

Copyright
by
Hyunjin Jinny Kim
2010

**The Dissertation Committee for Hyunjin Kim Certifies that this is the approved
version of the following dissertation:**

**A Self-Determination Perspective on Students' Differentiated
Experiences of Academic Motivation and Course Well-Being Across
Courses**

Committee:

Diane L. Schallert, Supervisor

Marilla D. Svinicki

Claire Ellen Weinstein

S. Natasha Beretvas

Karron G. Lewis

**A Self-Determination Perspective on Students' Differentiated
Experiences of Academic Motivation and Course Well-Being Across
Courses**

by

Hyunjin Kim, B.A.; M.Ed.

Dissertation

Presented to the Faculty of the Graduate School of
The University of Texas at Austin
in Partial Fulfillment
of the Requirements
for the Degree of

Doctor of Philosophy

The University of Texas at Austin

May 2010

Dedication

I dedicate this work to my parents: my father who passed away last year. He was always proud of and always loved me as I loved him. And my mother who has waited for this moment for a long time.

Acknowledgements

It is a pleasure to thank all those who made this dissertation possible helped me bring it and to success. Thank you especially to my supervisor, Professor Diane L. Schallert, whose encouragement, guidance, and support from the initial stages to the final steps enabled me to take on a mental and spiritual adventure that related to a diversity of knowledge and ideas, and my developing sense of research. Furthermore, she has been always there for me to make everything possible.

I would like to thank my committee members. Professor Marillar Svinicki encouraged and believed that I could carry on when I struggled in adapting to a new field in the beginning of my program. In addition, a thank you to Professor Claire Ellen Weinstein, who introduced me to Learning and Cognition, and whose support has had a lasting effect on me. I thank you, Professor S. Natasha Beretvas and Dr. Karron G. Lewis, whose work demonstrated to me that concern for every detail was a big part of research. I enjoyed discussing the issues and problems we shared in all our meetings.

I would like to thank my family for their neverending support, which helped me succeed. Also, thanks to all my friends whose support never wavered. There are so many, here and in Korea, that I cannot name them all.

Lastly, I offer my regards and blessings to all those who supported me in every respect during the completion of the dissertation, especially to all the young people who filled out surveys and gave me the data upon which this work rests. Their efforts must be acknowledged and my gratitude to them expressed.

**A Self-Determination Perspective on Students' Differentiated
Experiences of Academic Motivation and Course Well-Being Across
Courses**

Publication No. _____

Hyuunjin Kim, Ph.D.

The University of Texas at Austin, 2010

Supervisor: Diane L. Schallert

For many years, researchers and educators have been concerned about achievement scores but seemed less interested in students' happiness and psychological well-being at school. However, students' psychological well-being experiences may facilitate students' adjustment and ultimately lead to academic achievement. It can be assumed that students' different motivational and well-being experiences in each course would contribute to students' overall psychological well-being. The purpose of this study was to investigate how and why students experience different levels and kinds of motivation and well-being across courses. As the preliminary and important ground to allow me to address this purpose, I needed to establish first whether students experienced different levels of academic motivation and course well-being across the courses they were taking.

A total of 505 students participated in this study and provided information about 1817 courses they were taking. The participants come from a subject pool of one department that attracted students from diverse majors. Multilevel modeling was used to explore different situational (Level 1) and personal experiences (Level 2) of motivation and course well-being across courses and across students. The unconditional model showed variability of perceptions at Levels 1 and 2 indicating that students did vary in their reports across courses and that nevertheless, there were individual differences across students in their aggregate experiences. The conditional model was used to test what course characteristics were associated with motivational and well-being indicators at the situational level. Course characteristics were taken from different constructs: course value, classroom structure, teacher characteristics, classroom goal structure, and a caring classroom climate. Predictors at the personal level included students' sex and their perceptions of general needs for relatedness, general relatedness need fulfillment in everyday life, and personal growth. Having supported the preliminary hypothesis with the unconditional model that there was variance both within student and between students, I used the conditional model and found that various course characteristics were differently associated with academic motivation and course well-being. Overall, results addressed that teacher characteristics and a caring classroom climate were strongly associated with all the different kinds of motivational and course well-being indicators. Students' personal characteristics were, also, differently related to these outcomes.

Table of Contents

List of Tables	xii
List of Figures	xvii
Chapter 1 Introduction	1
One Theory of Academic Motivation: Self-Determination Theory	2
Course Well-Being	5
Different Degrees of Need Fulfillment and Course Well-Being Across Different Courses	7
Course Characteristics: Essential Condition For Motivation	8
Personal Factors Connecting to Motivation and Course Well-Being	13
Purpose of the Present Study	15
Chapter 2 Literature Review	20
Self-Determination Theory	20
Students' Experiences of Course Well-Being	28
Different Degrees of Need Fulfillment and Course Well-Being in Different Contexts	33
Course Characteristics: Essential Conditions for Motivation	35
Personal Factors	44
Chapter 3 Method	48
Participants	48
Structure of Data	48
Procedure	49
Measures	50
Research Questions, Hypotheses, and Rationale	56
Data Analysis	64
Chapter 4 Results	66
Preliminary Analysis	66
Research Questions 1-1 and 1-2	73

Research Questions 2-1 and 2-2	77
Research Questions 3-1 and 3-2	106
Research Questions 4-1 and 4-2	117
Chapter 5 Discussion	133
Research Questions 1-1 and 1-2	134
Research Questions 2-1 and 2-2	137
Research Questions 3-1 and 3-2	146
Research Questions 4-1 and 4-2	149
Limitations of the Study.....	152
Significance of the Study and Implication.....	154

Appendix A	Demographic Information	157
Appendix B	General Need for Relatedness	158
Appendix C	General Relatedness Need Fulfillment	159
Appendix D	Personal Growth of Psychological Well-Being	160
Appendix E	General Information.....	161
Appendix F	Course Value.....	162
Appendix G	Classroom Structure	163
Appendix H	Teacher Characteristics	164
Appendix I	Classroom Goal Structure.....	165
Appendix J	Caring Classroom Climate.....	166
Appendix K	Levels of Autonomy.....	167
Appendix L	Competence Need Fulfillment.....	168
Appendix M	Relatedness Need Fulfillment.....	169
Appendix N	Academic Emotion Scale	170
Appendix O	Course Satisfaction.....	171
Appendix P	CFAs for Constructs	172
Appendix Q	Items Showing High Error Correlations in CFA.....	173
Appendix R	Descriptive Statistics of Categorical Variables	174
Appendix S	Correlations Among Course Characteristics.....	175
Appendix T	Correlations Between Course Characteristics and Academic Motivation	176
Appendix U	Correlations Among Academic Motivation	177
Appendix V	Correlations Among Course Well-Being Indicators	178

Appendix W	Correlations Between Course Characteristics and Course Well-Being	179
Appendix X	Correlations Within Academic Motivation	180
Appendix Y	Correlations Between Academic Motivation and Course Well-Being	181
Appendix Z	Correlation Among Personal Factors at Level 2	182
References		183
Vita		200

List of Tables

Table 2:	CFAs for Subscales.....	69
Table 3:	Descriptive Statistics at Level 1 and Level 2.....	71
Table 4:	The Fully Unconditional Models with Variance, as well as the Total Variance Explained by Within- and Between-Student Variance.....	76
Table 5:	Initial Fixed and Random Effects of Course Characteristics Predicting External Motivation at Levels 1 and 2.....	79
Table 6:	Final Fixed and Random Effects of Course Characteristics Predicting External Motivation at Levels 1 and 2.....	80
Table 7:	Initial Fixed and Random Effects of Course Characteristics Predicting Introjected Self-Motivation at Levels 1 and 2.....	81
Table 8:	Final Fixed and Random Effects of Course Characteristics Predicting Introjected Self-Motivation at Levels 1 and 2.....	82
Table 9:	Initial Fixed and Random Effects of Course Characteristics Predicting Identified Self-Motivation at Levels 1 and 2.....	83
Table 10:	Final Fixed and Random Effects of Course Characteristics Predicting Identified Self-Motivation at Levels 1 and 2.....	84
Table 11:	Initial Fixed and Random Effects of Course Characteristics Predicting Intrinsic Self-Motivation at Levels 1 and.....	85
Table 12:	Final Fixed and Random Effects of Course Characteristics Predicting Intrinsic Self-Motivation at Levels 1 and 2.....	86
Table 13:	Initial Fixed and Random Effects of Course Characteristics Predicting Competence at Levels 1 and 2.....	87
Table 14:	Final Fixed and Random Effects of Course Characteristics Predicting Competence at Levels 1 and 2.....	88

Table 15:	Initial Fixed and Random Effects of Course Characteristics Predicting Relatedness to Instructor at Levels 1 and 2	89
Table 16:	Final Fixed and Random Effects of Course Characteristics Predicting Relatedness to Instructor at Levels 1 and 2	90
Table 17:	Initial Fixed and Random Effects of Course Characteristics Predicting Relatedness to Peers at Levels 1 and 2	91
Table 18:	Final Fixed and Random Effects of Course Characteristics Predicting Relatedness to Peers at Levels 1 and 2	92
Table 19:	Initial Fixed and Random Effects of Course Characteristics Predicting Enjoyment at Levels 1 and 2.....	93
Table 20:	Final Fixed and Random Effects of Course Characteristics Predicting Enjoyment at Levels 1 and 2.....	94
Table 21:	Initial Fixed and Random Effects of Course Characteristics Predicting Hope at Levels 1 and 2.....	95
Table 22:	Final Fixed and Random Effects of Course Characteristics Predicting Hope on at Levels 1 and 2.....	96
Table 23:	Initial Fixed and Random Effects of Course Characteristics Predicting Anger at Levels 1 and 2	97
Table 24:	Final Fixed and Random Effects of Course Characteristics Predicting Anger at Levels 1 and 2	98
Table 25:	Initial Fixed and Random Effects of Course Characteristics Predicting Anxiety at Levels 1 and 2	99
Table 26:	Final Fixed and Random Effects of Course Characteristics Predicting Anxiety at Levels 1 and 2	100

Table 27:	Initial Fixed and Random Effects of Course Characteristics Predicting Boredom at Levels 1 and 2	101
Table 28:	Final Fixed and Random Effects of Course Characteristics Predicting Boredom at Levels 1 and 2	102
Table 29:	Initial Fixed and Random Effects of Course Characteristics Predicting Course Satisfaction at Levels 1 and 2	103
Table 30:	Final Fixed and Random Effects of Course Characteristics Predicting Course Satisfaction at Levels 1 and 2	104
Table 31:	Initial Fixed and Random Effects of Course Characteristics Predicting Anticipated Grade at Levels 1 and 2.....	105
Table 32:	Final Fixed and Random Effects of Course Characteristics Predicting Anticipated Grade at Levels 1 and 2.....	106
Table 33:	Initial Fixed and Random Effects Relatedness Facets Predicting External Motivation at Levels 1 and 2	108
Table 34:	Final Fixed and Random Effects of Relatedness Facets Predicting External Motivation on at Levels 1 and 2.....	109
Table 35:	Initial Fixed and Random Effects Relatedness Facets Predicting Introjected Self-Motivation at Levels 1 and 2	110
Table 36:	Final Fixed and Random Effects of Relatedness Facets Predicting Introjected Self-Motivation at Levels 1 and 2	111
Table 37:	Initial Fixed and Random Effects Relatedness Facets Predicting identified self-motivation at Levels 1 and 2	112
Table 38:	Final Fixed and Random Effects of Relatedness Facets Predicting Identified Self-Motivation at Levels 1 and 2	113

Table 39:	Initial Fixed and Random Effects Relatedness Facets Predicting Intrinsic Self-Motivation at Levels 1 and 2.....	114
Table 40:	Final Fixed and Random Effects of Relatedness Facets Predicting Intrinsic Self-Motivation on at Levels 1 and 2	115
Table 41:	Initial Fixed and Random Effects Relatedness Facets Predicting Competence on at Levels 1 and 2	116
Table 42:	Final Fixed and Random Effects of Relatedness Facets Predicting Competence on at Levels 1 and 2	116
Table 43:	Initial Fixed and Random Effects of Motivation Predicting Enjoyment at Levels 1 and 2	119
Table 44:	Final Fixed and Random Effects of Motivation Predicting Enjoyment at Levels 1 and 2	120
Table 45:	Initial Fixed and Random Effects of Motivation Predicting Hope at Levels 1 and 2	121
Table 46:	Final Fixed and Random Effects of Motivation Predicting Hope at Levels 1 and 2	122
Table 47:	Initial Fixed and Random Effects of Motivation Predicting Anger at Levels 1 and 2	123
Table 48:	Final Fixed and Random Effects of Motivation Predicting Anger at Levels 1 and 2	124
Table 49:	Initial Fixed and Random Effects of Motivation Predicting Anxiety at Levels 1 and 2	125
Table 50:	Final Fixed and Random Effects of Motivation Predicting Anxiety at Levels 1 and 2	126

Table 51:	Initial Fixed and Random Effects of Motivation Predicting Boredom at Levels 1 and 2	127
Table 52:	Final Fixed and Random Effects of Motivation Predicting Boredom at Levels 1 and 2	128
Table 53:	Initial Fixed and Random Effects of Motivation Predicting Course Satisfaction at Levels 1 and 2	129
Table 54:	Final Fixed and Random Effects of Motivation Predicting Course Satisfaction at Levels 1 and 2	130
Table 55:	Initial Fixed and Random Effects of Motivation Predicting Anticipated Grade at Levels 1 and 2	131
Table 56:	Final Fixed and Random Effects of Motivation Predicting Anticipated Grade at Levels 1 and 2	132

List of Figures

Figure 1: The self-motivation model.....	63
--	----

Chapter 1

Introduction

For decades, educators have emphasized learning outcomes and considered ways to increase learning conditions to improve academic achievement. However, compared to this emphasis on learning outcomes, less focus has been paid to students' satisfaction with and enjoyment of school. Many college students suffer from depression and loneliness as well as being at-risk for dropping out of school, because for many, it is the first time they have lived far from home and must learn to manage their school and everyday life, which can feel totally isolated from their previous family-based life. I believe that students' motivational and well-being experiences in each course they take accumulate into a sense of general psychological well-being, contributing to student level of happiness. It has been frequently proposed that college students need to enjoy learning as a process and find purpose in their life at school (e.g., Schallert, Reed, & Turner, 2004). Altogether, it could be inferred that students' more positive and less negative experiences across courses would eventually lessen dropout rates and help students prepare for their future. Therefore, educators and researchers should consider students' well-being and help them focus on their learning at each class level. This is my general interest in this research.

As authors of one of the key theories about academic motivation, Deci and Ryan (1985; Ryan & Deci, 2000b) proposed an explanation of how self-determined motivation can be generated, ultimately contributing to psychological well-being. They claimed that humans are naturally motivated to fulfill the basic human needs of autonomy,

competence, and relatedness. Psychological well-being will result from the fulfillment of these basic needs.

In the next sections, I introduce achievement motivation and the literature on well-being, as well as research findings about course characteristics influencing well-being and one theory of achievement motivation in a course. I then describe the purpose of the study and hypothesis.

One Theory of Achievement Motivation: Self-Determination Theory

As originally proposed by Deci and Ryan (1985; Ryan & Deci 2000a), self-determination theory identifies motivation as founded in the basic needs that must be fulfilled: needs for autonomy, competence, and relatedness. This macro theory of self-determination has been needed to explain phenomena related to students' need fulfillment in classroom settings. As fulfilled needs play important roles in human life (Ryan & Deci, 2000a; Patrick, Knee, Canevello, & Lonsbary, 2007), need fulfillment in a particular course would contribute to students' learning process and course well-being in a course.

Autonomy

Some people may think autonomy refers to independence and own authority as distinguished from other authority. Instead, in self-determination theory, it refers to a sense of initiative, volition, and self-government (deCharms, 1968; Patrick et al., 2007). Self-determination theory explains the transfer process that brings external values into a sense of self and goals, identifying different levels of self-regulation or self-motivation. When individuals internalized external value of a task, they would feel less conflict with external value which is a motive to accomplish the task and accept this into internal

value. Motives are seen as existing on a continuum of amotivation, external, introjected, identified, and intrinsic self-motivation. To distinguish between introjected and identified self-motivation, we say that introjected self-motivation is in no sense self-determined, whereas identified self-motivation indicates a successful form of self-determination (Koestner, Losier, Vallerand, & Carducci, 1996). In the process, social relationships may play an important role (Koester & Losier, 2002). Some researchers put forward that by engaging in their social surroundings, students would internalize external values and goals, and be influenced by important contextual factors enhancing autonomy such as controllability and a sense of choice, teachers' autonomy support, and involvement (Skinner & Belmont, 1993; Skinner, Wellborn, & Connell, 1990). Separate levels of autonomy have been noted as discrete contributions to students' behavioral patterns and emotional experiences (Koestner & Loiser, 2002; Koestner et al., 1996; Lepper, Corpus, & Iyengar, 2005). I included different levels of autonomy: external and intrinsic motivations to look at how different levels of autonomy were uniquely associated with course characteristics and then played a role as academic motivation.

Competence

Ryan and Deci (2000a) defined competence as a feeling of efficacy and as having a sense of controllability in a certain situation. The opposite of competence refers to students' beliefs that they cannot control a situation because of lack of ability (Linnenbrink & Pintrich, 2003). Competence has been considered by many researchers and regarded as important for students in order to achieve their academic goals. Important in enhancing students' perceptions of competence, Bong and Skaalvik (2003) mentioned

four conditions: (a) recognition and adjustment of physiological reactions such as heartbeats and pain; (b) sequential success experiences; (c) vicarious experiences indicating that individuals experience competence from others' success experiences; and (d) verbal persuasion indicating significant others' support and their conveying of self-efficacy information. Among the four conditions, two elements, vicarious experiences and verbal persuasion, emphasize that a sense of competence can be increased by social interactions.

Relatedness

When students feel connected to classmates and the instructor of a class, such a feeling can allow students to initiate and accept new experiences and challenges in a class because they feel support and care for difficulties they may encounter (Nodding, 2005). Feelings of relatedness have been considered as important in students' learning (Battistich, Solomon, Kim, Watson, & Schaps, 1995; Goodenow, 2002; Juvonen, 2007; Roeser, Midgley, & Urdan, 1996; Wentzel, 1999). Furrer and Skinner (2003) reported that relatedness with parents, with teacher, and with peers contributed to students' emotional engagement and academic achievement. Students' perceptions of teacher involvement were a crucial influential element for students to engage more fully in a class (Patrick et al., 2007; Skinner & Belmont, 1993).

Relations Among Three Needs

According to self-determination theory, the fulfillment of autonomy, competence, and relatedness needs occurs as part of an intertwined process. Although each need fulfillment may predict psychological well-being uniquely (Deci & Ryan, 1985; Ryan &

Deci, 2000a), fulfillment of relatedness needs seems to play a central role in fulfillment of autonomy and competence needs (Guardia & Patrick, 2008; Koestner & Losier, 2002; Vansteenkiste, Lens, Soenens, & Luyckx, 2006). A sense of initiation or volition seems to be enhanced by social supports. Research findings by Hodgins, Koestner, and Duncan (1996) suggested a positive relationship between autonomy and relatedness need fulfillment. This result was also congruent with a notion by Koestner and Losier (2002) who argued that a perceived relationship with significant others influences the process of internalization of external values, which is an essential mechanism in changing a sense of autonomy. Students' perceived competence may also be boosted when they feel comfortable in a situation and supported by surroundings (Noddings, 2005). In addition, learners' desire for controllability and volition in a situation may occur when they feel efficacious and recognize their own capabilities to control a situation (Elliot, McGregor, & Thrash, 2002; Krapp, 2005; Vansteenkiste et al., 2006).

As described about relationships among the three needs, in this study I was interested in not only in how each need fulfillment could be facilitated, but also in exploring how fulfillment of relatedness needs predicted fulfillment of autonomy and competence needs.

Course Well-Being

There are two different indicators of well-being: subjective well-being and psychological well-being. According to research by Keyes Shmonkin, & Ryff (2002), subjective well-being and psychological well-being are strongly associated but show different dimensions. Subjective well-being is made up of a combination of positive

emotions, negative emotions, and life satisfaction, whereas psychological well-being involves personal growth, purpose in life, positive relationships, and mastery autonomy.

When individuals meet their needs, their self-determination is optimized and contributes to their psychological well-being (Ryan & Deci, 2000a; Patrick et al. 2007). Likewise, students' need fulfillment in a classroom context will contribute to their course well-being as shown by higher levels of positive emotions and lower levels of negative emotions as well as course satisfaction and good grades. In classroom contexts, why fulfillment of needs is important to well-being has been addressed in previous studies by showing positive associations between need fulfillment and well-being (e.g., Furrer & Skinner, 2003; Roeser et al., 1996; Skinner, Furrer, Marchand, & Kindermann, 2008; Skinner, Wellborn, & Connell, 1990). Patrick, Skinner, and Connell (1993) found that controllability and autonomy contributed uniquely to behavioral and emotional engagement. Students reported that when more intrinsically motivated, they felt more positive emotions and were more likely to engage in active participation in course activities, whereas students' feelings of being controlled were associated negatively with behavioral engagement and associated positively with negative emotional experiences. These results are congruent with recent research findings by Skinner et al. (2008) showing that fulfillment of autonomy, competence, and relatedness needs contributed uniquely to emotional and behavioral engagement. Moreover, fulfillment of autonomy needs was the stronger predictor of these engagements than were fulfillment of relatedness and competence needs. Research by Sheldon and Elliot (1998) also revealed that students' sense of autonomy predicted their efforts and commitment to course

activities. A study by Vansteenkiste et al. (2006) delineated that fulfillment of autonomy and relatedness needs separately predicted perceptions of psychological well-being (less depression, more energy, aliveness, excitement, and less sadness). However, they reported that students with low need for relatedness but high autonomy reported less depression than did students who reported low need for relatedness along with low autonomy. This result indicated that autonomy need fulfillment was beneficial when students perceived low fulfillment of relatedness needs.

As shown in previous research, it seemed important to answer how autonomy, competence, and relatedness needs were associated with students' sense of well-being in a course. Also, I considered that it was important to explore how course-related well-being could be enhanced in a classroom context.

Different Degrees of Need Fulfillment and Course Well-Being Across Different Courses

As discussed previously, researchers have asserted that need fulfillment is likely influenced by the environment (Deci & Ryan, 1985; 2000b). This notion allowed me to assume that students would perceive different levels of need fulfillment in terms of distinctive environmental conditions. Also, I posited that emotional experiences and course satisfaction, namely course well-being, would be differently perceived from course to course (Goetz, Pekrun, Hall, & Haag, 2006).

Previous studies have typically asked participants to report on only one course that a student is taking, and few studies have explored within-student comparisons of need fulfillment and course well-being experiences across courses. Whether students

perceive these psychological experiences differently from course to course, and if so, what differentiates these perceptions seemed important to answer.

Course Characteristics: Essential Conditions For Motivation

I put forward that the reason a student might be highly motivated and perceive positive emotions in one course but experience less motivation and perceive negative emotions in another may be related to characteristics associated with each course.

To improve one's need fulfillment and course well-being, creating optimal social contexts would seem essential (Corno, 1988). William and Deci (1996) investigated associations among values, degree of autonomy and competence, and contextual factors. Results revealed that conditions in which students felt autonomous and competent were autonomy-supportive and less controlling. Different degrees of autonomy, in particular, are developed as students interact with their environment and how much students internalize external values (Connell & Wellborn, 1991; Deci, La Guardia, Moller, Scheiner, & Ryan, 2006; Deci, Vallerand, Pelletier, & Ryan, 1991).

Various contextual factors make up a classroom's atmosphere. Previous studies have identified some of the important classroom contextual factors (Biddle & Berliner, 2002; Corpus, McClintic-Gilbert, & Hayenga, 2009; Englehart, 2007; Koth, Bradshaw, & Leaf, 2008; Lyke & Young, 2006; Turner, Meyer, Cox, Logan, DiCintio, & Thomas, 1998; Wentzel, 1997). Those course characteristics can be categorized into several dimensions such as structural dimension: class size and class lecture type; motivational dimension: goal orientation structures and external or internal course values; affective

and motivational dimension: caring climate; and social dimension: teacher characteristics (autonomy support, pedagogical competence, and classroom management).

Class Size

Class size has long been considered an important physical element influencing students' learning. Koth et al. (2008) investigated what factors were associated with elementary students' sense of school climate and academic motivation, using multilevel modeling (individual, class, and school levels). Results showed that class size showed no relation between students' perceived school safety but it did show a significant relationship to students' perceived academic motivation. Interestingly, interaction between class size and year of teaching experience was negatively related with academic motivation and school safety. This indicates that students in a large class and with newer teacher were likely to reports safe environment and willingness to study more. Kim and Schallert's investigation (2009) class size with college students revealed that students' perceptions of relatedness showed significant negative association with class size. Englehart (2007) in his review article reasoned about inconsistent results that have been reported; that is, a mere factor of class size does not affect students' complex learning process. He noted that class size along with other contextual factors such as teacher attitude and teaching skills would affect learning.

Course Value

Course value can be considered a motivational property. According to Wigfield and Eccles (2000), an important factor that influences students' learning process and achievement outcomes is task value. The value of a task or activity can be internal such

as how much a person enjoys or is interested in the activity, as well as external such as how important or useful a person feels the activity was. Durik, Vida, and Eccles (2006) reported that for high school students, each value separately predicted outcomes. The importance value of reading predicted choice for their future career goals and the number of courses they took per year. Interest value predicted leisure choice of reading and the number of courses taken related to reading. A crucial factor for students becoming motivated seems to be their initial interest value in taking a course. When students were involved in a task or activity out of their interest, they were likely to be motivated and engaged in it (Hulleman, Durik, Schweigert, & Harackiewicz, 2008).

Teacher Characteristics

Teacher characteristics make up part of the social dimension of a context. Teachers are essentially social agents contributing to students' learning. A study by Skinner and Belmont (1993) revealed that teachers' classroom management, autonomy support such as giving students choice, and involvement were associated with students' behavioral and emotional engagement. This result has also been supported by a large body of research findings (Furrer & Skinner, 2003; Roeser et al., 1996; Turner et al., 1998). Turner et al. (1998), in particular, identified teachers' qualities that encouraged students' learning. They reported teachers' being supportive of autonomy, sensitive to students' pace of learning and adjusting teaching, skillful in teaching, and encouraging positive emotional experiences were important for students' learning.

Classroom Goal Structures

Classroom goal structures are motivational aspects of a class. A large body of research has investigated their effects on students' motivation and learning (Bong, 2005; Urdan, Midgley, & Anderman, 1998). Classroom goal structures are usually described using the trichotomous framework consisting of: (a) mastery goal structure, in which a classroom context focuses on developing students' competence in a domain; (b) performance approach goal structure, in which a classroom context focuses on students' competence within a competitive environment; and (c) performance avoidance goal structure, in which a classroom context emphasizes students' avoiding displays of incompetence. Most studies have investigated how differently each classroom goal structure predicts students' perceptions of competence or personal goal orientation (Anderman & Anderman, 1999; Bong, 2005; Murayama & Elliot, 2009; Urdan & Midgley, 2003; Urdan et al., 1998). However, a few studies have investigated whether such classroom goal structures uniquely predict need fulfillment of autonomy and relatedness. This was the argument of Kim and Schallert (2009) who found connections between classroom goal structures and relatedness need fulfillment. They reported that three classroom goal structures significantly predicted relatedness need fulfillment to instructor. Especially, mastery classroom goal structure was negatively associated with students' perceived relationship with instructor. As for autonomy, few studies have explored relationship between goal structure and levels of autonomy. Mastery goal orientation is likely related to intrinsic self-motivation in that both emphasize learning explained by self such as own development and own enjoyment in learning situations. On

the other hand, performance goal orientation can be associated with introjected or extrinsic self-motivation in that both concepts are related to external stimuli. Based on such connections, it seemed essential to test whether classroom goal structures, as classroom contextual factors, would relate to students' different degrees of self-motivation.

Caring Classroom Climate

Caring classroom climate refers to motivational and affective aspects of the classroom context. A caring or respectful environment can bolster students' motivation and learning (Battistich, Solmon, Watson, & Schaps, 1997; Wentzel, 1994; 1997). Qualities of interactions between teacher and students and between students and students are important (Battistich et al., 1995; Goodenow, 2002; Braxton, Milem, & Sullivan, 2000) in that these contribute to students' perception of relatedness.

Wentzel (1997) reported that when students perceived their teacher and peers as supportive and caring, these perceptions predicted greater engagement with students' academic goal pursuits. The results imply that one of important elements for students being engaged in the classroom may be their perceptions of a caring classroom climate. Nevertheless, little research has tested, particularly with college students, how a caring classroom climate plays a role in students' motivational and emotional experiences at this level.

Undoubtedly, as shown, many different course characteristics would influence students' motivation and learning. Yet little research has included a variety of environmental and motivational characteristics of courses and delved into whether these

are related to students' motivation. Therefore, in this study, understanding associations between various course characteristics and students' need fulfillment as well as between course characteristics and course well-being across different courses was a crucial aim.

Personal Factors Connecting to Motivation and Course Well-Being

Students' personal factors may be associated with their perceptions of need fulfillment and course well-being. In addition to taking the students' sex into account, I also hypothesized that a general need for relatedness and general relatedness need fulfillment would be important in influencing these perceptions.

A General Need for Relatedness

The need to be related seems to vary from person to person, perhaps more so than the needs for autonomy and competence. This assumption was derived from the idea that some individuals are more independent from others whereas others are more dependent on human relationships. Thus, it seems that people may have different degrees of a need for relatedness (La Guardia, Ryan, Couchman, & Deci, 2000; Markus & Kitayama, 1991; Patrick et al., 2007).

The pre-existing degree to which an individual wants to be related to or associated with others should play an important role in relatedness need fulfillment, and this may affect autonomy and competence need fulfillment in a particular context such as a learning context (Kim, Kim, & Svinicki, 2008). Few studies have investigated the association among the level of a general need, the degree to which it is perceived as being fulfilled, and its effect on a student's motivation in an academic setting.

General Relatedness Need Fulfillment in Everyday Life

Some researchers such as Linnenbrink and Pintrich (2002) have been interested in different states in students' perceptions. In a review of the research on goals and affect, Linnenbrink and Pintrich (2002) distinguished the concept of general *mood*, which they claimed to be a general affective state, from *emotions*, an affective state in a particular context. Such moods and emotions are interactive. Likewise, this notion can imply that students' general satisfaction with relatedness needs in their everyday life would contribute to their perceptions of relatedness in a particular classroom setting, and vice versa. This connection between students' general fulfillment of relatedness needs in their everyday life and their fulfillment of relatedness need in a particular context has yet to be studied.

General Personal Growth

Ryff (1989) identified two different indicators of psychological well-being. Unlike subjective well-being that indicates overall life satisfaction and happiness, psychological well-being is defined as psychological growth and development (Keyes et al., 2002). For instance, when individuals attempt and overcome challenging situations, they are likely to feel a sense of personal growth or development.

Growth and developmental functions are central issues to educational researchers and educators. Students are continuously pursuing their goals even as they confront and overcome challenging academic tasks. Accordingly, psychological well-being reflecting personal growth and development will be an important indicator of the general well-being of students (Tuominen-Soini, Salmela-Aro, & Niemivirta, 2008). This is because

students' various success or failure experiences in each course would aggregate into a general feeling of development and well-being. That is what education aims for.

Purpose of the Present Study

The overarching purpose of this study was to bring a macro perspective from the basic human need sub-theory of self-determination theory into a micro perspective of need fulfillment within classroom settings (Figure 1, see p. 63). Keeping in mind Corno's (1988) assertion that three elements affect optimal learning conditions, task, self, and environmental factors, I was especially concerned in this study with self and environmental factors to explain students' motivational experiences. These elements were meant to allow me to explain the dynamic mechanism involving students' inner needs, environmental conditions, need fulfillment, and well-being. This mechanism was the central focus of this study.

The first purpose and important fundamental aim of this study was to establish whether students' need fulfillment and course well-being differed across the courses they were taking. My argument was that students might experience different motivation and emotions, "within-student," in response to the different contextual and motivational aspects of the different courses a student was taking. These unique course characteristics might result in students' different levels of need fulfillment. Thus, establishing the first assumption would allow me to explore the next research purposes.

The second research purpose was to explore associations between course characteristics and motivational and between course characteristics and well-being. This study included a broad range of structural, motivational, and affective course

characteristics: classroom structure (type of teaching and size); class value (whether a course was taken for an utility or interest reason and whether it was related to one's major); teacher characteristics (pedagogical knowledge, classroom management, and autonomy support); classroom goal structure (mastery, performance approach, and performance avoidance); caring classroom climate. Previous research on contextual factors has not investigated such a broad range of course characteristics at the same time and compared different associations with motivation and emotions. Thus, this attempt to bring in diverse course characteristics in one study was exploratory, but it seemed necessary not to leave out course characteristics that had previously been studied and found important in predicting students' motivational or well-being experience.

The third main research purpose was to explore associations among autonomy, competence, and relatedness need fulfillment, all aspects of self-determination theory. I hypothesized that relatedness need fulfillment would play an important role in levels of autonomy and competence need fulfillment.

A fourth research purpose was to understand associations among motivation and course well-being in a course. I assumed that unique motivational experiences would predict different types of course well-being (emotional experience, course satisfaction, and course grade) [Figure 1 (see p. 63)].

In this study because I focused on students' different experiences across courses they were taking, data were designated as clustered within a person across the courses the person was taking. Thus, I used multilevel modeling. In particular, Level 1 refers to the situational level and shows the variance within a student. Also, Level 2 refers to the

personal level and shows the variance between students. Thus, Level 1 factors included course related factors (course characteristics, motivation, and course well-being for each particular course). Level 2 factors included personal related factors (a general need for relatedness, general relatedness need fulfillment in everyday life, sex, and general feelings of personal growth. At the end of Chapter 3, I lay out the specific research questions and hypotheses, as well as rationale for each that I addressed in these purposes for my study.

Organization of the Report

In the next chapter, I review the existing literature that supports my research questions. In Chapter 3 I address, research methods, questions, and hypotheses guiding my study, as well as procedure and data analysis. In Chapter 4 and 5, I present findings and discussion for these findings. At the end of Chapter 5, I finish up with limitations, and significant findings and implications.

Table 1

Glossary of Terms

Characteristics	Term	Descriptions
Situational Motivations	Autonomy <ul style="list-style-type: none"> • External motivation • Introjected self-motivation • Identified self-motivation • Intrinsic self-motivation 	Degrees to which a student has internalized the external values and takes an action for the value. Continuum from totally external value for learning to totally internal value for learning.
	Competence	Perception of one's own competence and controllability in learning in a learning situation.
	Relatedness	Perception of positive interactions with social resources in a class (instructor and peers).
Course well-being Internal Self (Individual characteristics)	Academic Emotions <ul style="list-style-type: none"> • Enjoyment • Hope • Anger • Anxiety • Boredom 	Student experience diverse course emotions. <ul style="list-style-type: none"> • Enjoyment of learning • Hope for success • Anger and Anxiety about the possibility of failure • Boredom during learning
	Course satisfaction	Degree to which a person is satisfied with a course
	Anticipated grade	Anticipated final grade was gathered at the end of semester, so it would be close to students' real grade
Internal Self (Individual characteristics)	General relatedness in one's everyday life	Degree of satisfaction with relatedness needs in one's everyday life.
	General needs for relatedness	Degree to which a person perceives a need to be connected to others
	General Personal growth	General psychological well-being The factor connecting to students' variation in course well-being

Table Continued

*Statistical Terms**

Level 1	Situational Level (Within-student level)	Variation in students' perceptions of motivational and course well-being variables different courses, in particular situations or contexts
Level 2	Personal Level (Between-student level)	Variation in students' perceptions across individuals, also referred to as individual differences

Chapter 2

Literature Review

In this chapter, I review the literature associated with the constructs that were introduced in the first chapter: Self-determination theory, students' experiences of course well-being, and the different course characteristics. My goals in reviewing each topic are to reveal definitions, important concepts, and current findings relevant for my study. Eventually, potentially important connections among the constructs deliberated.

Students' situational experiences of motivation, course well-being and course characteristics across courses were inspected. Finally, students' personal factors influencing situational experiences were presented.

Self-Determination Theory

Overview

First proposed in the 1980's by Deci and Ryan (1985; 2008), self-determination theory was based on the premise that “needs specify innate psychological nutriments that are essential for psychological growth, integrity, and well-being” (Ryan & Deci, 2000a, p. 68). The three basic human needs posited by self-determination theory were autonomy, competence, and relatedness (Deci & Ryan, 1985). *Autonomy* refers to an individual's perceived control or senses of choice, initiation, and volition; *competence* refers to feeling of being efficacious in a situation; and *relatedness* refers to satisfying the need for interaction with others. Ryan and Deci (2000a; 2000b) asserted that people strive inherently to fulfill these three basic needs in order to achieve optimal and healthy psychological satisfaction. An essential claim of self-determination theory was that the

social context influences the fulfillment of these autonomy, competence, and relatedness needs. Together, these need fulfillments eventually promote an individual's self-determination (Deci et al., 1991).

Two sub-theories of self-determination theory explained how people interact with the environment and integrate external values into the self (Deci & Ryan, 1985):

Cognitive Evaluation Theory, and Organismic Integration Theory. The first sub-theory, Cognitive Evaluation Theory was used to represent how social contexts enhance human beings' motivation. According to Cognitive Evaluation Theory, individuals are naturally inclined to satisfy their needs to perceive that they control their surroundings and have a personal internal locus of causality, which ultimately leads to their intrinsic motivation. In contrast, when fulfillment of needs is externally determined and there is a lack of feelings of controllability intrinsic motivation diminishes (Deci & Ryan, 1985; Pintrich & Schunk, 2002).

A second sub-theory, Organismic Integration Theory, asserted that humans are active and growth-oriented organisms with a natural tendency to accommodate and assimilate their environment, indicating an internal ability to incorporate external experiences into the self (Deci & Ryan, 1985; Deci et al, 1991; Ryan & Deci, 2000a). Organismic Integration Theory explains the different forms of external motivation, called self-regulation or self- motivation.¹ Organismic Integration Theory emphasizes that people have abilities to absorb environmental conditions into the self. The degree to which they do so results from the degree of internalization processes of extrinsic

¹ In this paper, to distinguish the process of autonomy from self-regulatory process, different forms of autonomy are termed self-motivation.

motivation; *external, introjected, and identified* self-motivation represented increasingly internalized self-motivation. When people are entirely motivated by internal desire and interests, Deci and Ryan (1985; Vallerand, Pelletier, & Koestner, 2008) called it *intrinsic self-motivation*. Internalization, therefore, is regarded as a motivation process reflecting people's understanding of their social context and integration of social triggers within themselves. These four different stages of self-motivation are considered to represent different degrees of autonomy.

Three Components of Self-Determination Theory

According to Deci and Ryan (1985; Ryan & Deci, 2000b) self-determination theory is determined by fulfillment of three basic needs: autonomy, competence, and relatedness. Fulfillment of needs plays an important role in guiding individuals toward more proper functioning and well-being in social contexts. The general propensities associated with the three needs are discussed below.

Autonomy. The need for autonomy is defined as “the experience of choice in the initiation, maintenance, regulation of activity, and the experience of connectedness between one's actions and personal goals or values” (Connell, & Wellborn, 1990, p. 51). Autonomous individuals experience integrity, volition, and vitality. When intrinsically motivated, people engage in what are called *self-determined* activities. Thus, these individuals act with a full sense of volition and without a desire for rewards (Deci & Ryan, 1985; Vallerand & Bissonnette, 1992). Extrinsically motivated behaviors, by contrast, are performed not because of internal interest but because of external values

placed on performing an activity such as rewards (Levesque, Zuehke, Stanek, & Ryan 2004).

To adopt external motivation into self, there must be internalization processes that are generated when an individual interacts with the environment, a continuous autonomy seeking process. This is where originate external motivation; introjected self-motivation; and identified self-motivation. Identified self-motivation is considered as coming closest to intrinsic self-motivation (Ryan & Deci, 2000a). The final condition, intrinsic self-motivation, is achieved when students have a full sense of autonomy (Connell & Wellborn, 1990; Deci & Ryan, 1985; Deci et al., 1991; Ryan & Deci, 2000b). As stated, each motivational state comes with different predispositions. (a) External motivation refers to one's willingness to do something to receive an external reward. One takes an action because of the expected external contingency; (b) Introjected self-motivation is taking in but not fully accepting a value as one's own. Students who have introjected self-motivation may feel pressure to behave a certain way and feel shame if they do not do so. Recently, Assor, Vansteenkiste, and Kaplan, (2009) distinguished between *introjected avoidance* (to avoid feelings of shame), from *introjected approach* (to engage in something because one must); (c) Identified self-motivation occurs when the person has come to value the outcomes or goals. Also, a person with identified self-motivation has accepted external value and made them an internal value (feels it is important to do something) and feels more autonomous than one with introjected self-motivation; (d) The final component, intrinsic self-motivation, is an advanced form of autonomy in which a person behaves out of his or her own interest, values, and enjoyment.

Benware and Deci (1984) reported that college students who were intrinsically motivated learned text material with better conceptual understanding than did students who learned text materials for a test. Connell and Wellborn (1990) also suggested that students who were more intrinsically motivated and who developed more autonomous self-motivational styles were less likely to drop out of school and were better adjusted at school than were students with less self-determined types of motivation. Recent research findings by Vansteenkiste, Sierens, Soenens, Luyckx, and Lens (2009) revealed that students who feel highly autonomous and less controlled showed optimal learning outcomes such as cognitive processing, positive cognitive learning strategies, and better performance more so than did students who had high autonomy and high control, low autonomy and low control, or low autonomy and high control.

Competence. Competence has been defined as “the experience of oneself as capable of producing desired outcomes and avoiding negative outcomes” (Connell, & Wellborn, 1990, p. 53). It is central to several current motivation theories in education. According to some researchers (Connell & Wellborn, 1990; Skinner et al., 1990), there are three conditions that enhance perceived competence: (a) one should know what strategies lead to academic success (strategic beliefs: e.g., which effort or ability causes academic performance); (b) one must believe that he or she can access the strategies and expects to have the strategies (capacity beliefs: e.g., Can I exert effort? Am I smart?); and (c) one believes that he or she can produce desired outcomes with capabilities (control beliefs: e.g., Can I do well at school?).

Several studies have shown that people who feel self-efficacious are more strategic and capable of success (Krapp, 2005; Ryan, & Deci, 2000b; Skinner et al., 1990; Zimmerman & Bandura, 1994). There has been some research investigating the relationship between perceived competence and behavioral engagement (Connell, & Wellborn, 1990; Pierson & Connell, 1992; Skinner et al., 1990). Results have supported two ideas: that the degrees of perceived competence are related to students' behavioral engagement such as putting out effort; and that such engagement predicts student performance. A longitudinal study by Caprara, Fida, Vecchione, Bove, Vecchio, Barbaranelli, and Bandura (2008) investigated relations among students' self-efficacy, academic achievement, and likelihood of remaining in junior high school. Results showed that students' high perceptions of self-efficacy showed high correlation with a good grade and a high rate of retention at school.

Relatedness. In the 1960s, Maslow famously proposed that human beings are guided by a hierarchical set of desires. A fundamental desire, necessary to fulfill higher desires, is a sense of belongingness. Relatedness, a form of belongingness, is also a potentially important factor in education (Goodenow, 1992). This perception of relatedness is initiated by social interaction. According to researchers coming from diverse perspectives, students' fulfillment of relatedness needs can be defined in various ways, such as perceiving a sense of community or caring community, and a sense of belonging (Battistich, et al., 1997; Goodenow, 1992; Ryan & Powelson, 1991; Cross, 1999). A sense of community was found to be positively associated with students' learning, prosocial attitude, motivation, autonomy, and efficacy. It was also negatively

correlated with dropping out of school and maladaptive behaviors in school (Goodenow, 1992). Social constructivists assert that high quality social interactions accumulates a sense of belonging and social-emotional ties to others, as well as influencing students' motivation and knowledge acquisition (Cross, 1999; Goodenow, 1992; Ryan & Powelson, 1991).

Battistich et al. (1997) claimed that collaboration with other students created understandings of others' needs and on-going feelings, and a sense of community. In a similar vein, college students who had frequent contact and perceived relatedness with a faculty member were more likely to be satisfied with their academic experience and perceived that they learned more (Braxton et al., 2000; Christophel, 1990; Cross, 1999). Frequently, we can see that when individuals are willing to behave in certain ways, it is associated with values or goals that significant others in their lives have encouraged (Iyengar & Lepper, 1999; Markus & Kitayama, 1991). These others can be family members, a peer group, or teachers. In classrooms, students' feelings of being respected and cared for by the teacher may be important to their willingness to accept the preferred classroom values (Ryan & Deci, 2000b; Wendzel, 1999). A caring and supportive classroom environment seems crucial to enhance a student's perception of being connected to teacher, and between the self and peers.

Thus, a sense of relatedness seems important to students' learning process and engagement in activities. The engagement can be defined as effort and proactive behaviors to reach a goal. Students' asking for help, as a proactive behavior, likely occurs when students perceive a caring and warm classroom climate because they become less

concerned less about others' negative judgment about their abilities in such a classroom (Ryan, Pintrich, & Midgley, 2001). Results of previous studies imply that relatedness may be a key predictor of students' motivation and academic performance. A study by Furrer and Skinner (2003) tested the effect of relatedness need fulfillment on behavioral and emotional engagement and performance. Each perception of relatedness with peers, with parents, and with teacher uniquely predicted these outcomes but fulfillment of relatedness need with teacher was a more important predictor than others for students. Thus, relatedness need fulfillment by relationship with peers or with teachers contributes to students' motivation and learning. It comes down namely to the social dynamic aspect of relatedness in classroom settings.

Associations Among Need Fulfillments

Heretofore, I have dealt with each need separately. However, Deci and Ryan's theory is a claim that self-determined motivation results from straining to fulfill all three needs. In this section, I address research that has considered how more than one need may work together. Ryan and Powelson (1991), in a review paper, emphasized two strong fundamental needs, autonomy and relatedness, as influencing students' learning processes. They argued that internalization processes of autonomy would be facilitated by the degree to which students perceive surroundings as supportive and connected. Koestner and Losier (2002) also explained how relatedness affects different degrees of autonomy. To verify their notion, we have to consider the internal mechanisms of internalization and integration. These two mechanisms explain how external values or goals can be transferred into the self. If the goals are set by a person to whom students

feel closely connected, they are more likely to internalize those goals. This notion was supported by the research findings of Iyengar and Lepper (1999), suggesting how relatedness need fulfillment influenced students' autonomy and competence need fulfillment.

In addition, when students perceive themselves as competent in an activity or domain, they are more likely to internalize external values (Deci et al., 1991; Ryan & Deci, 2000b). This idea can also be derived from a close analysis of each concept. Competence need fulfillment refers to one's perception of skills and controllability in the environment to complete a task. Perceived competence may be enhanced not only when individuals successfully accomplish a task but also when they perceive cues of support by others with whom students have close relationships. Although suggestive, little research has investigated how students' perceived relationship influences fulfillment of autonomy and competence needs. More research needs to be done to establish that relatedness need fulfillment plays a pivotal role in degrees of autonomy and competence need fulfillment.

Students' Experiences of Course Well-Being

Overview

As the recognized leading research on well-being, Ryff (1989; Keyes et al, 2002) put forward two dimensions: subjective well-being and psychological well-being. Subjective well-being refers to one's happiness, self-esteem, and satisfaction with life. By contrast, the concepts of personal growth and development are pivotal components of psychological well-being. These two dimensions are exemplified. Students have course-related psychological well-being when they perceive course satisfaction and enjoyment as

well as they feel growth or development when they confront and overcome difficult academic situations.

A study by Patrick et al. (2007) used self-esteem, positive and negative emotions, and vitality of life as indicators of psychological well-being. They connected such indicators with fulfillment of autonomy, competence, and relatedness needs. Results showed that each need fulfillment positively and uniquely predicted self-esteem, positive emotions, and vitality, but predicted negative emotions in a negative direction. Perceived relatedness was an especially strong predictor of well-being indicators. These results are consistent with findings of some studies that investigated such associations (Sheldon & Elliot, 1998; Vantenkiste et al., 2006).

In a review article Ryan and Deci (2000b) supported the assertion that when students are more externally motivated, they tend to have fewer interests, less enjoyment, and fewer positive emotions as well as more negative emotions. On the other hand, when students are more internally motivated such as having intrinsic and identified self-motivation, they feel more interested, enjoy themselves more, and have more positive and fewer negative emotions. Thus, students' course well-being may reflect degrees of motivation students have experienced in a course. For my study, I considered three indicators of course well-being: higher levels of positive emotions, lower levels of negative emotions, and course satisfaction. These represent the degree to which students' need fulfillment contributes to their psychological well-being experience in a course. One more course well-being indicator I considered in this project was the students' grade in the course, arguing that grades reflect motivation by way of effort to achieve.

Course Well-Being

Emotions. Lazarus (1991) presented emotions from the viewpoint of a socio-cultural perspective. According to him, emotions are related to three components: cognition, motivation, and emotion. Cognition refers to knowledge and appraisal of what is happening; motivation indicates a person's internal characteristics and goals. These factors generate emotional responses. Thus, in his view, an event or context does not directly induce emotional responses. Rather, people interpret information and construct its meaning in the context of levels of motivation, and then generate emotions (Frijda, 1988; Schutz & DeCuir, 2002).

Researchers have clarified what emotions are as well as identified what triggers emotions and what can be influenced by emotions. Researchers such as Boekaerts (1993), Linnenbrink and Pintrich (2002), and Pekrun, Goetz, Titz, and Perry (2002) have, in particular, focused on emotions in an academic environment. They put forward that emotions are associated with students' learning process in academic as well as general situations, and are related to environmental factors. According to Pekrun et al. (2002), negative emotions of boredom and hopelessness were correlated negatively with all of the motivational variables and self-reported effort. On the other hand, positive academic emotions facilitated flexible and creative thinking such as elaboration, organization, and critical thinking.

Some researchers have provided models showing both precedents and consequences of emotions. Boekaerts (1993) proposed a model revealing how people engage in emotional experiences. According to her, students have goals (intentions) and

the goals are, in particular, to induce positive or negative emotions in learning situations. When a student perceives a learning task to be irrelevant to her or his goals for psychological well-being, no intense emotions are elicited. When students perceive their goals to be at stake, their psychological well-being may be threatened, and then negative emotions such as anxiety, anger, or disappointment are induced. Pekrun et al. (2002; Pekrun, Elliot, & Maier, 2006) illustrated reciprocal causation among environment, appraisals (motivation), and academic emotions. Their model presented emotions and motivational appraisals as related to emotions. These emotions also became precedents of motivation.

In learning situations, there are various emotional mechanisms generated by social interactions between a teacher and students, students and students, and context and students. A study by Do and Schallert (2004) showed that students experienced different emotions according to their active or passive engagement in discussion processes. Positive social experiences (e.g., teachers' autonomy support and caring) at school are likely to activate positive emotions and motivation, whereas a lack of social resources jeopardizes these experiences (Battistich et al., 1997; Nodding, 2005; Skinner & Belmont, 1993).

Emotions reflect students' positive or negative motivational experience. When students are aware of experiencing positive emotions in class, even though they participate in negative situations, the positive feelings may ameliorate such a situation (Meyer & Turner, 2006). Research by Turner and Schallert (2001) investigated how a negative emotion, shame, influenced college students' motivation and academic learning.

Results showed that shameful experiences were associated with failure of goals or standards that students considered important. Also, when students had specific valued goals for a course (even if they were external values), they tended bounce back after their failure.

Another line of studies has investigated associations between students' emotional experiences and contextual factors. A study by Frenzel, Pekrun, and Goetz (2007) examined what classroom environment was associated strongly with discrete emotional experiences. As for classroom environment, they included quality of instruction, positive peer esteem, punishment, and competition. Results illustrated that the quality of a teacher's instruction played an essential role in reducing students' levels of anxiety in mathematics. Also, students' peer esteem was positively associated with enjoyment and negatively to anxiety, anger, and boredom.

Pekrun and his colleague (2006) presented a 2 (positive and negative emotions) X 2 (activity- and outcome-focused emotions) taxonomy of academic emotions. Considering these different dimensions, I included, in this study, five discrete emotional well-being indicators: the positive emotions of enjoyment and hope; and the negative emotions of anger, anxiety, and boredom. Pekrun et al. (2006; 2006) identified boredom and enjoyment as activity focused emotions but hope, anger, and anxiety as outcome focused emotions.

Course satisfaction. Students' satisfaction with a course can be the most notable indicator of how much students are engaged in a class. Nie and Lau (2009) reported on associations among teacher caring attitudes in class and students' satisfaction at school.

Teachers' caring was a strong predictor of perceived relatedness. Results also indicated that teachers' attitudes were strong predictors of students' reported effort, attention, and participation in class activities, as well as their satisfaction at school. The study suggested that teachers' attitudes facilitate students' positive motivation as well as behavioral engagement and psychological well-being.

Grade. How much students are motivationally and behaviorally engaged in learning may predict positive academic outcomes (Lepper et al., 2005; Skinner et al., 2008; Skinner et al., 1990). Thus, I proposed for this study that students' grades may reflect the level of their motivation for a course. Although anticipated grade is not directly a measure of psychological course well-being, it would strongly reflect how much students experienced optimal motivation in a course. Accordingly, students' anticipated grades in a course were used as one of the indicators of course well-being.

Different Degrees of Need Fulfillment and Course Well-Being in Different Contexts

So far, I paid attention to students' academic motivational experiences and well-being in a course. Recall discussions above, students' motivational and emotional experiences may be differentiated by different contextual factors. Thus, students may experience levels of motivation and course well-being differently from course to course. Some prior studies are suggestive of this idea. Marsh and Craven (1997) argued that unrealistic high self-competence and values of young children became more realistic and practical through experiences of strength and weakness as students get older because of their developing cognition. This notion was also consistently presented by several researchers (e.g., Harter, 1998; Wigfield & Eccles, 2002). Marsh and Ayotte (2003)

asserted their *differential distinctiveness hypothesis* to describe that students have multidimensional self-concepts across different domains. To support this claim, they investigated self-concepts of competence and affect across different domains from grades 2 to 6. They compared correlation patterns of self-concept at each age to support the hypothesis that it would decline strong correlations of self-concept across domains with increasing age. This hypothesis was partially supported in that overall results showed decreasing correlation patterns across domains, but some categories increased with age. This indicates that some students' self-efficacy would be strong in certain domains such as math or physics, but some would not be strong in music. Therefore, although students have differential self-concepts across domains, they will have higher self-concepts in certain domains as age increases.

In a related line of research, some researchers have tested whether students' academic motivation and emotions are consistent within and between domains (Bong, 2005; Goetz, Frenzel, Pekrun, Hall, & Lüdtke, 2007; Urdan & Midgley, 2003). These studies were particularly interested in students' situational perceptions of motivational and emotional experiences concerning students' perceptions of contextual factors rather than in already shaped self-concepts. Goetz et al. (2007) used multilevel modeling to measure German students' discrete emotional experiences between- and within-domains: math, physics, German, and English. Results supported that students felt diverse emotional experiences across the courses that they are taking. This result implies that students may also have different perceptions of need fulfillment across courses they are taking. In this study, I was interested in within-student differences of need fulfillment

across courses and between-student differences across students. This research design was used in one study by Schmidt, Shernoff, & Csikszentmihalyi (2007), revealing within-student flow experiences across different contexts.

These studies investigating situational perceptions of motivation and emotions, as mentioned previously, revealed associations with contextual factors (Bong, 2005; Goetz et al., 2007). Likewise, in my study, whether students experienced different levels of need fulfillment and course well-being across the courses they were taking was fundamental and important to establish. As I extended this research question, I assumed that diverse course characteristics would influence autonomy, competence, and relatedness need fulfillment and course well-being. These diverse course characteristics have been investigated previously, and this is the literature I review next.

Course Characteristics: Essential Conditions For Motivation

Overview

One perspective influencing the field of educational research is social constructivism focusing on the idea that all student learning within social contexts (Palincsar, 1998). The Vygotskian theory of learning, in particular, addresses how students learn by actively engaging with a context (Cole, John-Steiner, Scribner, & Souberman, 1978). Patrick et al. (2007) addressed need fulfillment as enhanced in certain optimal conditions. Students would interpret environmental cues that they experience within a context, and thus these optimal or harmful contextual indicators enhance or threaten students' motivation. Therefore, researchers have noted that students' motivation should be considered within the particular context in which learning takes place. In

particular, self-determination pointed to the need to consider interactions between human needs and contexts (Deci & Ryan, 1985). In another line of research on emotions, several researchers (e.g., Lazarus, 1991; Pekrun et al., 2002; Frenzel et al., 2007) have highlighted interactions among emotions and contextual factors.

Courses Characteristics and Need Fulfillment

Research has identified particular contextual factors that enhance students' autonomy, competence, and relatedness need fulfillment. First, students' perceptions of external controllability of their classroom would decrease need fulfillment of autonomy (Williams & Deci, 1996). It has also been shown that when students perceive an environment as supportive of autonomy, they may experience fulfillment of autonomy need. One study by Patrick et al. (1993) showed that external and introjected self-motivations were related to extrinsic stimuli such as powerful others, luck, and unknown reasons. Yet identified and intrinsic self-motivations were related to internal value by attributed causations such as effort and ability. Second, competence need fulfillment is enhanced by students' vicarious successful experiences or others' encouragement. A study by Roeser et al. (1996) suggested that an elementary school environment emphasizing caring and supportive climates and effort predicted fulfillment of competence needs. This result is congruent with findings by Garcia and Pintrich (1996) that suggested information that college students, like the elementary students' experience, felt more competent and were more intrinsically motivated under a supportive environment. Third, among diverse environmental aspects, a warm and caring environment as well as a teacher's pedagogical knowledge and good structure seemed to

influence relatedness need fulfillment (Kim & Schallert, 2009). According to research by Goetz and his colleagues (2006), peer regard, family support, instructional skills and feedback, and teachers' enthusiasm were positively associated with enjoyment and pride, but negatively associated with anxiety, anger, and boredom. Also, Pekrun and his colleagues (2002; 2006) not only investigated relations among students' goal orientation and emotions, but also put forward a model revealing reciprocal relationships among emotions, environments, and motivations.

What contributes to creating an optimal educational environment and what influences students' desired motivational experiences have interested researchers. In response, researchers have inspected diverse contextual factors. However, although previous studies included a few contextual factors, few studies have explored and compared a wide range of environmental factors and their unique associations with each need fulfillment. For my project, broad classroom environmental factors supported by earlier research findings were integrated to represent social, motivational, structural, and affective characteristics. I grouped these categories into course structure, course value, teacher characteristics, classroom goal structure, and caring classroom climate.

Course structure. Largely because of policy interests, the effect of class size has been investigated with recommendations to reduce size of class to improve educational conditions. Because reducing class size will create significant costs, it seemed prudent to investigate its effect. Engleheart (2007) in his review paper noted that research findings in relation to class size have been surprisingly inconsistent. He argued that inconsistency occurs because a single factor of class size cannot explain complicated classroom

dynamics. He argued that determining how effective class size is in influencing students will be clearly shown when it is tested along with other factors such as how students interact with teachers or with peers.

Research by Koth et al. (2008) investigated the unique effects of class size and teachers' years of teaching experience, as well as their interactive effects on students' perceived school safety and motivation. Results showed that larger class size positively predicted students' academic motivation. Also, the interactive effects negatively predicted both motivation and a safe climate, indicating that students were more motivated and felt safe when they participated in large classes and were taught by new teachers. They interpreted this result as students' perceived teacher attitudes may mediate students' perceptions. Thus, students' perceived teachers' caring and teacher relationship mediated their perceptions of motivation and safety. Another study by Blatchford, Baines, Kutnick, and Martin (2001) examined relationships between class size and a number of within-class groupings. Small size and small number of groups were effective predictors of students' learning. When students in large class worked in a group with smaller members, this positively predicted students' contributions and involvement in classroom activities. These studies supported Englehart's (2007) claim that emphasized interactive effects of class size with other contextual factors.

There are teacher- or learner-centered classroom structures. A teacher creates such instructional structures by encouraging interactions such as lecture or group work only. Previous studies (Solomon, Watson, Battistich, Schaps, Tuck, Solomon, & Cooper, 1985; Solomon, Watson, Battistich, Schaps, & Delucchi, 1992) proposed a model

showing students' motivational and emotional experiences by interactions among peers and teacher. They addressed in this model that interaction-based learning created students' desired learning behaviors such as sharing emotion and cognition, helping and understanding one another. The model allows us to understand how contextual conditions influence students' cognitive, affective, motivational, and behavioral factors, and then prosocial behaviors.

Course value. Value theory explains how a value, coming either from an internal or external entity, affects students' motivation (Wigfield & Eccles, 2000). An internal value refers to students' interest or enjoyment of a subject or task. An external value, also known as utility value, refers to an activity's usefulness to a student. Such utility value may be related to students' plans for the future. Turner and Schallert (2001) had predicted that students holding utility value (e.g., students taking a course because of its relevance to future plans or goals) might be vulnerable to negative emotions. Instead, they found no significant association between utility value and the experience of the negative emotion of shame. Yet, of those experiencing shame upon receipt of test scores, those who reported strong utility value for the course recovered from their shame experience to reinvest their efforts in the course when compared to those reporting lower utility value. In another study, possessing different values predicted students' different behavioral engagement in a task such as spending time on a task (Durik et al., 2006). Students with utility value for reading reported that they were less likely to take courses related to reading. In contrast, students with intrinsic value toward reading rated high on both number of courses that required much reading and how much time they spent reading.

Another study by Hulleman et al. (2008) investigated both academic and sports summer camp situations, bringing in three perspectives of motivation (expectancy-value, interest, and goal-orientation) and connected those with achievement, consequential interest, and satisfaction. Results showed that students who had high initial interest and utility value for activities were likely to perform better than were students with low initial interest. Also, both intrinsic and utility values positively predicted students' satisfaction with a task and consequential interest.

Taken together, value, especially initial reason to take a class, seems to be considered as an influential course characteristic. Students, particularly college level students, hold different values for different subject areas. Students in college choose some courses because of their own internal interest and others because the courses fulfill requirements for their major. Thus, it can be assumed that students would perceive different values for each course they were taking. In my project, I included variables reflecting external and internal value: interest as a reason for taking a course for intrinsic value, requirement, and future career reason for taking a course for external value (or utility value). Courses within a student's major would have a bearing on the future, namely such a course might be conceptually related to utility value. In contrast, a course chosen regardless of major will appeal because of its intrinsic interest. Thus, in this study, I used whether students were taking a course as part of their major as one indicator of value categories.

Teacher characteristics. Many researchers have suggested that good instruction elevates students' use of skills and their ultimate learning (Pintrich, 2003; Skinner &

Belmont, 1993; Meyer & Turner, 2002; Stefanou, Perencevich, DiCintio, & Turner, 2004; Turner & Meyer, 2000). They have described this instruction as supportive of autonomy, intrinsic purpose (or interest), and meaningful learning. A great deal of research has supported the notion that students' perceptions of their teacher's involvement contributed to enhancing their mental and emotional engagement, and subject-specific academic intrinsic interest and values (Battistich et al., 1997; Furrer, & Skinner, 2003; Goodenow, 2002; 2003; Ryan & Deci, 2000b). Roeser et al. (1996) reported that good relationships with teachers led to students' efficacious beliefs in academic settings. To investigate teachers' behavioral and emotional engagement, Skinner and Belmont (1993) used students' perceptions of teachers' autonomy support, affective and behavioral involvement (e.g., understanding, sympathy, and aid), and structure (e.g., clear guidance and explanation, and instrumental help) as descriptors of teachers. Results revealed that students' perceived teacher characteristics positively predicted their emotional and behavioral engagement, uniquely. In a similar vein, Braxton et al. (2000) reported that at the college level, the quality of interactions with faculty and with peers predicted retention. They found that social interaction facets predicted students' engagement in learning and in the long run their retention and commitment to school. The results imply that students are more engaged in school when they are satisfied with the quality of the faculty teaching their classes. In contrast with previous research measuring students' perceptions, Walters and Daugherty (2007) used teachers' perceptions for their instructional skills. Consistent findings with students' perceptions were shown in their research. They found that teachers' perceived abilities

for classroom management, pedagogical competence, and engagement enhanced students' motivation and encouraged students' behavioral involvement in learning activities.

Taking an integrative perspective on the previous research, I postulated that teacher characteristics (teachers' pedagogical competence, classroom management, and autonomy support) could contribute to students' positive motivational experience and learning. I assumed that students' perceptions of teacher characteristics would reflect their learning directly and strongly. Thus, the present study focused on students' perceptions of teacher characteristics along with the three dimensions mentioned above.

Classroom goal structure. A large body of research has suggested how classroom goal structure is associated with students' motivation (Anderman & Anderman, 1999; Bong, 2005; Church, Elliot, & Gable, 2001; Meece & Miller, 2001; Urdan & Midgley, 2003). According to research findings by Meece and Miller (2001), students' personal goals were closely related to cognitive processes. That is, task-mastery goal orientation showed, in terms of literacy learning, deeper and more active cognitive learning processes (e.g., meta-cognitive learning strategies). Additionally, students' multiple goal orientations decreased over time. What led these to decline was not reported. One possible answer could be that students' perceptions of goal orientation could be related to their perceptions of contextual factors. This association was supported in research by Bong (2005).

Another study by Urdan and Midgley (2003) supported the idea of the effects of contextual factors. The study allocated students to three groups according to their

perception changes of mastery or performance goal structures: decrease, no change, and increase of goal structures. Results showed that change of mastery goal structure was the strongest predictor of use of learning strategies that could possibly improve task performance. Decrease in mastery goal orientation was more strongly and negatively associated with cognition and affect.

Research findings by Corpus et al. (2009) suggested positive associations between school goal context and personal goal orientation. Results suggested that each of mastery and performance goal contexts as school goal structures may be important factors in how much students enjoy or are interested in their course (mastery goal orientation), and how much they feel competition and consider others' evaluations (performance goal orientation), respectively. However, the study focused on the whole school context rather than on investigating the classroom goal context that may actually and directly affect students' motivational experience. Some studies have investigated goal structures at the college level. Lyke and Young (2006) showed that a classroom rated as high in extrinsic goal structure had students who used rehearsal strategies and not deep cognitive strategies. Intrinsic classroom goal structure predicted students' use of cognitive strategies including both deep and surface strategies.

A few studies have investigated relations among different goal structures, and the three needs of self-determination theory. However, we can also assume that each goal structure may also be associated with elements of self determination. In particular, different levels of internalization of external values would be related to contextual cues. For instance, mastery goal structure would be closely associated with intrinsic motivation

and competence, in that mastery goal structure emphasizes internal enjoyment of learning and competence.

Caring classroom climate. Previous researchers (Battistich et al., 1997; Goodenow, 1993; Meyer & Turner, 2006; Noddings, 2005; Wentzel, 1997; 1999) have written about the importance of a caring classroom climate as a precursor to students' learning and motivational engagement, as well as positive emotional experiences. Indeed, when students are in caring contexts and encounter difficult academic situations, they are more likely to approach teachers or peers to resolve their difficulties, as well as to feel less negative emotions. Teachers' attitudes that are considered to be pedagogically caring and socially supportive may influence positively students' motivation and academic interest (Goodenow, 1993; Wentzel, 1997). A study by Wentzel (1997) indicated that a teacher's caring attitude was associated with students' willingness to pursue engagement in classroom activities.

Although most studies have suggested the effects of teacher's caring attitudes on students' motivation (Meyer & Turner, 2006; Nie & Lau, 2009; Wentzel, 1997) peers' caring attitudes may also influence students' perceptions of caring. Teacher and peers' caring may form a caring classroom climate, and thus, I included caring factors as one of the course characteristics. A caring classroom climate should be thought of as a social and affective component of the classroom context.

Personal Factors

Markus and Kitayama (1991) argued that the self is central in affecting cognitive, emotional, and motivational processes. I am suggesting two aspects as elements of the

self relevant to the experience of relatedness. I assumed that these internal factors would affect relatedness need fulfillment regarding context: one's degree of a general need for relatedness to others and one's general relatedness need fulfillment in everyday life.

A General Need For Relatedness

A person's needs form a sort of background condition from which emerge emotions and motivation in learning settings (Krapp, 2005; Ryan & Deci, 2000a; 2000b). Such needs are different from person to person, meaning that individuals may have different degrees of a desire to be related (e.g., Goodenow, 2002; Knapp, 2005; Patrick et al., 2007). Some people may need more support from significant others and close relationships to feel positive emotions and motivation, whereas others are more independent from others and need less close relationships with other people. This notion is congruent with an argument by Iyengar and Lepper (1999) who claimed that there exist personal preferences for being close to others. They asserted that the degree to which a person was satisfied with the level of personal desires would determine how much he or she internalized values. In the study, they found that Asian students who were interdependent on parents performed better when a task was given by their mother than by when they selected it themselves. However, American students performed better when they chose a task than when they were assigned a task. These findings are similar to the argument by Markus and Kitayama (1991) who claimed that individuals perceive the self differently if they are from independent or collectivistic cultures. Individuals from independent cultures perceive the self (cognition and emotion) as separate from others, whereas those in collectivistic cultures perceive the self as connected closely with others.

I argue that not only among cultures, but also among students, there would be variation in need for relatedness. Therefore, some students would be more independent from others but other students more dependent on relationships. Such variation in general need for relatedness might influence students' emotions, motivation, and well-being in particular courses as well as generally.

General Relatedness Need Fulfillment in Everyday Life

A second aspect of the self regarding relatedness is the general perception that one's need for relatedness is fulfilled in one's everyday life. This general relatedness need fulfillment would be associated with fulfillment of relatedness needs in particular contexts. The association can be inferred by argument from another construct.

Linnenbrink and Pintrich (2002) identified two different states in affect: mood and emotions. Mood refers to general affective states and emotions refer to particular affective states regarding a certain context. Thus, mood seems to be a general feeling that one possesses but emotions are feelings that one perceives in a context and that affects learning outcomes directly. Researchers claimed not only the existence of these different states but also their interactions and effects on students' motivation. Likewise, I posited that general relatedness need fulfillment in everyday life and relatedness need fulfillment in a particular context would interact with each other and then affect motivation.

General Personal Growth

Human growth and development are important considerations for educators and educational psychologists. Individuals experience personal development and growth when they overcome optimal challenging situations (Ryff, 1989). In this study, I assumed

that students' aggregated course well-being experiences across the courses they were taking would be associated with their general psychological growth.

Sex

I predicted that the sex of the participants would be associated with how likely they were to report certain perceptions on motivation and course well-being. I assumed that female students would perceive higher relatedness need fulfillment to peers in a course than male students because they would more likely connect to peers. However, levels of autonomy or competence would be not associated with sex because both men and women need to perceive a certain amount of autonomy and competence. However, this study explored how sex was related to each motivational factor and to well-being. A study by Wentzel (1997) reported that girls were likely to report closer relationship with the instructor than boys, and boys were likely to report more controllability from others than girls. Thus, I included sex in the study as a variable at Level 2 to examine whether students' sensitivity differed by sex in terms of their aggregated motivation and course well-being.

Chapter 3

Method

Participants

Through the subject pool provided by a large university, 505 college students (214 men and 289 women, and 2 no-responses) participated in this study. Students ranged in age from 18 to over 30, with 7 students (1.4 %) identifying themselves in the over 30 category. Most students (n = 454, 89.9%) chose the between 20 and 23 category. Participants consisted mostly of seniors (n = 355, 70.3%) and juniors (n = 110, 21.8%). Students reported their ethnicities as white/Euro-American (83.8%, n = 423); Hispanic/Latino (9.1%, n = 46); Asian/Asian-American (2.8%, n = 14); American Indian (.6 %, n = 3); black/African-American (.4%, n = 2). Finally, there were 7 students who marked “mixed” (1.4%, n = 7) and 10 students who chose not to give their race.

Participants enrolled in the subject pool were taking a course in the Education Department but were from diverse majors. These were reported as business (n = 130, 25.7%), engineering (20.2%, n = 102), education (20.0%, n = 101), communication (17.4%, n = 88), and graduate school (11.5%, n = 58). The rest of the majors were fine arts, liberal arts, natural sciences, nursing, pharmacy, and school of information with 25 students. Finally, there was one no-response on their question.

Structure of Data

Participants were asked randomly to select up to four courses from the list of courses they were taking in that semester and to respond to sets of questionnaires about the four courses. In the end, I received information on 1817 courses. I removed 17

courses because these were reported on by 17 students who provided information on only one course. Twenty seven students were taking two courses, 98 were taking three courses, and 363 were taking four courses. This study needed a great variety of courses. Such information allowed me to gather diverse course characteristics derived from different courses and from different majors. This was possible because the subject pool took in a broad range of majors and included students enrolled in many courses. At the beginning of each set of questionnaires, I asked students to give the names of the instructor and the course. This helped me to identify what course information among all courses overlapped. Course information was constructed by what students reported (up to 4 courses from a student). Of the total 1800 course information participants reported, 708 courses were reported on by only a single individual students; two courses were included by a large number of students, 152 and 150 students each; 13 courses were reported on by 10 to 28 students; and 192 courses were provided by from 2 to 9 students.

Procedure

Data were collected using an online questionnaire administered toward the end of the semester. Students could access the online survey website anytime it was convenient but were asked to complete one page at least each time.

The questionnaires were presented in two parts. In the first part, students were asked to provide demographic information followed by measures of their general needs for relatedness, general relatedness need fulfillment in everyday life, and personal growth in one's life. At the end of the first part, participants were asked to list all the courses they were currently taking in that semester. In the second part, they began to fill out sets of

questionnaires, one set per course that they selected randomly, beginning each set by identifying a name of the particular course and its instructor. They answered questionnaires for up to 4 courses. Each set asked them to respond to questions about course characteristics and their perceptions of autonomy, competence, and relatedness for that particular class. In addition, students were asked to rate academic emotions and course satisfaction scales, and to provide their anticipated final grade for that course.

Measures

Students rated themselves on a scale representing how much they agreed with each statement, ranging from 1 (not at all true) to 5 (very true). I analyzed validity and reliability tests for each construct by randomly selecting courses, one per each student. Table 2 (p. 69) represents Confirmatory Factor Analysis (CFA) for each construct to see whether results of CFAs were satisfied with in the threshold of construct validity (described in the analysis section). Table 2 shows the descriptive statistics and reliability for each scale. The measures are described next.

The study included a broad range of contextual factors and environmental motivational elements. Five categories of course characteristics were included.

Classroom structure was measured by: (1) an item asking students to describe the type of course structure (lecture-oriented class, individual work-oriented class, discussion-oriented class, small group activity oriented class, mix of small group activities and lecture, or other); and (2) an item asking students to indicate the size of the class by estimating the appropriate range of number of students in the class (over 100, 60-100, 26-59, 11-25, and 10 or fewer). I used these two categories as follows: the first

category was based on interactions or lecture (and individual work), and the second category was dichotomized into a small class (under 25 students) or not. Coding of 1 was for the reference and 0 for other.

Class value was measured by asking students two questions: (1) Why students were taking the courses: because of interest, because the course is required, or because it will be useful for the future. Students could choose multiple categories; (2) Whether a course is related to their major or not. These value questions were dichotomous categories. Coding 1 was the reference and 0 was the other.

Teacher characteristics were assessed by three subscales. *Teacher classroom management* included five items that asked about students' perceptions of teacher clarity of expectation, instrumentality, and flexibility. An example item is "The instructor guides the class activity during class." *Teacher pedagogical content knowledge (or teacher competence)* included six items that tapped students' perceptions of teacher knowledge in the content of the class and ability to answer questions. An example item is "The teacher answers questions easily." Two scales, teacher characteristics and teacher competence, were developed for a prior study (Kim & Schallert, 2009) and checked for reliability and validity. Finally, *teacher autonomy support* was measured by a scale taken from the *Research Assessment Package for Schools* (RAPS, 1998) and involved three items that asked about the teacher's supportiveness of autonomy in class. An example item is "The teacher of this class tries to control everything I do [reverse-scored]."

Classroom goal structure was measured by assessing students' perceptions of the classroom goal structure from the *Patterns of Adaptive Learning Scales* (PALS; Midgley,

Maehr, Anderman, Anderman, Gheen, Kaplan, Kumar, Middleton, Nelson, Roger, & Urdan, 2000). The three classroom goal structure scales were: *Mastery classroom goal structure* asking whether students think that their class emphasizes the development of students' own competence and learning (e.g., "In this class, trying hard is very important"); *Performance Approach classroom goal structure* asking whether students think that their class focuses on competition, evaluation, and good grades (e.g., "In this class, getting good grades is the main goal"); and *Performance Avoidance classroom goal structure* asking whether they think that the class emphasizes not showing incompetence in their class avoidance (e.g., "In this class, it's very important not to look dumb").

Caring classroom climate was measured using a scale adapted from the Students' Sense of School Community scale (Roberts, Hom, & Battistich, 1995). This scale was constructed to measure a caring community construct. Out of the total 47 items, I selected 13 items assessing students' perceptions of the classroom climate as caring, and as encouraging helpfulness and respect among class members. Therefore, the teacher's perceptions of a caring classroom climate and items that appeared redundant were discarded. An example item is "People care about each other in this class."

Students' motivation was assessed by measuring the fulfillments of the three basic needs in self-determination theory: four different degrees of autonomy (external, introjected, identified, and intrinsic self-motivation); competence need fulfillment; and two aspects of classroom centered relatedness need fulfillment (relatedness to instructor and relatedness to peers).

Perceived autonomy was used to assess students' perception of degrees to internalization and integration of autonomy using the Self-Regulation Questionnaire (SRQ-A; Ryan & Connell, 1989). Four subscales measure four levels of autonomy representing how much a person externally (external motivation) or internally (intrinsic self-motivation) valued learning. Also, the scale measures how much a person internalized and integrated external values toward self (introjected and identified self-motivations). These four subscales are often portrayed on a continuum: external motivation, introjected self-motivation, identified self-motivation, and intrinsic self-motivation. These scales measured reasons why students engage in activities associated with three situations: to work in class work, to participate in classroom activities, and to do assignments. The *external motivation* scale includes items like the following: "I work on class work because I'll get in trouble if I don't." An example item for the *introjected self-motivation scale* is, "I wanted the instructor to think I'm a good student." An example item for the *identified self-motivation* scale includes "I want to understand the subject." Finally, the *intrinsic self-motivation* scale measures students' enjoyment and interest, "It's fun."

Perceived competence was measured by assessing students' perceptions of their competence in a course, using the *Pattern of Adaptive Learning Survey* (PALS; Midgley et al., 2000). An example item is, "I am certain I can master the skills that are taught in this class."

Perceived relatedness was measured by the *Classroom Community Scale* (Bush, Svinicki, Achacoso, & Kim, 2004), assessing how much a student perceived relatedness

in his/her course. The first subscale, *Student-Instructor Interaction*, measures perceptions of the quality of interactions between a student and the instructor. Example items are “I feel as though my instructor respects each student in this class” and “The instructor gives me positive feedback when I make a comment in class.” The second subscale, *Connectedness*, measures the quality of interaction between the student and classmates. Example items are “Students value others’ opinions” and “The other students in class make me feel welcome.”

In addition, two factors were assessed as personal dispositions (Level 2): (a) students’ general desire to be connected; and (b) students’ perceptions of fulfillment of relatedness needs in their everyday life.

General needs for relatedness assesses how much a person desires to be connected to others and how much a person considers other people to be close. Example items are “I value close relationships in general” and “Generally, I am a person who considers what others feel.” I developed this scale for a previous study (Kim & Schallert, 2009) to see whether general needs for relatedness affect relatedness need fulfillment in the specific context of a course.

General fulfillment of relatedness needs in everyday life was taken from the *Basic Psychological Need* scale (La Guardia et al., 2000) measuring a person’s fulfillment of a need for relatedness in his/her everyday life. Each item asks how much a person is fulfilled in his or her social relationships in general. Example items are: “People in my life care about me” and “I get along with people I come into contact with.”

Both course well-being and general psychological well-being were included in

this study. Connecting these two different states of well-being allowed me to see how well students' aggregated academic course well-being predicted their perceptions of personal growth in general. As for course well-being measures, I asked about academic emotional experiences, course satisfaction, and an anticipated grade in each course. Finally, I asked students how much they perceived they had experienced personal growth in their general lives.

Academic emotions were measured using the *Academic Emotion Questionnaire* (AEQ; Pekrun, Goetz, & Perry, 2002). Out of eight subscales, I took five academic emotion subscales, choosing those that were learning and success related scales: enjoyment, hope, anxiety, anger, and boredom. According to Pekrun et al. (2006), feelings of enjoyment and boredom are related to the learning process, whereas feelings of hope, anxiety, and anger are related to outcome and success. Example items are "I get excited about going to class," "I am full of hope in this class," "Thinking about this class makes me feel uneasy," "I feel frustrated in class," and "I get bored in class."

Course satisfaction was adapted from the *Satisfaction With Life Scale* (Diener, Emmons, Larsen, & Griffin, 1985), assessing a person's perceptions of general satisfaction in his/her life. The original measure was adjusted to measure students' satisfaction with a course. Example items are "So far I have gotten the important things I want in this class" and "I am satisfied with this class."

Students' anticipated final grade were measured by asking students to report an anticipated course grade for each course, using the university's A, A-, B+, B, B-, C+, C, C-, D+, D, D-, F scores.

General personal growth was taken from Ryff's scale measuring six different dimensions of psychological well-being (Springer & Hauser, 2006): self-acceptance, personal growth, purpose in life, positive relations, environmental mastery, and autonomy. Of these six subscales, the *personal growth* subscale was used to measure students' personal psychological well-being in their everyday life. One example item is, "I have the sense that I have developed a lot as a person over time."

Research Questions, Hypotheses, and Rationale

Research Questions 1-1 and 1-2

(1-1) Do students perceive different levels of motivation and course well-being across different courses they are taking (Level 1)?

(1-2) Is there variability in the motivation and course well-being across students (Level 2)?

Hypothesis 1a: There will be sufficient variation in students' perceptions of autonomy (external, introjected, identified self-motivation), competence, and relatedness need fulfillment across courses and across individuals (Levels 1 and 2).

Hypothesis 1b: There will be sufficient variation in students' emotions (enjoyment, hope, anger, anxiety, and boredom), course satisfaction, and anticipated grades across courses and across individuals (Levels 1 and 2).

Rationale: Each course has different contextual and motivational dispositions that trigger different levels of perceptions toward situational motivation and emotions.

Multilevel modeling provides variation at Levels 1 and 2, indicating different degrees of motivation and course well-being across courses as well as across individual students. If a

sufficient amount of variance was shown at each level on these variables, my data would support this particular hypothesis. Research by Schmidt et al. (2007) tested whether people have different levels of flow experience across different contexts, using multilevel modeling. They reported that a student's perceived different levels of flow experiences across different contexts and variance at Levels, personal and situational levels, was explained by discrete contextual factors. In another line of research investigating students' different emotional experiences across several domains, Goetz et al. (2007) also provided evidence that sufficient variance existed between- and within-domains (math, physics, German, and English). The idea about within-student variance in motivation and emotions can be inferred from the *multidimensional self-concept* by Marsh and Ayotte (2003). They investigated whether individuals developed more discrete self-concepts of competence in different domains as they grew older. Although this study did not suggest students' different situational motivation and emotions that I aimed to establish, their overall results imply that college students could distinguish their different levels of motivation and emotions accurately in different domains.

Research Questions 2-1 and 2-2

(2-1) Do different course characteristics explain students' perceptions of motivation (different levels of autonomy, competence, and relatedness) and course well-being (emotions: enjoyment, hope, anger, anxiety and boredom; course satisfaction; and anticipated grades) at Level 1?

(2-2) Do students' sex, general relatedness need fulfillment in everyday life, and general needs for relatedness as personal factors explain students' perceptions of

motivation and course well-being averaged across courses?

Hypothesis 2a: A small class and an interaction type of class will predict intrinsic and identified self-motivation, competence and relatedness need fulfillment, course satisfaction, and an anticipated grade positively, and will predict external and introjected self-motivation and negative emotions negatively.

Hypothesis 2b: Intrinsic and importance values (interest as a reason to take a course and whether the course is in one's major) will predict intrinsic and identified self-motivation, competence and relatedness need fulfillment, course satisfaction, and an anticipated grade positively, whereas utility value (requirement and future career as a reason to take a course) will predict external and introjected self-motivation, and negative emotions positively.

Hypothesis 2c: Teacher characteristics (management, competence, and autonomy support) will predict intrinsic and identified self-motivation, and competence and relatedness need fulfillment, positive emotions, course satisfaction, and an anticipated grade positively, whereas teacher characteristics will predict external and introjected self-motivation and negative emotions negatively.

Hypothesis 2d: Mastery classroom goal structure will predict intrinsic and identified self-motivation, and competence and relatedness need fulfillment, positive emotions, course satisfaction, and an anticipated grade positively, whereas performance approach and performance avoidance classroom goal structures will predict them negatively.

Hypothesis 2e: A caring classroom climate will predict intrinsic and identified self-motivation, and competence and relatedness need fulfillment, positive emotions, course satisfaction, and an anticipated grade positively, whereas these same variables will predict external and introjected self-motivation and negative emotions negatively.

Hypothesis 2f: Students' personal dispositions (general needs for relatedness, general relatedness need fulfillment in everyday life, and sex) will predict emotions, course satisfaction, and their anticipated grade.

Rationale: Researchers have investigated contextual factors, and they have suggested what factor may potentially enhance students' learning and adjustment at school. Potential influential factors include: teacher characteristics (Skinner & Belmont, 1993; Meyer & Turner, 2002), classroom goal structure (Anderman & Anderman, 1999; Urdan & Midgley, 2003), class size (Englehart, 2007), a caring classroom climate (Noddings, 2005; Wentzel, 1997), and classroom interactions (Koth et al., 2008). Additionally, I included students' values for a course as a course characteristic (Durik et al., 2006; Wigfield & Eccles, 2000). Including and comparing diverse course characteristics in the present study allowed me to understand dynamic phenomenon in a course. As argued in Research Question 1, I assumed that discrete course characteristics of each course would potentially determine degrees of students' perceptions of motivation and emotions. Multilevel modeling helped me investigate how predictors at situational and personal levels would predict outcomes at Levels 1 and 2.

Research questions 3-1 and 3-2

(3-1) Do students' relatedness need fulfillment to instructor and peers (situational level: Level 1) contribute to the different degrees of autonomy and competence need fulfillment?

(3-2) Do students' general needs for relatedness and general relatedness need fulfillment as personal factors play important roles in explaining average variance of student's perceptions of motivation and course well-being across courses?

Hypothesis 3a: Relatedness need fulfillment to instructor and to peers will be related to higher levels of internalized motivation such as identified and intrinsic self-motivations and competence need fulfillment.

Hypothesis 3b: General relatedness need fulfillment in everyday life (Level 2) will predict relatedness need fulfillment to instructor and peers positively.

Hypothesis 3c: General needs for relatedness will positively predict relatedness need fulfillment to instructor and peers.

Rationale: Previous research and self-determination theory have proposed that it is essential to have autonomy, competence, and relatedness needs in order to experience a good quality of life (Dei & Ryan, 1985). Although Deci and Ryan (2008; Ryan & Powelson, 1991; Vallerand, 2000) hypothesized associations among the three needs underlying self-determination, only a few studies have reported on these patterns. Some researchers such as Koester and Losier (2002) and Noddings (2005) have argued that perception of relatedness would contribute to different levels of autonomy and competence. Like them, I want to test how strongly relatedness need fulfillment to

instructor and to peers would predict different levels of autonomy and competence need fulfillment.

As another important aspect of this research question, little research has investigated how the internal self accounts for context-related motivation. Some researchers have noted that different states of perceptions may interact with one another such as affective states (Linnenbrink & Pintrich, 2002) and motivation (Vallerand, 2000). Because of a lack of evidence from previous studies, I assumed diverse possibilities of correlation patterns among general needs for relatedness, general relatedness need fulfillment in everyday life, and relatedness need fulfillment in a course. One possibility is that assumed that students' general satisfaction with relatedness needs in everyday life (Level 2) would be positively associated with relatedness need fulfillment at the course level (to instructor and peers). Nevertheless, I did entertain the possibility that this general relatedness need fulfillment would show no relations with relatedness need fulfillment to instructor and peers. This is because these are different kinds of need fulfillment: general relatedness need fulfillment is general satisfaction with relatedness needs; and relatedness need fulfillment to instructor or peers is contextually generated need fulfillment. As for general needs for relatedness (Level 2), students who have a high need to be related to others would likely feel more relatedness than would students who have a low need to be related to others. However, it should also happen that students with a high need for relatedness are less likely to be satisfied with relatedness need fulfillment to their instructor or peers due to their high needs.

Research Questions 4-1 and 4-2

(4-1) How do the three need fulfillments (degrees of autonomy, competence and relatedness) explain course well-being (emotions, course satisfaction, and anticipated grade)?

(4-2) Do students' perceptions of personal growth as personal factors contribute to their perceptions of motivation and course well-being across courses?

Hypothesis 4a: Intrinsic and identified self-motivation, and competence and relatedness need fulfillment (to instructor and peers) would predict positive emotions, course satisfaction, and anticipated grade positively, whereas external and introjected self-motivation would predict negative emotions positively.

Hypothesis 4b: Personal factors (Level 2) of sex and general perceptions of personal growth would predict course well-being (emotions, satisfaction, and grade) across courses.

Rationale: This research question and hypotheses aimed to clarify associations between students' motivation and course well-being in courses. Students' diverse motivational experiences could influence their positive or negative emotional experiences, course satisfaction, and their academic achievement in a particular course. I also assumed that personal growth would be associated with aggregated course well-being experiences across courses based on the notion by Keyes et al. (2002) arguing that personal growth is generated when people overcome challenging situations. In particular, students face diverse over- or under-challenged situations and overcome these situations.

Multi-level analysis allowed me to look at how students' perceived personal growth was associated with the mean of course well-being across courses.

Figure 1 displays the whole model showing the research questions and hypotheses described above. Research questions and their hypotheses were based on parts of this model.

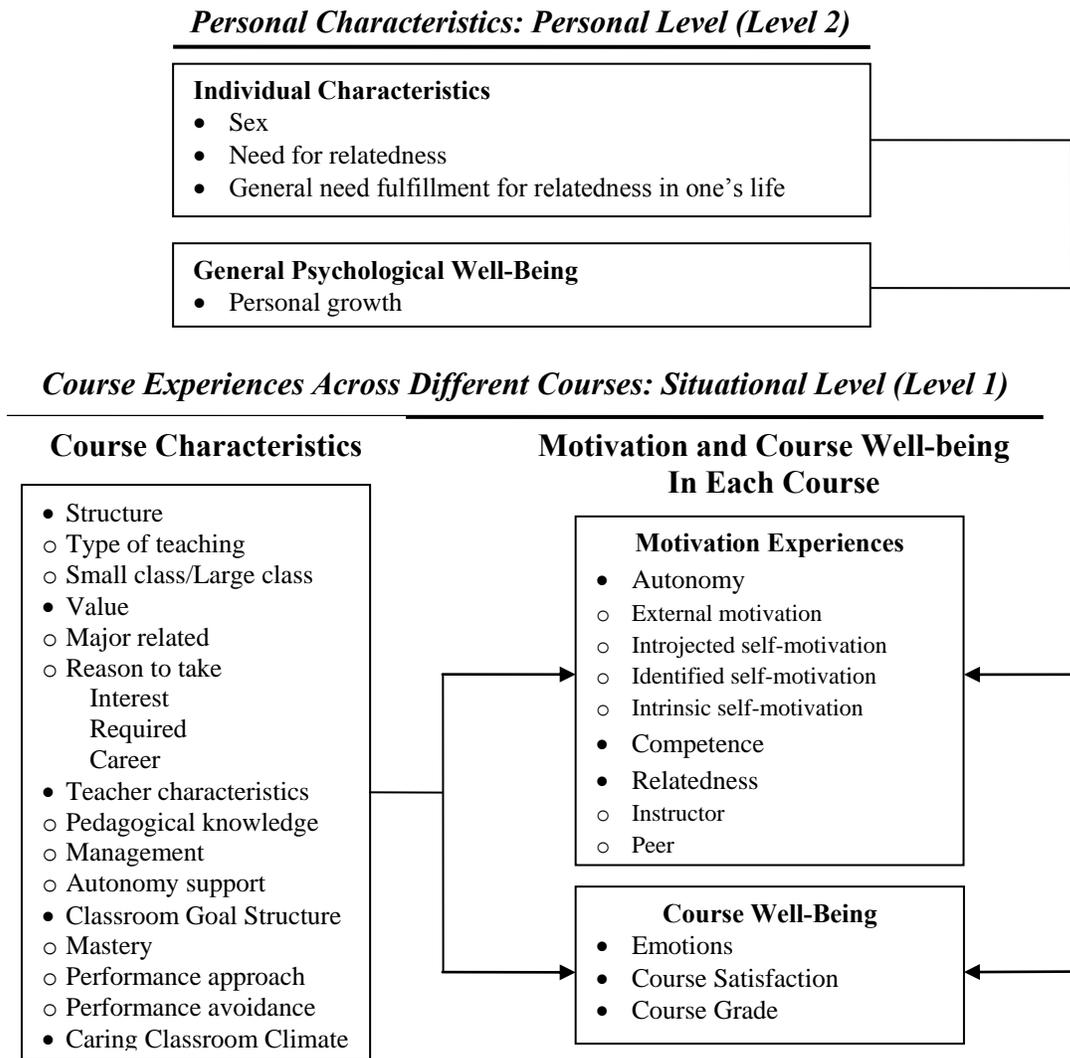


Figure 1. The self-motivation model

Note. This figure demonstrates the overall research design and research model representing research interests and relations among latent variables.

Data Analysis

To investigate the research questions and hypotheses, I used the following data analysis methods.

Preliminary Analysis (CFAs). *Validity tests:* Construct validity was tested for subscales and construct models by Confirmatory Factor Analysis (CFA) using M-plus software version 5.1. As a first step, validity tests were used to see whether each subscale measured one construct. In determining the validity of each subscale, I used three kinds of criteria: cutoff criteria (model good fit index) recommended by Kline (2005), factor loadings of items, and the wording of each item for each subscale. For (a) good fit index, I used comparative fit index (CFI > .90); standardized root mean square residual (SRMR, < .10); and root mean square error of approximation (RMSEA, < .05). For (b) factor loadings, I kept items for each construct that had loadings greater than .4, representing more than a medium relationship between an item and a factor. Finally, the wordings of items (c) showing poor factor loading were considered. After removing items showing low factor loading and wording problems, model fit indices were re-checked against the criteria to see whether the model fit indices had increased when the items were eliminated. In a second step, construct validity tests were examined for constructs with multiple subscales.

Reliability tests. Reliability was examined for all subscales with the final set of items, using SPSS software version 12.0.

Multilevel Modeling

Multilevel modeling is used to explore data with different levels. In a typical multilevel analysis, students (Level 1) are nested within a class or within a school (Level 2). However, this study was designed to inspect students' different perceptions across courses (Level 1) nested within students (Level 2). Multilevel modeling used HLM (Hierarchical Linear and Non-linear Modeling) software version 6 by Raudenbush, Bryk, and Congdon (2000). A fully unconditional model of multilevel modeling enabled me to check whether test was enough variations at the within-student and between-student levels, indicating that students' perceptions of motivation and course well-being were different across different courses and across different students. As a next step (a conditional model), multilevel analysis introduced predictors to establish how predictors at different levels were associated with outcome variables.

To describe in detail, Research Questions 1 through 4 were analyzed by this multilevel modeling. A three-step analysis was used to test my research questions and hypotheses. In Step 1, an unconditional model revealed how much motivation and course well-being variables varied within and between students. If there was no significant variation shown at Level 2, the HLM analysis should be stopped. In Step 2, predictors were introduced at Levels 1 and 2, called an initial model. Finally, in Step 3, non-significant predictors determined by *t*-test and *p* values were removed from the model and only significant predictors kept. In this step, I considered value of *t*-test when I remove predictors with non-significant *p* value and very low *t*-test value from the model. The final model was re-analyzed.

Chapter IV

Results

This chapter presents findings and interpretation. I begin with the results of preliminary analyses checking for validity and reliability estimates for each construct. Then, I provided descriptive statistics including mean scores for each construct in Table 3. In addition, the frequency distribution of each categorical variable is described in Appendix R.

Preliminary Analysis

Prior to addressing the hypotheses, I tested the validity and reliability of all measures, using as data the responses students provided for one course they were taking. Note that the course was randomly chosen.

Validity Tests. As a first step, a single factor model was tested for each subscale that was to be used as a latent variable in multilevel modeling. Considering the cutoff criteria, some items were removed from each subscale, for example, “the instructor of this class talks about how course content is related to my goals after graduation” from the scale of autonomy support and “students in the class treat each other with respect” from the scale of caring classroom climate. These two items showed factor loading of less than .4 coefficients. The Lagrange Multiplier (LM) test was used to see whether chi-square was increased by adding a path between items. To add a particular path in a model, I considered why connecting two items increased the chi-square and whether the wordings of the items were related. For example, on the caring classroom climate scale, a path between the items “students in the class treat each other with respect” and “the instructor

and students treat each other with respect in this class” showed an increase in chi-square. Thus, the correlation between these items was made a part of error variance (see more information, Appendix Q, p. 171). This kind of correlation among a few items occurred for a few scales: introjected self-motivation, identified self-motivation, competence, and relatedness to peers. Overall, the factor analysis for each subscale met the good fit criterion.

As a second step, in order to see whether construct models supported their constructs, I estimated those constructs that had model with multiple subscales, such as autonomy (external, introjected, identified, and intrinsic self-motivation), relatedness (instructor and peers), teacher characteristics (management, competence, and autonomy support), classroom goal structure (mastery, performance approach, and performance avoidance classroom goal structure), and academic emotions (enjoyment, hope, anger, anxiety, and boredom) as well as single construct models, such as general needs for relatedness, general relatedness in everyday life, and purpose in life. My data showed that although each subscale showed good model fit, the construct models of autonomy with four subscales, relatedness with two subscales, academic emotions with five subscales, and personal growth did not satisfy cutoff criterion values (see Appendix P, p. 170). I therefore treated these subscales as separate measures of constructs.

Reliability Tests. Reliability tests for all subscales were estimated with the remaining items in each subscale (Table 2). In each analysis, results of *F*-tests and correlations among items were also considered. The results from the reliability test are displayed in Table 3. All subscales and single scales suggested good reliabilities, ranging

from $\alpha = .75$ to $\alpha = .95$. The scale measuring teacher autonomy support, however, showed poor reliability with a Cronbach α of .54. I decided to keep this scale in further analyses because the scale have been widely used.

Table 2

CFAs For Subscales

Model	χ^2 (df)	CFI	SRMR	RMSEA (95% C. I.)
<i>Situational Level (Level 1)</i>				
Contextual Related Motivation				
Subscales of Autonomy				
Aggregated External Motivation	349.147 (9)	.914	.045	.144 (.131-.157)
External Motivation	92.375 (9)	.925	.046	.136 (.111-.161)
Introjected self-motivation	44.855 (11)	.985	.036	.078 (.055-.103)
Identified self-motivation	5.378 (4)	.999	.011	.026 (.000-.076)
Intrinsic self-motivation	19/989 (5)	.994	.012	.077 (.044-.114)
Subscale of Relatedness				
Instructor	15.700 (5)	.991	.018	.065 (.030-.103)
Peers	48.710 (5)	.963	.028	.132 (.099-.166)
Course Characteristics				
Teacher Factors				
Teacher Competence	71.710 (9)	.967	.027	.118 (.093-.144)
Teacher Management	69.142 (2)	.908	.058	.258 (.208-.312)
Autonomy Support		1.00		

Table Continued

Subscales of Classroom Goal Structure				
Mastery Goal Structure	84.014 (5)	.919	.051	.177 (.145-.211)
Performance Approach Goal Structure		1.00		
Performance Avoidance Goal Structure	42.100 (5)	.977	.20	.121 (.089-.156)
Outcomes				
Subscales of Academic Emotion				
Enjoyment	19.886 (5)	.992	.016	.077 (.048-.114)
Hope	.70.549 (5)	.933	.042	.161 (.129-.196)
Anger	42.468 (5)	.981	.018	.122 (.090-.157)
Anxiety	106.902 (5)	.905	.048	.201 (.169-.235)
Boredom	7.378 (5)	.999	.006	.031 (.000-.074)
Course Satisfaction				
Course Satisfaction	5.730 (5)	1.00	.009	.017 (.000-.066)

Table 3

Descriptive Statistics at Level 1 and Level 2

Continuous Variable				
Continuous Variables	N	Mean	SD	α (Item N)
Teacher Characteristics				
Teacher Management	1789	3.84	.88	.86 (4)
Teacher Pedagogical Knowledge	1788	4.03	.86	.92 (5)
Teacher Autonomy Support	1788	3.86	.77	.54 (3)
Caring Classroom Climate				
Caring Classroom Climate	1788	3.11	.72	.88 (10)
Classroom Goal Structure				
Mastery	1789	3.77	.85	.85 (5)
Performance Approach	1789	3.76	.96	.83 (3)
Performance Avoidance	1789	2.49	1.00	.90 (5)
<i>Situational Level (Level 1)</i>				
Situational Motivation				
Construct	N	Mean	SD	α (Item N)
Autonomy				
External motivation	1788	3.77	.74	.80 (6)
Introjected self-motivation	1788	3.45	.87	.87 (7)
Identified self-motivation	1788	3.83	.78	.85 (5)
Intrinsic self-motivation	1788	2.97	1.07	.93 (5)

Table Continued

Competence				
Competence	1787	3.98	.81	.88 (7)
Relatedness				
Instructor	1789	3.84	.82	.87 (5)
Peers	1789	3.80	.75	.85 (5)
Course Well-Being				
Academic Emotions				
Enjoyment	1789	2.76	1.04	.92 (5)
Hope	1789	3.24	.86	.86 (5)
Anger	1789	2.02	1.05	.93 (5)
Anxiety	1789	2.17	.96	.87 (5)
Boredom	1789	2.74	1.21	.95 (5)
Classroom Satisfaction				
Satisfaction	1788	3.35	.94	.95 (5)
<i>Personal Level (Level 2)</i>				
Construct	N	Mean	SD	α (Item N)
Internal Self-Condition of Motivation				
General Relatedness Need	501	4.23	.59	.76 (6)
Need for Relatedness	501	3.91	.55	.78 (8)
General Well-Being				
Purpose of Life	501	4.25	.53	.75 (7)

Note. The number of students at Levels 1 and 2 were from descriptive statistics of HLM analysis.

As was done with validity and reliability tests, in order to test research purposes and hypotheses, I calculated means and standard deviations for all subscales. Results of descriptive statistics are displayed in Table 3 for Levels 1 and 2 from the HLM analysis. The categorical variable with frequency was not included in this table (Appendix J).

Research Questions 1-1 and 1-2: Different Levels of Motivation and Course Well-Being Across Courses

(1-1) Do students perceive different levels of motivation and course well-being across different courses they are taking (Level 1)?

(1-2) Is there variability in the motivation and course well-being across students (Level 2)?

A fully unconditional model with no predictors was used in order to look at variance of outcomes at Levels 1 and 2. This model showed how much within- and between-student variance out of the total variance existed at every level. I assumed that a sufficient amount of variance across courses (situational level: Level 1) relative to variance across students (personal level: Level 2) would indicate that a student was reporting different levels of perceptions across courses.

As for motivation, results supported the hypotheses partially for the different kinds of motivation, indicating that students reported different levels of identified and intrinsic self-motivations across courses they were taking. Students' perceived external motivation and introjected self-motivation showed that only 30.9% and 33.3% of the within-student variance (Level 1) accounted for the total variance, whereas 69.1% and 66.7% of the total variance came from between-student variance (Level 2). For identified

self-motivation, a little more than half of the total variance was at the within-student variance (51.7%). Overall results showed significant amounts of variance at Level 2, indicating that there was variability across students, namely students' perceptions of different levels of autonomy across courses revealed significant variability. Compared to external motivation, the within-student variance (Level 1) for intrinsic self-motivation appeared to be more than the between-student variance (Level 2). In competence need fulfillment, 71.2% of the total variance was at the within-student variance (Level 1), while 28.3% of the total variance was at the between-student variance (Level 2). A large amount of the total variance (86.6%) was at the within-student variance (Level 1) in students' relatedness need fulfillment to instructor. However, there was still significant variance at Level 2, indicating that there were significant differences of relatedness fulfillment across students. Relatedness need fulfillment to peers showed much less variance at the within-student level (62.5%) than did relatedness need fulfillment to instructor, indicating that students reported more various levels of relatedness need fulfillment to instructor across courses than to peers.

As for course well-being, it was hypothesized that students' perceptions of course well-being would vary across courses (Level 1), and that students' perceptions of course well-being would vary across students (Level 2). These were supported for all course well-being indicators including emotional experiences, course satisfaction, and anticipated course grades. In general, there was a much larger amount of the total variance in students' perceived course well-being at the within-student variance (Level 2). Especially, for course satisfaction, the between-student variance (Level 2) was only

5.6% of the total variance, whereas the within-student variance (Level 1) contributed to 94.4% of the total variance. For the emotions of enjoyment and boredom, the between-student variance (Level 2) was less than 13% of the total variance but the within-student variance was 87.2% and 88.4%, respectively. Students' feelings of hope, anger, anxiety, and anticipated grades showed that the between-student variance (Level 2) had less variance than the within-student variance.

Table 4

The Fully Unconditional Models with Variance, as well as the Total Variance Explained by Within- and Between-Student Variance

Scale	Variance			
	Level 1	Level 2	Within-Student Variance (%)	Between-Student Variance (%)
Autonomy				
External Motivation	.17	.38	30.9	69.1
Introjected Self-Motivation	.25	.50	33.3	66.7
Identified Self-Motivation	.31	.29	51.7	48.3
Intrinsic Self-Motivation	.81	.32	71.7	28.3
Competence				
Competence	.47	.19	71.2	28.8
Relatedness				
Instructor	.58	.09	86.6	13.4
Peers	.35	.21	62.5	37.5
Emotional course well-being				
Enjoyment	.95	.14	87.2	12.8
Hope	.60	.13	82.2	17.8
Anger	.87	.24	78.4	21.6
Anxiety	.63	.28	69.2	30.8
Boredom	1.29	.17	88.4	11.6
Course satisfaction				
Course satisfaction	.84	.05	94.4	5.6
Grade				
Anticipated Grades	2.51	.84	74.9	25.1

Note. * $p < .001$.

Research Questions 2-1 and 2-2: Associations Between Course Characteristics and Academic Motivation, and Between Course characteristics and Course Well-Being.

(2-1) Do different course characteristics explain students' perceptions of motivation (different levels of autonomy, competence, and relatedness) and course well-being (emotions: enjoyment, hope, anger, anxiety and boredom; course satisfaction; and anticipated grades) at Level 1?

(2-2) Do students' sex, general relatedness need fulfillment in everyday life, and general needs for relatedness as personal factors explain students' perceptions of motivation and course well-being averaged across courses?

Research Question 2 was aimed at addressing what course characteristics would predict students' motivation and course well-being. The model for Research Question 2 presented course characteristics as predictors and motivation and course well-being variables as outcomes at the situational level (Level 1) as well as personal characteristics as slopes at the personal level (Level 2). The following model is the initial model. Five categories of course characteristics were considered as pivotal factors influencing students' motivation at the class level (Level 1): course structure with small class and interaction type of class; course value with reasons to take the course as interest, required, and related to a future career; teacher characteristics with teacher management, teacher pedagogical knowledge, and teacher autonomy support; classroom goal structure with mastery, performance approach, and performance avoidance goal structures; and finally a caring classroom climate. Note that classroom structure and course value were dichotomous categorical variables.

Multilevel Modeling

The model for situational level (Level 1) was as follows:

$$\text{Motivation (or course well-being)}_{ij} = \beta_{0j} + \sum_{i=1}^{13} \beta_{ij} \chi_{ij} + r_{ij}$$

The model for personal level (Level 2) was as follows:

$$\beta_{0j} = \gamma_{00} + \gamma_{01} (\text{sex})_j + (\gamma_{02} (\text{general needs for relatedness}^a)_j + \gamma_{03} (\text{general relatedness need fulfillment in an everyday life}^b)_j) + u_{0j}$$

Note. ^a and ^b at Level 2 were used when outcomes were relatedness need fulfillment (to instructor and peers) because two factors were predictors of relatedness need fulfillment at level 2. χ_{ij} : the 13 course characteristic variables at Level 1. β_{ij} was fixed at Level 2.

External motivation. At Level 1, when students took a course out of interest, they were less likely to report external motivation for the course. Both performance approach and performance avoidance goal structures were positively associated with external motivation. Surprisingly, when students perceived their class as having a caring climate, they reported more external motivation. At Level 2, female students were lower in their mean external motivation across courses than were male students.

Table 5

*Initial Fixed and Random Effects of Course Characteristics Predicting External**Motivation at Levels 1 and 2*

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>
Intercept, γ_{00}	2.80	.14	19.96*
Sex, γ_{01}	-.26	.05	-4.82*
Small class or not, γ_{10}	.04	.04	.96
Interaction or not, γ_{20}	.02	.03	.75
Major related course, γ_{30}	.02	.03	.67
Interest reason to take a course, γ_{40}	-.10	.04	-2.60*
Required course, γ_{50}	-.06	.03	-2.00
Future career reason to take a course, γ_{60}	-.08	.03	1.00
Teacher management, γ_{70}	.02	.03	.78
Teacher pedagogical knowledge, γ_{80}	.04	.03	1.60
Teacher autonomy support, γ_{90}	-.03	.02	-1.52
Mastery goal structure, γ_{10}	.03	.02	1.21
Performance approach goal structure, γ_{11}	.13	.02	7.01*
Performance avoidance goal structure, γ_{12}	.08	.02	4.77*
Caring classroom climate, γ_{13}	.06	.03	2.17
<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	.28	481	2950.06*
Level 1 Variance, r_{ij}	.18		

Note. * $p < .01$

Table 6

Final Fixed and Random Effects of Course Characteristics Predicting External Motivation at Levels 1 and 2

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>
Intercept, γ_{00}	2.93	.11	26.93*
Sex, γ_{01}	-.28	.05	-5.03*
Interest reason to take a course, γ_{10}	-.09	.03	-3.01*
Required to take the course, γ_{20}	-.07	.03	-2.42
Performance approach goal structure, γ_{30}	.12	.02	7.34*
Performance avoidance goal structure, γ_{40}	.09	.02	5.49*
Caring classroom climate, γ_{50}	.10	.02	5.05*

<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	.29	483	3644.30*
Level 1 Variance, r_{ij}	.17		

Note. * $p < .01$

Introjected self-motivation. At Level 1, one negative predictor, taking a course out of requirement, was found, indicating that when the course was required, students were less likely to report introjected self-motivation. However, when a course was related to students' majors, they reported more perceptions of introjected self-motivation. Teacher content pedagogical knowledge predicted students' reports of introjected self-motivation in a positive direction. All three aspects of classroom goal structure, including mastery, performance approach, and performance avoidance classroom goal structures, predicted introjected self-motivation positively. A caring classroom climate showed the strongest association with introjected self-motivation. At Level 2, female students reported higher levels of introjected self-motivation across courses than did men.

Table 7

Initial Fixed and Random Effects of Course Characteristics Predicting Introjected Self-Motivation at Levels 1 and 2

Fixed and Random Effects	Coefficient	SE	<i>t</i> -ratio
Intercept, γ_{00}	1.53	.16	9.58*
Sex, γ_{01}	-.26	.05	-4.82*
Small class or not, γ_{10}	.07	.04	1.65
Interaction or not, γ_{20}	.04	.03	1.26
Major related course, γ_{30}	.09	.03	2.63*
Interest reason to take a course, γ_{40}	-.09	.04	-2.23
Required to take the course, γ_{50}	-.13	.04	-3.53*
Future career reason to take a course, γ_{60}	-.11	.07	-1.61
Teacher management, γ_{70}	.04	.03	1.54
Teacher pedagogical knowledge, γ_{80}	.06	.03	1.92
Teacher autonomy support, γ_{90}	.02	.02	1.04
Mastery goal structure, γ_{10}	.09	.02	4.30*
Performance approach goal structure, γ_{11}	.07	.02	3.59*
Performance avoidance goal structure, γ_{12}	.12	.02	5.97*
Caring classroom climate, γ_{13}	.20	.03	6.66*
<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	.28	481	2950.06*
Level 1 Variance, r_{ij}	.18		

Note. * $p < .01$

Table 8

Final Fixed and Random Effects of Course Characteristics Predicting Introjected Self-Motivation at Levels 1 and 2

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>
Intercept, γ_{00}	1.57	.14	11.89*
Sex, γ_{01}	-.24	.06	-4.02*
Small class or not, γ_{10}	.07	.03	2.11
Major or not, γ_{20}	.12	.03	4.70*
Required to take the course, γ_{30}	-.08	.03	-2.92*
Teacher pedagogical knowledge γ_{40}	.10	.02	5.58*
Mastery goal structure, γ_{50}	.10	.02	5.06*
Performance approach goal structure, γ_{60}	.06	.02	3.37*
Performance avoidance goal structure, γ_{70}	.12	.02	6.33*
Caring classroom climate, γ_{80}	.21	.03	8.13*

<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_0	.39	483	4016.01*
Level 1 Variance, R	.19		

Note. * $p < .01$

Identified self-motivation. At Level 1, students reported that when a course was related to their major, they scored high in identified self-motivation. However, when students took a course because it was required, they scored lower in identified self-motivation, indicating that students would be less likely to internalize external values. Mastery classroom goal structure and a caring classroom climate positively predicted identified self-motivation, whereas performance approach goal structure predicted identified self-motivation with a smaller coefficient but in a positive direction. At Level

2, women reported higher levels of identified self-motivation across courses than did men.

Table 9

Initial Fixed and Random Effects of Course Characteristics Predicting Identified Self-Motivation at Levels 1 and 2

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>
Intercept, γ_{00}	1.59	.20	8.43*
Sex, γ_{01}	-.21	.05	-4.45*
Small class or not, γ_{10}	.00	.04	.00
Interaction or not, γ_{20}	-.01	.03	-.34
Major related course, γ_{30}	.08	.04	2.28
Interest reason to take a course, γ_{40}	-.02	.04	-.51
Required to take the course, γ_{50}	-.27	.04	-7.01*
Future career reason to take a course, γ_{60}	-.11	.06	-1.84
Teacher management, γ_{70}	.05	.03	1.60
Teacher pedagogical knowledge, γ_{80}	.09	.03	2.56
Teacher autonomy support, γ_{90}	.02	.03	.66
Mastery goal structure, γ_{10}	.02	.03	8.21*
Performance approach goal structure, γ_{11}	.08	.02	4.00*
Performance avoidance goal structure, γ_{12}	.03	.02	1.44
Caring classroom climate, γ_{13}	.21	.03	7.00*

<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	.42	481	1657.51*
Level 1 Variance, r_{ij}	.47		

Note. * $p < .01$

Table 10

Final Fixed and Random Effects of Course Characteristics Predicting Identified Self-Motivation at Levels 1 and 2

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>
Intercept, γ_{00}	1.72	.15	11.41*
Sex, γ_{01}	-.21	.05	-4.49*
Major or not, γ_{10}	.11	.03	3.82*
Required to take the course, γ_{20}	-.24	.03	-7.44*
Teacher pedagogical knowledge, γ_{30}	.12	.02	5.92*
Mastery goal structure, γ_{40}	.20	.02	9.10*
Performance approach goal structure, γ_{50}	.08	.02	4.22*
Caring classroom climate, γ_{60}	.21	.03	8.08*

<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	.18	483	1918.59*
Level 1 Variance, r_{ij}	.22		

Note. * $p < .01$

Intrinsic self-motivation. At Level 1, there were some predictors showing negative relations with intrinsic self-motivation. Small classes (less than 25 students), required course, future career reason, and performance classroom goal structure negatively predicted intrinsic self-motivation. These results indicated that when a class was small and externally valued, such as being required or being necessary for a future career, students were less likely to perceive intrinsic self-motivation. Additionally, when students perceived a course as a competitive environment (performance approach classroom goal structure), students scored lower in intrinsic self-motivation. On the other hand, a course constructed structure as encouraging interactions rather than as lecture,

and a teacher with good management and competence were associated positively with students' perceptions of intrinsic self-motivation. The strongest (and positive) predictor of intrinsic self-motivation among course characteristics was students' perceptions of a caring classroom climate. At Level 2, whether students were women or men, they reported similar levels of intrinsic self-motivation across courses.

Table 11

Initial Fixed and Random Effects of Course Characteristics Predicting Intrinsic Self-Motivation at Levels 1 and 2

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>
Intercept, γ_{00}	.82	.19	4.38*
Sex, γ_{01}	-.03	.06	.58
Small class or not, γ_{10}	-.13	.06	-2.28
Interaction or not, γ_{20}	.06	.05	1.25
Major related course, γ_{30}	-.00	.05	-.11
Interest reason to take a course, γ_{40}	.24	.07	3.63*
Required to take the course, γ_{50}	-.50	.05	-8.84*
Future career reason to take a course, γ_{60}	-.34	.09	-3.67*
Teacher management, γ_{70}	.14	.04	3.09*
Teacher pedagogical knowledge, γ_{80}	.17	.05	3.68*
Teacher autonomy support, γ_{90}	-.05	.04	-1.43
Mastery goal structure, γ_{10}	.02	.03	.53
Performance approach goal structure, γ_{11}	-.09	.03	-3.44*
Performance avoidance goal structure, γ_{12}	.04	.03	1.49
Caring classroom climate, γ_{13}	.47	.04	12.24*
<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	.22	481	1175.79*
Level 1 Variance, r_{ij}	.46		

Note. * $p < .01$

Table 12

Final Fixed and Random Effects of Course Characteristics Predicting Intrinsic Self-Motivation at Levels 1 and 2

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>
Intercept, γ_{00}	.88	.16	5.40*
Small class, γ_{10}	-.16	.05	-3.12*
Interaction based vs. lecture, γ_{20}	.23	.05	4.51*
Required to take the course, γ_{30}	-.48	.05	-9.83*
Career reason to take the course, γ_{40}	-.35	.08	-4.16*
Teacher management, γ_{50}	.11	.04	2.72*
Teacher pedagogical knowledge, γ_{60}	.17	.04	3.98*
Performance approach goal structure, γ_{70}	-.09	.02	-3.96*
Caring classroom climate, γ_{80}	.47	.03	13.76*

<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	.23	484	1339.72*
Level 1 variance, r_{ij}	.48		

Note. * $p < .01$

Competence. At Level 1, students reported lower levels of competence need fulfillment when a class was small, when they were taking it to fulfill requirement, or for a future career reason. Teacher management and teacher pedagogical knowledge were positively associated with students' perceptions of competence in a course. A caring classroom climate was a positive predictor of competence need fulfillment, but with only a small coefficient. A mastery classroom goal structure and a performance avoidance classroom goal structure were negatively associated with perception of competence. This indicated that whether a student perceived a course as emphasizing students' own

learning and progress and not showing incompetence, they were likely to rate their competence need fulfillment lower.

Table 13

Initial Fixed and Random Effects of Course Characteristics Predicting Competence at Levels 1 and 2

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>
Intercept, γ_{00}	3.04	.19	16.28*
Sex, γ_{01}	-.08	.05	-1.68*
Small class or not, γ_{10}	-.09	.05	-2.02
Interaction or not, γ_{20}	.12	.04	3.32*
Major related course, γ_{30}	-.02	.04	-.53
Interest reason to take a course, γ_{40}	.04	.05	.74
Required to take the course, γ_{50}	-.26	.05	-5.58*
Future career reason to take a course, γ_{60}	-.28	.09	-3.19*
Teacher management, γ_{70}	.13	.04	3.47*
Teacher pedagogical knowledge, γ_{80}	.23	.04	5.97*
Teacher autonomy support, γ_{90}	.06	.03	2.06
Mastery goal structure, γ_{10}	-.24	.03	-9.14*
Performance approach goal structure, γ_{11}	.03	.02	1.51
Performance avoidance goal structure, γ_{12}	-.12	.02	-5.91*
Caring classroom climate, γ_{13}	.16	.03	4.74*
<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	.28	481	2950.06*
Level 1 Variance, r_{ij}	.18		

Note. * $p < .01$

Table 14

Final Fixed and Random Effects of Course Characteristics Predicting Competence at Levels 1 and 2

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>
Intercept, γ_{00}	3.14	.16	19.88*
Small class, γ_{10}	-.12	.04	-2.68*
Interaction or not, γ_{20}	.12	.04	3.36*
Required to take the course, γ_{30}	-.27	.04	-6.67*
Career reason to take the course, γ_{40}	-.29	.09	-3.41*
Teacher management, γ_{50}	.13	.04	3.53*
Teacher pedagogical knowledge, γ_{60}	.24	.04	6.45*
Teacher autonomy support, γ_{70}	.06	.03	2.02
Mastery goal structure, γ_{80}	-.25	.03	-9.59*
Performance avoidance goal structure, γ_{90}	-.11	.02	-5.88*
Caring classroom climate, γ_{10}	.14	.03	4.58*

<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	.36	482	1092.24*
Level 1 variance, r_{ij}	.57		

Note. * $p < .01$

Relatedness to instructor. At Level 1, a course that was required predicted relatedness need fulfillment to instructor in a negative direction. A performance avoidance classroom goal structure was, also, a negative predictor of relatedness to the instructor. A class based on interaction rather than on lecture or individual work was a positive predictor of relatedness need fulfillment to the instructor. All three teacher characteristics were good predictors of how much students perceived relatedness need fulfillment to the instructor. Also, a caring classroom climate was an important and

positive predictor of this relatedness need fulfillment to instructor. At Level 2, no predictors showed any relationship to students' aggregate relatedness need fulfillment across courses.

Table 15

Initial Fixed and Random Effects of Course Characteristics Predicting Relatedness to Instructor at Levels 1 and 2

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>
Intercept, γ_{00}	.00	.14	.02
Sex, γ_{01}	.00	.03	.07
General relatedness need fulfillment, γ_{02}	.04	.02	1.79
Need for relatedness, γ_{03}	.04	.03	1.67
Small class or not, γ_{10}	-.02	.03	-.64
Interaction or not, γ_{20}	.10	.03	3.92*
Major related course, γ_{30}	-.05	.03	-1.91
Interest reason to take a course, γ_{40}	.01	.03	.44
Required to take the course, γ_{50}	-.09	.03	-3.18*
Future career reason to take a course, γ_{60}	.04	.06	.71
Teacher management, γ_{70}	.18	.02	7.14*
Teacher pedagogical knowledge, γ_{80}	.32	.03	12.10*
Teacher autonomy support, γ_{90}	.20	.02	8.85*
Mastery goal structure, γ_{10}	.03	.02	1.90
Performance approach goal structure, γ_{11}	-.01	.01	-.76
Performance avoidance goal structure, γ_{12}	-.07	.01	-4.49*
Caring classroom climate, γ_{13}	.26	.02	11.18*
	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	.14	479	617.89*
Level 1 variance, r_{ij}	.43		

Note. * $p < .01$

Table 16

Fixed and Random Effects of Course Characteristics Predicting Relatedness to Instructor at Levels 1 and 2

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>
Intercept, γ_{00}	.13	.11	1.19
Need for relatedness, γ_{01}	.06	.02	2.40
Interaction or not, γ_{20}	.11	.03	4.20*
Required to take the course, γ_{30}	-.11	.03	-4.08*
Teacher management, γ_{40}	.18	.02	7.47*
Teacher pedagogical knowledge, γ_{50}	.33	.03	12.45*
Teacher autonomy support, γ_{60}	.20	.02	9.41*
Performance avoidance goal structure, γ_{70}	-.07	.01	-5.04*
Caring classroom climate, γ_{80}	.27	.02	2.69*

<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	.14	481	623.76*
Level 1 variance, r_{ij}	.43		

Note. * $p < .01$

Relatedness to peers. At Level 1, students' ratings of teacher management and teacher pedagogical knowledge were positively associated with relatedness need fulfillment to peers. When students perceived a classroom as consisting of a performance avoidance goal structure, they scored lower on relatedness to peers. Students' perceptions of a caring classroom climate were the strongest predictor of relatedness need fulfillment to peers. At Level 2, general relatedness need fulfillment in everyday life and needs for relatedness were positively associated with relatedness need fulfillment to peers, indicating that students who perceived a high fulfillment in relatedness need in their

everyday life and who had high needs for relatedness rated their relatedness need fulfillment to peers more.

Table 17

Initial Fixed and Random Effects of Course Characteristics Predicting Relatedness to Peers at Levels 1 and 2

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>
Intercept, γ_{00}	.40	.20	2.01
Sex, γ_{01}	-.06	.04	-1.62
General relatedness need fulfillment, γ_{02}	.11	.03	3.43
Need for relatedness, γ_{03}	.12	.04	3.24
Small class or not, γ_{10}	.06	.03	1.61
Interaction or not, γ_{20}	.04	.03	1.43
Major related course, γ_{30}	-.01	.03	-.18
Interest reason to take a course, γ_{40}	.06	.04	1.69
Required to take the course, γ_{50}	-.03	.03	-.94
Future career reason to take a course, γ_{60}	.00	.07	.02
Teacher management, γ_{70}	.07	.03	2.66*
Teacher pedagogical knowledge, γ_{80}	.15	.03	5.61*
Teacher autonomy support, γ_{90}	.01	.02	.56
Mastery goal structure, γ_{10}	.03	.02	1.37
Performance approach goal structure, γ_{11}	.01	.02	.64
Performance avoidance goal structure, γ_{12}	-.06	.02	-4.02*
Caring classroom climate, γ_{13}	.50	.03	19.67*

<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	.08	479	1208.13*
Level 1 variance, r_{ij}	.17		

Note. * $p < .01$

Table 18

Final Fixed and Random Effects of Course Characteristics Predicting Relatedness to Peers at Levels 1 and 2

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>
Intercept, γ_{00}	.49	.16	3.02*
Sex, γ_{01}	-.07	.03	-2.16
General relatedness in everyday life, γ_{02}	.11	.03	3.44*
Need for relatedness, γ_{03}	.11	.03	3.25*
Interest reason to take a course, γ_{10}	.03	.02	2.02
Teacher management, γ_{20}	.06	.02	2.62*
Teacher pedagogical knowledge, γ_{32}	.16	.02	6.46*
Performance avoidance goal structure, γ_{40}	-.05	.01	-4.01*
Caring classroom climate, γ_{50}	.54	.02	25.92*

<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	.07	481	1292.36*
Level 1 variance, r_{ij}	.16		

Note. * $p < .01$

Enjoyment. At Level 1, students were less likely to feel enjoyment in class when a class was small or when it was required. However, students who were taking a course out of interest were more likely to enjoy it. When students perceived their teacher as knowledgeable and competent, they were likely to report enjoyment in that class. The most important predictor of students' enjoyment was a caring classroom climate at a moderate coefficient. Surprisingly, results showed that a performance avoidance goal structure slightly but positively predicted students' enjoyment of a class. At Level 2, men reported more enjoyment in overall courses than did women.

Table 19

Initial Fixed and Random Effects of Course Characteristics Predicting Enjoyment at Levels 1 and 2

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>
Intercept, γ_{00}	.18	.19	.93*
Sex, γ_{01}	.13	.05	2.74*
Small class or not, γ_{10}	-.15	.05	-2.74*
Interaction or not, γ_{20}	.07	.04	1.69
Major related course, γ_{30}	-.08	.04	-1.76
Interest reason to take a course, γ_{40}	.31	.06	5.67*
Required to take the course, γ_{50}	-.44	.05	-8.81*
Future career reason to take a course, γ_{60}	-.14	.08	-1.77
Teacher management, γ_{70}	.08	.04	2.02
Teacher pedagogical knowledge, γ_{80}	.34	.04	8.35*
Teacher autonomy support, γ_{90}	-.05	.03	-1.44
Mastery goal structure, γ_{10}	.00	.03	.31
Performance approach goal structure, γ_{11}	-.14	.02	-5.61*
Performance avoidance goal structure, γ_{12}	.07	.02	3.04*
Caring classroom climate, γ_{13}	.47	.04	12.86*
<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	.10	481	841.29*
Level 1 Variance, r_{ij}	.45		

Note. * $p < .01$

Table 20

Final Fixed and Random Effects of Course Characteristics Predicting Enjoyment at Levels 1 and 2

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>
Intercept, γ_{00}	.07	.15	.46
Sex, γ_{01}	.15	.05	3.19*
Small class, γ_{10}	-.15	.04	-3.33*
Interest reason to take the course, γ_{20}	.38	.04	8.72*
Required to take the course, γ_{30}	-.42	.04	-9.75*
Teacher pedagogical knowledge, γ_{50}	.39	.03	14.96*
Performance approach goal structure, γ_{70}	-.14	.02	-6.39*
Performance avoidance goal structure, γ_{80}	.07	.02	3.38*
Caring classroom climate, γ_{90}	.47	.03	14.84*

<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	.12	483	942.88*
Level 1 Variance, r_{ij}	.44		

Note. * $p < .01$

Hope. At Level 1, when a course was required, students were less likely to be hopeful. However, students who were taking a course out of interest reported a high score on hope. Teachers' management and pedagogical content knowledge positively predicted students' report of hope. Compared to other predictors, a caring classroom climate was a strong and positive predictor of students' feelings of hope. One unexpected finding was revealed for one predictor, the mastery classroom goal structure indicator. Perceptions of a mastery classroom goal structure were associated weakly but negatively with feelings

of hope. A student's sex did not significantly predict in aggregate hope score across courses (Level 2).

Table 21

Initial Fixed and Random Effects of Course Characteristics Predicting Hope at Levels 1 and 2

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>
Intercept, γ_{00}	.61	.17	3.67*
Sex, γ_{01}	.04	.04	1.05
Small class or not, γ_{10}	-.08	.05	-1.82
Interaction or not, γ_{20}	.02	.03	.61
Major related course, γ_{30}	-.00	.04	.01
Interest reason to take a course, γ_{40}	.08	.04	1.82
Required to take the course, γ_{50}	-.30	.04	-7.01*
Future career reason to take a course, γ_{60}	-.12	.08	-1.55
Teacher management, γ_{70}	.17	.03	5.29*
Teacher pedagogical knowledge, γ_{80}	.25	.03	7.30*
Teacher autonomy support, γ_{90}	.03	.03	1.16
Mastery goal structure, γ_{10}	-.05	.02	-1.92
Performance approach goal structure, γ_{11}	-.01	.02	-.39
Performance avoidance goal structure, γ_{12}	-.02	.02	-1.10
Caring classroom climate, γ_{13}	.39	.03	12.74*
<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	.32	481	1020.44*
Level 1 Variance, r_{ij}	.55		

Note. * $p < .01$

Table 22

Final Fixed and Random Effects of Course Characteristics Predicting Hope at Level 1 and 2

Fixed and Random Effects	Coefficient	SE	<i>t</i> -ratio
Intercept, γ_{00}	.66	.12	5.62*
Interest reason to take the course, γ_{20}	.10	.04	2.79*
Required to take the course, γ_{30}	-.28	.04	-7.42*
Teacher management, γ_{40}	.17	.03	5.51*
Teacher pedagogical knowledge, γ_{50}	.27	.03	8.77*
Mastery goal structure, γ_{50}	-.07	.02	-2.88*
Caring classroom climate, γ_{60}	.38	.03	14.56*

<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	.32	484	1085.49*
Level 1 variance, r_{ij}	.55		

Note. * $p < .01$

Anger. At Level 1, students reported more anger when a course was taken because it was required, showing a large coefficient. Three teacher characteristics were notably negative predictors of anger. In particular, a strong negative predictor of anger was students' perceptions of teacher pedagogical knowledge, followed by teacher management and teacher's autonomy support. However, as anticipated, when students perceived a class as emphasizing a performance approach or performance avoidance structure, they scored higher on levels of anger. At Level 2, students' sex was not related to their overall report of anger across courses.

Table 23

Initial Fixed and Random Effects of Course Characteristics Predicting Anger at Levels 1 and 2

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>
Intercept, γ_{00}	4.61	.22	20.77*
Sex, γ_{01}	.11	.05	2.12
Small class or not, γ_{10}	.05	.05	.96
Interaction or not, γ_{20}	-.08	.04	-1.95
Major related course, γ_{30}	.03	.04	.68
Interest reason to take a course, γ_{40}	-.03	.05	-.63
Required to take the course, γ_{50}	.33	.06	5.91*
Future career reason to take a course, γ_{60}	.20	.11	1.87
Teacher management, γ_{70}	-.17	.04	-3.98*
Teacher pedagogical knowledge, γ_{80}	-.42	.05	-9.15*
Teacher autonomy support, γ_{90}	-.21	.04	-5.50*
Mastery goal structure, γ_{10}	.03	.03	.97
Performance approach goal structure, γ_{11}	.05	.03	1.87
Performance avoidance goal structure, γ_{12}	.11	.03	4.29*
Caring classroom climate, γ_{13}	-.04	.04	-1.01
<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	.19	481	1115.81*
Level 1 variance, r_{ij}	.45		

Note. * $p < .01$

Table 24

Final Fixed and Random Effects of Course Characteristics Predicting Anger at Levels 1 and 2

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>
Intercept, γ_{00}	4.59	.19	26.80*
Sex, γ_{01}	.11	.05	2.07
Required to take the course, γ_{20}	.32	.04	7.43*
Teacher management, γ_{30}	-.19	.04	-4.81*
Teacher pedagogical knowledge, γ_{40}	-.42	.04	-10.06*
Teacher autonomy support, γ_{50}	-.21	.04	-5.93*
Performance approach goal structure, γ_{61}	.06	.02	3.08*
Performance avoidance goal structure, γ_{70}	.11	.02	4.68*
<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	.19	483	1288.08*
Level 1 variance, r_{ij}	.44		

Note. * $p < .01$

Anxiety. At Level 1, external values like a course being a required course or being necessary for a student's future career were positively associated with feelings of anxiety. However, all three teacher characteristics predicted anxiety in a negative direction. Also, a course involving a caring atmosphere was less likely to be associated with students' perceptions of anxiety. Anomalous findings were shown in both mastery goal structure and performance avoidance goal structures, predicting students' feelings of anxiety in a positive direction. This finding indicates that when students considered a class as emphasizing their own learning and development as well as not showing incompetence,

they were likely to report more anxiety about the class. At Level 2, sex did not significantly predict mean reported anxiety across courses.

Table 25

Initial Fixed and Random Effects of Course Characteristics Predicting Anxiety at Levels 1 and 2

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>
Intercept, γ_{00}	2.96	.19	15.23*
Sex, γ_{01}	.07	.05	1.37*
Small class or not, γ_{10}	.11	.05	2.07
Interaction or not, γ_{20}	-.06	.04	-1.42
Major related course, γ_{30}	.03	.04	.57
Interest reason to take a course, γ_{40}	-.00	.05	-.04
Required to take the course, γ_{50}	.24	.05	4.47*
Future career reason to take a course, γ_{60}	.23	.10	2.29
Teacher management, γ_{70}	-.14	.04	-3.49*
Teacher pedagogical knowledge, γ_{80}	-.25	.04	-6.20*
Teacher autonomy support, γ_{90}	-.12	.03	-3.40*
Mastery goal structure, γ_{10}	.26	.03	8.99*
Performance approach goal structure, γ_{11}	-.02	.03	-.85
Performance avoidance goal structure, γ_{12}	.28	.02	11.26*
Caring classroom climate, γ_{13}	-.16	.04	-4.04*

<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	.18	481	1141.57*
Level 1 variance, r_{ij}	.41		

Note. * $p < .01$

Table 26

Final Fixed and Random Effects of Course Characteristics Predicting Anxiety at Levels 1 and 2

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>
Intercept, γ_{00}	2.93	.15	19.35*
Required to take the course, γ_{30}	.22	.04	5.22*
Career reason to take the course, γ_{30}	.25	.09	2.88*
Teacher management, γ_{40}	-.12	.04	-3.28*
Teacher pedagogical knowledge, γ_{50}	-.26	.04	-6.91*
Teacher autonomy support, γ_{50}	-.13	.03	-4.01*
Mastery goal structure, γ_{70}	.28	.03	10.16*
Performance avoidance goal structure, γ_{80}	.27	.02	11.70*
Caring classroom climate, γ_{90}	-.17	.03	-5.33*

<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	.17	484	1235.15*
Level 1 variance, r_{ij}	.41		

Note. * $p < .01$

Boredom. At Level 1, when a course was based on interaction rather than on lecture or individual work, students were likely to report lower levels of perceived boredom. The intrinsic value of a course, that is, taking a reason out of interest, was a negative predictor of boredom. The external value of a course being required was a strong and positive predictor of a student's being bored in a course. Among three teacher characteristics, only teacher pedagogical knowledge was a strong negative predictor of boredom. Students who perceived a course as having a performance approach goal structure reported higher levels of boredom, whereas those who perceived a course as

having a caring climate reported lower levels of boredom. At Level 2, whether a student was a man or woman, students reported similar mean levels of boredom across courses.

Table 27

Initial Fixed and Random Effects of Course Characteristics Predicting Boredom at Levels 1 and 2

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>
Intercept, γ_{00}	5.26	.16	20.55*
Sex, γ_{01}	-.04	.06	-.66
Small class or not, γ_{10}	.02	.04	.35
Interaction or not, γ_{20}	-.15	.03	-2.78*
Major related course, γ_{30}	.05	.03	.96
Interest reason to take a course, γ_{40}	-.23	.04	-3.13*
Required to take the course, γ_{50}	.45	.04	6.55*
Future career reason to take a course, γ_{60}	.33	.07	2.61
Teacher management, γ_{70}	-.09	.03	-1.75
Teacher pedagogical knowledge, γ_{80}	-.45	.03	-8.47*
Teacher autonomy support, γ_{90}	-.10	.02	-2.31
Mastery goal structure, γ_{10}	-.08	.02	-2.08
Performance approach goal structure, γ_{11}	.17	.02	5.64*
Performance avoidance goal structure, γ_{12}	.07	.02	2.14
Caring classroom climate, γ_{13}	-.18	.03	-3.71*

<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	.22	481	976.85*
Level 1 variance, r_{ij}	.69		

Note. * $p < .01$

Table 28

*Final Fixed and Random Effects of Course Characteristics Predicting Boredom at Levels**1 and 2*

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>
Intercept, γ_{00}	5.28	.25	21.04*
Interaction based vs. lecture, γ_{10}	-.15	.05	-2.86*
Interest reason to take the course, γ_{20}	-.27	.06	-4.14*
Required to take the course, γ_{30}	.44	.07	6.51*
Future career reason to take a course, γ_{40}	.31	.12	2.49
Teacher pedagogical knowledge, γ_{50}	-.51	.04	-13.08*
Teacher autonomy support, γ_{60}	-.10	.04	-2.37
Mastery goal structure, γ_{70}	-.08	.04	-2.11
Performance approach goal structure, γ_{80}	.17	.23	5.60*
Performance avoidance goal structure, γ_{90}	.07	.03	2.18
Caring classroom climate, γ_{10}	-.19	.05	-4.18*

<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	.21	482	975.02*
Level 1 variance, r_{ij}	.69		

Note. * $p < .01$

Course satisfaction. At Level 1, when a course was small, students reported lower course satisfaction. A course that was required was also negatively related to students' perceptions of course satisfaction. However, students' taking a course out of interest was positively associated with course satisfaction. All three teacher characteristics were shown to be important positive predictors of course satisfaction, along with a caring classroom climate. However, students gave low scores in course

satisfaction when they perceived a course as encouraging a performance approach atmosphere.

Table 29

Initial Fixed and Random Effects of Course Characteristics Predicting Course Satisfaction at Levels 1 and 2

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>
Intercept, γ_{00}	-.07	.17	-.42
Sex, γ_{01}	.10	.04	2.59
Small class or not, γ_{10}	-.17	.04	-4.02*
Interaction or not, γ_{20}	.00	.03	.09
Major related course, γ_{30}	-.01	.04	-.29
Interest reason to take a course, γ_{40}	.10	.04	2.23
Required to take the course, γ_{50}	-.26	.04	-6.27*
Future career reason to take a course, γ_{60}	-.08	.08	-.96
Teacher management, γ_{70}	.19	.03	5.96*
Teacher pedagogical knowledge, γ_{80}	.40	.03	11.58*
Teacher autonomy support, γ_{90}	.12	.03	4.20*
Mastery goal structure, γ_{10}	-.01	.03	-.37
Performance approach goal structure, γ_{11}	-.06	.02	-2.74
Performance avoidance goal structure, γ_{12}	-.01	.02	-.49
Caring classroom climate, γ_{13}	.31	.03	9.65*
<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	.05	481	723.07*
Level 1 variance, r_{ij}	.32		

Note. * $p < .01$

Table 30

*Final Fixed and Random Effects of Course Characteristics Predicting Course**Satisfaction at Levels 1 and 2*

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>
Intercept, γ_{00}	-.15	.16	-.98
Sex, γ_{01}	.11	.04	3.15*
Small class or not, γ_{10}	-.16	.04	-4.47*
Interest reason to take the course, γ_{20}	.12	.03	3.64*
Required to take the course, γ_{30}	-.23	.04	-6.49*
Teacher management, γ_{70}	.21	.03	6.65*
Teacher pedagogical knowledge, γ_{40}	.40	.03	12.25*
Teacher autonomy support, γ_{90}	.11	.03	4.62*
Performance approach goal structure, γ_{70}	-.07	.02	-3.42*
Caring classroom climate, γ_{90}	.30	.03	10.43*

<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	.05	483	768.59*
Level 1 variance, r_{ij}	.31		

Note. * $p < .01$

Anticipated final course grade. At Level 1, external values for taking a course, for a requirement, and for future career reasons, predicted students' anticipated grades negatively and strongly. Students reported a better grade when they perceived the teacher of a course as showing good management skills. Especially, two course characteristics were strong predictors of students' reported anticipated grades: a mastery classroom goal structure and a caring classroom climate. A caring classroom climate was a strong and positive predictor of students' reported anticipated course grades, while a course that stressed students' own learning was related to lower anticipated grades.

Table 31

Initial Fixed and Random Effects of Course Characteristics Predicting Anticipated Course Grade at Levels 1 and 2

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>
Intercept, γ_{00}	8.51	.40	21.28*
Sex, γ_{01}	-.25	.12	-2.13*
Small class or not, γ_{10}	-.03	.11	-.27
Interaction or not, γ_{20}	.23	.10	2.34
Major related course, γ_{30}	.07	.10	.77
Interest reason to take a course, γ_{40}	.03	.12	.23
Required to take the course, γ_{50}	-.54	.12	-4.48*
Future career reason to take a course, γ_{60}	-.53	.24	-2.18
Teacher management, γ_{70}	.36	.09	4.11*
Teacher pedagogical knowledge, γ_{80}	.17	.09	1.93
Teacher autonomy support, γ_{90}	.00	.07	.03
Mastery goal structure, γ_{10}	-.43	.07	-6.07*
Performance approach goal structure, γ_{11}	.04	.06	.65
Performance avoidance goal structure, γ_{12}	-.08	.05	-1.82
Caring classroom climate, γ_{13}	.52	.08	6.54*
<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	.88	481	1148.18*
Level 1 variance, r_{ij}	2.06		

Note. * $p < .01$

Table 32

Final Fixed and Random Effects of Course Characteristics Predicting Anticipated Course Grade at Levels 1 and 2

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t-ratio</i>
Intercept, γ_{00}	8.50	.31	27.87*
Sex, γ_{01}	-.26	.12	-2.25
Interaction based vs. lecture, γ_{10}	.20	.10	2.11
Required to take the course, γ_{20}	-.53	.11	-4.71*
Future career reason to take a course, γ_{30}	-.53	.24	-2.22
Teacher management, γ_{40}	.36	.09	4.25*
Teacher pedagogical knowledge, γ_{50}	.18	.08	2.21
Mastery goal structure, γ_{60}	-.44	.07	-6.66*
Caring classroom climate, γ_{70}	.49	.07	.72*

<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	.89	481	1164.52*
Level 1 variance, r_{ij}	2.04		

Note. * $p < .01$

Research questions 3-1 and 3-2: Relationship Patterns Among Academic Motivation as Represented by Competence, Competence, Autonomy, and Relatedness Needs

(3-1) Do students' relatedness need fulfillment to instructor and peers (situational level: Level 1) contribute to the different degrees of autonomy and competence need fulfillment?

(3-2) Do students' general needs for relatedness and general relatedness need fulfillment as personal factors play important roles in explaining average variance of student's perceptions of motivation and course well-being across courses?

For Research Question 3, I shifted my attention in the relations among students' need fulfillment experiences. I assumed that levels of relatedness need fulfillment to instructor and to peers would contribute differently to degrees of autonomy and competence need fulfillment (Level 1). Additionally, personal factors (Level 2), such as sex, general fulfillment of relatedness needs in everyday life, and a general need for relatedness would predict slopes of relatedness to instructor and peers, indicating that fulfillment of relatedness needs in everyday life or different levels of needs for relatedness may interact with students' course-centered fulfillment of relatedness needs (with instructor and with peers), as well as autonomy and competence ultimately.

Multilevel modeling

The model for the situational level (Level 1) was as follows:

Different levels of autonomy (or competence) $_{ij} = \beta_{0j} + \beta_{1j}(\text{relatedness to instructor})_{ij} + \beta_{2j}(\text{relatedness to peers})_{ij} + r_{ij}$

The model for the personal level (Level 2) was as follows:

$$\beta_{0j} = \gamma_{00} + \gamma_{01}(\text{sex})_j + u_{0j}$$

$\beta_{1j} = \gamma_{10} + \gamma_{11}(\text{general relatedness need fulfillment})_j + \gamma_{12}(\text{general need for relatedness})_j + u_{1j}$

$\beta_{2j} = \gamma_{20} + \gamma_{21}(\text{general relatedness need fulfillment})_j + \gamma_{22}(\text{general need for relatedness})_j + u_{2j}$

External motivation. Recall that autonomy was measured by four scales (external motivation, indicated self-regulation, identified self-motivation, and introjected motivation). For this first test of the predictors of autonomy, external motivation, at Level 1, students rated high on relatedness need fulfillment with peers were higher on external motivation, reporting that they participated in course activities and did homework for external values. However, the magnitude of this positive association was small. Students' relatedness need fulfillment to instructor did not show significant relations with this extrinsic motivation. At Level 2, men were less likely to report external motivation across courses than were women.

Table 33

Initial Fixed and Random Effects of Relatedness Facets Predicting External Motivation at Levels 1 and 2

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t Ratio</i>
Intercept, γ_{00}	3.51	.09	37.13*
Sex, γ_{01}	-.18	.06	-3.03*
Relatedness to instructor, γ_{10}	.07	.19	.39
General relatedness need fulfillment, γ_{11}	-.07	.03	-2.07*
Need for relatedness, γ_{12}	.05	.04	1.36
Relatedness to peers, γ_{20}	-.22	.18	-1.22
General relatedness need fulfillment, γ_{21}	.06	.03	1.80
General needs for relatedness, γ_{22}	.01	.04	.37

<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	1.34	417	579.35*
L2: Relatedness to instructor, u_{1j}	.04	416	556.32*
L2: Relatedness to peers, u_{2j}	.01	416	453.69
Level 1 variance, r_{ij}	.14		

Note. * $p < .05$

Table 34

Final Fixed and Random Effects of Relatedness Facets Predicting External Motivation at Levels 1 and 2

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t Ratio</i>
Intercept, γ_{00}	3.51	.09	37.90*
Sex, γ_{01}	-.25	.06	-4.31*
Relatedness to peers, γ_{10}	.09	.02	3.99*
<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	1.12	461	644.19*
Relatedness to peers, u_{1j}	.07	462	594.78*
Level 1 variance, r_{ij}	.15		

Note. * $p < .05$

Introjected self-motivation. At Level 1, when students reported a high sense of relatedness to instructor, they likely reported low scores on the introjected self-motivation scale in that course. However, students, who reported relatedness need fulfillment to peers, reported higher scores in introjected self-motivation, indicating that students with perceptions of good relationships with peers reported a reason to study hard in order to avoid shame. At Level 2, there was a positive relation between relatedness need fulfillment to instructor and a need for relatedness, indicating that students with more general needs for relatedness were likely to report more relatedness need fulfillment to instructor in general. Female students reported higher score overall on the introjected self-motivation scale across courses.

Table 35

Initial Fixed and Random Effects of Relatedness Facets Predicting Introjected Self-Motivation at Levels 1 and 2

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t Ratio</i>
Intercept, γ_{00}	2.33	.10	23.49*
Sex, γ_{01}	-.18	.06	-3.03*
Relatedness to instructor, γ_{10}	.07	.19	.39*
General relatedness need fulfillment, γ_{11}	-.07	.03	-2.07*
Need for relatedness, γ_{12}	.05	.04	1.36*
Relatedness to peers, γ_{20}	-.22	.18	-1.22*
General relatedness need fulfillment, γ_{21}	.06	.03	1.80*
General needs for relatedness, γ_{22}	.01	.04	.37*

<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	1.34	417	579.35*
Relatedness to instructor, u_{1j}	.04	416	556.32*
Relatedness to peers, u_{2j}	.01	416	453.69*
Level 1 variance, r_{ij}	.14		

Note. * $p < .05$

Table 36

Final Fixed and Random Effects of Relatedness Facets Predicting Introjected Self-Motivation at Levels 1 and 2

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t Ratio</i>
Intercept, γ_{00}	2.34	.10	23.38*
Sex, γ_{01}	-.12	.07	-1.76
Relatedness to instructor, γ_{10}	-.18	.06	-2.81*
General needs for relatedness, γ_{11}	.08	.01	5.78*
Relatedness to peers, γ_{20}	.15	.03	4.86*

<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	.88	417	542.47*
L2: Relatedness to peers, u_{1j}	.03	417	463.00
L2: Relatedness to peers, u_{2j}	.04	418	460.92
Level 1 variance, r_{ij}	.19		

Note. * $p < .05$

Identified self-motivation. At Level 1, identified self-motivation was associated with relatedness need fulfillment to instructor but not to peers. These associations indicated that students who reported that a reason to study was because it was important were likely to perceive more relationship with instructor but not with peers. At Level 2, students' sex was related to degrees of students' identified self-motivation, showing female students reported higher identified self-motivation than male students. Also, a need for relatedness was positively correlated with students' reported perceptions of relatedness to instructor.

Table 37

Initial Fixed and Random Effects of Relatedness Facets Predicting Identified Self-Motivation at Levels 1 and 2

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t Ratio</i>
Intercept, γ_{00}	2.31	.11	21.78*
Sex, γ_{01}	-.15	.05	-2.91*
Relatedness to instructor, γ_{10}	.31	.27	1.14
General relatedness need fulfillment, γ_{11}	-.04	.05	-.84
Need for relatedness, γ_{12}	.03	.05	.50
Relatedness to peers, γ_{20}	-.05	.28	-.17
General relatedness need fulfillment, γ_{21}	.04	.05	.75
General needs for relatedness, γ_{22}	.02	.06	.28

<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	1.50	417	505.43*
Relatedness to instructor, u_{1j}	.04	416	477.20*
Relatedness to peers, u_{2j}	.06	416	475.13*
Level 1 variance, r_{ij}	.22		

Note. * $p < .05$

Table 38

*Final Fixed and Random Effects of Relatedness Facets Predicting Identified Self-**Motivation at Levels 1 and 2*

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t Ratio</i>
Intercept, γ_{00}	2.53	.09	27.70*
Sex, γ_{01}	-.16	.05	-3.01*
Relatedness to instructor, γ_{10}	.18	.05	3.67*
General needs for relatedness, γ_{12}	.04	.01	3.89*

<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	1.08	474	750.51*
L2: Relatedness to peers, u_{1j}	.21	474	616.00*
Level 1 variance, r_{ij}	.48		

Note. * $p < .05$

Intrinsic self-motivation. At Level 1, students' scores measuring relatedness need fulfillment to instructor and to peers were highly associated with their intrinsic self-motivation toward courses. At Level 2, students with higher levels of general relatedness need fulfillment were likely to report lower relatedness need fulfillment to peers. Students' sex was not significantly related to students' intrinsic self-motivation.

Table 39

Initial Fixed and Random Effects of Relatedness Facets Predicting Intrinsic Self-Motivation at Levels 1 and 2

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t Ratio</i>
Intercept, γ_{00}	.25	.13	1.91
Sex, γ_{01}	.04	.07	.65
Relatedness to instructor, γ_{10}	-.24	.42	-.56
General relatedness need fulfillment, γ_{11}	.10	.09	1.10
General needs for relatedness, γ_{12}	.08	.09	.93
Relatedness to peers, γ_{20}	-1.00	.42	2.37*
General relatedness need fulfillment, γ_{21}	-.14	.09	-.49
General needs for relatedness, γ_{22}	-.06	.09	-.65

<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	.82	417	424.98
Relatedness to instructor, u_{1j}	.14	416	493.35*
Relatedness to peers, u_{2j}	.03	416	416.41
Level 1 variance, r_{ij}	.50		

Note. * $p < .05$

Table 40

Final Fixed and Random Effects of Relatedness Facets Predicting Intrinsic Self-Motivation at Levels 1 and 2

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t Ratio</i>
Intercept, γ_{00}	.22	.13	1.65
Sex, γ_{01}	.02	.07	.34
Relatedness to instructor, γ_{10}	.52	.04	12.07*
Relatedness to peers, γ_{20}	.34	.08	4.21*
General relatedness need fulfillment, γ_{21}	-.03	.02	-2.25*

<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	1.19	474	636.98*
L2: Relatedness to peers, u_{1j}	.32	475	630.65*
Level 1 variance, r_{ij}	.71		

*Note. *p < .05*

Competence. At Level 1, results showed that when students had a good relationship with their instructor, they rated high on competence need fulfillment in a course. However, perceived relatedness to peer did not predict this competence need fulfillment, nor were personal factors associated with competence.

Table 41

*Initial Fixed and Random Effects of Relatedness Facets Predicting Competence at Levels**1 and 2*

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t Ratio</i>
Intercept, γ_{00}	.11	.11	20.44*
Sex, γ_{01}	.04	.04	1.15
Relatedness to instructor, γ_{10}	.31	.31	.43
General relatedness need fulfillment, γ_{11}	.06	.06	.38
Need for relatedness, γ_{12}	.06	.06	.88
Relatedness to peers, γ_{20}	.15	.31	.48
General relatedness need fulfillment, γ_{21}	.03	.06	.41
General needs for relatedness, γ_{22}	-.06	.06	-1.02

<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	1.15	417	459.04
Relatedness to instructor, u_{1j}	.33	416	499.62*
Relatedness to peers, u_{2j}	.25	416	404.04
Level 1 variance, r_{ij}	.57		

Note. * $p < .05$

Table 42

*Final Fixed and Random Effects of Relatedness Facets Predicting Competence at Levels**1 and 2*

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t Ratio</i>
Intercept, γ_{00}	2.20	.10	21.79*
Relatedness to instructor, γ_{10}	.46	.02	19.47*

<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	1.29	475	772.08*
L2: Relatedness to instructor, u_{1j}	.26	475	671.51*
Level 1 variance, r_{ij}	.58		

Note. * $p < .01$

Research Questions 4-1 and 4-2: Relations Between Motivation and Course Well-Being

(4-1) How do the three need fulfillments (degrees of autonomy, competence and relatedness) explain course well-being (emotions, course satisfaction, and anticipated grade)?

(4-2) Do students' perceptions of personal growth as personal factors contribute to their perceptions of motivation and course well-being across courses?

In this research objective, I aimed to inspect how students' different motivational experiences were associated with course well-being variables (five different emotions, course satisfaction, and anticipated grade). Personal factors were introduced at Level 2 on both slopes and mean of course well-being scores across courses. Additionally, I was interested in whether students' general perceptions of personal growth were associated with overall academic course well-being.

Multilevel modeling

The model for the situational level (Level 1) was as follows:

$$\text{Course well-being}_{ij} = \beta_{0j} + \sum_{i=1}^7 \beta_{ij} \chi_{ij} + r_{ij}$$

The model for the personal level (Level 2) was as follows:

$$\beta_{0j} = \gamma_{00} + \gamma_{01}(\text{sex})_j + \gamma_{02}(\text{personal growth in general})_j + u_{0j}$$

$$\beta_{ij} = \gamma_{i0} \quad (i: 1 - 5)$$

$$\beta_{6j}^a = \gamma_{60} + \gamma_{61}(\text{general relatedness need fulfillment})_j + \gamma_{62}(\text{general need for relatedness})_j$$

$$\beta_{7j}^b = \gamma_{70} + \gamma_{71}(\text{general relatedness})_j + \gamma_{72}(\text{general needs for relatedness})_j$$

Note. ^a and ^b at Level 2 were used for relatedness need fulfillment (to instructor and peers). χ_{ij} : 7 variables of academic motivation at Level 1. β_{ij} was fixed at Level 2.

Enjoyment. At Level 1, when students reported more external motivation, they rated low on enjoyment, whereas when they endorsed more intrinsic self-motivation, they reported high scores on enjoyment. This indicates that when students did course work due to external factor, they would tended to report less enjoyment. However, students who did homework and classroom activities for interest and fun enjoyed a course more. Also, results revealed that students' perceptions of relatedness need fulfillment to instructor were strongly associated with feelings of enjoyment. At Level 2, male students tended to show more overall enjoyment across courses than did female students. General relatedness need fulfillment in everyday life predicted the slope of relatedness need fulfillment to instructor in a negative direction.

Table 43

Initial Fixed and Random Effects of Motivation Predicting Enjoyment at Levels 1 and 2

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t Ratio</i>
Intercept, γ_{00}	.02	.20	.12
Sex, γ_{01}	.12	.04	3.02*
Personal growth in general, γ_{02}	-.08	.04	-1.80
External motivation, γ_{10}	-.14	.03	-4.65*
Introjected self-motivation, γ_{20}	-.04	.03	-1.33
Identified self-motivation, γ_{30}	.02	.03	.69
Intrinsic self-motivation, γ_{40}	.63	.02	30.09*
Competence, γ_{50}	.04	.02	1.81
Relatedness to instructor, γ_{60}	.65	.27	2.38*
General relatedness need fulfillment, γ_{61}	-.04	.05	-.73
General needs for relatedness, γ_{62}	-.04	.06	-.71
Relatedness to peers, γ_{70}	-.10	.27	-.37
General relatedness need fulfillment, γ_{71}	.01	.05	.21
Need for relatedness, γ_{72}	.03	.06	.54
<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	.07	482	858.00*
Level 1 variance, r_{ij}	.31		

Note. * $p < .01$

Table 44

Final Fixed and Random Effects of Motivation Predicting Enjoyment at Levels 1 and 2

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t Ratio</i>
Intercept, γ_{00}	-.09	.11	-.79
Sex, γ_{01}	.14	.04	3.65*
External motivation, γ_{20}	-.15	.02	-6.05*
Intrinsic self-motivation, γ_{30}	.64	.02	34.02*
Relatedness to instructor, γ_{40}	.51	.04	12.09*
General relatedness need fulfillment, γ_{50}	-.03	.01	-3.84*

<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	.25	483	834.32*
Level 1 variance, r_{ij}	.56		

Note. * $p < .01$

Hope. At Level 1, external motivation was negatively related to feelings of hope, whereas both identified and intrinsic self-motivations were positively associated with hope. Also, results indicated that the more students were intrinsically motivated, the stronger they reported hope feelings. The strongest predictor of hope among motivational factors was a sense of competence. When students perceived good relationship with instructor or peers, they reported more hope in a course. Especially, relatedness need fulfillment to instructor showed a larger coefficient than did relatedness to peers. At Level 2, no personal factors significantly predicted students' feelings of hope or relatedness facets.

Table 45

Initial Fixed and Random Effects of Motivation Predicting Hope at Levels 1 and 2

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t Ratio</i>
Intercept, γ_{00}	-.26	.19	-1.47
Sex, γ_{01}	.09	.04	2.50
Personal growth in general, γ_{02}	-.07	.04	-1.71
External motivation, γ_{10}	-.10	.03	-3.78*
Introjected self-motivation, γ_{20}	.06	.03	2.27
Identified self-motivation, γ_{30}	.13	.03	4.24*
Intrinsic self-motivation, γ_{40}	.26	.02	13.57*
Competence, γ_{50}	.36	.02	17.18*
Relatedness to instructor, γ_{60}	-.25	.22	-1.12
General relatedness need fulfillment, γ_{61}	.07	.04	1.83
Need for relatedness, γ_{62}	.05	.04	1.08
Relatedness to peers, γ_{70}	.57	.23	2.43
General relatedness need fulfillment, γ_{71}	-.08	.04	-1.99
General needs for relatedness, γ_{72}	-.04	.05	-.81

<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	.08	482	1243.00*
Level 1 variance, r_{ij}	.19		

Note. * $p < .01$

Table 46

Final Fixed and Random Effects of Motivation Predicting Hope at Levels 1 and 2

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t Ratio</i>
Intercept, γ_{00}	-.26	.11	-1.46
Sex, γ_{01}	.08	.04	2.42
Personal growth in general, γ_{12}	-.07	.02	-1.94
External motivation, γ_{10}	-.10	.02	-3.73*
Introjected self-motivation, γ_{20}	.06	.04	2.49
Identified self-motivation, γ_{30}	.12	.01	4.16*
Intrinsic self-motivation, γ_{40}	.26	.04	13.90*
Competence, γ_{50}	.36	.02	17.23*
Relatedness to instructor, γ_{60}	.23	.02	8.45*
Relatedness to peers, γ_{70}	.10	.04	3.36*

<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	.08	482	1256.05*
Level 1 variance, r_{ij}	.19		

Note. * $p < .01$

Anger. At Level 1, students rated high feelings of anger when they reported high levels of external motivation and introjected self-motivation. However, students scored low in anger when they reported high identified and intrinsic self-motivations. When students reported a great amount of competence need fulfillment in a course, they were likely to rate lower in anger toward that class. Among all motivational predictors, students' perceptions of relatedness to instructor were shown to be the greatest negative predictor of anger. However, students' sense of relatedness to peers was shown to have a positive relation to anger. At Level 2, male students reported higher levels of anger across courses than did female students.

Table 47

Initial Fixed and Random Effects of Motivation Predicting Anger at Levels 1 and 2

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t Ratio</i>
Intercept, γ_{00}	5.54	.27	20.56*
Sex, γ_{01}	.15	.05	2.92*
Personal growth in general, γ_{02}	-.02	.06	-.34
External motivation, γ_{10}	.12	.04	3.22*
Introjected self-motivation, γ_{20}	.12	.03	3.47*
Identified self-motivation, γ_{30}	-.18	.04	-4.32*
Intrinsic self-motivation, γ_{40}	-.14	.02	-5.61*
Competence, γ_{50}	-.35	.03	-11.30*
Relatedness to instructor, γ_{60}	-.48	.32	-1.48
General relatedness need fulfillment, γ_{61}	-.05	.06	-.81
Need for relatedness, γ_{62}	.00	.07	.00
Relatedness to peers, γ_{70}	-.00	.33	-.01
General relatedness need fulfillment, γ_{71}	.02	.06	.36
General needs for relatedness, γ_{72}	.03	.07	.35
<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	.19	482	1425.94*
Level 1 variance, r_{ij}	.36		

Note. * $p < .01$

Table 48

Final Fixed and Random Effects of Motivation Predicting Anger at Levels 1 and 2

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t Ratio</i>
Intercept, γ_{00}	5.46	.17	31.82*
Sex, γ_{01}	.15	.05	2.77*
External motivation, γ_{20}	.12	.04	3.25*
Introjected self-motivation, γ_{30}	.13	.03	4.02*
Identified to instructor, γ_{40}	-.18	.04	-4.55*
Intrinsic self-motivation, γ_{30}	-.14	.03	-5.16*
Competence, γ_{40}	-.35	.03	-11.40*
Relatedness to instructor, γ_{50}	-.68	.04	-15.77*
Relatedness to peers, γ_{60}	.19	.04	4.61*

<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	.19	482	1450.75*
Level 1 variance, r_{ij}	.36		

Note. * $p < .01$

Anxiety. At Level 1, introjected self-motivation predicted anxiety positively, indicating that students reported anxiety when they reported working to avoid feelings of shame and guilt. When they reported intrinsic self-motivation, they were less likely to report feelings of anxiety. This means that when they perceived doing homework and class activities as fun, they reported lower levels of anxiety. Competence need fulfillment was a strong negative predictor of anxiety, showing that when students perceived they had enough skill and ability for a course, they reported lower levels of anxiety. Also, students' perceptions of a good relationship with an instructor was associated with less anxiety in a class. At Level 2, students' perceptions of general personal growth in life

predicted a mean level of anxiety across courses in a negative direction, indicating that students' overall experiences of anxiety across courses was negatively related to personal growth in life.

Table 49

Initial Fixed and Random Effects of Motivation Predicting Anxiety at Levels 1 and 2

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t Ratio</i>
Intercept, γ_{00}	5.23	.23	22.81*
Sex, γ_{01}	.10	.04	2.40
Personal growth in general, γ_{02}	-.09	.05	-1.74
External motivation, γ_{10}	.04	.03	1.18
Introjected self-motivation, γ_{20}	.18	.03	5.68*
Identified self-motivation, γ_{30}	.07	.04	1.95
Intrinsic self-motivation, γ_{40}	-.09	.02	-4.29*
Competence, γ_{50}	-.68	.03	-27.18*
Relatedness to instructor, γ_{60}	-.28	.27	-1.06
General relatedness need fulfillment, γ_{61}	.03	.05	.65
Need for relatedness, γ_{62}	-.02	.06	-.43
Relatedness to peers, γ_{70}	.14	.27	.50
General relatedness need fulfillment, γ_{71}	-.09	.05	-1.60
General needs for relatedness, γ_{72}	.06	.06	1.04
<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	.12	482	1224.66*
Level 1 variance, r_{ij}	.28		

Note. * $p < .01$

Table 50

Final Fixed and Random Effects of Motivation Predicting Anxiety at Levels 1 and 2

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t Ratio</i>
Intercept, γ_{00}	5.71	.21	27.50*
Personal growth in general, γ_{01}	-.13	.05	-2.80*
Introjected self-motivation, γ_{30}	.24	.03	9.28*
Intrinsic self-motivation, γ_{30}	-.08	.02	-3.70*
Competence, γ_{40}	-.68	.03	-27.08*
Relatedness to instructor, γ_{50}	-.22	.03	-8.90*

<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	.13	483	1324.50*
Level 1 variance, r_{ij}	.28		

Note. * $p < .01$

Boredom. At Level 1, external motivation and intrinsic self-motivations were positively related to feelings of boredom. Intrinsic self-motivation showed a particularly greater magnitude of coefficient of association with bored feelings, indicating that when students had intrinsic motivation for a course, they reported that they were less bored during learning. The more perceived extrinsic motivations, introjected and identified self-motivations, contributed to feelings of boredom in opposite directions. Introjected self-motivation showed a positive relationship to boredom, whereas identified self-motivation showed a similar amount of association but in a negative direction with boredom. These results illustrates that when students did classroom activities and homework for fun and a value and a goal of importance, they would less feel bored in a course. Students who reported a good relationship with the instructor were also less likely to feel bored.

Table 51

Initial Fixed and Random Effects of Motivation Predicting Boredom at Levels 1 and 2

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t Ratio</i>
Intercept, γ_{00}	5.64	.30	19.10*
Sex, γ_{01}	.04	.06	.65
Personal growth in general, γ_{02}	.03	.06	.46
External motivation, γ_{10}	.21	.04	4.89*
Introjected self-motivation, γ_{20}	.15	.04	3.54*
Identified self-motivation, γ_{30}	-.16	.05	-3.44*
Intrinsic self-motivation, γ_{40}	-.46	.03	-14.66*
Competence, γ_{50}	-.06	.04	-1.56
Relatedness to instructor, γ_{60}	-.60	.35	-1.70
General relatedness need fulfillment, γ_{61}	-.07	.06	-1.05
Need for relatedness, γ_{62}	.06	.08	.78
Relatedness to peers, γ_{70}	-.05	.36	-.14
General relatedness need fulfillment, γ_{71}	.05	.07	.79
General needs for relatedness, γ_{72}	-.02	.08	-.24
<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	.21	482	1116.58*
Level 1 variance, r_{ij}	.58		

Note. * $p < .01$

Table 52

Final Fixed and Random Effects of Motivation Predicting Boredom at Levels 1 and 2

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t Ratio</i>
Intercept, γ_{00}	5.69	.17	33.87*
External motivation, γ_{10}	.21	.04	4.98*
Introjected self-motivation, γ_{20}	.17	.03	4.30*
Identified self-motivation, γ_{30}	-.16	.04	-3.34*
Intrinsic self-motivation, γ_{40}	-.47	.03	-14.90*
Relatedness to instructor, γ_{50}	-.61	.03	-17.56*

<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	.22	482	1167.47*
Level 1 variance, r_{ij}	.57		

Note. * $p < .01$

Course satisfaction. At Level 1, external motivation was negatively associated with course satisfaction, while identified and intrinsic self-motivation contributed positively to it. This result indicates that when students were more intrinsically motivated in a course, they were likely to be satisfied with that course. Students' high competence need fulfillment was also associated with reported high course satisfaction. The strongest predictor of course satisfaction was shown to be students' perceptions of good relationship with their instructor. At Level 2, the results showed that male students reported more course satisfaction than did women. One surprising finding at this level was that students' perceptions of general personal growth were negatively associated with average perceived course satisfaction across courses.

Table 53

*Initial Fixed and Random Effects of Motivation Predicting Course Satisfaction at Levels**1 and 2*

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t Ratio</i>
Intercept, γ_{00}	.21	.19	19.10*
Sex, γ_{01}	.08	.03	.65
Personal growth in general, γ_{02}	-.12	.04	.46
External motivation, γ_{10}	-.11	.03	4.89*
Introjected self-motivation, γ_{20}	-.02	.03	3.54*
Identified self-motivation, γ_{30}	.11	.03	-3.44*
Intrinsic self-motivation, γ_{40}	.27	.02	-14.66*
Competence, γ_{50}	.13	.02	-1.56
Relatedness to instructor, γ_{60}	.61	.25	-1.70
General relatedness need fulfillment, γ_{61}	.00	.05	-1.05
General needs for relatedness, γ_{62}	.00	.05	.78
Relatedness to peers, γ_{70}	.04	.26	-.14
General relatedness need fulfillment, γ_{71}	-.00	.05	.79
General needs for relatedness, γ_{72}	-.01	.05	-.24
<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	.05	482	784.41*
Level 1 variance, r_{ij}	.28		

Note. * $p < .01$

Table 54

Final Fixed and Random Effects of Motivation Predicting Course Satisfaction at Levels 1 and 2

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t Ratio</i>
Intercept, γ_{00}	.21	.17	1.26
Sex, γ_{01}	.10	.03	2.96*
Personal growth in general, γ_{02}	-.12	.03	-3.42*
External motivation, γ_{20}	-.13	.02	-5.41*
Identified to instructor, γ_{30}	.10	.03	3.45*
Intrinsic self-motivation, γ_{40}	.27	.02	14.59*
Competence, γ_{50}	.14	.02	5.77*
Relatedness to instructor, γ_{60}	.61	.02	25.26*

<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	.22	482	792.30*
Level 1 variance, r_{ij}	.53		

Note. * $p < .01$

Anticipated grade. At Level 1, external motivation was negatively associated with anticipated final grade in a course, indicating that when students externally valued course work such as when they gave as a reason to study to receive teacher's and peers' compliments, or a good outcome, they expected a lower final course grade. However, introjected self-motivation was associated positively with anticipated grade, illustrating that students who did assignments and participated in course activity to avoid shame or guilt reported anticipating a better final grade. Additionally, students' intrinsic self-motivation was related positively to anticipated grade, showing students' perceptions of fun during learning as associated with a better final grade. Not surprising but expected,

students' perceptions of competence were the greatest predictor of the anticipated final course grade. At Level 2, no personal factors predicted slopes or average anticipated grades across courses.

Table 55

Initial Fixed and Random Effects of Motivation Predicting Anticipated Final Grade at Levels 1 and 2

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t Ratio</i>
Intercept, γ_{00}	6.08	.69	10.27*
Sex, γ_{01}	-.07	.11	-.70
Personal growth in general, γ_{02}	-.20	.12	-1.71
External motivation, γ_{10}	-.21	.08	-2.76*
Introjected self-motivation, γ_{20}	.16	.07	2.36*
Identified self-motivation, γ_{30}	.08	.09	.88
Intrinsic self-motivation, γ_{40}	.24	.05	4.70*
Competence, γ_{50}	1.02	.06	16.11
Relatedness to instructor, γ_{60}	.55	.64	.85
General relatedness need fulfillment, γ_{61}	-.10	.13	-.71
Need for relatedness, γ_{62}	-.04	.12	-.33
Relatedness to peers, γ_{70}	-.75	.64	-1.18
General relatedness need fulfillment, γ_{71}	.13	.14	.92
Need for relatedness, γ_{72}	.08	.12	.65
<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	.71	482	784.41*
Level 1 variance, r_{ij}	1.68		

Note. * $p < .01$

Table 56

Final Fixed and Random Effects of Motivation Predicting Anticipated Course Grade at Levels 1 and 2

<i>Fixed and Random Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>t Ratio</i>
Intercept, γ_{00}	5.36	.30	17.58*
External motivation, γ_{20}	-.19	.07	-2.66*
Introjected self-motivation, γ_{40}	.24	.07	3.49*
Intrinsic self-motivation, γ_{30}	.27	.04	6.17*
Competence, γ_{50}	1.03	.06	16.66*

<i>Random Effect</i>	<i>Variance Component</i>	<i>df</i>	<i>Chi-Square</i>
Level 2 intercept, u_{0j}	.70	484	1218.70*
Level 1 variance, r_{ij}	1.69		

Note. * $p < .01$

Chapter 5

Discussion

In this study, I approached various questions related to college students' motivational experience and their well-being. Do students experience different kinds of motivation and well-being across courses they are taking? Were different course characteristics associated with students' motivation and course well-being? Does students' relatedness need fulfillment play an important role in levels of internalized motivation and competence need fulfillment? Were students' various motivational experiences associated differently with course well-being? To investigate these research questions, I measured students' perceptions of their own academic motivation, course well-being, and course characteristics across the courses they were taking. Relevant to students' perceptions in relation to particular situations, I also included students' personal characteristics to explore how such personal factors were associated with their situational perceptions. As for academic motivation, three needs from a self-determination theory perspective were assessed: levels of autonomy, competence, and relatedness. Course well-being indicators were measured including emotional experiences, course satisfaction, and anticipated final course grade. Course characteristics involved various aspects: structural (size and type of class), social (teacher characteristics: management, pedagogical content knowledge, and autonomy support), motivational (interest and utility values: interest, requirement, or career reasons for taking a course, relation to major; and classroom goal structure: mastery, performance approach, and performance avoidance), and affective (caring classroom climate) aspects. Additionally, personal characteristics

were included such as sex, general needs for relatedness, general relatedness need fulfillment in everyday life, and feelings of personal growth.

In the rest of this chapter, I present briefly assumptions and purposes for each research question. Then, I discuss major findings, and then in particular, describe distinctive findings, and interpretation and implications from existing literature. I then discuss the study's limitations and close the chapter with significance and educational and pedagogical implications of the study.

Research Questions 1-1 and 1-2: Different Levels of Motivation and Course Well-Being Across Courses

(1-1) Do students perceive different levels of motivation and course well-being across different courses they are taking (Level 1)?

(1-2) Is there variability in the motivation and course well-being across students (Level 2)?

In order to inspect why students have different levels of motivation and well-being from one course to another, as a fundamental and primary objective, it was imperative that establish whether students experienced distinctive academic motivation and well-being across the different courses they were taking, namely at the situational level. Additionally, students' perceptions across students was inspected, namely the personal level. In the multilevel modeling, a fully unconditional model provided full variance of outcomes such as academic motivation and well-being at both Levels 1 and 2.

Overall results indicated that the within-student variance (the situational level) allowed me to suggest that students were sensitive to motivational and course well-being

experiences in each of the courses they were taking. Intrinsic motivation, competence need fulfillment, and relatedness need fulfillment to instructor showed that more than 70% of variance shown at the within-student level. Also, all course well-being variables showed that the within-student variance was greater than the between-student variance. In particular, it was shown that students reported more variety in their perceptions of course satisfaction across their courses with 94.4% of the total variance was found in the within-student variance. Heretofore, few studies have investigated students' situational motivational and emotional experiences across different courses. However, a study by Schmidt et al. (2007) approached the design of my study by testing students' situational flow experiences across different contexts, using multi-level modeling. Findings supported their claim that students would perceive different levels of flow experience over different contexts. This result is congruent with my findings in terms of a situational basis for motivational experiences in a particular context. Also, in relation to students' emotional experiences, Goetz et al. (2007) supported the idea that students experienced various emotions between- and within-domains: math, physics, German, and English. Also, consistent findings provided by Kim and Schallert (2009) showed that students reported different degrees of relatedness need fulfillment to instructors and peers as well as emotions across courses. The current study also suggested and extended these studies by looking at more academic motivational features such as different levels of internalized motivation and competence need fulfillment.

In addition, results at the between-student variance (personal level) suggested that students' aggregated perceptions across courses were different from one student to

another. The data in particular showed that external motivation and introjected self-motivation showed a greater amount of variance at Level 2 (around 70% of the total variance) than at Level 1, indicating that some students had higher external motivation and introjected self-motivation than others. For identified self-motivation, almost half of variance existed at Level 2. One study by Marsh and Ayotte (2003) investigated whether students perceived distinctive multi-dimensional self-concepts of competence and affect across math, reading, and general school work as they grew older. They hypothesized that because of developing multi-dimensional self-concepts with age, the magnitude of correlation between self-efficacy and affect in different domains would decrease with age. However, results showed that there were discrete self-concepts in some domains with age but no such thing was found in other domains, indicating that there might be more aspects needed to explain students' development of self-efficacy and affect. My findings suggested that students' motivation and course well-being may be more sensitive to situational environment, along with individual tendencies for levels of such variables.

One line of research investigated whether motivation changed within a year and whether the changes were connected to students' perceptions of contextual indicators (Anderman & Midgley, 1997; Bong, 2005; Goetz et al., 2007; Marsh & Ayotte, 2003). Bong (2005) investigated whether students' competence and goal orientation changed over a year, whether these motivations were related to classroom goal structures, and whether such relation patterns showed consistency across domains: English, math, Korean, and general school. Her results extended literature inquiring about students' various motivational experiences in relation to contextual factors over a year. Also, this

result seems to support my data in that students reported different levels of motivation according to their perceptions of contextual cues. Their finding showed that certain contextual factors such as classrooms that were perceived as encouraging a mastery goal structure were positively associated with a sense of high fulfillment of competence needs. Relative to Bong's research investigating students' different perceptions over a year, my study added the idea of students' different perceptions across classes.

Research Questions 2-1 and 2-2: Associations Between Course Characteristics and Academic Motivation, and Between Course characteristics and Course Well-Being.

(2-1) Do different course characteristics explain students' perceptions of motivation (different levels of autonomy, competence, and relatedness) and course well-being (emotions: enjoyment, hope, anger, anxiety and boredom; course satisfaction; and anticipated grades) at Level 1?

(2-2) Do students' sex, general relatedness need fulfillment in everyday life, and general needs for relatedness as personal factors explain students' perceptions of motivation and course well-being averaged across courses?

What course characteristics would form optimal conditions for students' motivation and course well-being was an important main objective of my study. Integrating previous work on contextual factors facilitating students' learning, I explored various course characteristics involving students' perceptions of social, motivational, and affective course variables. Overall findings indicated that teacher pedagogical content knowledge and a caring classroom climate were the most notable contributors to students' academic achievement motivation and course well-being indicators. Thus, I

address these characteristics first.

Teacher characteristics. Overall, findings showed that perceptions of the teacher as high in pedagogical content knowledge and course management were significantly and positively associated with overall motivation except external motivation. These qualities also contributed positively to positive emotions as well as course satisfaction, but negatively to negative emotions.

Interestingly teacher's management predicted anticipated grade positively. Also, this was associated positively with feelings of hope but negatively associated with anger and anxiety. According to the taxonomy of Pekrun and his colleagues (2006), these three academic emotions of hope, anger, and anxiety are outcome-related positive and negative emotions. Compared to the association between students' perceived teacher's competence and overall motivation and course well-being, This result suggests that a distinctive feature of students' perceptions of good teacher management seems to be directly associated with students' outcome related course well-being. Although teacher guidance and structure, namely teacher management, seem to be indicators of threatening students' development of autonomy need fulfillment such as controlling environment, these teacher qualities may differently contribute to students' learning from the inference. According to Solomon and his colleagues (1992), when elementary students are given informal or formal evaluations of their individual work (such as checking their work and receiving praise for good work), an impression of teacher caring can arise, and so did a sense of encouraging students' democratic interactions, treating students individually rather than as a whole group. Their note about the elements of increasing students' perceptions of

caring and my data suggested that teacher's good management of a course seem to be a good facilitator for college students' learning as well.

In contrast with prior studies (e.g., Reeve & Jang, 2006; Jang et al., 2009; Garcia and Pintrich, 1996), my data did not suggest that a teacher's autonomy support contributed to levels of autonomy and competence need fulfillment, nor to academic emotions. Teacher autonomy support was associated only with students' fulfillment of relatedness needs to instructor. Most studies reporting significant contributions of teacher's autonomy support to student learning have not included other teacher factors as I included in this project. Many studies investigated controlling and supporting environment (e.g., Jang et al., 2009). In a similar line of the present study, Skinner and Belmont (1993) included students' perceptions of teacher factors (involvement, structure, and autonomy support) to investigate how these factors were linked to students' engagement for effortful and desired behaviors and positive emotions. They reported that students' perceptions of teacher warmth and consideration for students' learning were the most influential factor for students' behavioral and emotional engagement. Another study (Skinner et al., 2008) supported this finding by reporting time-lagged path analysis. They addressed that students' perceptions of teacher autonomy support in the fall predicted neither behavioral engagement nor emotional engagement in the spring. These studies and my data including diverse teachers' attitudes for teaching and skills seem to suggest that students' perceptions of teacher involvement and good content knowledge are crucial elements perhaps to enhance students' motivation.

Caring classroom climate. Overall findings showed that a caring classroom climate crucially and positively predicted all motivation and course well-being. Not surprising by, my results showed that a caring classroom climate was an important predictor of relatedness facets, especially its strong association with relatedness need fulfillment to peers.

A unique finding of my data was the positive associations of a caring classroom climate not only with intrinsic self-motivation but also with external motivation. My interpretation of this finding is that when students considered a course as encouraging a caring environment, they perceived this climate as a positive environment. At the same time, this caring climate may encourage students to devote their effort even with an extrinsic value such as wanting to please their teacher.

Some researchers (Battistich et al., 1997; Goodenow, 1992; Noddings, 2005, Solomon et al., 1992) have asserted that a caring classroom climate plays an important role in enhancing students' shared purposes, participating in an activity, and fulfilling needs. Wentzel (1997) reported that teacher caring positively predicted students' academic effort, goal pursuit, and prosocial goal pursuit. Also, Skinner et al. (1990; 2008) reported that teachers' warm and emotional supportive attitudes were associated more with students' positive emotions but these were related less to negative emotions. Most of these studies considered only the teacher's caring attitude. My study considered a caring classroom climate as constructed by both the teacher's caring attitudes and students' respectful behaviors toward their peers. Thus, this study extended and confirmed existing literature showing important effects of a caring environment on students' motivation and

emotions.

Course value. My data suggested that the three course value variables, interest, importance, and utility as reasons for taking a course, were separately associated with each need fulfillment. Seemingly, importance and interest values (whether a course was related to their major and of interest) contributed positively to optimal academic motivation and emotions, whereas utility value (requirement) contributed to these negatively.

In particular, a utility value for taking a course such as a requirement or career reasons was negatively related to students' intrinsic motivation and fulfillment of competence needs, as well as relatedness need fulfillment to instructor. However, from an indication of its positive association with introjected and identified self-motivations, the importance value (a reason for taking a course because it was in one's major) seemed to be important for internalization of course values. By contrast, when students were taking a course for interest value, they reported high levels of autonomy and competence need fulfillment as well as more positive emotions of enjoyment and hope, but less of the negative emotion of boredom. Similar results were shown in research by Bye, Pushkar, and Conway (2007), revealing positive associations between interest and intrinsic motivation, but no relation between interest and extrinsic motivation. Their results and my data supported definitions from Deci and Ryan (1985; Wigfield & Eccles, 2000) who noted that external value (such as utility value) is similarly associated with external motivation, and intrinsic value (such as interest) is linked to intrinsic self-motivation.

As I reviewed earlier, Turner and Schallert (2001) reported that strong goal

pursuit including extrinsic goals also play a positive role in students' resiliency after a failure experiences. My data did not support their findings by showing negative associations among taking a course to fulfill a requirement, positive motivation, and well-being variables. This study suggested that interest value played an important role in students' overall perceived motivation and positive course well-being experiences. My interpretation of utility value is that although a required course should be important for students in college accomplishment, such courses may be at the introductory level; that is, students may perceive the courses as under-challenging. Acee and his colleagues (2010) reported that students identified different boredom experiences in over and under-challenging situations. They reported that students in the under-challenged situation were more likely to rate higher scores of boredom than students in the over-challenged situation. My data would suggest that students in introductory courses that fulfill a requirement and that is perhaps considered the under-challenged situation may be a strong boredom indicator as well as associated negatively with positive emotions and course satisfaction.

What I want to point out as one interesting finding among several was that the future career reason for taking a course revealed only significant association with anxiety, an outcome-related negative emotion. This indicates that when a course is taken because it is related to a student's future career, there may be a higher concern about achievement and success in the course.

Course structure. Overall results indicated that a small class (under 25 students) was negatively related to motivation and positive emotions but an interaction-based class

was positively associated with these.

In particular, size of class was negatively associated with students' perceptions of intrinsic motivation and competence need fulfillment, as well as feelings of enjoyment and course satisfaction, whereas an interaction-based class was positively associated with these. Also, the course encouraging interactions among classmates and the teacher was a positive and significant predictor for students' perceptions of relatedness to instructor. These results confirmed previous research by Kim and Schallert (2009) that represented small classes as negatively associated with students' perceptions of relatedness need fulfillment and positive emotions. According to Biddle and Berliner (2002), small size of class may increase chances to interact with teacher and peers, and allow the teacher to focus on individual students, and this may enhance students' learning. This would affect students' motivation, namely students want to devote time to learning and success. Although my findings did not suggest a positive effect of small class size on students' positive motivation, it seems to support their notion about the effect of positive interactions, by showing a positive association between a class with interactive structure, and students' experience of positive motivation and emotions.

One possibility to explain the unexpected findings of the small class size variable is that this kind of classroom structure would increase the likelihood of students' confronting challenges for workload and feeling pressure to participate in activities such as group work and presentations. Therefore, these elements would negatively impact students' enjoyment and positive motivational engagement. Together, as shown in size of class and the interaction-based learning variables, my data imply that an important

condition that may facilitate students' motivation seems to be quality of interaction among teacher and students rather than size of class.

Classroom goal structure. Results showed that students' perceptions of a performance approach classroom goal structure and a performance avoidance classroom goal structure were positively associated with the more extrinsic motivation including introjected and external motivation and negative emotions, and negatively associated with positive emotions and well-being.

These findings in particular indicated that when students perceived a course as encouraging competition among peers and evaluative of their outcomes (a performance approach goal structure), they felt less enjoyment and satisfaction with a course but more anger and boredom in a course. Students' perceptions that they should hide their incompetence (a performance avoidance goal structure) was associated with more anger and anxiety and though a small in magnitude, also with enjoyment.

In particular, unpredictable findings were revealed for perceptions of a mastery goal structure. The mastery goal structure variable showed its negative association with competence need fulfillment, hope for success, and expected final course grade, as well as no significant relations with fulfillment of relatedness to instructor or peer. Previous research reported that perceptions of a classroom mastery goal structure were related to students' perceived self-efficacy (Bong, 2002). Also, Corpus et al., (2009) reported that an increase in perceptions of a mastery goal structure was related to intrinsic motivation, whereas an increase in performance goal structure was associated with extrinsic motivation. My findings, however, did not support such positive contributions of mastery

classroom goal orientation to students' positive motivational and emotional experiences. My interpretation of these findings is that because a college course may encourage students to find their own learning resources and strategies rather than giving direction for their learning, the degree to which the course emphasizes students' own learning may reduce students' confidence and feelings of enjoyment. This interpretation also comes from the implication addressed in how teacher's management positively contributed to students' positive motivation and anticipated grades. This indicates that students' perceptions of teacher direction were desired indicators for students' optimal learning experiences. Students' perceptions of a mastery goal structure was positively associated with internalized extrinsic motivation such as introjected and identified self-motivation, whereas a performance goal structure and a performance avoidance goal structure were positively associated with external motivation along with introjected and identified self-motivations, respectively. This seems to support different characteristics of goal structures. Although a mastery goal structure was associated negatively with some of the motivation and emotion variables, students' perceptions of this goal may help develop their internalization of motivation.

Personal Levels. Whereas as students' relatedness need fulfillment to instructor was not associated with how satisfied students were with relatedness needs in their everyday life, or how much students possessed a general need for relatedness, students' relatedness need fulfillment to peers was associated with these two factors. Students' sex was associated with different levels of external motivation (external, identified, and identified self-motivations), indicating that female college students were more likely to

be sensitive to external motivation than male college students. However, students' sex resulted in non-significant associations with intrinsic self-motivation, and competence and relatedness need fulfillment. This indicated that no matter their gender, students perceived a similar amount of overall intrinsic self-motivation, competence need fulfillment, and relatedness need fulfillment.

Research questions 3-1 and 3-2: Relationship Patterns Among Academic Motivation as Represented by Competence, Competence, Autonomy, and Relatedness Needs

(3-1) Do students' relatedness need fulfillment to instructor and peers (situational level: Level 1) contribute to the different degrees of autonomy and competence need fulfillment?

(3-2) Do students' general needs for relatedness and general relatedness need fulfillment as personal factors play important roles in explaining average variance of student's perceptions of motivation and course well-being across courses?

This study shifted attention from the question of how to enhance students' motivation and well-being in a class to the question of how the three needs interacts with one another. In particular, I hypothesized that relatedness need fulfillment would play an important role in levels of autonomy and competence need fulfillment. Even though in the past fulfillment of autonomy needs has been portrayed as the most essential among the three needs (Deci & Ryan, 2000a), some researchers have noted that the internalization process of autonomy needs which is an integrating process of taking in external values and goals into one's own personal values and goals would occur when the guidance and direction were from significant others (Carvert & Scheir, 2000; Koestner &

Losier, 2002). I also considered for this research question how two personal characteristics are associated with students' relatedness need fulfillment in a course and then associated with autonomy and competence need fulfillment: how great students have a need for relatedness in general and how much students perceive relatedness need fulfillment in their existing general.

Overall findings indicated that students' perceptions of relatedness to instructor were a positive and strong predictor of students' autonomy and competence need fulfillment. When students perceived relatedness need fulfillment to instructor, they were likely to show internalized motivations, namely identified and intrinsic self-motivations, and to perceive competence need fulfillment. By contrast, such relations were not found for external motivation and introjected self-motivation. Lepper et al. (2005) investigated changes in intrinsic and extrinsic motivations with age and found that intrinsic motivation decreased with age but such a pattern was not shown for extrinsic motivation. Relative to Lepper et al.'s finding showing that intrinsic motivation decreased with age, my data indicated that college students reported a significant amount of intrinsic motivation. Also, they reported that perceived dependence on the teacher was positively associated with both intrinsic and extrinsic motivations, but pleasing the teacher was positively related to extrinsic motivation and negatively associated with intrinsic motivation. Lepper et al. interpreted this result as suggestive of the complex nature of external motivation. My interpretation of this result is that rather than being due to the complex nature of external motivation, the result occurred because the phenomenon depended on the teacher. This attribution to the teacher seems to point to an external source of motivation. In addition,

when students say it “depend on the teacher,” it should be because they see this relationship with the teacher as trustworthy, implying that there can be internal value to particular relationships to some teachers. “Pleasing the teacher” by contrast seems to imply more of an external value. My data seemed to clarify that trust and respect in relationship with an instructor are strongly associated with intrinsic motivation. My findings extended supported the existing literature positing the importance of the teacher’s role in students’ learning (Furrer & Skinner, 2003; Turner et al., 1998; Turner, Midgley, Meyer, Gheen, Anderman, & Kang, 2002; Roeser et al., 1996).

Students’ perceived relatedness need fulfillment to peers showed a positive association with external and introjected self-motivations as well as with intrinsic self-motivation. Compared with relatedness to the instructor which showed no association with external motivation, these results imply that peer relationship may have complex feature of students’ perceived motivation. As shown by my results, when students perceived relatedness to peers, they not only worked hard to receive desired outcomes (which refers to extrinsic motivation), but also were likely to perceive the class fun and interesting (which refers to intrinsic self-motivation) for learning. These complicated associations of peer relationship were addressed in a review paper by Juvonen (2007). She reported that peer support can enhance students’ adjustment and adaptation to school, whereas students’ perceived relationship to peers can also involve much conflict and competition in learning settings.

Personal level. When students felt general relatedness need fulfillment in their everyday lives and perceived relatedness to instructor, they were likely to report

internalized motivation of the introjected and identified sorts. However, when students felt a lack of general relatedness need fulfillment in their everyday lives but high levels of relatedness need fulfillment to peers in a course, their intrinsic self-motivation remained high. These results imply that students' satisfaction with their relatedness need to peers in a course may play a crucial role in their levels of motivation, especially when students do not find relatedness fulfillment in their lives.

Research Questions 4-1 and 4-2: Relations Between Motivation and Course Well-Being

(4-1) How do the three need fulfillments (degrees of autonomy, competence and relatedness) explain course well-being (emotions, course satisfaction, and anticipated grade)?

(4-2) Do students' perceptions of personal growth as personal factors contribute to their perceptions of motivation and course well-being across courses?

This purpose aimed to identify what different academic motivations predicted course well-being indicators. The idea was derived from the assertion that feelings of autonomy, competence, and relatedness were needed by humans in order to experience a sense of well-being (Deci & Ryan, 1985; Ryan & Deci, 2000a). Overall findings showed that need fulfillment was associated with a variety of course well-being indicators including discrete emotions, course satisfaction, and anticipated grade, supporting the notion by Vallerand et al. (2008) who pointed out that high levels of motivation led to high achievement and positive school experiences. My data showed that external and intrinsic self-motivation showed opposite patterns of associations with course well-beings

indicators. In particular, intrinsic self-motivation was strongly associated with feelings of enjoyment, course satisfaction, and anticipated grades in positive directions, but with boredom in a negative direction.

Interesting findings were shown for introjected and identified self-motivations. My findings showed that introjected self-motivation was positively associated with negative feelings of anger, anxiety, and boredom, as well as anticipated grades. By contrast, identified self-motivation was positively associated with hope, course satisfaction, but negatively with anger and boredom. However, no relation was shown between identified self-motivation and anticipated grade. My findings are congruent with a previous study of Assor et al. (2009) in which students with introjected self-motivation reported good grades but experienced negative emotions. In contrast, students with identified self-motivation experienced positive emotions. As implied by their study and my findings, two motivational factors seem to be orthogonal. Introjected self-motivation refers to perceptions of external controllability and being less autonomous but identified self-motivation refers to perceptions of internal controllability and being more autonomous. Identifying the contributions of these two self-motivations in development processes have interested researchers (Assor et al, 2009; Koestner et al., 1996; Ratelle et al., 2007). A study by Koestner et al. (1996) identified two internalized motivations by associating with decision-making strategies and emotions in terms of political participation. Results showed that introjected self-motivation was related to positive and negative emotions as well as passive decision-making strategies, whereas identified self-motivation was associated with positive emotions and active decision-making strategies.

My data along with these studies suggest that although both are classified as external motivations, they may play different motivational roles in students' well-being.

Relative to other need fulfillment, results revealed that perceived competence showed a strong positive relation with hope and course satisfaction. Also, students with high competence were less anxious in a course and ended up expecting good grades. The data confirmed previous research findings by Goetz et al. (2006) revealing that perceived competence was positively correlated with enjoyment and pride, and negatively correlated with anger, anxiety, and boredom. Another study by Garcia and Pintrich (1996) also confirmed this finding by showing that self-efficacy was the strongest predictor of final grades in a college course.

I found that relatedness need fulfillment to instructor was a notable predictor of overall course well-being. Like previous research (Goetz et al., 2006), my findings imply that the teacher may play a pivotal role in perhaps facilitating students' positive emotions and satisfaction with school but decreasing negative emotions. Especially, when students perceived a good relationship with their instructor, they were more likely to enjoy and be more satisfied with a course, but felt less boredom. However, no relation was revealed in association between relatedness need fulfillment to instructor and anticipated grade. I found in the section on Research Question 3 that strong associations between relatedness need fulfillment to instructor and competence need fulfillment were shown. Here, the association was between competence need fulfillment and anticipated grades. Together, my interpretation of these results is that there are an indirect relationship between students' relatedness need fulfillment to instructor and anticipated grade through

competence need fulfillment. On the one hand, relatedness need fulfillment to peers predicted positively both hope and anger which are outcome- and success-related feelings. This result indicates that students' perceived good relationship with peers in a course may play complex roles in students' learning. Again, as I described earlier when discussing Research Question 3, students' perceived relationship to peers was positively associated with both extrinsic and intrinsic motivation. Along with these implications, my findings here indicate that relatedness need fulfillment to peers maybe a good resource for social support but may also be related to feelings of competitiveness in a course. Again, as indicated in my above findings, relatedness need fulfillment to instructor would be a good facilitator for students' more stable motivation and course well-being.

Personal Level. Results partially supported the assumption that personal growth was associated with students' aggregated course well-being across the courses they were taking (hypothesis 4b). Personal growth in general was negatively associated with feelings of anxiety averaged across courses. In contrast with assumptions of personal growth in life, it was also negatively associated with course satisfaction averaged across courses.

Limitations of the Study and Future Research

There were several limitations that should be kept in mind in interpreting my study. In preliminary tests, the purpose in life scale at first did not show sufficient construct validity in a factor analysis. Also, although it has been widely used in previous studies the scale of teacher autonomy support showed low reliability. Thus, future tests of whether these scales provide similar results as I found in this project are necessary.

Second, in relation to course characteristics as shown in Research Question 2, parts of their associations with academic motivation and well-being were omitted in Research Questions 3 and 4. This was (a) because need fulfillment and well-being which became predictors and outcomes in Research Questions 3 and 4 were supposed to show the same associations with course characteristics in Research Question 2; and (b) because Research Questions 3 and 4 aimed to look at a different part of these associations. Especially, in Research Question 3, I inspected the associations among fulfillment of the three needs, whereas in Research Question 4, I focused on the associations between need fulfillment and course well-being. Thus, I assumed that the contributions of course characteristics already existed in Research Questions 3 and 4.

Third, because my research design was admittedly complex and made use of multiple analyses, the type I error rate may have been unacceptably high and affected the results.

Fourth, although correlation patterns among course characteristics seemed not to be too highly correlated with one another except teacher management and competence (see Appendix T), the fact that I used so many does bring in problems of multicollinearity and possibly suppression effects in the results.

Fifth, the variable of course grade was not the actual grade but was the anticipated final course grade. Thus, there is always the chance that students' motivational and emotional states may be influencing their expectations rather than their true achievement in a course. Nevertheless, because I collected data close to the end of semester, I believe

that the grades the students reported would likely reflect realistically the final course grade.

Finally, in Research Question 3, I omitted the motivation part from the whole set of associations focused on the associations among the three needs. For that question, I hypothesized that relatedness need fulfillment was the important predictor of different levels of autonomy and competence. In this particular research question, I included two personal factors, general relatedness need fulfillment in everyday life and general needs for relatedness. These data partially supported hypothesized associations among general relatedness need fulfillment, general need for relatedness, and relatedness need fulfillment in particular courses. In future research, rather than looking at regression associations, it would be helpful to use path analysis to look for associations among these variables.

Significance of the Study and Implications

This study seems unique in that little previous research has investigated students' diverse motivational experiences and course well-being across various courses they are taking in a semester. Another unusual feature of this study was that participants were from diverse majors. Thus, such participants reported various levels of course experiences across courses that diverse departments provided. Results using these data were grounded in the primary and fundamental purpose of the study and showed a requisite amount of variance of motivation and course well-being at each level (Levels 1 and 2). This study thus extended existing literature that has been interested in differences of within-student experiences.

This study examined the motivation and course well-being the students experienced across the different courses they were taking. Through these data and the multilevel modeling, results helped us understand the original question, “whether and how students perceive better motivation but not to another.”

This study is unique in that my findings synthesized and extended existing literature investigating more than one or two context factors; that is, the present study included diverse dimensions of course characteristics and compared their discrete associations with motivations and well-being.

Although this study depended on self-reported measures, I believed that students’ perceptions of psychological conditions such as motivation and well-being would reflect the most important psychological experiences and conditions they were experiencing. Some studies by Skinner and her colleagues (2003; 2008) have compared how students’ and teacher’s perceptions of contextual factors were associated with student’s perceptions of emotional and behavioral engagement. Their results suggested that students’ perceptions predicted their engagement more accurately than did their teachers’. From these perspectives, the current study tells the field much about students’ experiences concerning different levels of motivation and well-being across courses.

Finally, my findings give information to teachers and educators about what course characteristics could facilitate or threaten students’ optimal experiences of motivation and well-being. Especially, my data suggested that social and affective factors, namely teacher characteristics and a caring classroom climate, are the most prominent factors for

students' positive experiences in class. Thus, teachers should be aware of their role in class.

Appendix A: Demographic information

1. What is your sex? _____M _____F

2. What is your classification? _____ Freshman _____ Sophomore _____ Junior
_____ Senior _____ Other(specify) _____

3. What is your age?
_____ less than 20 _____ 21-23 _____ 24-27 _____ 28-30 _____ Over 31

4. In what college is your current major?
_____ architecture _____ liberal arts
_____ business _____ natural sciences
_____ communication _____ nursing
_____ education _____ pharmacy
_____ engineering _____ social work
_____ fine arts _____ undeclared (you are not a part of any college)
_____ graduate school
_____ school of information

5. What ethnicity do you identify yourself?
_____ American Indian/Native American
_____ Asian/Asian American/Oriental
_____ Black/African American
_____ Hispanic/Latino
_____ Mixed
_____ White/Euro-American
_____ No Response

Appendix B: General Need for Relatedness

1. I really like the people I interact with.
2. I get along with people I come into contact with.
3. I pretty much keep to myself and don't have a lot of social contacts.
4. I consider the people I regularly interact with to be my friends.
5. People in my life care about me.
6. There are not many people that I am close to.
7. The people I interact with regularly do not seem to like me much.

Appendix C: General Relatedness Need Fulfillment

1. People are generally pretty friendly towards me.
2. Generally, I am a person who considers what others feel.
3. It is important to me what people around me think of me.
4. I feel fulfilled when people like me.
5. I don't really care what people think of me.
6. I consider people around me when I make a decision.
7. I feel comfortable when I am with people I know even though we are in an unfamiliar situation.
8. I need support from the people who are important to me

Appendix D: Personal Growth of Psychological Well-Being

1. I am not interested in activities that will expand my horizons
2. I have the sense that I have developed a lot as a person over time
3. When I think about it, I haven't really improved much as a person over the years
4. I think it is important to have new experiences that challenge how I think about myself and the world
5. I don't want to try new ways of doing things-my life is fine the way it is
6. I do not enjoy being in new situations that require me to change my old familiar ways of doing things
7. There is truth to the saying you can't teach an old dog new tricks
8. For me, life has been a continuous process of learning, changing, and growing
9. I gave up trying to make big improvements or changes in my life a long time ago.

Appendix E: General Information

Name of the course that you are thinking of now _____

Name of the course instructor _____

What grade do you expect to get in the end of this semester

- 1) A
- 2) A-
- 3) B+
- 4) B
- 5) B-
- 6) C+
- 7) C
- 8) C-
- 9) D+
- 10) D
- 11) D-
- 12) D-
- 13) F

Appendix F: Course Value

1. Why are you taking this course? (You can answer more than one reason)
 - 1) Because I am interested in the subject
 - 2) Because this course is required
 - 3) Because it will be necessary for my future career

2. Is this course your major?
 - 1) Yes
 - 2) No

Appendix G: Classroom Structure

1. Please pick a response which best describes your class.
 - 1) Lecture-oriented class
 - 2) Discussion-oriented class
 - 3) Small group activity oriented class
 - 4) Mix of lecture and discussion-oriented class
 - 5) Lab-oriented class
 - 6) other _____

2. How many students in the class?
 - 1) over 100 students
 - 2) 60 – 100 students
 - 3) 26 – 59 students
 - 4) less than 25 students but more than 10
 - 5) 10 or fewer

Appendix H: Teacher Characteristics

A. Teacher classroom management

1. The instructor clearly explains every classroom activity in the class.
2. I lose track of what is going on in the class.
3. The instructor guides the classroom activity during class.
4. The instructor supports me when I need it.
5. The instructor adjusts teaching when it is necessary.

B. Teacher Pedagogical Content Knowledge

1. The teacher is confident in teaching the materials
2. The teacher is clear, and relatively easy to understand
3. The teacher's efforts at managing the class are effective
4. The teacher answers question easily
5. The teacher gives good feedback
6. The teacher is able to overcome problems that arise in class

C. Teacher Autonomy Support

1. The teacher of the class always explains why we have to learn certain things in school
2. The teacher of the class talks about how course content is related to my goals after graduation
3. The teacher of the class interrupts me when I have something to say
4. The teacher of the class tries to control everything I do

Appendix I: Classroom Goal Structure

A. Mastery-goal structure

1. In the class, trying hard is very important
2. In the class, how much you improve is really important
3. In the class, really understanding the material is the main goal
4. In the class, it's important to understand the work, not just memorize it
5. In the class, learning new ideas and concepts is very important
6. In the class, it's OK to make mistakes as long as you are learning

B. Performance-Approach goal structure

1. In the class, getting good grades is the main goal
2. In the class, getting right answers is very important
3. In the class, it's important to get high scores on tests.

C. Performance-Avoid goal structure

1. In the class, showing others that you are not bad at class work is really important
2. In the class, it's important that you don't make mistakes in front of everyone
3. In the class, it's important not to do worse than other students
4. In the class, it's very important not to look dumb
5. In the class, one of the main goals is to avoid looking like you can't do the work

Appendix J: Caring Classroom Climate

1. People care about each other in this class.
2. Students in the class treat each other with respect
3. When I'm having a problem, other students will help me
4. Students in the class work together to solve problems
5. Teacher and students treat each other with respect in this class
6. Students in my class help each other, even if they are not personal friends
7. In the class, I get to do things that I want to do
8. My classmates care about my work just as much as their own
9. In the class, the teacher and students plan together what we will do
10. In the class, the students get to help plan what they will do
11. Students in the class can get a rule changed if they think it is unfair
12. In the class, the teacher is the only one who decides on the rules
13. Students in my class don't get along together very well

Appendix K: Levels of Autonomy

Please read each of the following items carefully, thinking about how it relates to the course that you remembered, and then indicate how true it is for you. Your responses are confidential. Please be honest and straightforward. Use the following scale to respond.

1	2	3	4	5
not at all		somewhat		very
true		true		true

A. Why did I do my assignment?

1. Because I wanted the instructor to think I'm a good student.
2. Because I would be penalized if I didn't.
3. Because it's fun.
4. Because I felt bad about myself if I didn't do it.
5. Because I wanted to understand the subject.
6. Because that's what I was supposed to do.
7. Because I enjoyed doing my assignment.
8. Because it's important to me to do my assignment.

B. Why did I work on my class work?

1. So that the instructor wouldn't be disappointed with me.
2. Because I wanted the instructor to think I'm a good student.
3. Because I wanted to learn new things.
4. Because I would be ashamed of myself if it didn't get done.
5. Because it's fun.
6. Because that's the rule.
7. Because I enjoyed doing my class work.
8. Because it's important to me to work on my class work.

C. Why did I try to participate in class?

1. Because I wanted the other students to think I'm smart.
2. Because I felt ashamed of myself when I don't try.
3. Because I enjoyed participating in class.
4. Because that's what I was supposed to do.
5. To find out if I'm right or wrong.
6. Because it's fun to participate in class.
7. Because it's important to me to try to participate in class.
8. Because I wanted the instructor to say nice things about me.

Appendix L: Competence Need Fulfillment

Please respond to each of the following items in terms of how true it is for you with respect to your learning in this course. Use the scale:

1	2	3	4	5
not at all		somewhat		very
true		true		true

1. If I had enough time, I could do most of the work in this class.
2. Some of the work was too difficult for me.
3. I am certain I could master the skills that were taught in this class this semester
4. No matter how hard I try, there was some work in this class I never understood.
5. I could do almost all the work in this class if I didn't give up.
6. I am certain I could do even the most difficult work
7. I am certain I could do a good job on the assignments and tests in this class this semester.

Appendix M: Relatedness Need Fulfillment

1. Instructor Relationship

- 1) I feel as though my instructor respects each student in this class.
- 2) The instructor gives me positive feedback when I make a comment in class.
- 3) The relationship between the instructor and students is comfortable.
- 4) Interactions with my instructor are generally positive.
- 5) The instructor supports student comments.

2. Students Relationship

- 1) Students value other's opinions.
- 2) The other students in class make me feel welcome.
- 3) I respect my classmates.
- 4) Students in this course treat each other with respect.
- 5) I value each student's contribution to the class.

Appendix N: Academic Emotion Scale

1. I am confident when I go to class.
2. I get excited about going to class.
3. I am full of hope.
4. I enjoy participating so much that I get energized.
5. I feel frustrated in class.
6. I get bored.
7. As the end of the class, I start looking forward to the next time I'll be in this same class.
8. Thinking about class makes me feel uneasy.
9. I am looking forward to learning a lot in this class.
10. I wish I didn't have to attend class because it makes me angry.
11. Because I get bored my mind begins to wander.
12. I worry the others will understand more than me.
13. Because the time drags I frequently look at my watch.
14. When I think of the time I waste in class I get aggravated.
15. I get restless because I can't wait for the class to end.
16. I am motivated to go to this class because it's exciting.
17. I am confident because I understand the material.
18. I feel anger arising up in me.
19. Being confident that I will understand the material motivates me.
20. I feel nervous in this class.
21. Because I'm angry I get restless in this class.
22. I worry whether I will be able to understand the material in this class.
23. I start yawning in this class because I'm so bored.
24. I get scared that I might say something wrong, so I'd rather not say anything.
25. My confidence motivates me to prepare for class.

Enjoyment: 2, 4, 7, 9, 16

Hope: 1, 3, 17, 19, 24

Anger: 5, 10, 14, 18, 21

Anxiety: 8, 12, 20, 22, 24

Boredom: 6, 11, 13, 15, 23

Appendix O: Course Satisfaction

1. Most way of my experiences in this class are close to my ideal
2. The conditions of this class are excellent
3. I am satisfied with this class
4. So far I have gotten the important things I want in this class.
5. I think this course need to change almost nothing.

Appendix P: CFAs for Constructs

Model	χ^2 (df)	CFI	SRMR	RMSEA (95% C. I.)
<i>Situational Level (Level 1)</i>				
Contextual Related Motivation				
Autonomy	1684.4490 (221)	.841	.140	.114 (.109 - .120)
Competence	46.531 (13)	.984	.025	.071 (.050 - .094)
Relatedness	377.862 (33)	.897	.081	.144 (.131 - .157)
Course Characteristics				
Classroom goal structure	329.069 (62)	.921	.063	.092 (.083 - .102)
Teacher characteristics	278.324 (61)	.949	.033	.084 (.074 - .094)
Caring classroom climate	199.034 (25)	.922	.052	.117 (.102 - .133)
Outcomes				
Academic Emotion	1759.832 (269)	.862	.090	.106 (.101 - .111)
Course Satisfaction	18.402 (5)	.993	.015	.073 (.039 - .110)
<i>Personal Level (Level 2)</i>				
Internal Self-Condition of Motivation				
General Relatedness	52.836 (9)	.932	.043	.100 (.075-.127)
Need for Relatedness	97.948 (20)	.908	.045	.090 (.072-.108)
General Well-Being				
Purpose of Life	104.267 (14)	.856	.057	.115 (.095-.136)

Appendix Q: Items Showing High Error Correlations in CFA

Scale	Correlated Items	
Introjected self-motivation	Why do I do my assignment? Because I want the instructor to think I'm a good student.	Why do I work on my class work? Because I want to the instructor to think I 'm a good student.
Identified self-motivation	Why do I do my assignment? Because I want to understand the subject.	Why do I work on my class work? Because I want the instructor to think I'm a good student.
Competence	In this class, some of the work is too difficult for me	No matter how hard I try, there is some work in this class I cannot understand
Relatedness	I respect my classmates.	Students in this course treat each other with respect

Appendix R: Descriptive Statistics of Categorical Variables

Course Characteristics

Categorical Variables

Variable	Frequency	Percent	Missing	Coding
<i>Value</i>				
Interest reason to take the course	504 (vs. 1296)	28.0% (vs. 72%)	No	1: Interest (0: No)
Required course to take	608 (vs. 1192)	33.8% (vs. 66.2%)	No	1: Requirement (0: No)
Career reason to take the course	75 (vs. 1725)	4.2% (vs. 95.8%)	No	1: Career (0: No)
Major related course or not	893 (vs. 907)	49.6% (vs. 50.4%)	No	1: Major (0: No)
<i>Structure of Course</i>				
Small Size (under 25 or not)	371 (vs. 1419)	20.6% (vs. 78.8%)	10 (.5%)	1: Small (0: No)
Type of class (Interaction vs. Lecture and Individual course)	563 (vs. 1019)	31.3% (vs. 56.6%)	218 (12.1%)	1: Interaction (0: No)

Appendix S: Correlation Among Course Characteristics

Construct	1	2	3	4	5	6	7	8	9	10	11	12
Course Structure												
1 Small Course/not	-											
2 Interaction/Lecture	.31*	-										
Course Value												
3 Interest/not	-.16*	.12	-									
4 Required course/not	-.01	-.23*	-.49*	-								
5 Career/not	.05	-.09	-.14*	-.16*	-							
6 Major Related/not	.11	-.07	-.41*	.14*	.08	-						
Teacher Characteristics												
7 Management	.04	.18*	.14*	-.21*	-.05	.08	-					
8 Pedagogical knowledge	.01	.19*	.18*	-.25*	-.07	-.11	.82*	-				
9 Autonomy support	.02	.15*	.02	-.14*	.03	.05	.52*	.51*	-			
Classroom Goal Structure												
10 Mastery	.22*	.07	-.21*	-.08	.00	.20	.41*	.40*	.34*	-		
11 Performance approach	-.21	-.26*	-.12*	.10	-.02	-.01	.01*	.01	-.09	.13*	-	
12 Performance avoidance	.02	-.06	-.06	.01	.01	.00	-.12*	-.12*	-.27*	.12*	.27*	-
Caring Classroom Climate												
13 Caring	.25	.26	.00	-.20*	-.02	.06	.54*	.45*	.28*	.38*	-.21*	.04

Note. * $p < .01$

Appendix T: Correlations Between Course Characteristics and Academic Motivation

Construct	External Motivation	Introjected Self-Motivation	Identified Self-Motivation	Intrinsic Self-Motivation	Competence	Relatedness to Instructor	Relatedness to Peers
Course Structure							
Small Course/not	.03	.07	.03	-.01	-.04	.10	.14*
Interaction/Lecture	.02	.09	.07	.18*	.17*	.26*	.20*
Course Value							
Interest	-.13*	-.05	.00	.30*	.22*	.13*	.05
Required course	.06	-.12*	-.27*	-.44*	-.28*	-.27*	-.21*
Career	-.01	.02	.01	-.05	-.08	-.00	-.03
Major Related/not	.00	.05	.05	-.07	-.11	-.08	-.01
Teacher Characteristics							
Management	.16*	.29*	.41*	.42*	.45*	.76*	.60*
Pedagogical knowledge	.17*	.30*	.43*	.43*	.47*	.75*	.54*
Autonomy support	.10	.19*	.32*	.20*	.31*	.64*	.39*
Classroom Goal Structure							
Mastery	.22*	.39*	.52*	.22*	.03	.41*	.37*
Performance approach	.33*	.20*	.17*	-.17*	-.01	-.11	-.06
Performance avoidance	.21*	.28*	.02	.04	-.18*	-.21*	-.12*
Caring Classroom Climate							
Caring	.18*	.34*	.40*	.50*	.34*	.59*	.72*

Note. * $p < .01$

Appendix U: Correlation Among Academic Motivation

Construct	1	2	3	4	5	6	7	8	9	10	11	12
Course Structure												
1 Small Course/not	-											
2 Interaction/Lecture	.31*	-										
Course Value												
3 Interest/not	-.16*	.12	-									
4 Required course/not	-.01	-.23*	-.49*	-								
5 Career/not	.05	-.09	-.14*	-.16*	-							
6 Major Related/not	.11	-.07	-.41*	.14*	.08	-						
Teacher Characteristics												
7 Management	.04	.18*	.14*	-.21*	-.05	.08	-					
8 Pedagogical knowledge	.01	.19*	.18*	-.25*	-.07	-.11	.82*	-				
9 Autonomy support	.02	.15*	.02	-.14*	.03	.05	.52*	.51*	-			
Classroom Goal Structure												
10 Mastery	.22*	.07	-.21*	-.08	.00	.23	.41*	.40*	.34*	-		
11 Performance approach	-.21	-.26*	-.12*	.10	-.02	-.01	.01*	.01	-.09	.13*	-	
12 Performance avoidance	.02	-.06	-.06	.01	.01	.00	-.12*	-.12*	-.27*	.12*	.27*	-
Caring Classroom Climate												
13 Caring	.25	.26	.00	-.20*	-.02	.06	.54*	.45*	.28*	.38*	-.21*	.04

Note. * $p < .01$

Appendix V: Correlations Among Course Well-Being Indicators

Construct	1	2	3	4	5	6	7	8	9	10	11	12
Course Structure												
1 Small Course/not	-											
2 Interaction/Lecture	.31*	-										
Course Value												
3 Interest/not	-.16*	.12	-									
4 Required course/not	-.01	-.23*	-.49*	-								
5 Career/not	.05	-.09	-.14*	-.16*	-							
6 Major Related/not	.11	-.07	-.41*	.14*	.08	-						
Teacher Characteristics												
7 Management	.04	.18*	.14*	-.21*	-.05	.08	-					
8 Pedagogical knowledge	.01	.19*	.18*	-.25*	-.07	-.11	.82*	-				
9 Autonomy support	.02	.15*	.02	-.14*	.03	.05	.52*	.51*	-			
Classroom Goal Structure												
10 Mastery	.22*	.07	-.21*	-.08	.00	.23	.41*	.40*	.34*	-		
11 Performance approach	-.21	-.26*	-.12*	.10	-.02	-.01	.01*	.01	-.09	.13*	-	
12 Performance avoidance	.02	-.06	-.06	.01	.01	.00	-.12*	-.12*	-.27*	.12*	.27*	-
Caring Classroom Climate												
13 Caring	.25	.26	.00	-.20*	-.02	.06	.54*	.45*	.28*	.38*	-.21*	.04

Note. * $p < .01$

Appendix W: Correlations Between Course Characteristics and Course Well-Being

Construct	Enjoyment	Hope	Anger	Anxiety	Boredom	Course Satisfaction	Anticipated Grade
Course Structure							
Small Course/not	-.02	.06	-.02	-.01	-.06	-.01	.06
Interaction/Lecture	.19*	.16*	-.22*	-.16*	-.24*	.19*	.23*
Course Value							
Interest	.36*	.20	-.21*	-.21*	-.30*	.23*	.12*
Required course	-.47*	-.38*	.37*	.27*	.43*	-.38*	-.26*
Career	-.04	-.00	.02	.06	.06	-.01*	-.03
Major Related/not	-.14*	-.06	.13*	.13*	.13*	-.08	.01
Teacher Characteristics							
Management	.49*	.55*	-.58*	-.38*	-.48*	.66*	.31*
Pedagogical knowledge	.52*	.56*	-.62*	-.43*	-.54*	.68*	.31*
Autonomy support	.25*	.34*	-.48*	-.36*	-.35*	.46*	.20*
Classroom Goal Structure							
Mastery	.25*	.29*	-.26*	.04	-.27*	.32*	.04
Performance approach	-.18*	-.07	.10	.13*	.16*	-.14*	-.03
Performance avoidance	.04	-.02	.24*	.41*	.18*	-.07	-.08
Caring Classroom Climate							
Caring	.52*	.56*	-.37*	-.27*	-.39*	.54*	.33*

Note. * $p < .01$

Appendix X: Correlations Within Academic Motivation

Construct	1	2	3	4	5	6	7
1 External Motivation	-						
2 Introjected Self-Motivation	.60*	-					
3 Identified Self-Motivation	.41*	.67*	-				
4 Intrinsic Self-Motivation	.07	.38*	.55*	-			
5 Competence	.14*	.17*	.36*	.42*	-		
6 Relatedness to Instructor	.20*	.33*	.48*	.47*	.49*	-	
7 Relatedness to Peers	.26*	.36*	.47*	.41*	.41*	.73*	-

Note. * $p < .001$

Appendix Y: Correlations Between Academic Motivation and Course Well-Being

Construct	Enjoyment	Hope	Anger	Anxiety	Boredom	Course Satisfaction	Anticipated Grade
External Motivation	-.01	.11	.02	.05	.09	.04	.06
Introjected Self-Motivation	.27*	.36*	-.14*	.07	-.13*	.28*	.24*
Identified Self-Motivation	.43*	.49*	-.38*	-.18*	-.36*	.45*	.35*
Intrinsic Self-Motivation	.75*	.64*	-.44*	-.32*	-.59*	.63*	.39*
Competence	.40*	.59*	-.54*	-.70*	-.38*	.46*	.51*
Relatedness to Instructor	.56*	.61*	-.66*	-.46*	-.57*	.73*	.32*
Relatedness to Peers	.47*	.53*	-.44*	-.36*	-.41	.52	.33*

Note. * $p < .01$

Appendix Z: Correlations Among Personal Factors at Level 2

Construct	1	2	3	4
1 Sex (men(1) vs. women(0))	-			
2 General Need Fulfillment	-.20*	-		
3 General Needs for Relatedness	-.28*	.29*	-	
4 General Personal Growth	-.23*	.44*	.23*	-

Note. * $p < .001$

References

- Acee, T. W., Kim, H., Kim, H. J., Kim, J. I., Chu, H. N., Kim, M., Cho, Y. J., Wicker, F. W. & The Boredom Research Group. (2010). Academic boredom in under-and over-challenging situations. *Contemporary Educational Psychology, 35*, 17-27.
- Anderman, E. M., & Midgley, C. (1997). Changes in achievement goal orientation, perceived academic competence, and grades across the transition to middle-level schools. *Contemporary Educational Psychology, 22*, 269-298.
- Anderman, L. H., & Anderman, E. M. (1999). Social predictors of changes in students' achievement goal orientation. *Contemporary Educational Psychology, 25*, 21-37.
- Assor, A., Vansteenkiste, M., & Kaplan, A. (2009). Identified versus introjected approach and introjected avoidance motivations in school and in sports: the limited benefits of self-worth strivings. *Journal of Educational Psychology, 101*, 482-407.
- Battistich, V., Solomon, D., Kim, D., Watson, M., & Schaps, E. (1995). Schools as communities, poverty levels of student populations, and students' attitudes, motives, and performance: A multilevel analysis. *American Educational Research Journal, 32*, 627-658.
- Battistich, V., Solomon, D., Watson, M., & Schaps, E. (1997). Caring school communities. *Educational Psychologist, 32*, 137-151.
- Benware, C., & Deci, E. L. (1984). Quality of learning with an active versus passive motivational set. *American Educational Research Journal, 21*, 755-765.

- Biddle, B. J. & Berliner, D. C. (2002). Small class size and its effects. *Educational Leadership, 59*, 12-23.
- Blatchford, P., Baines, E., Kutnick, P., & Martin, C. (2001). Classroom contexts: Connection between class size and within class grouping. *British Journal of Educational Psychology, 71*, 283-302.
- Boekaerts, M. (1993). Being concerned with well-being and with learning. *Educational Psychologist, 28*, 149-167.
- Bong, M. (2005). Within-grade changes in Korean girls' motivation and perceptions of the learning environment across domains and achievement levels. *Journal of Educational Psychology, 97*, 656-672.
- Bong, M., & Skaalvik, E. M. (2003). Academic self-concept and self-efficacy: How different are they really? *Educational Psychology Review, 15*, 1-40.
- Braxton, J. M., Milem, J. F., & Sullivan, A. S. (2000). The influence of active learning on the college student departure process. *The Journal of Higher Education, 71*, 570-590.
- Bush, A. M., Svinicki, M. D., Achacoso, M. V., & Kim, M. S. (2004, April). *Developing classroom community: Defining dimensions of the classroom community scale*. Paper presented at the Annual Meeting of American Educational Research Association, San Diego.
- Bye, D., Pushkar, D., & Conway, M. (2007). Motivation, interest, and positive affect in traditional and nontraditional undergraduate students. *Adult Education Quarterly, 57*, 141-158.

- Caprara, G. V., Fida, R., Vecchione, M., Vove, G. D, Vechio, G. M., Barbaranelli, C., & Bandura, A. (2008). Longitudinal analysis of the role of perceived self-efficacy for self-regulated learning in academic continuance and achievement. *Journal of Educational Psychology, 100*, 525-534.
- Carvert, C. S., & Scheier, M. F. (2000). Autonomy and self-regulation. *Psychological Inquiry, 11*, 284-291.
- Christophel, D. M. (1990). The relationships among teacher immediacy behaviors, student motivation, and learning. *Communication Education, 39*, 323-340.
- Church, M. A., Elliot, A. J., & Gable, S. L. (2001). Perceptions of classroom environment, achievement goals, and achievement outcomes. *Journal of Educational Psychology, 93*, 43-54.
- Cole, M., John-Steiner, V., Scribner S., & Souberman, E. (1978). *L. S. Vygotsky, Mind in Society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.
- Connell, J. P., & Wellborn, J. G. (1990). Competence, autonomy, and relatedness: A motivational analysis of self-system processes. In M. R. Gunnar & L. A. Sroufe (Eds.), *Minnesota symposium on child psychology* (Vol. 23, pp. 43-77). Hillsdale, NJ: Erlbaum.
- Corno, M. R. (1988). Success and failure on classroom tasks: Adaptive learning and classroom teaching. *The Elementary School Journal, 88*, 296-312.

- Corpus, J. H., McClintic-Gilbert, M. S., & Hayenga, A. O. (2009). Within-year change in children's intrinsic and extrinsic motivational orientations: Contextual predictor and academic outcomes. *Contemporary Educational Psychology, 34*, 154-166.
- Cross, K. P. (1999). What do we know about students' learning, how do we know it? *Innovative Higher Education, 23*, 255-270.
- deCharms, R. (1968). *Personal causation: The internal affective determination of behavior*. New York: Academic press.
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum Press.
- Deci, E. L., & Ryan, R. M. (2008). Self-determination theory: a macrotheory of human motivation, development, and health. *Canadian Psychology, 49*, 182-185.
- Deci, E. L., La Guardia, J. G., Moller, A. C., Scheiner, M. J., & Ryan, R. M. (2006). On the benefits of giving as well as receiving autonomy support: Mutuality in close friendships. *Personality and Social Psychology Bulletin, 32*, 313-327.
- Deci, E. L., Vallerand, R. J., Pelletier, L. G., & Ryan, R. M. (1991). Motivation and Education: the Self-Determination Perspective. *Educational Psychologist, 26*, 325-346.
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction with Life scale. *Journal of Personality Assessment, 49*, 71-75.
- Do, S., & Schallert, D. L. (2004). Emotions and classroom talk: Toward a model of the role of affect in students' experiences of classroom discussions. *Journal of Educational Psychology, 96*, 619-634.

- Durik, A. M., Vida, M., & Eccles, J. S (2006). Task value and ability beliefs as predictors of high school literacy choices: A developmental analysis. *Journal of Educational Psychology, 98*, 382-393.
- Elliot, A. J., McGregor, H. A., & Thrash, T. M. (2002). The need for competence. In E. L. Deci & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 361-387). New York: The University of Rochester Press.
- Engleheart, J. M. (2007). The centrality of context in learning from further class size research. *Educational Psychology Review, 19*, 455-467.
- Frenzel, A. C., Pekrun, R., & Goetz, T. (2007). Perceived learning environment and students' emotional experiences: A multilevel analysis of mathematics classrooms. *Learning and Instructions, 17*, 478-490.
- Frijda, N. H. (1988). The law of emotion. *American Psychologist, 43*, 349-358.
- Furrer, C., & Skinner, E. (2003). Sense of relatedness as a factor in children's academic engagement and performance. *Journal of Educational Psychology, 95*, 148-162.
- Garcia, T., & Pintrich, P. R. (1996). The effects of autonomy on motivation and performance in the college classroom. *Contemporary Educational Psychology, 21*, 477-486.
- Goetz, T., Frenzel, A. C., Pekrun, R., Hall, N. C., Lüdtke, O. (2007). Between- and within-domain relations of students' academic emotions. *Journal of Educational Psychology, 99*, 715-733.

- Goetz, T., Pekrun, R., Hall, N., & Haag, L. (2006). Academic emotions from a social-cognitive perspective: Antecedent and domain specificity of students' affect in the context of Latin instruction. *The British Psychological Society, 76*, 289-308.
- Goodenow, C. (1992). Strengthening the links between educational psychology and the study of social contexts. *Educational Psychologist, 27*, 177-196.
- Guardia, J. G. L., & Patrick, H. (2008). Self-determination theory as a fundamental theory of close relationship. *Canadian Psychology, 49*, 201-209.
- Harter, S. (1998). The development of self-representation. In W. Damon (Series Ed.) and S. Eisenberg (Vol. Ed.), *Handbook of child psychology: Vol. 3. Social, emotional and personality development* (5th ed. pp. 553-617). New York: Wiley.
- Hodgins, H., Koestner, R., & Duncan, N. (1996). On the compatibility of autonomy and relatedness. *The Society for Personality and Social Psychology, 22*, 227-237.
- Hulleman, C. S., Durik, A. M., Schweigert, S. A., & Harackiewicz, J. M. (2008). Task values, achievement goals, and interest: An integrative analysis. *Journal of Educational Psychology, 100*, 398-416.
- Ilardi, B. C., Leone, D., Kasser, R., & Ryan, R. M. (1993). Employee and supervisor ratings of motivation: Main effects and discrepancies associated with job satisfaction and adjustment in a factory setting. *Journal of Applied Social Psychology, 23*, 1789-1805.
- Iyengar, S. S., & Lepper, M. R. (1999). Rethinking the value of choice: A cultural perspective on intrinsic motivation. *Journal of Personality and Social Psychology, 76*, 349-366.

- Jang, H., Reeve, J., Ryan, R. M., & Kim, A. (2009). Can self-determination theory explain what underlies the productive, satisfying learning experiences of collectivistically oriented Korean students? *Journal of Educational Psychology, 101*, 644-661.
- Juvonen, J. (2007). Reforming middle schools: Focus on continuity, social connectedness, and engagement. *Educational Psychologist, 42*, 197-208.
- Keyes, C. L. M., Shmonkin, D., & Ryff, C. D. (2002). Optimizing well-being: The empirical encounter of two traditions. *Journal of Personality and Social Psychology, 82*, 1007-1022.
- Kim, H. J., & Schallert, D. (2009, April). *Does environmental factors contribute to college-students' perceived relatedness differently across classes that they are taking?* Paper presented at the Annual Meeting of American Educational Research Association, San Diego.
- Kim, H. J., Kim, H., & Svinicki, M. D. (2008, March). *Does basic psychological need for relatedness contribute to students' motivation emotion, and classroom satisfaction?* Poster session presented at the annual meeting of the American Educational Research, Yew York.
- Kline, R. B. (2005). *Principles and practice of structural equation modeling*. New York: Guilford Press.
- Koester, R., & Losier, G. F. (2002). Distinguishing three ways of being highly motivated: A closer look at introjection, identification, and intrinsic motivation. In E. L. Deci

- & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 101-121).
Rochester, NY: The University of Rochester Press.
- Koestner, R., Losier, G. F., Vallerand, R. J., & Carducci, D. (1996). Identified and introjected forms of political internalization: extending self-determination theory. *Journal of Personality and Social Psychology, 70*, 1025-1036.
- Koth, C. W., Bradshaw, C. P., & Leaf, P. J. (2008). A multilevel study of predictors of student perceptions of school climate: The effect of classroom-level factors. *Journal of Educational Psychology, 100*, 96-104.
- Krapp, A. (2005). Basic needs and the development of interest and intrinsic motivational orientations. *Learning and Instruction, 15*, 381-395.
- La Guardia, J. G., Ryan, R. M., Couchman, C. E., & Deci, E. L. (2000). Within-person variation in security of attachment: A self-determination theory perspective on attachment, need fulfillment, and well-being. *Journal of Personality and Social Psychology, 79*, 367-384. Basic Psychological Needs Scale. Retrieved January, 20, 2008, from http://www.psych.rochester.edu/SDT/measures/bpns_scale.php
- Lazarus, R. S. (1991). Progress on a cognitive-motivational-relational theory of emotion. *American Psychologist, 46*, 819-834.
- Legault, L., Green-Demers, I., & Pelletier, L. (2006). Why do high school students lack motivation in the classroom? Toward an understanding of academic amotivation and the role of social support. *Journal of Educational Psychology, 98*, 567-582.

- Lepper, M. R., Corpus, J. H., & Iyengar, S. S. (2005). Intrinsic and extrinsic motivational orientations in the classroom: Age differences and academic correlates. *Journal of Educational Psychology, 97*, 184-196.
- Levesque, C., Zuehke, A. N., Stanek, L., & Ryan, R. M. (2004) Autonomy and competence in German and American university students: A comparative study based on self-determination theory. *Journal of Educational Psychology, 96*, 68-84.
- Linnenbrink, E. A., & Pintrich, P. R. (2002). Achievement goal theory and affect: An asymmetrical bidirection model. *Educational Psychologist, 37*, 69-78.
- Linnenbrink, E. A., & Pintrich, P. R. (2003). The role of self-efficacy beliefs in student engagement and learning in the classroom. *Reading & Writing Quarterly, 19*, 119-137.
- Lyke, J. A., & Young, A. J. K. (2006). Cognition in context: Students' perceptions of classroom goal structures and reported cognitive strategy use in the college classroom. *Review in Higher Education, 47*, 477-490.
- Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review, 98*, 224-253.
- Marsh, H. W., & Ayotte, V. (2003). Do multiple dimensions of self-concept become more differentiated with age? The differential distinctiveness hypothesis. *Journal of Educational Psychology, 95*, 678-706.
- Marsh, H. W., & Craven, R. G. (1997). Academic self-concept: Beyond the dustbowl. In G. Phye (Ed.), *Handbook of classroom assessment: Learning, achievement and*

- adjustment* (pp. 131-198). Orlando, FL: Academic Press.
- Meece, J. L., & Miller, S. D. (2001). A longitudinal analysis of elementary school students' achievement goals in literacy activities. *Contemporary Educational Psychology, 26*, 454-480.
- Meyer, D. K., & Turner, J. C. (2006). Re-conceptualizing emotion and motivation to learn in classroom contexts. *Educational Psychology Review, 18*, 377-390.
- Midgley, C., Maehr, M. L., Anderman, E., Anderman, L., Gheen, M., Kaplan, A., Kumar, R., Middleton, M. J., Nelson, J., Roeser, R., & Urdan, T. (2000). *Patterns of Adaptive Learning Survey (PALS) Manual*. Retrieved January, 20, 2008, from http://www.umich.edu/~pals/PALS%202000_V12Word97.pdf
- Murayama, K., & Elliot, A. J. (2009). The joint influence of personal achievement goals and classroom goal structures on achievement-relevant outcomes. *Journal of Educational Psychology, 101*, 432-447.
- Nie, Y., & Lau, S. (2009). Complementary roles of care and behavioral control in classroom management: The self-determination theory perspective. *Contemporary Educational Psychology, 34*, 185-194.
- Noddings, N. (2005). *The challenge to care in schools: An alternative approach to education*. New York: Teachers College Press.
- Palinscar, A. S. (1988). Social constructivist perspectives on teaching and learning. *Annual Review of Psychology, 49*, 345-375.

- Patrick, B. C., Skinner, E. A., & Connell, J. P. (1993). What motivates children's behavior and emotion? Joint effects of perceived control and autonomy in the academic domain. *Journal of Personality and School Psychology, 65*, 781-791.
- Patrick, H., Knee, C. R., Canevello, A., & Lonsbary, C. (2007). The role of need fulfillment in relationship functioning and well-being: A self-determination theory perspective. *Journal of Personality and Social Psychology, 92*, 434-457.
- Pekrun, R., Elliot, A. J., & Maier, M. A. (2006). Achievement goals and discrete achievement emotions: A theoretical model and prospective test. *Journal of Educational Psychology, 98*, 583-597.
- Pekrun, R., Goetz, T., Titz, W., & Perry, R. P. (2002). Academic emotions in students' self-regulated learning and achievement: A program of qualitative and quantitative research. *Educational Psychologist, 37*, 91-105.
- Pierson, L. H., & Connell, J. P. (1992). Effect of grade retention on self-system processes, school engagement, and academic performance. *Journal of Educational Psychology, 84*, 300-307.
- Pintrich, P. R. (2003). A motivational science perspective on the role of student motivation in learning and teaching contexts. *Journal of Educational Psychology, 95*, 667-686.
- Pintrich, P. R., & Schunk, D. H. (2002). *Motivation in education: Theory, research and applications*. New Jersey: Merrill Prentice Hall.

- RAPS (Research Assessment Package For schools, 1998). *Institute for research and reform in education*, Inc. Retrieved January, 20, 2008, from http://www.irre.org/publications/pdfs/RAPS_manual_entire_1998.pdf
- Raudenbush, S., Bryk, T., & Congdon, R. (2000). *Hierarchical linear and nonlinear modeling*. Scientific software international, Inc.
- Reeve, J., & Jang, H. (2006). What teacher say and do to support students' autonomy during a learning activity. *Journal of educational psychology*, 98, 209-218.
- Roberts, W., Hom, A., & Battistich, V. (1995, April). *Assessing students' and teachers' sense of the school as a caring community*. Presented at the meeting of the American Educational Research Association, San Francisco.
- Roeser, R. W., Midgley, C., & Urdan, T. C. (1996). Perceptions of the school psychological environment and early adolescents' psychological and behavior functioning in school: The mediating role of goals and belonging. *Journal of Educational Psychology*, 88, 408-422.
- Ryan, A. M., Pintrich, P. R., & Midgley, C. (2001) Avoiding seeking help in the classroom: Who and why? *Educational Psychology Review*, 13, 93-114.
- Ryan, M. R., & Deci, E. L. (2000a). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55, 68-78.
- Ryan, R. M., & Connell, J. P. (1989). Perceived locus of causality and internalization: Examining reasons for acting in two domains. *Journal of Personality and Social Psychology*, 57, 749-761.

- Ryan, R. M., & Deci, E. L. (2000b). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology, 25*, 54-67.
- Ryan, R. M., & Powelson, C. L. (1991). Autonomy and relatedness as fundamental to motivation and education. *Journal of experimental education, 60*, 49-66.
- Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology, 57*, 1061-1081.
- Schallert, D. L., Reed, J. H., & Turner, J. E. (2004). The interplay of aspirations, enjoyment, and work habits in academic endeavors: Why is it so hard to keep long-term commitments? *Teachers College Record, 106*, 1715-1728.
- Schmidt, J. A., Shernoff, D. J., & Csikszentmihalyi, M. (2007). Individual and situational factors related to the experience of flow in adolescence: A multilevel approach. In A. D. Ong, & M. H. M. van Dulmen (Eds.), *Oxford handbook of methods in positive psychology* (pp. 542-559). New York: Oxford University Press.
- Schutz, P. A., & DeCuir, J. T. (2002). Inquiry on emotions in education. *Educational Psychologist, 37*, 125-134.
- Sheldon, K. M., & Elliot, A. J. (1998). Not all personal goals are personal: Comparing autonomous and controlled reasons for goals as predictors of effort and attainment. *Personality & Social Psychology Bulletin, 24*, 546-559.
- Skinner, E. A., & Belmont, M. J. (1993). Motivation in the classroom: Reciprocal effects of teacher behavior and student engagement across the school year. *Journal of Educational Psychology, 85*, 571-581.

- Skinner, E. A., Wellborn, J. G., & Connell, J. P. (1990). What it takes to do well in school and whether I've got it: A process model of perceived control and children's engagement and achievement in school. *Journal of Educational Psychology, 82*, 22-32.
- Skinner, E., Furrer, C., Marchand, G., & Kindermann, T. (2008). Engagement and disaffection in the classroom: Part of a larger motivational dynamic? *Journal of Educational Psychology, 100*, 765-781.
- Solomon, D., Watson, M., Battistich, V., Schaps, E., & Delucchi, K. (1992). Creating a caring community: Educational practices that promote children's prosocial development. In F. K. Oser, A. Dick, & J. Patry (Eds.). *Effective and responsible teaching: The new synthesis* (pp. 383-396). San Francisco, CA: Jossey-Bass Publishers.
- Solomon, D., Watson, M., Battistich, V., Schaps, E., Tuck, P., Solomon, J., Cooper, C., & Ritchey, W. (1985). A program to promote interpersonal consideration and cooperation in children. In R. Slavin, S. Sharan, S. Kagan, R. Hertz-Lazarowitz, C. Webb, & R. Schmuck (Eds.). *Learning to cooperate, cooperating to learn* (pp. 371-401). New York: Plenum Press.
- Springer, K. W., & Hauser, R. M. (2006). An assessment of the construct validity of Ryff's scales of psychological well-being: Method, mode, and measurement effects. *Social Science Research, 35*, 1080-1102.

- Stefanou, C. R., Perencevich, K. C., DiCintio, M., & Turner, J. C. (2004). Supporting autonomy in the class: Ways teacher encourage student decision making and ownership. *Educational Psychologist, 39*, 97-110.
- Tuominen-Soini, H., Salmela-Aro, K., & Niemivirta, M. (2008). Achievement goal orientations and subjective well-being: A personal-centered analysis. *Learning and Instruction, 18*, 251-266.
- Turner, C. J., Midgley, C., Meyer, D. K., Gheen, M., Anderman, E. M., & Kang, Y. (2002). The classroom environment and students' reports of avoidance strategies in Mathematics: A multimethod study. *Journal of Educational Psychology, 94*, 88-106.
- Turner, J. C., & Meyer, D. K. (2000). Studying and understanding the instructional context of classrooms: Using our past to forge our future. *Educational Psychologist, 35*, 69-85.
- Turner, J. C., Meyer, D. K., Cox, K. E., Logan, C., DiCintio, M., & Thomas, C. T. (1998). Creating contexts for involvement in mathematics. *Journal of Educational Psychology, 90*, 730-745.
- Turner, J. E., & Schallert, D. L. (2001). Expectancy-value relationships of shame reactions and shame resiliency. *Journal of Educational Psychology, 93*, 320-329.
- Urdu, T., & Midgley, C. (2003). Changes in the perceived classroom goal structure and pattern of adaptive learning during early adolescence. *Contemporary Educational Psychology, 28*, 524-551.

- Urduan, T., Midgley, C., & Anderman, E. M. (1998). The role of classroom goal structure in students' use of self-handicapping strategies. *American Educational Research Journal, 35*, 101-122.
- Vallerand, R. J. (2000). Deci and Ryan's self-determination theory: A view from the hierarchical model of intrinsic and extrinsic motivation. *Psychological Inquiry, 11*, 312-318.
- Vallerand, R. J., & Bissonnette, R. (1992). Intrinsic, extrinsic and amotivational styles as predictors of behavior: A prospective study. *Journal of Personality, 60*, 599-620
- Vallerand, R. J., Pelletier, L. G., & Koestner, R. (2008). Reflections on self-determination theory. *Canadian Psychology, 49*, 257-262.
- Vansteenkiste, M., Lens, W., Soenens, B., & Luyckx, K. (2006). Autonomy and relatedness among Chinese sojourners and applicants: Conflictual or independent predictors of well-being and adjustment? *Motivation and Emotion, 30*, 273-282.
- Vansteenkiste, M., Sierens, E., Soenens, B., Luyckx, K., & Lens, W. (2009). Motivational profiles from a self-determination perspective: The quality of motivation matters. *Journal of Educational Psychology, 101*, 671-688.
- Walters, C. A., & Daugherty, S. G. (2007) Goal structures and teachers' sense of efficacy: Their relation and association to teaching experience and academic level. *Journal of Educational Psychology, 99*, 181-193.
- Wentzel, K. R. (1994). Relations of social goal pursuit to social acceptance, classroom behavior, and perceived social support. *Journal of Educational Psychology, 86*, 173-182.

- Wentzel, K. R. (1997). Student motivation in middle school: The role of perceived pedagogical caring. *Journal of Educational Psychology, 89*, 411-419.
- Wentzel, K. R. (1999). Social-motivational processes and interpersonal relationships: Implications for understanding motivation at school. *Journal of Educational Psychology, 91*, 76-97.
- Wigfield, A., & Eccles, J. S. (2000). Expectancy-value theory of achievement motivation. *Contemporary Educational Psychology, 25*, 68-81.
- Wigfield, A., & Eccles, J. S. (2002). The development of competence beliefs, expectancies for success, and achievement values from childhood through adolescence. In A. Wigfield & J. S. Eccles (Eds.), *Development of achievement motivation* (pp. 91-120). San Diego, CA: Academic Press.
- William, G. C., & Deci, E. L. (1996) Internalization of biopsychosocial value by medical students: A test of self-determination theory. *Journal of Personality and Social Psychology, 70*, 767-779.
- Zimmerman, B.J., & Bandura, A. (1994). Impact of self-regulatory influences on writing course attainment. *American Educational Research Journal, 31*, 845-862.

Vita

Hyunjin Jinny Kim was born in Seoul, South Korea, on January 10, 1974, the daughter of Kichaul Kim and Myungjae Kim. After completing her work at Sungyue High School, she entered Sungkyunkwan University in Seoul, Korea to work on teaching certificate in Secondary Teaching of English. In February 2000, she received the degree of Bachelor of Arts in Education, from Sungkyunkwan University. She then entered the graduate school at Sungkyunkwan University to pursue the degree of Master of Arts in Educational Psychology, and she graduated in 2003. At same year, she entered the doctoral program in Learning, Cognition, and Instruction in the Department at Educational Psychology the University of Texas at Austin.

Permanent Address: 114-1002 Daewoo APT., Kumho Dong, Sungdong GU, Seoul, Korea.

This dissertation was typed by the author.