of myself if it didn't get done.				
V11	TW	Because I might get a reward if I do well.				

Notes . HW = Why do I do my homework? CW = Why do I work on my classwork? AQ = Why do I try to answer hard questions in class? TW = Why do I try to do well in school?

Extraction Method: Principal Axis Factoring.

Rotation Method: Oblimin with Kaiser Normalization.

Loadings with absolute value less than .40 not shown.

Appendix J

Factor Pattern Matrix for the J-SRQ-A

Var. No.	Stem	Item	1 IDENT	2 EXTERN	3 INTROJ	4 INTRIN
V27	CW	Because it's important to me to work on my classwork.	.784			
V28	CW	I do it so that I won't have problems when I'm a junior high	.749			
V33	TW	For my future.	.653			
V25	HW	I do my homework so that I won't have problems when I'm	.650			
V31	TW	Because it's important to me to try to do well in school.	.649			
V20	TW	Because I'll feel really bad about myself if I don't do well.	.621			
V23	HW	Because it's important to me to do my homework.	.611			
V30	AQ	Because it's important to me to try to answer hard questions	.583			
V14	HW	Because I will feel bad about myself if I don't do it.	.559			
V24	HW	I think I'll become smarter if I do it.	.555			
V32	TW	So that I'll become smarter.	.555			
V2	HW	Because that's what I'm supposed to do.	.546			
V9	TW	Because that's what I'm supposed to do.	.519			
V29	AQ	To find out if I'm right or wrong.	.503			
V26	CW	Because I want to learn new things.	.490			
V22	HW	Because I want to understand the subject.	.464			
V5	CW	Because that's the rule.	.401			

Var. No.	Stem	Item	1 IDENT	2 EXTERN	3 INTROJ	4 INTRIN
V21	TW	Because I will feel really proud of myself if I do well.				
V16	CW	Because I'll be ashamed of myself if it didn't get done.				
V6	AQ	Because I am told to do it by my teacher.		.722		
V10	TW	Because I will get in trouble if I don't do well.		.646		
V4	CW	So that the teacher won't yell at me.		.640		
V3	HW	Because I am told "do your homework" by my mother.		.525		
V1	HW	Because I'll get in trouble if I don't.		.471		
V12	TW	I am told by my parents that I should try my hardest.				
V7	AQ	Because that's what I'm supposed to do.				
V15	CW	Because I want the teacher to think I'm a good student.			-.788	
V19	TW	So my teachers will think I'm a good student.			-.738	
V8	AQ	Because I want the teacher to say nice things about me.			-.687	
V13	HW	Because I want the teacher to think I'm a good student.			-.669	
V18	AQ	Because I feel ashamed of myself when I don't try.			-.455	
V17	AQ	Because I want the other students to think I'm smart.			-.435	
V11	TW	Because I might get a reward if I do well.			-.434	

Var. No.	Stem	Item	1 IDENT	2 EXTERN	3 INTROJ	4 INTRIN
V38	AQ	Because I enjoy answering hard questions.				.887
V39	AQ	Because it's fun to answer hard questions.				.791
V37	CW	Because I enjoy doing my classwork.				.567
V40	TW	Because I enjoy doing my school work well.				.565
V36	CW	Because it's fun.				.545
V34	HW	Because it's fun.				.403
V35	HW	Because I enjoy doing my homework.				

Notes. HW = Why do I do my homework? CW = Why do I work on my classwork? AQ = Why do I try to answer hard questions in class? TW = Why do I try to do well in school?
Extraction Method: Principal Axis Factoring.
Rotation Method: Oblimin with Kaiser Normalization.
Loadings with absolute value less than .40 not shown.

Appendix K

Standardized Parameter Estimates for the Respecified SRQ-A Model: Factor Loadings and Error Terms

Var. No.	Stem	Item	F1 EXTERN	F2 INTROJ	F3 IDENT	F4 INTRIN
V1	HW	Because I'll get in trouble if I don't.	.56* (.83*)			
V4	CW	So that the teacher won't yell at me.	.64* (.77*)			
V5	CW	Because that's the rule.	.42* (.91*)			
V10	TW	Because I will get in trouble if I don't do well.	.53* (.85*)			
V18	AQ	Because I feel ashamed of myself when I don't try.	.74* (.68*)			
V8	AQ	Because I want the teacher to say nice things about me.		.88* (.48*)		
V13	HW	Because I want the teacher to think I'm a good student.		.74* (.68*)		
V15	CW	Because I want the teacher to think I'm a good student.		.76* (.65*)		
V17	AQ	Because I want the other students to think I'm smart.		.80* (.60*)		
V19	TW	So my teachers will think I'm a good student		.94* (.35*)		
V9	TW	Because that's what I'm supposed to do.			.47* (.88*)	
V14	HW	Because I will feel bad about myself if I don't do it.			.57* (.82*)	
V20	TW	Because I'll feel really bad about myself if I don't do			.64* (.77*)	
V22	HW	Because I want to understand the subject.			.48* (.88*)	
V23	HW	Because it's important to me to do my homework.			.75* (.66*)	
V26	CW	Because I want to learn new things.			.68* (.73*)	
V27	CW	Because it's important to me to work on my classwork.			.81* (.59*)	
V30	AQ	Because it's important to me to try to answer hard questions in class.			.76* (.65*)	

Var. No.	Stem	Item	F1 EXTERN	F2 INTROJ	F3 IDENT	F4 INTRIN
V31	TW	Because it's important to me to try to do well in school.			.83* (.56*)	
V34	HW	Because it's fun.				.74* (.67*)
V35	HW	Because I enjoy doing my homework.				.73* (.68*)
V36	CW	Because it's fun.				.89* (.45*)
V37	CW	Because I enjoy doing my classwork.				.90* (.43*)
V38	AQ	Because I enjoy answering hard questions.				.59* (.81*)
V39	AQ	Because it's fun to answer hard questions.				.67* (.74*)
V40	TW	Because I enjoy doing my school work well.				.77* (.64*)

Notes. *$p < .05$. Error terms in parentheses. HW = Why do I do my homework? CW = Why do I work on my classwork? AQ = Why do I try to answer hard questions in class? TW = Why do I try to do well in school?

Appendix L

Standardized Parameter Estimates for the Respecified J-SRQ-A Model: Factor Loadings and Error Terms

Var. No.	Stem	Item	F1 EXTERN	F2 INTROJ	F3 IDENT	F4 INTRIN
V1	HW	Because I'll get in trouble if I don't.	.64* (.77*)			
V3	HW	Because I am told "do your homework" by my mother.	.63* (.78*)			
V4	CW	So that the teacher won't yell at me.	.71* (.70*)			
V6	CW	Because I am told to do it by my teacher.	.74* (.67*)			
V10	TW	Because I will get in trouble if I don't do well.	.79* (.61*)			
V8	AQ	Because I want the teacher to say nice things about me.		.74* (.67*)		
V11	TW	Because I might get a reward if I do well.		.50* (.87*)		
V13	HW	Because I want the teacher to think I'm a good student.		.68* (.74*)		
V15	CW	Because I want the teacher to think I'm a good student.		.78* (.63*)		
V17	AQ	Because I want the other students to think I'm smart.		.64* (.77*)		
V18	AQ	Because I feel ashamed of myself when I don't try.		.64* (.77*)		
V19	TW	So my teachers will think I'm a good student.		.80* (.60*)		
V2	HW	Because that's what I'm supposed to do.			.48* (.88*)	
V5	CW	Because that's the rule.			.44* (.90*)	
V9	TW	Because that's what I'm supposed to do.			.49* (.87*)	
V14	HW	Because I will feel bad about myself if I don't do it.			.53* (.85*)	
V20	TW	Because I'll feel really bad about myself if I don't do well.			.66* (.75*)	
V22	HW	Because I want to understand the subject.			.65* (.76*)	
V23	HW	Because it's important to me to do my homework.			.66* (.75*)	

Var. No.	Stem	Item	F1 EXTERN	F2 INTROJ	F3 IDENT	F4 INTRIN
V24	HW	I think I'll become smarter if I do it.			.60* (.80*)	
V25	HW	I do my homework so that I won't have problems when I'm an adult.			.67* (.74*)	
V26	CW	Because I want to learn new things.			.66* (.75*)	
V27	CW	Because it's important to me to work on my classwork.			.72* (.69*)	
V28	CW	I do it so that I won't have problems when I'm a junior high school student or high school student.			.65* (.76*)	
V29	AQ	To find out if I'm right or wrong.			.71* (.71*)	
V30	AQ	Because it's important to me to try to answer hard questions in class.			.71* (.71*)	
V31	TW	Because it's important to me to try to do well in school.			.76* (.65*)	
V32	TW	So that I'll become smarter.			.57* (.82*)	
V33	TW	For my future.			.57* (.82*)	
V34	HW	Because it's fun.				.68* (.73*)
V36	CW	Because it's fun.				.88* (.49*)
V37	CW	Because I enjoy doing my classwork.				.75* (.66*)
V38	AQ	Because I enjoy answering hard questions.				.61* (.79*)
V39	AQ	Because it's fun to answer hard questions.				.62* (.78*)
V40	TW	Because I enjoy doing my school work well.				.81* (.58*)

Notes. *$p < .05$. Error terms in parentheses. HW = Why do I do my homework? CW = Why do I work on my classwork? AQ = Why do I try to answer hard questions in class? TW = Why do I try to do well in school?

Appendix M

Correlations Among Latent Factors in the Respecified

SRQ-A and J-SRQ-A Models

SRQ-A	F1	F2	F3	*J-SRQ-A*	F1	F2	F3
F1. External				F1. External			
F2. Introjected	.48*			F2. Introjected	.60*		
F3. Identified	.14	.43*		F3. Identified	.28*	.51*	
F4. Intrinsic	.00	.41*	.64*	F4. Intrinsic	.11	.49*	.70*

Notes. *$p < .05$

Appendix N

Error Correlations in the Four-Factor Respecified SRQ-A and J-SRQ-A Models

SRQ-A	*r*	*J-SRQ-A*	*r*
E13, E15	.47*	E8, E19	.36*
E14, E20	.33*	E13, E15	.38*
E22, E26	.31*	E15, E19	.22*
E34, E35	.26*	E2, E5	.25*
E38, E39	.71*	E2, E9	.38*
		E5, E9	.28*
		E14, E20	.41*
		E24, E32	.31*
		E25, E28	.26*
		E25, E33	.32*
		E28, E33	.29*
		E36, E37	.31*
		E38, E39	.74*

Notes. *$p < .05$

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