UNDERSTANDING THE MASTERY-AVOIDANCE GOALS CONSTRUCT:
AN INVESTIGATION AMONG MIDDLE SCHOOL STUDENTS IN TWO DOMAINS

A Dissertation
Submitted to the
Temple University Graduate Board

in Partial Fulfillment
of the Requirements for the Degree
DOCTOR OF PHILOSOPHY

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May 2016

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ABSTRACT

This dissertation addressed knowledge gaps concerning “mastery-avoidance goals”—a construct within the prominent motivational perspective Achievement Goal Theory. Mastery-avoidance goals refer to students’ engagement in an achievement task with the purpose of avoiding failure to develop competence. While it was introduced to the achievement goal literature over a decade and a half ago, the construct of mastery-avoidance goals still lacks intuitive relevance, conceptual clarity, and evidence of prevalence among young students. In addition, so far, research has not established clear patterns of relations of mastery-avoidance goals with the other personal achievement goals (mastery-approach, performance-approach, and performance-avoidance), with contextual motivational emphases, or with adaptive and maladaptive educational outcomes. This dissertation aimed to contribute to knowledge in these gaps by investigating mastery-avoidance goals among middle school students in two subject domains that concern different types of competence: science and instrumental music.

The dissertation describes two studies. In Study 1, I administered a self-report measure to middle school students \( N=126 \) that included summed scales to investigate the empirical distinction between mastery-avoidance goals and other achievement goals, the components of its conceptual definition, its prevalence of adoption by young students in the two different domains, as well as its relations with contextual emphases and adaptive and maladaptive educational outcomes. Multidimensional scaling analysis indicated that while students in both science and instrumental music made a distinction between mastery and performance goals, these students did not make a complete distinction between mastery-approach and mastery-avoidance goals, at least according to
the conceptual definition investigated in these studies. Regression analyses indicated that students’ perceptions of their teachers’ emphasis on mastery-approach and mastery-avoidance goals were significantly related to their reports of mastery-avoidance goals. Cluster analysis suggested a pattern of two general motivational profiles in the sample of more and less motivated students that differed on their simultaneous and respective high and low endorsements of both mastery-approach and mastery-avoidance goals, intrinsic and extrinsic motivation, sense of academic efficacy, and also academic achievement.

In Study 2, I aimed to further knowledge of the meaning that students make of mastery-avoidance goals by examining students’ (N=79) qualitative responses to questions asking them to interpret items from the summated-scales self-report measure. Findings from a qualitative content analysis supported the findings from Study 1 about students’ lack of distinction between mastery-approach and mastery-avoidance goals, and indicated that students interpreted mastery-avoidance goals items in ways that were different from those intended by the researchers. These findings suggested that students form meanings of mastery-avoidance goals that are potentially different from the formal conceptual definition in the literature.

The findings are interpreted as suggesting that students’ meaning-making about mastery-avoidance goals in both science and instrumental music may be contextualized by their personal characteristics (e.g., age), by characteristics of their school and classroom environments, and by situational characteristics (e.g., proximity of evaluative tasks). Further research should investigate systematically the different personal and contextual factors that may contribute to the meaning students make of mastery-avoidance goals.
ACKNOWLEDGEMENTS AND DEDICATION

I am grateful to many people who helped me along this journey: my advisor and mentor, Avi Kaplan, your contagious passion, patience, understanding, and kindness have been invaluable; Julie Booth, Joseph DuCette, and Laura Pendergast, for taking the time to lend your support and feedback.; Ting Dai, Tony Perez, Bradley Bergey, Ted Wills, and others from my time at Temple, for all of the support offered to me throughout our graduate school years and beyond, and the privilege to be able to call you friends as well as colleagues; my friends at 440, my deepest appreciation for your support both professionally and personally.

To my parents- I would never be where I am today without your constant love and support. The many sacrifices you have made in order for me to succeed have never gone overlooked.

My husband Oz- while at times I may not have shown it, words cannot express my appreciation for your patience, support, and partnership through the many years this work has been in progress. I look forward to many more years together.

I dedicate my dissertation to my children Sophia, and soon-to-be-born, Luca. Sophia, please never set any goal that is less than what you want, and never let anyone tell you that you can’t achieve it. Luca, thank you for giving me the timeline I needed to finish this work and reach my goal. I can’t wait to meet you.
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CHAPTER 1. INTRODUCTION

Achievement goals, which refer to the reasons or purposes that guide students’ engagement in academic tasks, have become central constructs in the contemporary motivational literature (Graham & Weiner, 2012). Research has established the relevance and prominence of three achievement goals to understanding students’ engagement patterns: mastery-approach, performance-approach, and performance-avoidance goals. However, a more recent construct in the theory—mastery-avoidance goals—which refers to engagement in academic tasks with the purpose of avoiding not developing competence, has received far less attention. Whereas research on mastery-avoidance goals has been increasing (Bong, 2009), many questions remain. The conceptual definition of mastery-avoidance goals is not completely clear. Moreover, there is a lack of theoretical clarity and empirical evidence concerning the phenomenological meaning of mastery-avoidance goals, their actual prevalence and relevance, the appropriate way to operationalize them methodologically, and their associated outcomes, particularly among young students, and in different subject domains. Therefore, this dissertation sought to investigate how middle school students make sense of the goals aimed at avoiding not developing competence, and how the meaning, prevalence, and relevance of mastery-avoidance goals among middle-school students differ in two different subject domains: science and instrumental music. Finally, this dissertation investigated the relations between mastery-avoidance goals and students’ perceptions of their classrooms’ goal structure, as well as outcome patterns of intrinsic/extrinsic motivation, academic efficacy, and academic achievement.
Achievement Goal Theory

Over the last couple of decades, achievement goal theory has emerged as a dominant theory of achievement motivation (Elliot & McGregor, 1999; Graham & Weiner, 2012; Pintrich & Schunk, 2002). As competence is central to achievement situations such as those in educational settings (Elliot & Dweck, 2005), achievement goal theory has focused on competence strivings (Maehr, 1989). Specifically, the central concept in the theory—achievement goals—refers to the reasons and purposes that concern competence in achievement tasks. The achievement goals that have dominated the literature in achievement goal theory for decades concern the purposes of developing or demonstrating competence (Ames, 1992; Dweck, 1986; Maehr, 1989; Nicholls, 1984).

Competence Standards: Two Achievement Goals

Theorists have used various labels for achievement goals, each having slightly different meanings. However, during the 1980s and ‘90s, most achievement goal research converged to focus on two types of achievement goals and followed Carole Ames’ (1992) labels for these goals: Mastery goals and Performance goals.

*Mastery* goals refer to a focus on *developing* competence. Students are said to pursue mastery goals when they engage in achievement tasks with the orientation towards developing their competence, and seek feedback that indicates success in competence development along task-based standards, such as mastering knowledge or a skill, or *intra*-personal standards, such as improving over a previous level of performance (Elliot & McGregor, 1999).

*Performance* goals refer to a focus on *demonstrating* competence, particularly relative to other students (Ames, 1992; Nicholls, 1984). Students who pursue
performance goals are oriented towards demonstrating their competence and seek feedback that indicates success in demonstrating their competence along interpersonal standards such as outperforming other students (Elliot & McGregor, 1999).

**Competence Valence: Three Achievement Goals**

In the late 1990s, Elliot and colleagues proposed that the achievement valence of approaching success or avoiding failure should be incorporated into achievement goal theory (Elliot & Church, 1997; Elliot & McGregor, 1999; Elliot & Harackiewicz, 1996). There is much literature on approach and avoidance strivings in achievement motivation, as it had been considered relevant and important already by early theorists (e.g., Murray, 1938; see Elliot & Covington, 2001). Early theories viewed achievement motivations as framed by two basic personality-based needs: the need for success and the need to avoid failure. These needs are assumed to sensitize the individual to the possibility of success or the possibility of failure, respectively. They manifest when a person is faced with an achievement situation where actions may lead to success or failure. Individuals with high need for success will tend to approach the situations with the primary orientation of hoping for success and seeking pride in their accomplishment, whereas individuals with high need to avoid failure tend to approach the situation with the primary orientation of wanting to avoid failing and seeking to avoid embarrassment or shame (Atkinson, 1957, 1964; McClelland 1951).

Whereas mastery goals were considered to have only the valence of approaching success, Elliot and Church (1997) argued that performance goals might be pursued either with an approaching success valence or with an avoidance of failure valence. Thus, the initial incorporation of approach and avoidance valence into achievement goal theory
yielded three achievement goals—a trichotomous model—with mastery, performance-approach, and performance-avoidance goals. In this model, mastery goals were conceptualized as an orientation towards approaching success in developing competence along task-based and/or intra-personal standards; performance-approach goals were conceptualized as an orientation towards approaching success in demonstrating competence along inter-personal, or normative, standards; and performance-avoidance goals were conceptualized as an orientation towards avoiding failure in demonstrating competence along inter-personal, or normative, standards (Elliot & Church, 1997; Elliot & McGregor, 2001).

**Avoidance of Failure Valence in Mastery Goals: Four Achievement Goals**

A little over a decade ago, and only a few years following the incorporation of the approach-avoidance valence into performance goals, Elliot and McGregor (1999) suggested that the valence of avoidance of failure should also be applied to mastery goals (see also Pintrich, 2000a; Pintrich, 2000b). Mastery-avoidance goals were conceptualized as an orientation towards avoiding failure in developing competence along intra-personal and/or task-based standards. Examples of avoiding failure, evaluated along standards of task-mastery or self-referenced change in competence, could include trying to avoid misunderstanding material in class and striving to avoid forgetting things learned in a course. Adding mastery-avoidance goals to the trichotomous model created a “2x2” model of achievement goals, with two types of competence standards (mastery and performance) and two types of valence (approach and avoidance) (Elliot & McGregor, 2001).
More recently, Elliot and colleagues made the argument that the task-based standards and self-referenced standards in mastery goals should be differentiated into distinct strivings. Thus, the two valences of approach and avoidance were suggested to be combined with three, rather than two standards of competence—task-based, self-referential, and other-based standards of competence—yielding six separate achievement goal constructs (Elliot, Murayama, & Pekrun, 2011). This model is quite new and lacks extensive empirical support.

**Outcomes Related to Achievement Goals**

Researchers continue to investigate the processes and outcomes underlying and associated with different achievement goals. Literature over the past few decades has established that different achievement goals are associated with different achievement-related outcomes such as help-seeking, study skills and strategies, affective reactions, adaptive and maladaptive patterns of behavior, and academic achievement (Church, Elliot, & Gable, 2001; Elliot & McGregor, 1999; Hulleman et al., 2010; Roussel, Elliot, & Feltman 2011).

**Performance Goals**

Early research in achievement goal theory that focused on the two-goal model primarily sought to compare the associations between mastery and performance goals with various academic and affective outcomes. The findings of this research mostly indicated that performance goals were associated with a less adaptive pattern of outcomes than were mastery goals (Dweck, 1986; Nicholls, 1984). However, the pattern of findings relating outcomes to performance goals was mixed. Many studies found performance goals to be associated with a maladaptive pattern of outcomes, or with a less adaptive
pattern of outcomes than were mastery goals (Ames & Archer, 1988). Yet, some studies found performance goals to have no association with maladaptive outcomes, whereas others found performance goals to be as adaptive as mastery goals (Urdan, 1997). Elliot and Church (1997) and Pintrich (2000) suggested that this mixed pattern of outcomes was due to the confounding of performance-approach and performance-avoidance goals. Subsequent research investigated the differential associations of these two performance goals with different outcomes.

Following the conceptual distinction between performance-approach and performance-avoidance goals, much attention has been paid to the association of performance-approach goals relative to that of mastery goals with academic achievement. While some studies found positive relationships between performance-approach goals and high academic achievement (scores on tests), grades, and (academic) self-efficacy (Church, Elliot & Gable, 2000; Elliot & McGregor, 1999; Elliot & Church, 1997), other studies found no such relationships. For example, Elliot and McGregor (1999), who looked at undergraduate students’ grades in an introductory psychology course, in addition to participants’ test anxiety, worry, and emotionality during an exam, found that performance-approach goals had no relationship to grades on pop-quizzes. However, they also did not find significant relationships between performance-approach goals and students’ emotionality or feelings of worry during the exam.

Researchers have attempted to explain the mixed results of relations between performance-approach goals and academic achievement. Brophy (2005) contended that the mixed results may have to do with how performance goals are defined and measured. Butler (2006, 2000) suggested that mastery goals are better related to achievement than
are performance-approach goals when the task involves learning new material. A recent meta-analysis of more than 90 studies by Linnenbrink-Garcia, Tyson, and Patall (2008) found that student ability, difficulty of the task, and perceived competence may moderate the relationship between performance-approach goals and achievement. Adopting performance-approach goals, compared to mastery goals, was beneficial for student achievement when students’ ability or perceived competence for the task is high and when the task is easy. Overall, findings suggest that the adoption of performance-approach goals may be beneficial to academic achievement, but only for certain students, and only under certain conditions (Midgley, Kaplan, & Middleton, 2001). In addition to achievement, certain studies have found positive relationships between performance-approach goals and grades, as well as academic efficacy (Church, Elliot, & Gable, 2000).

Unlike the mixed outcomes found to be associated with pursuit of performance-approach goals, research results concerning performance-avoidance goals are generally consistent and suggest that performance-avoidance goals are associated with largely maladaptive academic outcomes such as avoiding help-seeking, self-handicapping, less effective study strategies, and low academic achievement (Elliot & Church, 1997; Elliot & McGregor, 2001; Urdan, 2004).

**Mastery Goals**

Research generally finds mastery goals to be associated with a more positive pattern of outcomes than do performance goals. Adaptive outcomes associated with mastery goals include deeper level of processing, more effective learning strategies, increased effort, and intrinsic motivation (Elliot & Thrash, 2002; Urdan, 2004). However, researchers have begun to realize that much like in the case of performance
goals, the relations of mastery goals and outcomes may be complex. As reported in a meta-analysis by Hulleman, Schrager, Bodmann, and Harackiewicz (2010), mastery goals are often not found to be significantly associated with achievement. Since mastery goals have been associated with self-regulated learning, deep learning strategies, positive affect towards schoolwork, and positive coping with failure, the non-significant relations with achievement have puzzled researchers. Several explanations have been suggested, including the mismatch of the deep engagement associated with mastery goals and the surface-level strategies that are often required for achieving high grades in many educational contexts. Another possible explanation for this finding is that mastery-oriented students may be distracted from focusing on achievement by their own interests, which may not align necessarily with the academic agenda of the teacher (Senko & Harackiewicz, 2005a; Senko & Miles, 2008). The meta-analysis by Linnenbrink-Garcia et al. (2008) found that mastery goals are very often associated with achievement at the elementary school level, but are related to achievement among college students only in approximately one-third of the reviewed studies. Findings indicate that much more research is needed in the area of potential moderators in the relationship between adoption of certain achievement goals and achievement.

One potential, but unexplored, explanation for the inconsistent findings between mastery goals and achievement is the confounding of mastery-approach and mastery-avoidance goals. Much like resolving some of the inconsistent findings regarding performance goals, the distinction of mastery goals to mastery-approach and avoidance goals may help to clarify some of the puzzling findings. However, the research on mastery-avoidance goals has been scarce. More importantly, there are several issues
concerning the construct of mastery-avoidance goals that need to be addressed in order for this construct to be well-integrated into the theory and research in achievement goal theory.

**Remaining Questions Regarding Mastery-Avoidance Goals**

Many questions still remain regarding mastery-avoidance goals. First, the conceptual definition of mastery-avoidance goals is not completely clear. Elliot (1999) conceptualizes mastery-avoidance goals as “striving to avoid losing one’s skills and abilities (or having their development stagnate), forgetting what one has learned, misunderstanding material or leaving a task incomplete or unmastered” (p. 181). Thus, there is a lack of conceptual clarity as mastery-avoidance goals highlight both task-mastery based standards and self-referenced standards of competence. Second, there is a lack of theoretical clarity and empirical evidence concerning the phenomenological meaning of mastery avoidance goals, particularly among young students, and in different subject domains. That is, whereas mastery-avoidance goals are more intuitive among the elderly and in other situations in which people may be losing competence, it is not clear what the focus on “not losing competence” actually means to younger people whose competencies are mostly increasing. In addition, it is not clear what the focus on not losing competence may mean in different domains that focus on different types of competence – e.g., academic knowledge (science) versus artistic skill (instrumental music).

Third, the actual prevalence and relevance of mastery-avoidance goals among students is not well known, as mastery-avoidance goals may only manifest for certain individuals in certain contexts. Among students, it may be that mastery-avoidance goals
would manifest in those who are perfectionists or in certain domains such as music or languages, where a concern with skill loss may be more salient.

Fourth, the appropriate way to operationalize mastery-avoidance goals is as yet undetermined. While surveys with summated scales have been the most popular way to operationalize and study these goals, most of the surveys being used do not reflect all of the standards within the conceptual definition of mastery-avoidance. Specifically, most surveys do not address the intrapersonal and task-based standards that are part of the definition of mastery avoidance, in addition to the distinction of “avoiding loss” and “avoiding no gain” that is conceptually a part of each standard. Additionally, most surveys used are limited in the sense that they are not able to target students’ actual interpretation of the items. Finally, very little has been established about the patterns of associated outcomes with mastery-avoidance goals.

This dissertation sought to investigate how middle school students make sense of engaging in academic work with goals aimed at avoiding not developing competence, and how the meaning, prevalence, and relevance of mastery-avoidance goals among middle-school students differ in two different subject domains; science and instrumental music. This dissertation also investigated the relations between mastery-avoidance goals and students’ achievement, intrinsic and extrinsic motivation, and academic self-efficacy, as well as how the goals teachers are perceived to be emphasizing in the classroom affect students’ adoption of mastery-avoidance goals.

**Main Research Questions**

Therefore, based on the questions still surrounding mastery-avoidance goals, this dissertation explored the following main research questions:
1. What is the conceptual definition of mastery-avoidance goals?

2. Are mastery-avoidance goals empirically distinct from the other achievement goals among middle school students and in different domains?

3. How are mastery-avoidance goals related to motivational emphases in the learning environment?

4. How are mastery-avoidance goals related to adaptive and maladaptive educational outcomes?

Overview of Chapters

In the following chapters I elaborate on the theoretical framework of achievement goal theory, review findings of previous research investigating mastery-avoidance goals, and provide support for the need for further conceptualization and research on mastery-avoidance goals. I then describe the methodology of the current dissertation, the results, and my interpretation of the dissertation findings, and their implications for theory and research.

In Chapter 2, I review theoretical and empirical literature on mastery-avoidance goals, focusing on its conceptual definition, operationalization, prevalence and relevance, and relationship with various educational outcome variables. I end that chapter with specific research questions and hypotheses for this dissertation’s study.

In Chapter 3, I present the methodology of the two studies that make-up this dissertation, describing the procedure used to collect data, the characteristics of the participants, as well as detailed descriptions of the measures used to assess outcome variables. I also describe the analyses used to address the research questions.
In Chapter 4, I present detailed findings from the analyses conducted to answer the research questions for both studies.

Finally, in Chapter 5, I interpret and discuss the findings, integrate them with prior theory and research, note the studies’ limitations, and consider their implications for future research.
CHAPTER 2. LITERATURE REVIEW

Although there is much empirical support for mastery-approach, performance-approach, and performance-avoidance goals, far less attention has been given to mastery-avoidance goals. While attention to mastery-avoidance goals has increased, there still exist a number of questions. There is the lack of clarity concerning the conceptual definition of mastery-avoidance goals. Additionally, in this area of research there is a lack of empirical evidence concerning the phenomenological meaning, prevalence, relevance, methodological operationalization, and associated patterns of outcomes associated with this construct. An additional limitation of the current literature on mastery-avoidance goals is that, of the few studies that investigated mastery-avoidance goals, most have concentrated on high school and undergraduate students in the domain of physical education and sports (e.g., Ciani & Sheldon, 2010; Guan, Xiang, McBride, & Bruene 2006; Sideridis & Mouratidis, 2008; Wang, Biddle, & Elliot, 2007;), leaving questions unanswered about mastery-avoidance goals among students in different academic subject domains.

In this chapter, I will first present a review of the literature discussing the conceptual definition of mastery-avoidance goals. Second, I review literature concerning the phenomenological meaning of mastery-avoidance goals among students of different characteristics. Third, the operationalization of and different methodology used to investigate these goals are discussed. Next, I review the prevalence and relevance of mastery-avoidance goals. Lastly, I review these goals within the context of the educational environment and academic outcomes associated with such goals, specifically intrinsic and extrinsic motivation, academic self-efficacy, and academic achievement,
while integrating my hypotheses on what I may expect to find from results of this dissertation.

**Conceptual Definition of Mastery-Avoidance Goals**

The most commonly accepted definition of mastery-avoidance goals, and the one I use for the purpose of this dissertation, is “striving not to fall short of task-mastery or striving not to lose one's skills, abilities or knowledge” (Elliot & Thrash, 2001, p. 145), that highlights the two different standards of competence included in mastery-avoidance goals: task-mastery based standards and self-referenced standards. The distinction between these two standards constitutes a point of debate in the scant available research on mastery-avoidance goals because research has yet to determine if these two standards really represent a single construct or distinct achievement goals (Elliot et al., 2011; Madjar, Kaplan, & Weinstock, 2010), and how these standards relate to the other achievement goals of mastery-approach, performance-approach and performance-avoidance (Bong, 2009). Additionally, researchers seem to have trouble envisioning mastery goals as having an avoidance component (Van Yperen, Elliot, & Anseel, 2009). For example, what does it actually mean to avoid failure within a standard that emphasizes development of competence, or what does it actually mean to avoid not-developing competence?

The first step in furthering knowledge on the definition of mastery-avoidance goals may be looking at how achievement goals are defined in general. Achievement goals were originally defined in terms of the *purpose* for engagement in an academic task (Maehr, 1989). However, Elliot argued that ‘purpose’ is an imprecise concept since it can have two different meanings—a reason or a goal/aim. Therefore, in his 2x2 model,
achievement goals are conceived as aims—end states to be achieved. Thus, according to this definition, mastery-avoidance goals refer to the aim of avoiding incompetence, and the standards by which the achievement of the goal is evaluated can be task or self-based.

However, the recent research by Elliot et al. (2011) suggests that rather than an overall mastery-avoidance goals construct that encompasses both task-based and self-referential standards, these standards should actually be separated out into task-based and self-referential achievement goals. Elliot et al. argued that while there are circumstances in which task-based and self-referential standards comingle, there are also possible situations in which a person could endorse each independently, providing conceptual support for these standards as distinct achievement goals. For example, students could complete a homework assignment in order to do better than they did on a previous assignment, without thinking about the actual quality of their work on the current task. Conversely, students could be trying to complete a homework assignment well and master the knowledge in it without any thought as to how they did on the last assignment. While this research is quite new and therefore lacking extensive empirical support, the existing findings add to the discussion on what should constitute a mastery-avoidance goal.

Further adding to the complication of the conceptual definition of mastery-avoidance goals are potential further distinctions among standards within the task-based and self-based categories, including the distinction, for example, of “avoiding no gain” (e.g. “striving not to fall short of task-mastery;” Elliot & Thrash, 2001, p. 145), versus “avoiding loss” (e.g. “striving not to lose one’s skills, abilities or knowledge;” Elliot & Thrash, 2001, p. 145). Thus far, no research had investigated these distinctions as being a
significant component of mastery-avoidance goals. As this distinction is potentially psychologically meaningful, one aim of the current investigation is to further explore these differences within both the task and self-based standard categories.

**Phenomenological Meaning of mastery-avoidance goals**

From its early days, some researchers were skeptical about the relevance of the mastery-avoidance goal construct for describing authentic achievement motivation. The questions regarding its relevance stemmed from the perception that the formulation of the mastery-avoidance goals construct and its conceptualization were based in the desire for theoretical symmetry of the standard-valence 2x2 matrix, rather than in meaningful students’ phenomenological experiences (cf. Pintrich, 2000). Researchers note that in interviews, observations, and classroom incentive structures, the three goals of mastery-approach, performance-approach, and performance-avoidance manifest much more readily than mastery-avoidance goals (Maehr & Zusho, 2009). Mastery-approach goals manifest in students’ focus on learning knowledge, or on improving; performance-approach goals manifest in students’ desire for and sense of pride in getting high grades that are better than those of their peers; and performance-avoidance goals manifest in concerns about getting lower grades than those of peers or with giving the wrong answer in class and being made fun of, and the sense of relief when these concerns do not materialize. However, mastery-avoidance goals seem to be counterintuitive, as it is not clear what students’ phenomenological meaning is for a focus on avoiding not developing competence.

Elliot and Thrash (2001) listed several possible examples for such meanings, including student focus on skill loss or on not forgetting material that has been learned.
Mastery-avoidance goals could also manifest in student concern over incorrect answers that indicate to the student herself her lack of knowledge (e.g., for a student who is a “perfectionist”), or distress about missed educational opportunities. However, do students indeed perceive a distinction between mastery-avoidance and mastery-approach goals? Do they distinguish between the task-based and self-based standards within mastery-avoidance goals? The scarce empirical evidence suggests a complicated picture. Quantitative results using multi-dimensional scaling yielded mixed results about the coherence of these two standards assumed to underlie mastery-avoidance goals, and showed some overlap with mastery-approach goals (Karakus et al. 2011; Madjar et al., 2010). The Israeli junior high school students in the study by Madjar et al. (2010) did distinguish between the task-based and self-based standards thought to underlie mastery avoidance goals, even though the items assessing the task-based standards in the scale showed poor internal consistency. In contrast, a study by Karakus et al. (2011) with a different sample of Israeli junior high school students did not find clear distinctions between these two types of standards, and did find that some mastery-avoidance goal items overlapped with the mastery-approach goal subscale. These findings suggest that at least among some early adolescent students, mastery-approach goals and some aspects of mastery-avoidance goals may have a shared meaning, but that this may not be the case with all aspects of mastery-avoidance goals.

Other quantitative studies suggested that students misinterpret mastery-avoidance goal items (Ciani & Sheldon, 2010). For example, in their study with eight university baseball players Ciani and Sheldon (2010) employed an interview protocol in which participants were asked to explain their ratings to mastery-avoidance items they were
asked to rate on a scale of 1-6 with 1 being ‘not at all true of me,’ and 6 being ‘very true of me’. For example, players were first asked to respond with 1-6 for the item “My goal is to avoid losing my skills.” They were then asked, “Please explain why you answered the way that you did (try to be specific, give an example if needed)” (p. 129). Results here were important, indicating that while half of the players endorsed mastery-avoidance goals, further examination of their explanations revealed that players could actually be interpreting these items as mastery-approach.

Clearly, research is needed to investigate whether the construct of mastery-avoidance goals does capture a unique phenomenological motivational orientation that is distinct from mastery-approach goals on the one hand and from performance-avoidance goals on the other; whether such a phenomenological meaning is coherent or itself comprises different sub-meanings reflecting different motivational orientations; and whether these potential different meanings in turn corroborate or problematize the theoretical definition of the construct and its underlying standards and valence.

**Operationalization and Methodology**

The issues of operationalization and methodology are critical when researching a construct, particularly one as elusive as mastery-avoidance goals with its unclear conceptual definition and phenomenological meaning. So far, researchers have used surveys and interviews to operationalize and assess mastery-avoidance goals. I review these instruments and methods below.

**Surveys**

Surveys have been the most prevalent method for operationalizing and studying achievement goals. Different types of scales exist for this purpose including those with
forced-choice items (Sideridis & Mouratidis, 2008; Van Yperen 2006), open-ended questions (Sideridis & Mouratidis, 2008), and summated scales such as in most widely used measures: the Patterns of Adaptive Learning Survey (PALS) (Midgley et al. 2000) and the Achievement Goal Questionnaire (AGQ) (Elliot & Murayama 2008; Elliot & McGregor 2001).

Van Yperen (2006) administered a forced-choice measure to college freshman psychology students in the Netherlands in which each achievement goal from the 2x2 model (Elliot & McGregor, 2001) is contrasted against the other goals in a pairwise manner, forcing the respondent to choose between different goals. This forced response guides the researcher in concluding about dominant achievement goal orientation. An example of a complete item is “In my study, I find it more important A…to perform better than my usual level” (mastery-approach) “or B…not to perform worse than my usual level” (mastery-avoidance). The participant is asked to select either ‘A’ or ‘B.’ Results with this six-item measure indicated that 85% of the participants were said to have a dominant achievement goal. This forced-choice measure was an improvement over Van Yperen’s (2003) single-item measure that asked participants to select one achievement goal among the four available.

Sideridis and Mouratidis (2008) used a forced-choice measure to investigate achievement goals among elementary and middle-school Greek students in the domain of physical education (PE). Participants were asked to choose one achievement goal that they thought pertained to them in PE. For example, participants were asked to select one of the following: (a) “In PE, I want to learn new things (e.g. new sports, new skills), exercise myself, and improve myself” (mastery-approach); (b) “In PE, I want to be
among the best, or to outperform others” (performance-approach); (c) “In PE, I want to avoid being among the worse students or show that I am not skillful enough” (performance-avoidance); (d) “In PE, I want to avoid not learning all that I possibly could” (mastery-avoidance); and (e) “In PE, I want to learn new things, exercise myself, and improve myself AND I want to be among the best” (multiple goals).

These forced-choice surveys have the limitation that they do not always reveal variation, or individual differences, among the participants that may underlie different responses to items (Carrell, Zusho, Cuatt, & Huntington, 2011). Forced-choice items do not allow a respondent to elaborate on the reasons underlying their choice. Such items also do not allow participants to reflect on the meaning they make of the item itself. They also undermine the possibility that students pursue multiple goals to similar degrees (Barron & Harackiewicz, 2000).

Surveys with summated scales are frequently used to assess achievement goals. The AGQ (Elliot & McGregor 2001) is the most commonly used measure to assess mastery-avoidance. The original three mastery-avoidance items in the AGQ were “I worry that I may not learn all that I possibly could in this class;” “Sometimes I’m afraid that I may not understand the content of this class as thoroughly as I’d like;” and “I am often concerned that I may not learn all that there is to learn in this class” (p. 504). More recently, Elliot and Murayama (2008) pointed to the possible confounding of the mastery-avoidance goals items with emotions (worry, fear, and concern), and revised the AGQ. The AGQ-R assesses mastery-avoidance goals through the items: “My aim is to avoid learning less than I possibly could”; “I am striving to avoid an incomplete
understanding of the course material;” and “My goal is to avoid learning less than it is possible to learn” (p. 617).

Yet, even with the revisions, the AGQ-R operationalization of mastery-avoidance goals involves various standards for competence. The items in the mastery-avoidance goal scales in the AGQ as well as in the AGQ-R include a focus on the task-based standard of competence (avoid an incomplete understanding of the material), a focus on the intrapersonal standard of competence (avoid learning less than I could), and an item that seems to focus on a combination of these two standards (avoid learning less than it is possible to learn). In addition, considering the conceptual definition of mastery-avoidance goals, these scales neglect to assess a central aspect of the intrapersonal standard of competence: avoid losing competence (Madjar et al., 2011). In response to this challenge, Madjar et al. (2011) constructed an eight-item summated scale that aimed to include the task-mastery as well as both aspects of the intrapersonal standards of mastery avoidance, including “avoiding losing competence,” (p. 272) as well as items assessing an additional aspect—“avoiding failing to keep up with learning” (p. 272). Madjar et al. (2011) administered the scale, together with other measures, to 256 Israeli junior and high school students, with 141 responding to the items based on their motivation in the subject of history, and 115 on their motivation in the subject of math. While Multi-Dimensional Scaling (MDS) results indicated that students distinguished mastery-avoidance goals from the other three achievement goals in both domains of history and math, this distinction was observed only for the intra-personal items. The task-based mastery-avoidance goals items did not appear to be distinguished from mastery-approach goals among these students—in either domain. This may indicate that students were
interpreting the items in different ways than intended, which raises questions regarding
the language of the items and their validity. Research is needed to further explore items
that better assess both the “avoid no gain” and “avoiding loss” aspects of both the task-
based and self-based standards.

Since these types of surveys often do not allow further explanation of differences
in individual responses, in order to explore such variation, researchers included open-
ended items in their assessment of achievement goals. For example, Sideridis and
Mouratidis (2008) included an open-ended item that followed the items in their
summated scales: “Regardless of your previous choice, please write down what you are
usually trying to achieve or attain, in PE”. These researchers contended that such open-
ended items offered a richer conceptualization of achievement goals by allowing students
to elaborate more on the meaning underlying their goal choices.

Interviews

Although surveys are still the predominant type of methodology used in
achievement goal research, and educational psychological research more generally
(Schwartz, 1999), qualitative techniques are becoming increasingly popular (Green,
Camilli, & Elmore, 2006), including in achievement goal research. Interviews (Levy et
al., 2004; MacCallum, 2000;), and the use of semi-structured interviews with open-ended
questions (Lee & Anderson, 1993) allow students to elaborate on responses providing
insights into the subtleties by which achievement goals may manifest among different
students and in different educational contexts.

Recently, researchers have also started to employ cognitive interviews specifically
for validating achievement goals measures (Koskey, Karabenick, Woolley, Bonney, &
Dever, 2010). In this method (sometimes referred to as cognitive pretesting), participants are asked to explain what they understand a specific item on a survey to mean, their answer choice, as well as the reason for their choice. These semi-structured interviews may also ask participants to elaborate on, or provide specific examples of their responses, thus enabling the researcher to gain further insight as to how participants interpret constructs being investigated (Karabenick et al., 2007). Such insight is important, as also seen with the study previously described in which interpretation of the construct may affect the researcher’s interpretation about the prevalence of mastery-avoidance goals, which may not be uncovered without this type of interview technique (Ciani & Sheldon, 2010).

**Prevalence and Relevance**

Elliot (2005) admitted that mastery-avoidance goals might be more common among certain people and contexts than among others. For example, perfectionists may be more likely to adopt mastery-avoidance goals than would people who are not perfectionists, and the elderly may hold mastery-avoidance goals more than do younger individuals as both types of people are more likely to be concerned with loss of skills and abilities (Elliot, 2005). In comparison, such concerns with loss of competence may be only minimally relevant to young children (Bong, 2009).

Research findings about the relevance and prevalence of mastery-avoidance goals among young students have been mixed. In one study, Sideridis and Mouratidis (2008) surveyed 165 Greek 5th and 6th graders in the domain of PE. Using a five-item, forced-choice scale, students were given examples of each goal orientation, (mastery-approach, mastery-avoidance, performance-approach, and performance avoidance), and asked to
choose the most salient achievement goal they endorsed for their physical education class. The example provided for students of a mastery-avoidance goal was “In PE, I want to avoid not learning all that I possibly could.” Results indicated that endorsement of mastery-avoidance goals accounted for less than .01% of the achievement goal distribution. In a second study, Sideridis and Mouratidis (2008) surveyed 335 Greek middle school students about their motivation in PE using the same measure. Results of the prevalence of mastery-avoidance goals in this sample were only slightly higher, indicating only 4.9% of participants endorsing mastery-avoidance goals as their most salient achievement goal in PE. Interestingly, additional analyses of students’ responses in that particular study indicated a positive relationship between mastery-avoidance and performance-avoidance goals, as well as a negative relationship between mastery-avoidance and mastery-approach goals.

Bong (2009) surveyed 684 Korean elementary and middle school students in math, using PALS items (Midgley et al., 2000) to assess mastery-approach goals, performance-approach goals, and performance avoidance goals. Mastery-avoidance goals were assessed with items that the researcher developed for the study (e.g., “I’m afraid that I don’t do my very best in math class,”; “I’m concerned that I may not learn all there is to learn from my math class,” “It is important to me “not” to do my math homework incorrectly” (p. 896)). Students endorsed these items on a 5-point Likert scale, ranging from 1-“Not at all true” to 5- “Very true”. Results from this study did indicate that mastery-avoidance goals were a relevant goal among younger Korean math students ($M= 3.51, SD= .96$), but less so for middle school students ($M= 2.99, SD= .81$). However, in this study, there was a strong positive correlation between performance-
approach goals and mastery-avoidance goals—a finding that is in contrast to the conceptual definition of these constructs as they do not share either a competence standard or a valence.

Findings from Madjar et al. (2011) indicate mastery-avoidance as a relevant goal among Israeli junior high students in history and math for both the task-based ($M=3.86$, $SD=.60$ on a 5-point scale), and intrapersonal items ($M=3.27$, $SD=.67$ on a 5-point scale). A more recent study followed Madjar et al. in seeking to determine the relevance and prevalence of mastery-avoidance goals among Israeli junior high school students in the domains of humanities and math/science (Karakus et al., 2011). The items used in this study to assess mastery-avoidance goals were taken from various sources (Bong, 2009; Elliot & McGregor, 2001; Madjar et al., 2011), and addressed both the task-based, and intrapersonal standards of mastery-avoidance goals that are concerned with avoiding deterioration of competence. Results from this study indicated endorsement of mastery-avoidance goals in both domains. Although mastery-approach goals had a higher rate of endorsement in math, mastery-avoidance goals were endorsed more frequently in both the humanities and math domains than both performance-approach and avoidance goals. These results indicate that mastery-avoidance goals did appear to be a relevant achievement goal among these Israeli students in both the humanities and math/science domains. Together, the findings from the various studies suggest that mastery-avoidance goals may have different prevalence and relevance among different students in different contexts and subject-domains.

The possible domain-specificity of mastery-avoidance goals is an important area that requires further research, as certain research has provided support for other
achievement goals to be domain-specific. For example, Bong’s (2001) study of young Korean students in the subject domains of Korean, English, math, and science did find the adoption of mastery-approach goals to be domain-specific, which highlights the need to investigate the meaning of mastery-avoidance goals as well in different subject domains.

If we understand the nature of competence and the purposes related to its pursuit as constructed within the classroom environment (Gresalfi, Martin, Hand, & Greeno, 2009; Meece, Anderman & Anderman, 2006), it stands to reason that achievement goals would be different by subject domain. For example, the skills and knowledge needed to be deemed competent in physical education, a setting where there is a great emphasis on physical performance, are likely quite different from those in science or history. As such, there is a need for research to further investigate the prevalence and relevance of mastery-avoidance goals among younger students and in different domains, as well as to investigate the role that other motivational characteristics of the learning environment may play in the endorsement of these achievement goals.

The Educational Environment and Mastery-Avoidance Goals

The nature of the educational environment may play an important role in students’ endorsement or non-endorsement of mastery-avoidance goals. Mastery and performance goal structures—teachers’ motivational emphases as perceived by students in the classroom—have been identified as antecedents for both mastery and performance goals (Ames, 1992; Kaplan & Maehr, 1999). Research indicates that students' personal achievement goals do correspond with how they view their classroom goal structure (Anderman & Midgley, 1997; Roeser et. al, 1996; Urdan, 2004). A student who
perceives the teacher as emphasizing improvement, effort, and deep understanding (i.e. a mastery goal structure) is more likely to endorse a mastery goal. Conversely, a student who perceives the teacher as emphasizing grades and relative ability (i.e., a performance goal structure) is more likely to endorse a performance goal.

Performance-approach and avoidance goal structures refer to students perceiving the teacher as emphasizing outperforming others or avoiding “looking stupid,” respectively (Meece, Anderman & Anderman, 2006; Midgley et al., 2000). The little research that has explored antecedents for performance-avoidance goals as being distinct from those of performance-approach goals has found that when students perceive their teacher as placing a harsh, strong emphasis on grades, they were less likely to adopt performance-approach goals, and more likely to adopt performance-avoidance goals. While research has explored performance-approach and avoidance goal structures, the conceptualization and investigation of educational environments’ emphasis on mastery-avoidance—a mastery-avoidance goal structure—as a distinct goal structure from mastery-approach goal structure, and as a potential antecedent to adoption of personal mastery-avoidance goals, has not been undertaken yet.

As mastery-avoidance goals encompass a focus both on development of competence (mastery goals) as well as on avoidance of failure, it can be expected that endorsement of mastery-avoidance goals would be greater when the teacher is perceived as emphasizing both aspects. For example, students may be more apt to endorse mastery-avoidance goals over mastery-approach goals if they perceive the teacher as placing an emphasis on ‘not forgetting’ material, rather than a sole emphasis on learning the material. Additionally, students may be more likely to endorse mastery-avoidance goals
if they perceive the teacher to emphasize avoiding skill loss, rather than on the building of new skills. Therefore, one of the aims of this dissertation is to examine this relationship between students’ perception of the goal that the teacher is emphasizing in the classroom and the goals that students adopt.

*Mastery-Avoidance Goals and Academic Outcomes*

The unclear conceptualization and operationalization of mastery-avoidance goals, together with the scarcity of empirical research, result also in little knowledge about the various outcomes variables that contribute to the nomological network of mastery-avoidance goals. Elliot & McGregor (2001) argued that mastery-avoidance goals are generally maladaptive, having been associated with worry, test anxiety, and disorganization. Several studies investigated the relations of mastery-avoidance goals with outcomes among university students in the domains of sport and exercise. Findings of many of these studies found mastery-avoidance to be associated with maladaptive outcomes including amotivation (Nien & Duda, 2008), fear of failure (Conroy & Elliot, 2004), and negative reactions to imperfection (Stoeber, Stoll, Pescheck, & Otto, 2008). However, contrary to this pattern, one study of physical education students (aged 11-18) in Singapore found positive relationships between mastery-avoidance goals and effort, perceived competence, and enjoyment (Wang, Biddle, & Elliot, 2007).

In academic domains, mastery-avoidance goals have been found to be associated with a less adaptive pattern of outcomes than do mastery-approach goals, but with a more adaptive pattern of outcomes than do performance-avoidance goals. For example, Bong (2009) found that Korean elementary school students who endorsed mastery-avoidance
goals in math were also likely to report higher use rates of self-regulatory and cognitive strategies.

In this dissertation, I investigated the relations of mastery-avoidance goals with a set of motivational, affective, and behavioral outcomes that have been studies as part of the nomological network of the other achievement goals. Specifically, I investigated the relationship of mastery-avoidance goals with the outcomes of intrinsic and extrinsic motivation, academic efficacy, and academic achievement.

**Intrinsic and Extrinsic Motivation**

Intrinsic motivation refers to engagement in the task due to the qualities of the task itself (Ryan & Deci, 2000). More specifically, intrinsic motivation refers to a person’s desire to engage and persist at a task because of the benefit derived from performing the task, including experiences of interest or enjoyment. Extrinsic motivation refers to individuals’ engagement and persistence in a task for external rewards such as praise, grades, and feedback (Ryan & Deci, 2000). Individuals who persist at a task due to extrinsic motivation do so in order to complete specific goals, earn some type of reward, or avoid punishment (Deci et al., 1999).

Intrinsic and extrinsic motivations are linked to different outcomes, some more adaptive than others. Intrinsic motivation is usually viewed as more adaptive because it has been related to positive affect, creativity, high-quality learning, and fulfillment of psychological needs (Ryan & Deci, 2000). Outcomes of extrinsic motivation vary depending on the degree of autonomy the student manifests in their engagement in a given task. For example, students who do their classwork because they see it as valuable for a future career goal may experience more positive outcomes than the students who do
their classwork due to their fear of punishment. In this dissertation, I assessed the less autonomous form of extrinsic motivation. This type of extrinsic motivation is less adaptive than intrinsic motivation (Pintrich, Roeser, & De Groot, 1994).

The limited research looking at the relations of mastery-avoidance goals with intrinsic and extrinsic motivation suggests a negative relationship between mastery-avoidance goals and intrinsic motivation (Cury et al., 2006). As mastery-avoidance goals are oriented towards the possibility of failure, it is likely that they would not be associated with enjoyment and that they will be negatively related with intrinsic motivation. The relations of mastery-avoidance goals and extrinsic motivation are difficult to predict. I suspect that the nature of the extrinsic reward and the importance of the domain to the student may play a role in the mastery-avoidance goal adoption. For example, students who focus on grades or development of a skill in a domain or task important for their career may be more likely to adopt mastery-avoidance goals when the possibility of failure is salient.

**Academic Self-Efficacy**

Academic self-efficacy refers to an individual’s beliefs about his or her capabilities to perform an academic task successfully (Schunk, 1991). Many studies have highlighted the important role that academic self-efficacy plays in an individual’s academic success in many domains. Individuals with higher academic self-efficacy tend to have a higher level of academic achievement (Pajares & Schunk, 2001), use more effective cognitive strategies in their learning, use more effective decision-making and problem-solving strategies, and set higher goals for themselves (Chemers, Hugh, & Garcia, 2001).
Findings about the relationship between academic efficacy and achievement goals are complex. Several studies have found self-efficacy to be positively related with mastery-approach goals, and negatively with performance-avoidance goals (Fenollar et al. 2007; Greene, Miller, Crowson, Duke, & Akey, 2004). Pajares et al. (2000) found a positive relationship between performance-approach goals and self-efficacy in writing; however, Middleton and Midgley (1997) found no relationship between self-efficacy and performance-approach goals in mathematics. With regard to mastery-avoidance goals, Coutinho and Neuman (2008) found no significant relationship between mastery-avoidance goals and self-efficacy among undergraduate psychology students.

**Academic Achievement**

Research investigating the relationship of mastery-avoidance goals and achievement has been quite limited and indicates mixed-results. While some studies found a negative relationship between mastery-avoidance goals and achievement (Bodmann, Hulleman, and Schrager, 2007; Howell & Watson, 2007), others found no significant relationship between mastery-avoidance goals and grades (Barron, Finney, Davis, & Owens, 2003; Elliot & McGregor, 2001).

**Research Questions and Hypotheses**

As many questions regarding mastery-avoidance goals remain, this dissertation addressed the following research questions:

*(RQ1): Are mastery-avoidance goals empirically distinct from the other achievement goals?*

Based on previous research that has found empirical support to the distinction between mastery-avoidance goals and the other goal constructs (Baranik, Barron, &
Finney, 2007; Cury, Elliot, DaFonseca, & Moller, 2006; Elliot & McGregor, 2001; Finney, Pieper, & Barron, 2004; Van Yperen 2003), and the conceptual distinction of mastery-avoidance goals on both standard and valence from performance-approach goals, I expect to find an empirical distinction between middle school students’ mastery-avoidance goals and performance-approach goals. Because mastery-avoidance goals share valence with performance-avoidance goals and share a competence standard with mastery-approach goals, and since some studies did not find these goals to be empirically distinguishable (e.g., Bodmann, Hulleman, and Schrager, 2007), I do not have a clear expectation about the empirical distinction between mastery-avoidance and mastery-approach goals, or mastery-avoidance and performance-avoidance goals.

(RQ2): Is there an empirical distinction between the different competence standards in mastery-avoidance goals? (task-based vs. intrapersonal, and avoid loss vs. avoid no gain)

Due to a conceptual distinction between the different standards, and in light of recent development in achievement goal theory that distinguish between the task-based and self-reference standards, I expect to find a distinction between the different competence standards. However, due to the conceptual overlap in valence and similarity of standards, I expect to find some empirical overlap between these different types of mastery-avoidance goals among the middle school students.

(RQ3): Is the empirical distinction of mastery-avoidance from mastery-approach and performance-avoidance goals similar in different subject domains (science & instrumental music)?

Similar to the expectation in RQ1, I do not have a clear directional expectation about this distinction in the different subject domains since research in this area has yielded mixed results. While these goals are conceptually distinct in both domains, I also
acknowledge the possibility of empirical overlap in the way the students interpret these goals.

(RQ4): What is the prevalence of adoption of mastery-avoidance goals among middle school students in science and instrumental music and how does it compare to the prevalence of the other achievement goals?

In terms of adoption of mastery-avoidance goals in the different domains, I would expect that a domain such as instrumental music, which places a strong emphasis on avoiding skill loss, may have higher rates of endorsement than other domains, such as science. Thus, I hypothesize that mastery-avoidance goals would be more prevalent among middle school students in instrumental music relative to science. Still, based on previous research, I also hypothesize that endorsement of mastery-avoidance goals would be lower than that of the other three achievement goals in both domains.

(RQ5): What is the relationship of mastery-avoidance goals and the classroom environment as assessed by classroom goal constructs?

As mastery-avoidance goals encompass both emphasis on a mastery standard as well as on an avoidant valence, I would expect that endorsement of mastery-avoidance goals would be higher when the teacher is perceived as emphasizing both a mastery standard and an avoidance of failure. For example, students may be more apt to endorse mastery-avoidance goals over mastery-approach goals if they perceive the teacher as placing an emphasis on ‘not forgetting’ material, rather than on learning the material. Additionally, students may be more likely to endorse mastery-avoidance goals if they perceive the teacher to emphasize avoiding skill loss, rather than on improving or building new skills.
(RQ6): What are the patterns of association between mastery-avoidance goals both adaptive and maladaptive educational outcomes, including intrinsic and extrinsic motivation, academic efficacy, and academic achievement, among middle school students?

As mastery-avoidance goals are oriented towards the possibility of failure, I hypothesize to find a negative relationship between mastery-avoidance goals and intrinsic motivation. As outcomes with extrinsic motivation remain unclear, I do not have a clear hypothesis about the relationship between extrinsic motivation and mastery avoidance goals.

Since mastery-avoidance goals place an emphasis on the possibility of failure, I hypothesize to find a negative relationship between academic efficacy and mastery-avoidance goals.

I also hypothesize that mastery-avoidance goals will have either a negative relationship or no relationship with achievement. Because mastery-avoidance goals represent a students’ focus on learning, but at the same time a focus on failure, I would expect such a focus on failure to correlate negatively with achievement. However, based on prior literature, I also recognize the possibility of no relationship. Since mastery-avoidance goals are failure-focused, I do not anticipate a positive relationship between achievement and endorsement of mastery-avoidance goals.
CHAPTER 3. METHODOLOGY

I investigated the research questions with two studies among middle school students in two subject domains that represent different types of competencies: science and instrumental music. Study 1 sought to investigate research questions concerning the empirical distinction between the different competence standards in mastery-avoidance goals, prevalence and relevance of mastery-avoidance goals in the two domains, as well as the relations of mastery-avoidance goals with the other achievement goals and with various educational outcomes using students’ self-report responses to summated scales. Study 2 sought to investigate the phenomenological meaning of mastery-avoidance goals by examining students’ responses and descriptions of mastery-avoidance, mastery-approach, performance-approach, and performance-avoidance goals.

**Study 1**

This study was designed to investigate mastery-avoidance goals among middle schools students in the domains of science and instrumental music. Six main research questions were investigated: (RQ1): Are mastery-avoidance goals empirically distinct from the other achievement goals? (RQ2): Is there an empirical distinction between the different competence standards of task-based vs. intrapersonal, and avoid loss vs. avoid no gain in mastery-avoidance goals? (RQ3): Is an empirical distinction of mastery-avoidance from mastery-approach and performance-avoidance different in the different subject domains of science and instrumental music? (RQ4): What is the prevalence of adoption of mastery-avoidance goals among middle school students in science and instrumental music and how does it compare to the prevalence of the other achievement goals? (RQ5): What is the relationship of mastery-avoidance goals and classroom goal
structures? (RQ6): What is the pattern of relations of mastery-avoidance goals with the adaptive and maladaptive educational outcomes of intrinsic and extrinsic motivation, academic efficacy, and academic achievement?

**Participants**

Participants were 126 students recruited from a local, suburban, public, middle school in the 8th grade science \( (n=98) \), and instrumental music classes (6-8 graders) \( (n=28) \) at this school. Table 1 presents the demographic characteristics of the sample. I had access to this particular school due to it being a source of data collection for a previous research project. I had support from both the assistant superintendent as well as the principal. Both the science teacher and music teacher agreed that I could collect data from each one of their classes, and that the data would be collected in a location of their choosing (e.g. the computer lab and the music room). Details regarding recruitment of participants are described in the ‘Procedure’ section below.

**Sex, Grade, and Ethnicity**

Participants were 50% female, with 86.5% of participants being in the 8th grade, 11.9% in 7th grade, and the remaining participant being in the 6th grade. Participants were 71% White, 3% Black, 5% Latino, and 17% identifying as ‘other.’ As reported by the Pennsylvania Department of Education, these statistics are similar to the overall demographic makeup of the school (48% female, 79% White, 8% Black).

**Parental Level of Education**

Participants were asked to report on their mother’s and father’s highest level of education as an indicator of Socioeconomic Status (SES). Mothers’ highest level of education was reported as: 36% having a Bachelor’s degree, 26% having a graduate
degree, 16% having ‘some college/community college’, and 15% having a high school diploma. Five percent were reported as not having graduated from high school. Father’s highest level of education was reported as: 23% having a Bachelor’s degree, 35% having a graduate degree, 12% having some college/community college, and 24% having a high school diploma. Three percent were reported as not having graduated from high school.

**Academic Achievement**

Students’ final course grades (in science or music) were collected from teachers. Grades were reported on a 0-100 point scale. Science students had a mean course grade of 82.11 (SD= 10.07), and music students had a mean course grade of 97.42 (SD= 3.54).

Table 1.

*Participant Demographic Information*

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<th>Demographic Variable</th>
<th>Frequency (N)</th>
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<tr>
<td>Some college/community college</td>
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<td>15.8%</td>
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Table 1, continued

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<th>Demographic Variable</th>
<th>Frequency (N)</th>
<th>Percentage (%)</th>
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<td>Graduate/professional degree</td>
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<td>Father's Educational Attainment</td>
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</tr>
<tr>
<td>Graduate/professional degree</td>
<td>39</td>
<td>35.1%</td>
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**Measures**

I assessed students’ personal achievement goals, academic efficacy, intrinsic and extrinsic motivation, and goal structures (perceptions of teachers’ goals). All measures, excluding the mastery-avoidance scales, had been previously validated and shown to have good reliability, and used in other studies. The mastery-avoidance scales were developed for the current study. Below I describe the nature of each measure, including reported scoring, validity and reliability information from prior research.

**Demographics Questionnaire**

A standard demographics questionnaire adapted from Perez (2011) was administered in order to collect data on students’ sex, ethnicity, SES, and domain (see Appendix A).

**Patterns for Adaptive Learning Survey (PALS)**

Scales assessing student personal mastery-approach (5 items), performance-approach (5 items), and performance-avoidance goals (4 items) were adopted from the Patterns for Adaptive Learning Surveys (PALS; Midgley et al., 2000). All items were slightly adapted in order to be domain specific. For example, an original mastery-
approach item, *One of my goals is to learn as much as I can*, was modified to read *One of my goals in science is to learn as much as I can*, for participants taking the survey in science class. For performance-approach, the original item, *It’s important to me that other students in my class think I am good at my class work*, read as *It’s important to me that other students in my class think I am good at science*. Lastly, for performance-avoidance, the original item, *It’s important to me that I don’t look stupid in class*, read as *It’s important to me that I don’t look stupid in science class*.

**Scoring**

All items had 5-point Likert-type response scales with anchors of 1 – ‘Not at all true of me’ to 5 – ‘Very true of me’ which is in line with the original scoring of the measure (Midgley et al., 2000). Higher scores on this measure indicated higher rates of endorsement of mastery-approach goals, performance-approach, and performance-avoidance goals.

**Face Validity and Reliability**

Scales from the PALS are the most widely used achievement goals measures among early and middle adolescents, with ethnically diverse samples, and have been found to be reliable and valid (Midgley et al., 1998; Midgely et al., 2000). The following outlines empirical support for validity and reliability for each of the scales used from the PALS.

Midgley et al. (2000) report a Cronbach’s alpha of .85 for the personal mastery-approach goal orientation scale. The purpose of the personal mastery goal scale was to assess student endorsement of mastery-approach goals – students’ engagement with the purpose of development of competence and understanding. The items of the scale
demonstrated high face validity (e.g., *One of my goals is to master a lot of new skills this year*).

Midgley et al. (2000) report a Cronbach’s alpha of .89 for the performance-approach scale. Students who adopt performance-approach goals focus on a demonstration of competence relative to other students. The item, “*One of my goals in science is to look good in comparison to the other students in my class,*” reflects both this demonstration as well as the comparison component of performance-approach goals, providing support for the face validity of the scale.

Midgley et al. (2000) report a Cronbach’s alpha of .74 for the performance-avoidance scale. Students who adopt performance-avoidance goals focus on avoiding demonstrating incompetence. As such, items in this scale have face validity as demonstrated by the emphasis of the item *One of my goals is to keep others from thinking I’m not smart in class* on the desire of not wanting to demonstrate incompetence which is the central component of a performance-avoidance goal.

**Construct Validity**

Mastery-approach goals share a valence with performance-approach goals, but do not share either valence or standard of competence with performance-avoidance goals. Thus, they are expected to be mildly and positively related to performance-approach goals and unrelated to performance-avoidance goals. Research with these scales supports their validity. In a sample of 1,870 American middle school students, Conley (2012) used the PALS scale and found a significant positive correlation between mastery-approach goals and performance approach goals (*r* = .29) and no statistically significant correlation between mastery-approach goals and performance-avoidance goals (*r* = .08). Using the
same scale with a sample of middle school students in South Korea, Bong (2009) found a significant and positive correlation between mastery-approach goals and performance-approach goals \( (r = .42) \), and no correlation between mastery-approach goals and performance-avoidance goals \( (r = .01) \). Additionally, a significant, albeit small correlation was found between mastery-approach goals and mastery-avoidance goals \( (r = .17) \) providing support for mastery-avoidance goals as a distinct construct.

Performance-approach goals share valence with mastery-approach goals, and a competence standard with performance-avoidance goals. Thus, they are hypothesized to be positively correlated with each of these two other achievement goals. Conley (2012) did report positive correlations between performance-approach goals and performance avoidance goals \( (r = .49) \). In a sample of middle school students in South Korea, Bong (2009) found a significant positive correlation between performance-approach goals and performance-avoidance goals \( (r = .41) \) providing further support for the validity of performance-avoidance as well.

**Personal Mastery-Avoidance Goals**

Two items assessing mastery-avoidance goals were adopted from a scale used by Madjar et al. (2011). The original item used was an intra-personal, avoid loss item: “It is very important to me that I do not forget what I have learned in history/math so far” (p. 272) with a slight modification so that for the dissertation the item read, “It is very important to me that I do not forget what I have learned in science so far.” A second item, a task-based, avoid no gain item, originally read “One of my goals in history/math class is not to miss opportunities to learn important things” (Madjar et al., 2011, p. 272) and was changed to read “It is important to me not to miss out learning important things.
in science. No other items were adopted from Majdar et al. (2011) as six additional items were created for the purpose of the study as measures from previous studies failed to address all components of the conceptual definition being used in the proposed studies (Elliot & Murayama 2008; Elliot & McGregor 2001). The six new items on this scale were constructed in order to represent both the task-based and self-based competence standards, as well as the foci on “avoid no gain” and “avoid loss” within each standard. Item stems were selected to reflect the definition of mastery-avoidance goals as an aim or a goal (“one of my goals”), but also to make items compatible with the stems of the other achievement goal measures in PALS, which include an emphasis on broader focus (“it’s important to me”) while avoiding the confound of emotion as found in the original AGQ. After items were developed based on the conceptual definition of mastery-avoidance goals used in the current study, items were reviewed by an expert in the field in order to provide additional support for the construct and face validity of the scale.

Two items reflected each category:

**Intra-personal, avoid no gain**

“It’s important to me that I don’t learn less in science class than I was able to do in the past,”

“One of my goals in science class is not to learn less than I could do before”

**Intra-personal, avoid loss**

“It is very important to me that I do not forget what I have learned in science so far,” (based on Madjar et al., 2011)

“One of my goals in science class, is not to forget what I have learned”

**Task-based, avoid no gain**
“It’s important to me not to miss out learning important things in science,”
(based on Madjar et al., 2011)

“One of my goals in science class is not to miss out on learning all that I could learn”

Task-based, avoid loss

“When learning science, it’s important to me that what I learn will not turn out to be wrong,”

“One of my goals in science class is to make sure that what I learn will not turn out to be wrong”

All items have 5-point Likert-type response scales with anchors of 1 – ‘Not at all true of me’ to 5 – ‘Very true of me’ which is in line with the scales from the PALS measure (Midgley et al., 2000). Higher scores on this measure indicate higher rates of endorsement of mastery-avoidance goals.

Achievement goal structures (Perception of Teacher’s Goals)

Scales that assessed student perception of the teacher’s emphasis on mastery-approach goals (5 items), performance-approach goals (3 items), and performance avoidance (4 items) were adopted from the Patterns for Adaptive Learning Survey (PALS; Midgley et al., 2000). Items were slightly adapted in order to be domain specific. For example, the original item, My teacher thinks mistakes are okay as long as we are learning read My science teacher thinks mistakes are okay as long as we are learning for participants who took the survey in science class. The original performance-approach item, My teacher tells us how we compare to other students, read as My science teacher tells us how we compare to other students in science, for participants taking the survey in
science class. Lastly, the original performance-avoidance item, *My teacher tells us that it is important that we don’t look stupid in class* reads as *My science teacher tells us that it is important that we don’t look stupid in class* for participants taking the survey in science class.

**Scoring**

All items had 5-point Likert-type response scales with anchors of 1 – ‘Not at all true of me’ to 5 – ‘Very true of me’ which is in line with the original scoring of the measure (Midgley et al., 2000). Higher scores on these measures indicated higher levels of student perception of teacher mastery-approach, performance approach, and performance-avoidance goals.

**Reliability and Face Validity**

Midgley et al. (2000) report a Cronbach’s alpha of .83 for the teachers’ mastery-approach goal structure. The scale is based on the student’s perception of the teacher as emphasizing the value and goal of learning, improvement, effort, and deep understanding. Items such as *My teacher wants us to understand our work, not just memorize it*, and *My teacher really wants us to enjoy learning new things* supported the face validity of the scale.

Midgley et al. (2000) report a Cronbach’s alpha of .79 for the teachers’ performance-approach goal structure. The perception of teacher’s emphasis on performance-approach goals scale is based on the student’s perception of the teacher as emphasizing demonstrating ability and outperforming other students. Items such as *My teacher points out those students who get good grades as an example to all of us*, and *My
Teacher lets us know which students get the highest scores on a test support the face validity of the scale.

Midgley et al. (2000) report a Cronbach’s alph of .71 for the perception of teachers’ performance-avoidance goal structure. The perception of teacher’s emphasis performance-avoidance goals scale is based on the student’s perception of the teacher as emphasizing not demonstrating low ability and underperforming in relation to other students. Items such as, My teacher says that showing others that we are not bad at class work should be our goal, and, My teacher tells us it’s important to join in discussions and answer questions so it doesn’t look like we can’t do the work, support the face validity of the scale.

**Construct Validity**

While teachers’ goal structures are correlated with students’ adoption of personal achievement goals, they are a distinct construct. Kaplan, Gheen, and Midgley (2002) surveyed 388 ninth-grade US students, and reported weak negative correlations between perception of the teacher’s emphasis on mastery-approach goals and perception of teacher’s emphasis on performance-approach goals ($r = -.14$), as well as between perception of teacher’s emphasis on mastery-approach goals and perception of teacher’s emphasis on performance-avoidance goals ($r = -.18$). Friedel, Cortina, Turner and Midgley (2007) surveyed middle school students in the US, assessing both their personal achievement goals and students’ perception of the teacher’s goal emphasis. They reported correlations between teacher emphasis on mastery goals and student endorsement of mastery-goals ($r = .50$), and between teacher emphasis on mastery goals and student
endorsement of performance goals ($r = .06$). (This study did not separate students’ performance goals to performance-avoidance and performance-approach constructs).

Kaplan, Gheen, and Midgley (2002) also reported a significant medium-sized correlation between perceptions of teacher’s emphasis on performance-approach goals and perceptions of teacher’s emphasis on performance-avoidance goals ($r = .41$). However, most studies that assess teachers’ goal structures either fail to separate students’ perception of teacher’s goals emphasis into performance-approach and performance-avoidance scale (Polychroni, Hatzichristou, & Sideridis, 2012; Shim, Cho, & Wang, 2013) or for the few studies that do separate the performance goal structure scale into approach and avoidance, do not report on findings with any of the other motivational constructs that were assessed in the current study (Kaplan, Gheen, & Midgley, 2002).

**Achievement goal structures (Perception of Teacher’s Goals) Mastery-Avoidance**

Eight items assessing students’ perception of teacher’s emphasis on mastery-avoidance goals were constructed for the purposes of the current study as the literature to date has only addressed students’ perception of teacher’s emphasis on mastery-approach goals. All items have 5-point Likert-type response scales with anchors of 1 – ‘Not at all true of me’, to 5 – ‘Very true of me’.

Similar to the development of the items for the scale assessing students’ personal mastery-avoidance goals, items on this scale were designed to reflect both the task-based and self-based competence standards, as well as the components of “avoid no gain” and “avoid loss” within each standard that are part of the conceptual definition being used. The stems of these items (e.g. “my teacher wants us”) were also modeled after the PALS
items that assess Perception of Teacher’s Goals emphasis for performance-approach goals, performance-avoidance goals, and mastery-approach goals in order to maintain consistency with items that have extensive empirical support for their reliability and validity. These items were also reviewed by an expert in the field in order to provide addition support for their construct and face validity. Two items reflect each category:

*Intra-personal, avoid loss*

“My science teacher tells us that it is important not to forget what we have learned,”

“My science teacher thinks that one of our goals should be to avoid forgetting the material”

*Intra-personal, avoid no gain*

“My science teacher tells us that it’s important not to learn less than we were able to in the past,”

“My science teacher does not want us to learn less than we could do before”

*Task-based, avoid loss*

“My science teacher wants us to avoid misunderstanding what we are learning in the class, after we have learned new material”

“My science teacher does not want us to misunderstand the material in science class, after we have learned new material”

*Task-based, avoid no gain*

“My science teacher thinks that we should not miss out on learning what we can in science”

“My science teacher wants us to avoid missing out on learning the material”
Scoring

All items have 5-point Likert-type response scales with anchors of 1 – ‘Not at all true of me’ to 5 – ‘Very true of me’ which is in line with the original scoring of the scales from the PALS (Midgley et al., 2000). Higher scores on this measure indicate higher levels of student perception of teacher mastery-avoidance goals.

Intrinsic and Extrinsic Motivation

Scales that assessed student intrinsic (2 items), and extrinsic (4 items) motivation were adopted from established measures of intrinsic and extrinsic motivation (Assor et al., 2005; Ryan & Connell, 1989). Two additional items measuring intrinsic motivation were created for the purposes of this study because items from existing measures of intrinsic motivation were too similar to items being used to assess mastery-approach goals. These items are described below. All items were adapted to be specific to the domain in which students were being surveyed.

Scoring

All items have 5-point Likert-type response scales with anchors of 1 – ‘Not at all true of me’ to 5 – ‘Very true of me’. Higher scores on this measure indicate higher levels of students’ intrinsic or extrinsic motivation.

Reliability and Validity

Kaplan, Assor and Roth (2003) reported a Cronbach’s alpha of .73 for the extrinsic motivation scale. Ryan and Connell (1989) reported Cronbach’s alphas of .62-
.82 as a range for the measures used, but did not give a specific alpha for the intrinsic scale which was included in this range.

The intrinsic motivation measure assesses a person’s desire to engage and persist at a task because of interest or enjoyment of the activity itself. As such, the new intrinsic items were designed to capture the definition of the construct (e.g. “I do my schoolwork in science because I enjoy it”). Items were then reviewed by an expert in the field to provide additional support for construct and face validity.

The extrinsic motivation measure assesses a person’s desire to engage and persist at a task because of an external reward or punishment. Items such as I do my schoolwork because I’ll get in trouble if I don’t, and I do my schoolwork because I want to get a good grade provide support for face validity. While intrinsic and extrinsic motivations are related to achievement goals, they are distinct constructs. When surveying elementary school children, Ryan and Connell (1989) report a significant correlation between intrinsic motivation and mastery-approach goals (r = .54) and a significant negative correlation between mastery-approach goals and extrinsic motivation (r = -.41). Further reported was a non-significant correlation between intrinsic and extrinsic motivation (r = .11).

**Academic Efficacy**

A scale assessing academic efficacy (five items) were adopted from the PALS (Midgley et al., 2000). Items were slightly adapted in order to be domain specific. For example, the original item, I'm certain I can master the skills taught in class this year read as I'm certain I can master the skills taught in science class this year for participants taking the survey in science class.
**Scoring**

All items have 5-point Likert-type response scales with anchors of 1 – ‘Not at all true of me’ to 5 – ‘Very true of me’ which is in line with the original scoring of the measure (Midgley et al., 2000). Higher scores on this measure indicate higher levels of students’ academic efficacy.

**Reliability and Validity**

Midgley et al. (2000) report a Cronbach’s alph of .78 for the academic efficacy scale. The academic efficacy scale is based on the student’s perception of their own competence and resources to succeed in their school work. Thus, the items that capture this perception, such as, “I'm certain I can figure out how to do the most difficult class work” and “I can do almost all the work in class if I don't give up” support the face validity of the scale.

The scale received support for its validity in multiple studies that found it to be related positively to mastery-approach goals, performance-approach goals, and academic achievement. Pajares, Britner, and Valiante (2000) surveyed 497 American middle school students and reported a significant positive correlation between self-efficacy and mastery-approach goals ($r = .26$), as well as between self-efficacy and performance-approach goals ($r = .35$). Bong (2009) reported a significant correlation between self-efficacy and performance-approach goals ($r = .50$), as well as between self-efficacy and mastery-approach goals ($r = .67$). The correlation between self-efficacy and performance-avoidance goals was not significant.
Procedure

I spoke to each class individually, informing students that I was a graduate student at Temple University and that I was interested in studying student motivation. Students were informed of the following: (1) that the study was entirely voluntary, (2) the study would consist of the student taking an online survey during one 42 minute class period, (3) any answers to the survey would be kept confidential with only myself or members of the research team having access, and (4) the student could withdraw from the study at any time without fear of penalty. I distributed a cover letter and consent forms to the students to take home and return approximately two weeks in advance of data collection. One form included parent/guardian consent for their child’s participation, and release of student grades for the specific class (domain). A second form included student assent for participation and release of grades. I then collected consent forms from students a few days before the study and recorded which students had parental consent to participate in the study. On the day of the study, students who had returned the parental consent forms filled out student assent forms prior to the survey administration. Student names and consent information were kept on a password-protected laptop, with only myself having access to that information in order to protect the confidentiality of participants. Once data were collected, participant names were replaced with an ID number to further protect confidentiality.

Data collection for science students took place in the school’s computer lab during non-instructional time. Students in the computer lab took the survey at the same time on individual computers. Since school policy prohibits the teacher from leaving the classroom while class is in session, the teacher was asked to stand or sit at the front of the
room so that students would feel more comfortable giving honest responses, as some items did ask about the students’ teacher. Survey Monkey was used to administer the survey, with students copying a link from the white board in the computer lab to the browser on their individual computers. After students were able to pull up the survey online, I started an audio recording of the survey in order to control for any differences in reading ability among the students. The audio played out of one speaker in the room that every student could hear. Students were instructed that they did not have to listen to the audio, but could if they found it helpful and to ask myself if they had any questions. Most students were able to complete their surveys within 30 minutes. When students had completed their surveys, they were instructed by the teacher to finish other schoolwork. Any students not participating in the study were instructed by the teacher to complete other work.

Due to the larger number of students in the instrumental music section and the nature of the setup in that particular class, administration of the measures for the instrumental music class were done via pencil-and-paper. Again, the teacher was asked to stand near the front of the room, away from where students were taking the surveys, and were instructed to direct any questions to me. Students sat on individual chairs and took the surveys individually after their consent had been confirmed. Any student who did not obtain consent was instructed to work on other schoolwork. Again, the audio recording of the survey was played and students could hear this out of the main speaker in the classroom. Students were advised that they did not have to follow along with the audio, but could if they found it helpful.
Timing

The timing of the measure was thought to be a critical component of the procedure. While I could not anticipate the number of students who would indicate pursuing mastery-avoidance goals, my assumption was that they are more likely to do so around a time of assessment, when the confidence in learning and concern about loss of knowledge and skill learned are heightened. Therefore, in coordination with the teachers, the measure for the science students was administered a week before a major unit exam, and the assessment for the music students was given approximately two weeks before their major spring concert.

Screening for Assumptions

P-P Plots were run for each variable. The observed cumulative probability was comparable to the expected cumulative probability. Skewness and kurtosis were also examined to verify that the skewness for each variable was less than 2.0, and kurtosis less than 4.0.

Collinearity diagnostics were run in order to check for possible multicollinearity between variables. Tolerance and variance inflation factors were examined and were found to indicate acceptable multicollinearity between variables, as VIF for all variables was less than 6.

Homogeneity of variance in the residuals was examined and was found to indicate random distributions. Scatterplots were used to examine linearity, and outliers were identified and removed. For each variable there was less than five percent missing data. Casewise, there were fewer than five cases that had more than five percent missing data. The missing data were believed to be missing at random, prompting the decision to use
maximum likelihood estimation method in MPlus handle the missing data in the regression analyses.

**Data Analyses**

The first three research questions asked: (1) Are mastery-avoidance goals empirically distinct from the other achievement goals? (2) Is there an empirical distinction between the different competence standards in mastery-avoidance goals? (task-based vs. intrapersonal, and avoid loss vs. avoid no gain), and (3) Is an empirical distinction of mastery-avoidance from mastery-approach and performance-avoidance different in the different subject domains of science and instrumental music? To answer these questions, I employed both Exploratory Factory Analysis (EFA) and Non-Metric Multidimensional Scaling (MDS) to investigate the distinctions between the different competence standards in mastery-avoidance goals (task-based vs. intrapersonal, and avoid loss vs. avoid no gain), and MDS to investigate the distinction between mastery-avoidance goals and the other achievement goals, as well as the potentially empirically meaningful distinctions in the difference subject domains. Using both EFA and MDS allows one to examine the empirical distinction between conceptually distinct constructs under different assumptions. EFA creates groups of items on the basis of commonly shared variance with an algorithm that is oriented towards independent factors. In comparison, MDS creates a visual display of the relations among all items in the analysis, without attempting to create distinct groups. This allowed for a deeper investigation into the structure of the mastery-avoidance construct while allowing it also to overlap with the other achievement goal constructs. Importantly, non-metric MDS is also reliable if
relationships are not linear, making it a more robust method of analysis than EFA when non-linearity is assumed or is present (Shye, 1997).

Convergent and divergent validity were then further assessed with correlation analyses that are presented in Chapter 4. Theoretically, I hypothesized that mastery-approach and mastery-avoidance goals would be positively correlated because of their shared definition of competence. Similarly, it was my hypothesis that a positive correlation would exist between mastery-avoidance goals and performance-avoidance goals, as there is a shared valence. As there is no shared definition of competence, or a shared valence, theoretically, I did not expect to find a significant correlation between mastery-avoidance goals and performance-approach goals. However, I did recognize the possibility of such a relationship as concern about achievement in an evaluative situation (e.g. an exam or performance), may give rise to both mastery-avoidance goals and performance-approach goals, leading to a correlation between the two. In fact, while most studies do not find such a correlation, there are studies with young students (Bong, 2009) as well as undergraduate students (Elliot & McGregor, 2001; Finny, Pieper, & Barron, 2004) that found significant correlations between mastery-avoidance goals and performance-approach goals.

The next research questions investigated was (4) What is the prevalence of adoption of mastery-avoidance goals among middle school students in science and instrumental music and how does it compare to the prevalence of the other achievement goals? In order to analyze the prevalence of adoption of mastery-avoidance goals, I calculated the mean and medians for each of the achievement goals, their distributions, as well as the goal endorsement for each of the four achievement goals.
The next question investigated was (5) What is the relationship of mastery-avoidance goals and classroom goal structures? In order to examine relations of mastery-avoidance goals with the classroom environment, I conducted multiple regression with mastery-avoidance goals as the outcome variables and the teachers’ goal structure as the predictors, in addition to a dummy covariate variable – science, indicating whether a student was in science or music. I used the program G*Power (Faul, Erdfelder, Buchner, & Lang, 2009) to calculate the number of participants I would need to have at an alpha of $p = .05$, to attain a power of $0.80$ and a medium effect size, $f^2 = .15$, $R^2 = .13$. Based on this information, a minimum $N$ of 85 was required for my sample size. I have taken a variable-centered approach in order to investigate the nomological network of mastery-avoidance goals.

The last research questions asked what is the pattern of relations of mastery-avoidance goals with the adaptive and maladaptive educational outcomes of intrinsic and extrinsic motivation, academic efficacy, and academic achievement? Hence, I have adopted a person-centered approach to investigate these relationships.

In order to investigate the different patterns of associations between mastery-avoidance goals, the other achievement goals, and the outcome variables, I employed cluster analysis to create “motivational profiles”. Cluster analysis can be used to group individuals based on similar characteristics, such that there is high homogeneity within a cluster, and high heterogeneity between clusters. In order to do the cluster analysis, I removed any outliers. There are different hierarchical clustering procedures. For the purposes of this study, I used Ward’s method as it aims to minimize differences within the clusters while maximizing differences between clusters. A decision on the number of
clusters was determined by several criteria. One was parsimony, considering that cluster analysis aims at meaningful data reduction, and hence a smaller number of clusters that represented the data in ways that answer the research questions is considered better than a higher number of clusters. The number of clusters was also determined by looking at the agglomeration coefficient that indicates increases in information lost. Selection between close cluster solutions was done with an eye to maintaining meaningful information about variance between clusters. Finally, the most important criterion for selecting the cluster solution was a solution that corresponded theoretically with the focus and research questions of the current study.

Ward’s method is an exploratory approach to hierarchical clustering. This procedure was then followed by the nonhierarchical or K-means clustering to refine the clusters. Clusters were examined for the profiles “fit” with those produced by Ward’s method (Hair, Anderson, Tatham, & Black, 1998).

A cluster analysis was first run using the personal achievement goal variables. A second cluster analysis was then run with the personal achievement goals in addition to the outcome variables. After the clusters were interpreted and verified, the outcome variables of the study were used in a MANOVA in order to further understand the nomological network of mastery-avoidance goals.

**Study 2**

The aim of Study 2 was to pursue a richer and deeper understanding of middle school students’ phenomenological meaning of mastery-avoidance goals through analysis of qualitative data of students’ own descriptions and examples of the various achievement
goals. Sideridis and Mouratidis (2008) administered an open-ended question to young Greek students in order to elicit information about students’ achievement goals in Physical Education (PE). The responses to the open-ended questions provided insights into the type of goals students reported pursuing. However, the Sideridis and Mouratidis study used only one, very general open-ended question (“please write down what you are usually trying to achieve or attain, in PE”, p. 227), in addition to forced-choice response items. In the current study, I posed pointed open-ended questions that were specific to mastery-avoidance goals, as well as to mastery-approach and performance-avoidance goals—the constructs that share theoretical features with mastery-avoidance goals.

Patrick and Ryan (2008) used similar open-ended questions about each scale item from the PALS in order to explore in-depth the meaning of mastery classroom goal structure among middle school students. After each item, students were asked to explain their choice by answering the following questions: “Why did you circle that answer? Explain what your teacher does or says that makes you think that. Please give examples” (p. 106). While time in the current study did not permit asking students to respond this way for each item, I included open-ended questions that were paired with a Likert-type response item, to ask students to provide specific examples pertinent the scales assessing the each of the achievement goals of mastery-avoidance, mastery-approach, and performance-avoidance in the domain (See Appendix B).

**Participants**

Participants for Study 2 were the same students from Study 1. After removing students who did not respond to the open-ended questions, the results of study 2 are based on 79 students from study 1 (64 science students, 15 music students; 54.4% female).
**Measures**

Open-ended questions. In addition to the summated scales administered and analyzed in Study 1, the survey included five pairs of open-ended questions. The first item in each pair was an item modeled after the achievement goal scales followed by a 5-point Likert-type response with anchors of “1- Not at all like me” to “5 – Very much like me.” The second item in each pair was an open-ended question that asked the student to elaborate and provide an example of their answer from the first item, in order to elicit information about the meaning students made of the achievement goal. The purpose of this measure was to enable students to provide a description of that achievement goal in the domain using their own words (cf. Sideridis & Mouratidis, 2008). The complete measure appears in Appendix B. An example of a pair of question-item is:

1a. “Some students do their schoolwork in science because they really don’t want to forget what they already learned in science class. How much are you like these students in science?

1b. “Can you please give an example from science class for a time when you did your schoolwork because you really didn’t want to forget what you already learned in science class?”

**Procedure**

The procedure for Study 2 was identical to the procedure in Study 1 as the measures were part of the survey in Study 1.

**Analyses**

I conducted qualitative content analysis following the procedures and steps described by Zhang and Wildemuth (2009). First, I prepared the data by typing all of the
responses to the open-ended questions into a word-processor document, reading them several times to familiarize myself with the scope of students’ interpretations of mastery-avoidance goals statements, as well as their responses to the questions about the other achievement goals.

I and two other researchers developed a coding scheme. The process of generating codes and themes involved both inductive (data-emergent) and deductive (theory informed) processes, since the purpose of the current investigation was not simply to confirm a current theoretical position, but also to contribute to the development of theory about students’ phenomenological interpretation of the achievement goals through examination of students’ interpretations. Themes developed deductively focused on the examples the students gave of mastery-avoidance goals, and how these were different or similar to students’ examples of mastery-approach and performance-avoidance goals. This allowed for a deeper understanding of the meaning that students made of mastery-avoidance goals, and whether or not they viewed mastery-avoidance goals as distinct from the other types of goals.

The Code Book with theoretical definitions and examples appears in Appendix C. Codes were divided into “achievement goal,” “motive behind the goal,” and “valence.” The category of “achievement goals” included the codes: “0-no goals,” “1-mastery goal,” “2-performance goals” and “3-Conformity”.

The next category was “motive behind the goal.” This category included the codes: “0-no goals,” “1-mastery goal,” “2-performance goals”, “3- intrinsic,” “4-extrinsic,” and “5-conformity.”
Lastly, responses were coded on the category of valence. This category included the codes: “0-no valence,” “1- approach,” “2-avoidance,” “3-approach and avoidance.”

The coding scheme was then tested on a small portion of the data by myself and a research assistant who conducted an independent analysis to provide inter-rater reliability and content validity. All text was then coded and re-checked in order to assess the consistency of the coding. The researchers met to review codes and discussed any codes that were in disagreement until the codebook was finalized.

After the codebook was verified with three quarters of the data, the final 19 participants’ data were used in order to assess inter-rater reliability using Cohen’s Kappa. The percent agreement between the two coders and Cohen’s Kappa were: Mastery-Approach: %Agreement -.70, Kappa-.53; Mastery-Avoidance Intrapersonal Avoid Loss: %Agreement - .89, Kappa - .82; Mastery-Avoidance Task-based Avoid No Gain: %Agreement - .77, Kappa - .66; Performance-Avoidance: %Agreement - .75, Kappa - .63; Performance-Approach: %Agreement .82, Kappa - .31. Overall, Cohen’s Kappa for the measure was .60, indicating a moderate strength of agreement (Altman, 1991).

In order to investigate how students interpreted the items relative to the items’ intended meaning, frequencies were run for each student on and evaluated relative to the initial intention of the goal, motive, and valence of the item. A match and a mismatch designation was given for each goal, motive, and valence example, for each of the five items. Participants were then categorized as mismatching, meaning when they responded in a way that did not align with the original intention of the item. For example, if a person were responding to a mastery item, but was coded on the goal as ‘performance,’ this would be considered a mismatch. If that individual had responded to the mastery item
and had been coded on the goal as ‘mastery’ that would be considered a match. Further frequencies were run in order to determine which components students were more likely to match or mismatch.
CHAPTER 4. RESULTS

This chapter reports on the findings from the data analyses that aimed to provide answers to the research questions. The chapter is divided to findings from Study 1 followed by findings from Study 2. I begin by presenting results from the Exploratory Factor Analysis (EFA) that aimed to investigate the structure of students’ responses on the mastery-avoidance goals items in relation to the other achievement goal items, and to guide the decision regarding the constitution of the mastery-avoidance goal variable to be used in further analyses. I follow with descriptive statistics that address the question pertaining to the prevalence of mastery-avoidance goals among the participants. Next, I present correlations among outcome variables to investigate the nomological network of mastery-avoidance goals.

I then present results of a Multidimensional Scaling (MDS) analysis that aimed to investigate students’ responses with regard to the empirical distinctions between mastery-avoidance goals and the other achievement goals, as well as the distinctions between the different standards within mastery-avoidance goals in both science and instrumental music domains. I then report on multiple regression results that investigated the relationship between teachers’ goal structure and mastery-avoidance goals. Finally for Study 1, I describe results of cluster analyses that investigated students’ motivational profiles in order to gain more in-depth knowledge about the relationship between mastery-avoidance goals, the other achievement goals and the educational outcomes. Study 2 aimed to further investigate the meaning that students make of mastery-
avoidance goals. I describe results of frequencies that indicate how students interpreted the items relative to the items’ intended meaning, as well as students’ evaluations relative to the initial intention of the goal, motive, and valence of the item.

Study 1

Section 1: Exploratory Factor Analysis (EFA)

EFA with Mastery-Approach and Mastery-Avoidance Goals Across All Participants

I conducted a separate EFA using Principal Axis Factoring with an Oblimin Rotation on the mastery-approach and mastery-avoidance goals items. Factors were first selected based on an eigenvalue greater than one. This analysis yielded a single factor solution, explaining 59.3% of the variance. However, since an important purpose of the current study is to investigate the approach-avoidance distinction in mastery goals, I conducted a second EFA using Principal Axis Factoring and Oblimin Rotation in which I specified a two-factor solution. This two-factor solution explained 70.1% of the variance. The factor loadings of the pattern matrix are presented in Table 2. All mastery-approach items and four mastery-avoidance items loaded onto the first factor (Factor 1). Four other mastery-avoidance items loaded onto the second factor which explained 9.2% of the total variance. Two of these four items represented the “task-based avoid loss” aspect of mastery-avoidance, and the other two items represented the “task-based avoid no gain” aspect. Therefore, I calculated a mean score for Mastery-Avoidance using these four items, and a mean score for Mastery-Approach using the mastery-approach items.
Table 2. *Pattern Matrix for EFA of Mastery-approach and Mastery-avoidance Goal Variables*

<table>
<thead>
<tr>
<th>Factor 1</th>
<th>Factor 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAVTAL Item 1</td>
<td>0.870</td>
</tr>
<tr>
<td>MAVTAL Item 2</td>
<td>0.879</td>
</tr>
<tr>
<td>MAVTANG Item 1</td>
<td>0.853</td>
</tr>
<tr>
<td>MAVTANG Item 2</td>
<td>0.839</td>
</tr>
<tr>
<td>MAVIPANG Item 1</td>
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</tr>
<tr>
<td>MAVIPANG Item 2</td>
<td>0.536</td>
</tr>
<tr>
<td>MAVIPAL Item 1</td>
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</tr>
<tr>
<td>MAVIPAL Item 2</td>
<td>0.788</td>
</tr>
<tr>
<td>MAP Item 1</td>
<td>0.622</td>
</tr>
<tr>
<td>MAP Item 2</td>
<td>0.962</td>
</tr>
<tr>
<td>MAP Item 3</td>
<td>0.914</td>
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<tr>
<td>MAP Item 4</td>
<td>0.816</td>
</tr>
<tr>
<td>MAP Item 5</td>
<td>0.832</td>
</tr>
</tbody>
</table>

*Note.*

Extraction Method: Principal Axis Factoring. Rotation Method: Oblimin with Kaiser Normalization. MAP = Mastery approach goal; MAVTAL = Mastery avoidance, task-based, avoid loss; MAVTANG = Mastery-avoidance, task-based, avoid no gain; MAVIPANG = Mastery-avoidance, intrapersonal, avoid no gain; MAVIPAL = Mastery-avoidance, intrapersonal, avoid loss

*Section 2: Descriptive Statistics*

Descriptive statistics for the individual achievement goals, goal structures, academic efficacy, intrinsic motivation, and extrinsic motivation variables are presented in Table 3. Initial analyses indicated that all four achievement goals had moderate means across the two domains, indicating that in both science and music, endorsement of mastery-approach, mastery-avoidance, performance-approach, and performance-avoidance approximated normal distributions roughly around the midpoint of the response scale, with slight negative Skewness. All variables have acceptable Skewness, Kurtosis, and reliability (with the exception of Extrinsic motivation).
Table 3. Descriptive Statistics of Variables by Domain

<table>
<thead>
<tr>
<th>Variable</th>
<th># of items</th>
<th>Mean</th>
<th>StD.</th>
<th>Skewness</th>
<th>Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAP (M)</td>
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<td>4.03</td>
<td>1.09</td>
<td>-1.35</td>
<td>0.95</td>
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<td>MAV (M)*</td>
<td>4</td>
<td>3.84</td>
<td>0.99</td>
<td>-0.75</td>
<td>0.82</td>
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<td>PAP (M)</td>
<td>5</td>
<td>3.42</td>
<td>1.09</td>
<td>-0.19</td>
<td>0.88</td>
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<td>PAV (M)</td>
<td>4</td>
<td>3.33</td>
<td>1.07</td>
<td>-0.45</td>
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<td>MAP (S)</td>
<td>5</td>
<td>3.30</td>
<td>0.95</td>
<td>-0.32</td>
<td>0.88</td>
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<td>MAV (S)</td>
<td>4</td>
<td>3.32</td>
<td>0.88</td>
<td>-0.60</td>
<td>0.81</td>
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<td>PAP (S)</td>
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<td>2.98</td>
<td>1</td>
<td>0.1</td>
<td>0.88</td>
</tr>
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<td>PAV (S)</td>
<td>4</td>
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<td>0.98</td>
<td>-0.02</td>
<td>0.73</td>
</tr>
<tr>
<td>Intrinsic (M)</td>
<td>4</td>
<td>3.56</td>
<td>1.3</td>
<td>-0.33</td>
<td>0.93</td>
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<td>2.94</td>
<td>1.03</td>
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<td>Intrinsic (S)</td>
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<td>2.32</td>
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<td>0.67</td>
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<td>Extrinsic (S)</td>
<td>4</td>
<td>3.57</td>
<td>0.84</td>
<td>-0.42</td>
<td>0.64</td>
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<td>Academic Eff (M)</td>
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<td>4.11</td>
<td>0.99</td>
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<td>Academic Eff (S)</td>
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<td>3.54</td>
<td>0.95</td>
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<td>3.79</td>
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<td>TGMAV (M)</td>
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<td>TGMAV (S)</td>
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<td>0.82</td>
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<td>0.71</td>
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<td>GPA (S)</td>
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</table>

*Note: MAP= Mastery-approach, MAV= Mastery-avoidance, PAP= Performance-approach, PAV= Performance-avoidance, M=music, S=Science, TG= teacher goals (classroom goal construct) GPA= Achievement (student grades)*

Achievement Goal Endorsement

Table 4 presents achievement goal endorsement in both domains. Fifty percent of students endorsed mastery-avoidance goals at or above a level of 3.29 in science and 4.00 in music. Mastery-avoidance goals were endorsed more frequently in both domains than were either performance-approach or performance-avoidance goals. Comparing the
domains of science and instrumental music, mastery-avoidance goals were slightly more prevalent in the domain of music, with half of the students having scores implying average response between “somewhat true” or “very true” to the mastery-avoidance goals items. In science half of the students have scores implying average response between “so so,” “somewhat true,” or “very true” to the mastery-avoidance goals items.

Table 4. *Achievement Goal Endorsement in Science and Instrumental Music*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Science</th>
<th>Likert-choice</th>
<th>n</th>
<th>Music</th>
<th>Likert-choice</th>
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<td>Mastery Avoidance</td>
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<td></td>
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</tbody>
</table>
Section 3: Correlations

I calculated Bivariate Pearson Correlations, which I present in the following groups: Table 5 presents correlations among personal achievement goals, intrinsic and extrinsic motivation, academic efficacy, and achievement in both science and music; Table 6 presents correlations among the personal achievement goals and teacher goal structures in both science and music; and Table 7 presents correlations among teacher goal structures and intrinsic motivation, extrinsic motivation, and academic efficacy in both science and music.

Correlations between Personal Achievement Goals, Extrinsic and Intrinsic Motivation, Academic Efficacy, and Achievement

In both the science and music domains, significant and high positive correlations were found between mastery-avoidance goals and mastery-approach goals, \( r = .71, r = .79 \), and moderate positive correlations between mastery-avoidance goals and performance-avoidance goals \( r = .45, r = .48 \). These findings are consistent with the theoretical correspondence between mastery-avoidance goals and mastery-approach goals on the mastery competence standard, and the theoretical correspondence between mastery-avoidance goals and performance-avoidance goals on the avoidance valence. However, specifically in science, there was a significant positive correlation between mastery-avoidance goals and performance-approach goals, which is interesting in light of the fact that these two constructs share neither a competence standard nor a valence. Additionally across both the science and music domains, mastery-avoidance goals were significantly moderately-highly and positively correlated with extrinsic motivation \( r = .62, r = .66 \), and with academic efficacy \( r = .53, r = .76 \), suggesting that the students
who endorsed high levels of mastery-avoidance goals tended also to endorse higher levels of extrinsic motivation and academic efficacy. Yet, in both domains, mastery-avoidance goals were also significantly moderately and positively correlated with intrinsic motivation ($r = .40$, $r = .53$), suggesting that for students in both content areas, endorsement of mastery-avoidance goals was associated also with high levels of intrinsic motivation. This may suggest that in the current sample, endorsement of mastery-avoidance goals is simply associated with overall high motivation for school.

Mastery-approach goals were significantly and positively correlated in the science domain with performance-approach ($r = .43$) and performance-avoidance goals ($r = .30$). While the correlation with performance-approach goals is consistent with theory as these constructs share a valence, mastery-approach goals share neither a competence standard nor a valence with performance-avoidance goals, although some studies have found such a relationship. Across both domains mastery-approach goals were moderately and positively significantly related to extrinsic motivation ($r = .43$, $r = .39$), intrinsic motivation ($r = .54$, $r = .66$), and academic efficacy ($r = .63$, $r = .88$). It is also interesting to note the significant correlations between mastery-approach goals and both intrinsic and extrinsic motivation since mastery-approach goals are consistently linked to more adaptive patterns of behavior, and extrinsic motivation with less adaptive.

Across both domains, performance-approach goals and performance-avoidance goals were significantly and positively correlated ($r = .74$, $r = .68$), which is consistent with the shared competence standard of these two constructs. In science, performance-approach goals were significantly and positively related to extrinsic motivation ($r = .38$), intrinsic motivation ($r = .37$), and academic efficacy ($r = .42$). This is consistent with
prior research suggesting performance-approach goals have been linked to both adaptive and less adaptive outcomes. Similarly in science, performance-avoidance goals were significantly and positively correlated with extrinsic motivation ($r = .38$), intrinsic motivation ($r = .24$), and academic efficacy ($r = .31$). This pattern is less consistent with theory and prior research suggesting performance-avoidance goals to be associated with negative outcomes.

In music, extrinsic and intrinsic motivation were significantly and positively correlated ($r = .40$), an interesting finding considering the different natures of these two types of motivation. Across both domains, extrinsic motivation was significantly and positively correlated with academic efficacy ($r = .51$, $r = .51$), which is somewhat consistent with the mixed results seen with extrinsic motivation in different contexts, although the type of extrinsic motivation explored in this dissertation is linked with less adaptive outcomes. Similarly, intrinsic motivation was significantly and positively correlated with academic efficacy across science and music ($r = .43$, $r = .59$), a finding consistent with intrinsic motivation being linked to more adaptive outcomes.

Regarding non-significant correlations, in science, there was a non-significant correlation between intrinsic and extrinsic motivation ($r = .20$). Interestingly, there were many more non-significant correlations in music when looking at the relationship between the personal achievement goals and outcome variables. In music, there was a non-significant correlation between performance-approach goals and mastery-approach goals ($r = .26$), as well as between performance-avoidance goals and mastery-approach goals ($r = .37$), the latter non-significant correlation being more consistent with theory.
Additionally in music, there was a non-significant correlation between mastery-avoidance goals and performance-approach goals \((r = .39)\), consistent with theory as these constructs do not share a competence standard or valence. There are also non-significant correlations between extrinsic motivation and performance-approach goals \((r = .33)\), as well as between performance-approach goals and intrinsic motivation \((r = -.06)\). In this domain, performance-approach goals are also not significantly related to academic efficacy \((r = .29)\), consistent with mixed results in research on performance-approach goals. There are also non-significant correlations in this domain between performance-avoidance goals and extrinsic motivation \((r = .29)\), which is less consistent with research linking performance-avoidance goals to maladaptive outcomes. The non-significant correlations between performance-avoidance goals and intrinsic motivation \((r = .08)\), and academic efficacy \((r = .26)\), are more consistent with prior research. These results support the construct validity of mastery-avoidance goals as well as the relations of mastery-avoidance goals with adaptive outcomes in both subject domains.
Table 5. *Bivariate Correlations among personal achievement goals, extrinsic/intrinsic motivation, academic efficacy, and achievement in both science and instrumental music*

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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</thead>
<tbody>
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<td>1. MAP</td>
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Note: <sup>a</sup>=p<.01, <sup>b</sup>=p<.05. Coefficients to the left are for Science, to the right for Music. MAP= Mastery-approach; PAP=Performance-approach, PAV=Performance-avoidance, MAV= Mastery-avoidance, EM=Extrinsic motivation; IM= Intrinsic motivation; ACEFF= Academic efficacy; GPA= Achievement
Correlations between Personal Achievement Goals and Teachers’ Goal Structures in Science and Music

Table 6 presents bivariate correlations between personal achievement goals and teachers’ goal structures in science and music. Across both domains, significant and positive correlations were found between teachers’ mastery-approach goal structures and personal mastery-approach goals ($r = .30, r = .60$) and between teachers’ mastery-approach goal structures and personal mastery-avoidance goals ($r = .21, r = .51$). These are consistent with theory in that there is the shared competence standard between the goal structure and the personal goals. Significant positive correlations were also found between teachers’ performance-avoidance goal structures and personal mastery-approach goals ($r = .27, r = .53$). This is interesting considering there is not a shared competence standard, nor a shared valence between the constructs.

Significant positive correlations were also found between teachers’ performance-avoidance goal structures and personal mastery-avoidance goals, ($r = .31, r = .53$) which is consistent with constructs that share a valence, in this case a focus on the possibility of failure. There were significant positive correlations found between teachers’ performance-avoidance goal structures and teacher’s mastery-approach goal structures ($r = .35, r = .61$). Again, this is an interesting finding considering the constructs share neither a competence standard nor a valence. Significant and positive correlations were found between teachers’ mastery-avoidance goal structure and personal mastery-avoidance goals ($r = .47, r = .57$), and between teachers’ mastery-avoidance goal structure and teachers’ mastery-approach goal structure ($r = .64, r = .75$), again, consistent with constructs that share a competence standard and/or a valence.
Additionally, significant positive correlations were found between teachers’ mastery-avoidance goal structure and teachers’ performance-approach goal structure ($r = .54$, $r = .65$), a finding which again is interesting considering these constructs do not share a competence standard or valence.

In the domain of science, there was a significant negative correlation between teachers’ performance-approach goal structure and teachers’ mastery-approach goal structure ($r = -.35$), which is not unexpected considering these constructs share a valence but not a competence standard. There was a significant positive correlation found between teachers’ mastery-avoidance goal structure and personal performance-approach goals ($r = .23$) which is not expected from constructs that do not share a competence standard or valence. In the domain of music, there was a significant positive correlation between teachers’ performance-avoidance goal structure and personal performance-avoidance goals ($r = .44$) consistent with constructs that share both a competence standard and valence.

Across both domains, there were non-significant correlations between mastery-approach goals and teachers’ performance-approach goal structure ($r = .03$, $r = .08$), which is consistent with not sharing a competence standard even though the constructs share a valence. Also non-significant was the relationship between performance-approach goals and teachers’ mastery-approach goal structure ($r = .05$, $r = .08$), again consistent with not sharing competence standards even though the two share a valence. Performance-approach goals were not significantly related to teachers’ performance-avoidance goal structure ($r = .18$, $r = .26$). For performance-avoidance goals, these were not significantly correlated with teachers’ mastery-approach goal structure ($r = .12$, $r =$
Performance-avoidance goals were also not significantly correlated with teachers’ mastery-avoidance goal structure ($r = .19$, $r = .19$). Also across both domains, mastery-avoidance goals were not significantly related to teachers’ performance-approach goal structure ($r = .11$, $r = .08$). This would be consistent with theory about constructs that do not share a competence standard or valence. There were no significant correlations between teachers’ performance-approach and performance-avoidance goal structures ($r = .01$, $r = .03$). Also, in both domains, there was not a significant correlation between teachers’ mastery-avoidance and performance-avoidance goal structures ($r = -.42$, $r = .10$). These non-significant relationships are interesting considering the shared competence standard of the performance-approach and avoidance structures, as well as the shared valence of the mastery and performance-avoidance goal structures.

In only instrumental music, there was no significant correlation between mastery-approach and performance-approach goals ($r = .35$), between performance-approach goals and mastery-avoidance goals ($r = .39$), or between performance-approach goals and teachers’ mastery-avoidance goal structure ($r = .11$). Additionally in music, there was no significant correlations between the teachers’ mastery-approach and performance-approach goal structures ($r = -.16$).

Only in science, performance-avoidance goals were not significantly correlated with teachers’ performance-avoidance goal structure ($r = .14$). This non-significant relationship is of particular interest considering the similarity in constructs. These results provide overall empirical support for the relationships between the corresponding teachers’ goal structure and students’ personal goals.
Table 6. *Bivariate Correlations between personal achievement goals and teachers' goal structures*

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Note: <sup>a</sup>=<i>p</i>&lt;.01, <sup>b</sup>=<i>p</i>&lt;.05. Coefficients to the left are for Science, to the right for Music. MAP= Mastery-approach; PAP=Performance-approach, PAV=Performance-avoidance, MAV= Mastery-avoidance, TG= Teachers’ goal structure
Correlations between Teachers’ Goal Structure and Academic Efficacy, Extrinsic Motivation, Intrinsic Motivation, and Achievement in Science and Music

Table 7 presents results of bivariate correlations between teachers’ goal structure and academic efficacy, extrinsic motivation, intrinsic motivation, and achievement. Across both domains, significant positive correlations were found between academic efficacy and teachers’ mastery-approach goal structure \((r = .23, r = .58)\), consistent with mastery-approach being generally adaptive. Significant, positive correlations were found between academic efficacy and teachers’ mastery-avoidance goal structure \((r = .38, r = .62)\), which would not be consistent with many of the maladaptive patterns seen with mastery-avoidance. Additionally, across both domains, significant, positive correlations were found between intrinsic motivation and teachers’ mastery-approach goal structure \((r = .36, r = .53)\), consistent with theory, as well as between intrinsic motivation and teachers’ mastery-avoidance goal structure \((r = .36, r = .42)\), which is not consistent with theory suggesting a negative relationship. Significant and positive correlations were found between intrinsic motivation and performance-avoidance teachers’ goal structure \((r = .29, r = .57)\), which is less consistent with theory suggesting performance-avoidance is generally maladaptive. Significant, positive correlations were found between intrinsic motivation and academic efficacy \((r = .43, r = .58)\), and intrinsic motivation and extrinsic motivation \((r = .21, r = .52)\).

In the domain of science, significant positive correlations were found between teachers’ mastery-avoidance goal structure and extrinsic motivation \((r = .30)\), which was difficult to predict but consistent with the expectation that the nature of the extrinsic reward may play a part in mastery-avoidance. Significant positive correlations were
found between achievement and academic efficacy ($r = .37$), which is consistent with theoretical expectations, as well as between achievement and extrinsic motivation ($r = .27$) which was less expected considering extrinsic motivation is commonly linked with less adaptive outcomes. In the domain of music, significant positive correlations were found between teachers’ performance-avoidance goal structure and academic efficacy ($r = .51$), an interesting finding that may be specific to this type of domain in which “not looking bad” in front of other students may be a salient part of how well students feel they are doing in the course. Significant positive correlations were also found between teachers’ performance-avoidance goal structure and extrinsic motivation ($r = .43$), and extrinsic motivation and academic efficacy ($r = .59$). Again, these types of outcomes may be consistent in a domain in which teachers could emphasize the importance of how students look relative to other students and how this comparison relates to student success.

Across both domains, there were non-significant correlations between teachers’ mastery-approach and performance-approach goal structures ($r = -.35, r = -.16$). There was a non-significant correlation between teachers’ mastery-approach goal structure and extrinsic motivation ($r = -.01, r = .22$) which would be expected as mastery-approach goals are usually associated with adaptive outcomes. Teachers’ mastery-approach goal structure was also found to be non-significantly related to student achievement ($r = -.12, r = .30$) a finding that aligns with the mixed outcomes of student achievement. Teachers’ mastery-avoidance and performance-approach goal structures were not significantly correlated ($r = -.04, r = .10$). Teachers’ mastery-avoidance goal structure was not significantly related to student achievement ($r = .03, r = .31$), again, a finding in line with
mastery-avoidance thought to be linked to less adaptive outcomes. Teachers’
performance-approach goal structure was not significantly related to teachers’
performance-avoidance goal structure or any of the other outcome variables. Teachers’
performance-avoidance goal structure was not significantly correlated with student
achievement ($r = .03$, $r = .23$), consistent with theory suggesting performance-avoidance
goals are linked to less adaptive outcomes. Intrinsic motivation was not significantly
correlated with students’ achievement ($r = -.13$, $r = .20$).

In science, there was a non-significant correlation between teachers’ performance-
avoidance goal structure and academic efficacy ($r = .15$), in line with the expectation of
performance-avoidance not being associated with adaptive outcomes. Additionally, there
was a non-significant relationship between teachers’ performance-avoidance goal
structure and extrinsic motivation ($r = .13$).

In music, there was no significant correlation between teachers’ mastery-
avoidance goal structure and extrinsic motivation ($r = .32$). There was no significant
correlation between academic efficacy and student achievement ($r = .34$). Lastly, in
music, there was no significant correlation between extrinsic motivation and achievement
($r = -.02$).

The above correlations provide support for the expected relationships between a
teachers’ goal structure and their students’ educational outcomes. Similar to the findings
concerning students’ personal mastery avoidance goals, the findings suggest positive
relationships between teachers’ mastery-avoidance goal structure and adaptive student
outcomes.
Table 7. Bivariate correlations between teachers’ goal structure and academic efficacy, extrinsic motivation, intrinsic motivation, and achievement

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Note: <sup>a</sup>=p<.01, <sup>b</sup>=p<.05. Coefficients to the left are for Science, to the right for Music. MAP=Mastery-approach, MAV=mastery-avoidance, PAP=performance-approach, TG=teachers’ goal construct, ACEFF=Academic efficacy, EM=extrinsic motivation, IM=intrinsic motivation, GPA=achievement.
Section 4: Multi-Dimensional Scaling

I analyzed students’ responses on the achievement goal items with Multi-Dimensional Scaling (MDS) in order to investigate in more depth (1) the patterns of empirical distinction between mastery-avoidance goals and the other achievement goals; (2) whether there is an empirical distinction between the different competence standards in mastery-avoidance goals (task-based vs. intrapersonal, and avoid loss vs. avoid no gain); and (3) whether the distinction of mastery-avoidance from mastery-approach and performance-avoidance is different in the different subject domains of science and instrumental music.

Analysis A: MDS of Personal Achievement Goals Across All Participants

Figure 1 presents the results of an MDS analysis of all items from the personal Achievement goals scales across all participants. The Figure presents the 2-dimensional map of the personal achievement goal items reflecting the relative proximity (Euclidean distance) of any two items, relative to the proximity of all other items. The findings suggest that the participants made a general distinction between performance goals (located on the left-hand side of the map), and mastery goals (located on the opposite side of the map). There is a slight overlap of space between performance-approach and performance-avoidance items. Two performance-avoidance items (items 1-“It’s important to me that my teacher doesn’t think that I can do less well than others in science class” and 3-“It’s important to me that I don’t look stupid in science class”) fall outside of this overlap area, while items 2- “One of my goals in science is to keep others from thinking I’m not good in science” and 4-“One of my goals in science class is to
avoid looking like I have trouble doing the work” fall closer to the performance-approach items. The locations of mastery-avoidance and mastery-approach items overlap, suggesting that students did not make a distinction when responding to the mastery-avoidance items and mastery-approach items. However, certain mastery-avoidance items---one task-based, avoid no gain item (mavtang –“It’s important to me not to miss out learning important things in science”), one intrapersonal avoid-loss item (mavipal1-One of my goals in science class, is not to forget what I have learned”), and one intrapersonal avoid no gain item (mavipang 2- “One of my goals in science class is not learn less than I could do before”), fall around this overlap area, suggesting that the meaning of mastery-avoidance goals may be broader than, and may include, the meaning of mastery-approach goals. This may also be the case with performance-avoidance containing broader meaning than performance-approach goals among these students.

Figure 1. 2 Dimensional MDS of All Achievement Goals for All Participants
Note: N=105, Stress = .14
Figure 2 shows a 2-dimensional map of responses by all participants to the eight items assessing mastery-avoidance goals, with indicators for the items that assess the different competence standards of mastery-avoidance goals. Results here indicate that participants do make distinctions among the four competence standards. All task-based items are located along the bottom half of the map, while all intrapersonal items occupy the top half of the map. Interestingly, the intrapersonal items occupy the middle of the map, while task-based avoid no gain items occupy the left-hand side, and task-based avoid loss items occupy the lower, right-hand quadrant. Two intrapersonal items, one avoid loss, (mavipal 1-“One of my goals in science class, is not to forget what I have learned”), and one avoid no gain, (mavipang 2-“One of my goals in science class is not to learn less that I could do before”), are located very close together, indicating that students do not necessarily make a complete distinction between these two sub-standards of avoid loss and avoid no gain, at least within the intrapersonal standard.

Figure 2. 2 Dimensional MDS of MAV Competence Standards for all Participants
Note: N = 115, Stress = .09
Analysis B: MDS Within the Domains of Science and Music

Figure 3 shows a 2-dimensional map of all items assessing the personal achievement goals among the science student participants. Similar to the findings among all participants, students made a general distinction between performance and mastery goals, with all performance items occupying the left-hand side of the map, and all mastery-items occupying the right-hand side of the map. Also similar to the results for all participants, the performance item ‘pav 1- “It’s important to me that my teacher doesn’t think that I can do less well than others in science class”’ - falls further outside of the overlap area than the other performance-avoidance items. This indicates that these science students may make more of a distinction between this performance-avoidance item and the other performance items, and that performance-avoidance goals, as a construct, may be broader than, and contain, the construct of performance-approach goals among these science students. In looking at the mastery-avoidance items, the items that fall furthest away from the mastery-approach items are both intrapersonal avoid-loss items, one intrapersonal avoid no gain item (mavipang 2-One of my goals in science class is not to learn less than I could do before”), one task-based, avoid loss item (mavtal 1- When learning science, it’s important to me that what I learn will not turn out to be wrong”), and one task-based, avoid no gain item (mavtang 1-“It’s important to me not to miss out learning important things in science”). This could indicate that these students make a distinction between mastery-approach and certain components of the mastery-avoidance construct, or, again, that the mastery-avoidance goals construct is broad and contains within it the mastery-approach goals construct among these science students.
Figure 3. 2 Dimensional MDS of All Achievement Goals, All Science Participants
Note: N = 82, Stress = .15

Figure 4 shows a 2-dimensional map of all personal achievement goals items among a sample of science students who were matched with the music students in the sample. Similar to the map of the personal achievement goals items among all science participants, the matched students made a general distinction between performance and mastery goals, with all performance items occupying the left-hand side of the map, and all mastery-items occupying the right-hand side of the map. In looking at the performance items, two performance-avoidance items (pav 1-“It’s important to me that my teacher doesn’t think that I can do less well than others in science class” and pav 2-“One of my goals in science is to keep others from thinking I’m not good in science”) fall the furthest away from the performance-approach items. In looking at the overlap
between the mastery-approach and the mastery-avoidance items, the mastery-avoidance items that fall the furthest away from the mastery-approach items are the two task-based avoid no gain items, the two task-based, avoid loss items, and one intrapersonal avoid-no gain items. Again this suggests some distinction between mastery-approach and mastery-avoidance goals, but only for certain components of mastery-avoidance, and points to the broader meaning of the avoidance constructs that, at least in the case of performance goals, seems to contain the performance-approach construct.

Figure 4. 2 Dimensional MDS of All Goals, Matched Science Group
Note: N = 23, Stress = .15
Figure 5 presents a 2-dimensional map of all personal achievement goals items among participants in the music domain. Again, performance items occupy the left-hand side of the map, and mastery items occupy the right-hand side of the map, suggesting a general distinction made by these students between mastery and performance goals in music. For these students there is still overlap between the performance-avoidance and performance-approach items. In looking at the mastery items, there is overlap between the mastery-approach and mastery-avoidance items, but one task-based avoid no gain item (mavtang 2—“One of my goals in science class is not to miss out on learning all that I could learn”), and one intrapersonal avoid loss item (mavipang 2—“one of my goals in science class is not to learn less than I could do before”), fall the furthest away from the mastery-approach items, indicating that similar to science students these students may make some distinction between these mastery-avoidance items and the mastery-approach items. Similar to the findings with science students, in the music domain, the avoidance constructs seem to have a broader meaning and contain the approach constructs.
In order to investigate in more depth students’ patterns of responses to the mastery-avoidance relative to the mastery-approach goals items, I conducted an MDS analysis with these items only. Figure 6 presents a 2-dimensional map of only the items assessing mastery-approach and -avoidance goals for the matched sample of science participants. In examining the components of the mastery-avoidance construct for these students, the task-based, avoid loss items occupy one section in the top half of the map, while both intrapersonal, avoid no-gain items occupy a separate section in the bottom half of the map. These two sets of items do not overlap with any of the mastery-approach items. Both intrapersonal avoid-loss and both task-based avoid no gain items overlap with the mastery-approach items, indicating that again, these students may make a
distinction between mastery-approach and mastery-avoidance items for some components of the mastery-avoidance construct, but not all.

**Figure 6.** 2 Dimensional MDS of Mastery-Approach and Mastery-Avoidance Goals for Matched Science Participants

Note: $N = 25$, Stress = .17

Figure 7 presents a 2-dimensional map of the mastery-approach and mastery-avoidance goals items among the music students. Similar to the science students, the task-based avoid loss and the intrapersonal avoid no gain items are further away from the mastery-approach items. The task-based avoid no gain items occupy their own space on the map, and the intrapersonal avoid loss items also occupy their own space on the map. One mastery-avoidance intrapersonal avoid-loss item (mavipal 2-“It’s important to me that I do not forget what I have learned in music so far”) is very close to one mastery-approach item, (map 4- “It’s important to me that I improve my skills in music this year”), indicating perhaps less of a distinction between these two items, but the mastery-
approach items are close together and there is less overlap between the mastery-approach and avoidance items, indicating more of a distinction between mastery-approach and mastery avoidance items for these students in this domain.

![2 Dimensional MDS of MAP and MAV goals for Instrumental Music](image)

**Figure 7.** 2 Dimensional MDS of MAP and MAV goals for Instrumental Music  
*Note: N = 25, Stress = .09*

Figures 8 and 9 present 2-dimensional maps of the mastery-approach and mastery-avoidance goals items among the music students. Across both domains, there is a separation of the task-avoid-loss items, the intrapersonal avoid no gain items, and the other two standards.

With the instrumental music students, the task-based avoid no gain standards and the intrapersonal avoid loss standards seem to be distinct, but in science, there is some overlap suggesting less of a distinction of these standards in this domain.

In addition, the items in each standard seem closer in science than in music which may suggest a more precise and shared meaning of the two items within each standard in
science relative to music. Due to a low sample size in one of the domains and since a strong conclusion cannot be made about large differences between domains, the decision to combine participants from both domains for all other analyses was made.

**Figure 8.** 2 Dimensional MDS of MAV goals, Science

Note: $N = 27$, Stress = .11
Results of the MDS analyses indicate that in general, students make a distinction between performance and mastery goals. However, while they make a distinction between mastery-avoidance and performance-avoidance goals, they do not make a distinction between mastery-avoidance and mastery-approach goals. Additionally, this pattern is seen for students in both domains. Also across domains, there is support for students making a distinction between the different standards within mastery-avoidance, however, music students seem to make more of a distinction between mastery-approach and master-avoidance, as well as a slightly greater distinction between the standards within mastery-avoidance goals.

Figure 9. 2 Dimensional MDS of MAV goals, Music
Note: $N = 25$, Stress = .02
Section 5: Multiple Regression

RQ5: What is the relationship of mastery-avoidance goals and the classroom environment as assessed by teachers’ goal structure?

In order to examine relations of mastery-avoidance goals with the classroom environment, I conducted multiple regression with students’ personal mastery-avoidance goals as the outcome variable and the teachers’ goal structure as the predictors, in addition to a dummy covariate variable – science, indicating whether a student was in science or music. Additionally, regressions were conducted with the other achievement goals as outcome variables and the teachers’ goal constructs as the predictors.

Mastery-avoidance goals

The regression model of mastery-avoidance goals on all four classroom goals and science explained 30.7% of the variance in mastery-avoidance goals, $F(5, 113) = 10.02$, $p < .001$ (see Table 8). Teachers’ mastery-avoidance goal structure was significantly associated with students’ personal mastery-avoidance goals ($\beta = .503, p < .001$), indicating that a one standard deviation increase in teachers’ mastery-avoidance goal structure is associated with a .503 standard deviation increase in students’ personal mastery-avoidance goals. None of the other predictors were found to be significant predictors of mastery-avoidance goals. These results indicate that teachers perceived to be emphasizing both development of competence and avoidance of failure may influence students to adopt mastery-avoidance goals.
Table 8. *Summary of Results for Variables Predicting Mastery-avoidance goals*

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCIENCE</td>
<td>-0.045</td>
<td>.198</td>
<td>-0.20</td>
</tr>
<tr>
<td>TGPAP</td>
<td>0.063</td>
<td>.064</td>
<td>0.089</td>
</tr>
<tr>
<td>TGPAV</td>
<td>0.115</td>
<td>.093</td>
<td>0.117</td>
</tr>
<tr>
<td>TGMAP</td>
<td>-0.062</td>
<td>.098</td>
<td>-0.075</td>
</tr>
<tr>
<td>TGMAV</td>
<td>0.578*</td>
<td>.145</td>
<td>0.503</td>
</tr>
<tr>
<td>R²</td>
<td></td>
<td>0.307</td>
<td></td>
</tr>
</tbody>
</table>

*P < .001

*Mastery-approach Goals*

The model with mastery-approach goals regressed on the four classroom goals and science (see Table 9) explained 30.9% of the variance in mastery-approach goals ($F_{[5, 113]} = 10.13, p < .001$). Teachers’ mastery-avoidance goal structure was significantly associated with students’ personal mastery-approach goals ($\beta = .435, p < .001$), indicating that a one standard deviation increase in teachers’ mastery-avoidance goal structure is associated with a .435 standard deviation increase in students’ personal mastery-approach goals. The other variables in the model were not significant predictors of mastery-approach goals. These results indicate that teachers perceived to be emphasizing both a development of competence and an avoidance of failure in the classroom may influence students to adopt mastery-approach goals.
Table 9. *Summary of Results for Variables Predicting Mastery-approach goals*

<table>
<thead>
<tr>
<th>Variable</th>
<th>( B )</th>
<th>( SE , B )</th>
<th>( \beta )</th>
</tr>
</thead>
<tbody>
<tr>
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<td>.219</td>
<td>-.087</td>
</tr>
<tr>
<td>TGPAP</td>
<td>.053</td>
<td>.071</td>
<td>.068</td>
</tr>
<tr>
<td>TGPAV</td>
<td>.052</td>
<td>.103</td>
<td>.048</td>
</tr>
<tr>
<td>TGMAP</td>
<td>.063</td>
<td>.108</td>
<td>.068</td>
</tr>
<tr>
<td>TGMAV</td>
<td>.553*</td>
<td>.160</td>
<td>.435</td>
</tr>
<tr>
<td>( R^2 )</td>
<td></td>
<td>.309</td>
<td></td>
</tr>
</tbody>
</table>

*p < .001

*Performance-approach Goals*

The regression model of performance-approach goals on the four classroom goals and science (see Table 10) explained 15.5% of the variance in performance-approach goals (\( F[5, 111] = 4.06, p < .05 \)). Teachers' performance-approach goal structure was significantly associated with PAP (\( \beta = .279, p < .05 \)), indicating that a one standard deviation increase in teachers' performance-approach goal structure was associated with a .279 standard deviation increase in performance-approach goals. The other variables were not significant predictors of performance-approach goals. Results indicate that teachers being perceived to emphasize outperforming others in the classroom may influence students to adopt performance-approach goals.
Table 10. *Summary of Results for Variables Predicting Performance-approach goals*

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCIENCE</td>
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<td>.248</td>
<td>-.033</td>
</tr>
<tr>
<td>TGPAP</td>
<td>.223*</td>
<td>.081</td>
<td>.279</td>
</tr>
<tr>
<td>TGPAV</td>
<td>.100</td>
<td>.117</td>
<td>.092</td>
</tr>
<tr>
<td>TGMAP</td>
<td>-.005</td>
<td>.125</td>
<td>-.005</td>
</tr>
<tr>
<td>TGMAV</td>
<td>.235</td>
<td>.184</td>
<td>.178</td>
</tr>
<tr>
<td>R²</td>
<td></td>
<td></td>
<td>.155</td>
</tr>
</tbody>
</table>

*Performance-avoidance Goals*

A regression model of performance-avoidance goals on the four classroom goals was non-significant. None of the classroom goals or science was a significant predictor of performance-avoidance goals. These results indicate that regardless of what goals the teacher was perceived to be emphasizing in the classroom, students were not influenced to adopt performance-avoidance goals.

Section 6: Cluster Analysis

**RQ6: What is the pattern of relations of mastery-avoidance goals with the adaptive and maladaptive educational outcomes of intrinsic and extrinsic motivation, academic efficacy, and academic achievement?**

A cluster analysis was done in order to examine students’ motivational profiles. The purpose of the first cluster analysis was to examine the different patterns of association between the mastery-avoidance goals and the other achievement goals. Therefore, the first cluster analysis included students’ personal achievement goals of
mastery-approach, mastery-avoidance, performance-approach, and performance-avoidance. A second cluster analysis was used in order to examine the patterns between mastery-avoidance goals, the other goals, and the other outcome variables. Therefore, the second cluster analysis used the personal achievement goals in addition to the outcome variables of GPA, academic efficacy, intrinsic motivation and extrinsic motivation.

Following the criteria for selecting factor solutions, the findings of the cluster analysis with the four achievement goals suggested a five cluster solution. A K-means analysis was used to refine the five cluster solution produced by the Ward’s method. Participants in Cluster 1 \((N=23)\) labeled “All Achievement Goals High” endorsed all four achievement goals at high levels. A level was determined to be high if the mean of the cluster for a particular achievement goal was above 4 on the 1-5 scale, indicating that the scores fell at the top fifth, and that the average responses across items in the scale reflected endorsement of the achievement goal items as higher than ‘somewhat true.’ . Participants in Cluster 2 \((N=6)\) labeled “High Mastery” endorsed both mastery-approach and mastery-avoidance goals at a high level, and both performance-approach and performance-avoidance goals at low levels. A level was determined to be low if the mean of the cluster on a particular achievement goal was below 2 on the 1-5 scale, indicating that the scores fell at the bottom fifth, and that the average responses across items in the scale reflected endorsement of the achievement goal items as lower than ‘somewhat not true.’ Participants in Cluster 3 \((N=36)\) labeled “All Achievement Goals Medium” endorsed all achievement goals at a medium-high level. A level was considered medium-high if the mean of the cluster for a particular achievement goal fell between 3.4 and 3.9 on the 1-5 scale indicating that scores fell above the mid-point but below the top fifth,
and that the average responses across items in the scale reflected endorsement of the achievement goal between ‘so so’ and ‘somewhat true’ Participants in Cluster 4 (N=44) labeled “Mastery Medium” endorsed both mastery-approach and mastery-avoidance at a medium level, where the mean of the cluster for a particular achievement goal was around 3.1 on the 1-5 scale, indicating that scores fell at the mid-point, and that the average response across items in the scale reflected endorsement of the achievement goal of ‘so so.’ and endorsed performance-approach and performance-avoidance at lower levels. Participants in Cluster 5 (n=13) labeled “All Achievement Goals Low” endorsed all achievement goals at a low level.

The second cluster analysis was run with the personal achievement goals in addition to the outcome variables of GPA, academic efficacy, intrinsic and extrinsic motivation. Based on a very clear dendrogram, the agglomeration coefficient, as well as theoretical relevance, the findings pointed to a two cluster solution. Again, a K-means analysis was used to refine the two cluster solution produced by the Ward’s method. A MANOVA was then run in order to explore the differences between the clusters. The MANOVA indicated that there were significant differences between the two clusters (F(8, 103) = 36.90, p = .000; Hotelling’s Trace = 2.866). Specifically, there was a significant difference between the two clusters in terms of GPA (F(1, 110) = 256.56; p = .000); academic efficacy (F(1, 110) = 29.41; p = .000); personal mastery-approach goals (F(1, 110) = 7.08; p = .009) and personal mastery-avoidance goals (F(1, 110) = 4.48; p = .036). Students in cluster 1 (n=71) labeled “More Adaptive” had significantly higher GPA, higher academic efficacy, higher mastery-approach goals, and higher mastery-avoidance goals than students in cluster 2 (n=41) labeled “Less Adaptive.” Marginally
significant results were seen with extrinsic and intrinsic motivation with students in cluster 1 generally being higher in extrinsic and intrinsic motivation than those students in cluster 2. The two clusters did not differ in levels of the performance goals variables. Results of the cluster analysis indicate that students do not seem to differentiate much in terms of their goals and educational outcomes, but that both mastery-avoidance and mastery-approach goals are related to more adaptive outcomes for this particular sample of students.

Results: Study 2

Study 2 attempted to investigate middle school students’ phenomenological meaning of mastery-avoidance goals through analysis of qualitative data of students’ descriptions and examples of the different achievement goals. The following analyses were run in order to explore students’ own interpretation of the items, in order to give a sense of the meaning that students make of the different achievement goals.

Chi-square Tests

In order to explore whether interpretation of the items differed among students who endorsed the item at different levels, I ran a series of Chi-square tests that cross-tabulated students’ endorsement of the item on the 1-5 Likert-response scale with the distribution of codes on each of the categories of Goal, Motive, and Valence. None of the tests were significant, indicating that students’ interpretation of the achievement goal items as determined by the qualitative coding did not differ significantly as a function of their level of endorsement of the item.

There was no significant relationship between students’ endorsement of the mastery-approach goals item and the type of goal $X^2 (4, N = 70) = 2.63, p = .62$, the type
of motive $X^2 (25, N = 79) = 12.12, p = .06$, or the valence $X^2 (2, N = 79) = 1.44, p = .49$ identified in their written examples. There was no significant relationship between students’ endorsement of the mastery-avoidance goals item and the type of goal $X^2 (3, N = 71) = 4.41, p = .22$, the type of motive, $X^2 (6, N = 78) = 6.76, p = .34$, or the valence $X^2 (6, N = 79) = 5.88, p = .44$ identified in their written examples. There was no significant relationship between students’ endorsement of the mastery-avoidance goals and the type of goal, $X^2 (2, N = 58) = 3.98, p = .14$, the type of motive, $X^2 (4, N = 44) = 4.58, p = .33$, or the valence $X^2 (6, N = 74) = 11.61, p = .07$ identified in their written examples. There was no significant relationship between students’ endorsement of the performance-avoidance goals item and the type of goal, $X^2 (4, N = 69) = 5.81, p = .21$, the type of motive, $X^2 (4, N = 69) = 2.80, p = .59$, or the valence $X^2 (12, N = 77) = 15.57, p = .21$ identified in their written examples. There was no significant relationship between students’ endorsement of the performance-approach goals item and the type of motive, $X^2 (4, N = 62) = 6.65, p = .23$, or the type of valence $X^2 (4, N = 73) = 3.33, p = .50$ identified in their written examples. A chi-square test was not calculated with performance-approach goals and level of goal endorsement due to a previously calculated low inter-rater reliability.

**Students’ Interpretation of Items**

Table 11 presents results of analyses designed to examine students’ interpretation of the items by looking at matches of the item’s interpretation by the students with that intended by the researchers on the aspects of goal (e.g., mastery, performance, extrinsic), motive (e.g., mastery, performance, extrinsic) and valence (i.e., approach, avoidance). This was examined for each of the five items included in the second part of the survey,
which asked students to respond to each item and then provide an example from their experience.

The item with the highest percentage of full match between intended meaning and students’ interpretation on goal, motive, and valence was assessing mastery-approach goals (15.19%). The items with the lowest percentages of full match were assessing mastery-avoidance, task-based, avoid no gain goals and performance-approach goals, (both with 1.27%). The items for which there was the highest percentage of full mismatch on the three aspects were assessing performance-approach and performance-avoidance goals (PAV-72.15%; PAP-74.68%).

Table 11. Percentages of students’ interpretation that matched the Intended Meaning of Items (N=79)

<table>
<thead>
<tr>
<th>Item</th>
<th>Match across all</th>
<th>Match on 2</th>
<th>Match on 1</th>
<th>No match</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Percentage (N)</td>
<td>Percentage (N)</td>
<td>Percentage (N)</td>
<td>Percentage (N)</td>
</tr>
<tr>
<td>Mastery-approach</td>
<td>15.19% (12)</td>
<td>24.05% (19)</td>
<td>31.65% (25)</td>
<td>29.11% (23)</td>
</tr>
<tr>
<td>Mastery-avoidance, intrapersonal</td>
<td>2.53% (2)</td>
<td>29.11% (23)</td>
<td>29.11% (23)</td>
<td>39.24% (31)</td>
</tr>
<tr>
<td>Mastery-avoidance, task-based</td>
<td>1.27% (1)</td>
<td>21.52% (17)</td>
<td>31.65% (25)</td>
<td>45.57% (36)</td>
</tr>
<tr>
<td>Performance-avoidance</td>
<td>8.86% (7)</td>
<td>12.66% (10)</td>
<td>6.33% (5)</td>
<td>72.15% (57)</td>
</tr>
<tr>
<td>Performance-approach</td>
<td>1.27% (1)</td>
<td>12.66% (10)</td>
<td>11.39% (9)</td>
<td>74.68% (59)</td>
</tr>
</tbody>
</table>

Percentages for each student’s match by their Likert-choice endorsement were calculated for each item, (see Tables 12-16). Matches of the item’s interpretation by the students with that intended by the researchers on the aspects of goal (e.g., mastery,
performance, extrinsic), motive (e.g., mastery, performance, extrinsic) and valence (i.e., approach, avoidance) are presented in Tables 17-21.

Results indicate that students who endorsed the mastery-approach goals item with a response of ‘4’-‘Usually like that’ or ‘5’-‘Always like that’, had the highest percentage of matching two aspects of those intended by the researchers. The two aspects most commonly matched were goal (mastery) and valence (approach). No participants had a match across all three aspects. Participants who did not endorse the mastery-approach goals item, indicated by a response of a ‘1’-‘Never like that’ or a ‘2’-‘Not usually like that’, had much lower percentages of matches. However, we may not necessarily expect matches from students who do not endorse the goal.

Results for the mastery-avoidance intrapersonal item indicate that for those students who report themselves as endorsing this mastery-avoidance goal as evidenced by a response of a ‘4’-‘Usually like that’ or ‘5’-‘Always like that’, had the highest percentage of matching one aspect of those intended by the researchers. The aspect most commonly matched was the goal (mastery). A similar pattern was found for those responding to the mastery-avoidance task-based item with a ‘4’-‘Usually like that’ or a ‘5’-‘Always like that.’ However, for the task-based mastery-avoidance item, the most commonly matched aspect was the valence (avoidance).

For the performance-avoidance item, for participants who endorsed performance-avoidance with a response of ‘4’-‘Usually like that’ or ‘5’-‘Always like that’, high percentages did not match any aspect of those intended by the researchers. For the performance-approach item, for participants who endorsed performance-approach with a
response of ‘4’- “Usually like that” or ‘5’- “Always like that”, the highest percentage did not match on any aspect intended by the researchers.

Table 12. *Percentage of Student Matches by Likert-choice, Mastery-approach (N=78)*

<table>
<thead>
<tr>
<th>Likert-choice</th>
<th>Match across all</th>
<th>Match on 2 (add categories)</th>
<th>Match on 1</th>
<th>No match</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Percentage (n)</td>
<td>Percentage (n)</td>
<td>Percentage (n)</td>
<td>Percentage (n)</td>
</tr>
<tr>
<td>1</td>
<td>0.00%(0)</td>
<td>0.00%(0)</td>
<td>1.28%(1)</td>
<td>1.28%(1)</td>
</tr>
<tr>
<td>2</td>
<td>2.56%(2)</td>
<td>1.28%(1)</td>
<td>1.28%(1)</td>
<td>2.56%(2)</td>
</tr>
<tr>
<td>3</td>
<td>5.13%(4)</td>
<td>3.85%(3)</td>
<td>11.54%(9)</td>
<td>10.26%(8)</td>
</tr>
<tr>
<td>4</td>
<td>7.69%(6)</td>
<td>11.54%(9)</td>
<td>8.97%(7)</td>
<td>8.97%(7)</td>
</tr>
<tr>
<td>5</td>
<td>0.00%(0)</td>
<td>7.69%(6)</td>
<td>8.97%(7)</td>
<td>5.13%(4)</td>
</tr>
</tbody>
</table>

Table 13. *Percentage of Student Matches by Likert-choice, Mastery-avoidance, Intrapersonal (N=75)*

<table>
<thead>
<tr>
<th>Likert-choice</th>
<th>Match across all</th>
<th>Match on 2</th>
<th>Match on 1</th>
<th>No match</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Percentage (n)</td>
<td>Percentage (n)</td>
<td>Percentage (n)</td>
<td>Percentage (n)</td>
</tr>
<tr>
<td>1</td>
<td>0.00%(0)</td>
<td>0.00%(0)</td>
<td>2.67%(2)</td>
<td>1.33%(1)</td>
</tr>
<tr>
<td>2</td>
<td>0.00%(0)</td>
<td>2.67%(2)</td>
<td>5.33%(4)</td>
<td>6.67%(5)</td>
</tr>
<tr>
<td>3</td>
<td>2.67%(2)</td>
<td>8.00%(6)</td>
<td>1.33%(1)</td>
<td>8.00%(6)</td>
</tr>
<tr>
<td>4</td>
<td>0.00%(0)</td>
<td>9.33%(7)</td>
<td>13.33%(10)</td>
<td>8.00%(6)</td>
</tr>
<tr>
<td>5</td>
<td>0.00%(0)</td>
<td>9.33%(7)</td>
<td>8.00%(6)</td>
<td>4.00%(3)</td>
</tr>
</tbody>
</table>

Table 14. *Percentage of Student Matches by Likert-choice, Mastery-avoidance, Task-based (N=74)*

<table>
<thead>
<tr>
<th>Likert-choice</th>
<th>Match across all</th>
<th>Match on 2</th>
<th>Match on 1</th>
<th>No match</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Percentage (n)</td>
<td>Percentage (n)</td>
<td>Percentage (n)</td>
<td>Percentage (n)</td>
</tr>
<tr>
<td>1</td>
<td>0.00%(0)</td>
<td>0.00%(0)</td>
<td>0.00%(0)</td>
<td>2.70%(2)</td>
</tr>
<tr>
<td>2</td>
<td>13.51%(1)</td>
<td>0.00%(0)</td>
<td>4.05%(3)</td>
<td>2.70%(2)</td>
</tr>
<tr>
<td>3</td>
<td>0.00%(0)</td>
<td>6.76%(5)</td>
<td>9.46%(7)</td>
<td>20.27%(15)</td>
</tr>
<tr>
<td>4</td>
<td>0.00%(0)</td>
<td>8.11%(6)</td>
<td>12.16%(9)</td>
<td>14.84%(11)</td>
</tr>
<tr>
<td>5</td>
<td>0.00%(0)</td>
<td>8.11%(6)</td>
<td>8.11%(6)</td>
<td>6.76%(5)</td>
</tr>
</tbody>
</table>
Table 15. *Percentage of Student Matches by Likert-choice, Performance (N=72)*

<table>
<thead>
<tr>
<th>Likert-choice</th>
<th>Match across all</th>
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<th>Match on 1</th>
<th>No match</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Percentage (n)</td>
<td>Percentage (n)</td>
<td>Percentage (n)</td>
<td>Percentage (n)</td>
</tr>
<tr>
<td>1</td>
<td>2.78%(2)</td>
<td>0.00%(0)</td>
<td>1.39%(1)</td>
<td>25.00%(18)</td>
</tr>
<tr>
<td>2</td>
<td>1.39%(1)</td>
<td>2.78%(2)</td>
<td>1.39%(1)</td>
<td>18.06%(13)</td>
</tr>
<tr>
<td>3</td>
<td>1.39%(1)</td>
<td>5.56%(4)</td>
<td>1.39%(1)</td>
<td>19.44%(14)</td>
</tr>
<tr>
<td>4</td>
<td>1.39%(1)</td>
<td>1.39%(1)</td>
<td>0.00%(0)</td>
<td>4.17%(3)</td>
</tr>
<tr>
<td>5</td>
<td>2.78%(2)</td>
<td>4.17%(3)</td>
<td>2.78%(2)</td>
<td>9.72%(3)</td>
</tr>
</tbody>
</table>

Table 16. *Percentage of Student Matches by Likert-choice, Performance-approach (N=78)*

<table>
<thead>
<tr>
<th>Likert-choice</th>
<th>Match across all</th>
<th>Match on 2</th>
<th>Match on 1</th>
<th>No match</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Percentage (n)</td>
<td>Percentage (n)</td>
<td>Percentage (n)</td>
<td>Percentage (n)</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>1.28%(1)</td>
<td>2.56%(2)</td>
<td>15.38%(12)</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>0</td>
<td>3.85%(3)</td>
<td>23.08%(18)</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>5.13%(4)</td>
<td>2.56%(2)</td>
<td>15.38%(12)</td>
</tr>
<tr>
<td>4</td>
<td>1.28%(1)</td>
<td>3.85%(3)</td>
<td>1.28%(1)</td>
<td>8.97%(7)</td>
</tr>
<tr>
<td>5</td>
<td>0</td>
<td>2.56%(2)</td>
<td>1.28%(1)</td>
<td>10.26%(8)</td>
</tr>
</tbody>
</table>

Table 17. *Breakdown of matches by Likert-item, Mastery-approach*

<table>
<thead>
<tr>
<th>Likert Item</th>
<th>Match 2- which aspect</th>
<th>Match 1- which aspect</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>n=0</td>
<td>n=0</td>
</tr>
<tr>
<td>2</td>
<td>n=1, goal and val</td>
<td>n=1, val</td>
</tr>
<tr>
<td>3</td>
<td>n=3, goal and val</td>
<td>n=9, 6 val, 1 goal, 1 mot</td>
</tr>
<tr>
<td>4</td>
<td>n=9, 7 on goal and val, 2 on mot and val</td>
<td>n=7, all val</td>
</tr>
<tr>
<td>5</td>
<td>n=6, 5 on goal and val, 1 on mot and val</td>
<td>n=7, 6 val, 1 goal</td>
</tr>
</tbody>
</table>

*Note: mot=motive, val=valence*

Table 18. *Breakdown of matches by Likert-item, Master-avoidance, intrapersonal*

<table>
<thead>
<tr>
<th>Likert Item</th>
<th>Match 2- which aspect</th>
<th>Match 1- which aspect</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>n=0</td>
<td>n=2, 1 goal, 1 val</td>
</tr>
<tr>
<td>2</td>
<td>n=2, 1 goal and val, 1 goal and mot</td>
<td>n=4, on val, 1 goal</td>
</tr>
<tr>
<td>3</td>
<td>n=6, 4 on val and goal, 2 on goal and mot</td>
<td>n=1, 1 on goal</td>
</tr>
<tr>
<td>4</td>
<td>n=7, 3 on val and goal, 4 on goal and mot</td>
<td>n=10, 7 on goal, 2 mot, 1 val</td>
</tr>
<tr>
<td>5</td>
<td>n=7, 4 on goal and mot, 2 on goal and val, 2 on mot and val</td>
<td>n=6, 3 on goal, 3 on val</td>
</tr>
</tbody>
</table>

*Note: mot=motive, val=valence*
Table 19. Breakdown of matches by Likert-item, Mastery-avoidance, Task-based

<table>
<thead>
<tr>
<th>Likert Item</th>
<th>Match 2- where</th>
<th>Match 1- where</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>n=0</td>
<td>n=0</td>
</tr>
<tr>
<td>2</td>
<td>n=0</td>
<td>n=3, on val</td>
</tr>
<tr>
<td>3</td>
<td>n=5, 3 on goal and mot, 1 on goal and val, 1 on mot and val</td>
<td>n=7, 6 on val, one on goal</td>
</tr>
<tr>
<td>4</td>
<td>n=6, 3 on goal and mot, 3 on goal and val</td>
<td>n=9, 6 on val, 3 on goal</td>
</tr>
<tr>
<td>5</td>
<td>n=6, 4 on goal and mot, 1 on mot and val, 1 on goal and val</td>
<td>n=6, 5 on val, 1 on goal</td>
</tr>
</tbody>
</table>

Note: mot=motive, val=valence

Table 20. Breakdown of matches by Likert-item, Performance-avoidance

<table>
<thead>
<tr>
<th>Likert Item</th>
<th>Match 2- where</th>
<th>Match 1- where</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>n=0</td>
<td>n=1, on mot</td>
</tr>
<tr>
<td>2</td>
<td>n=2, both on goal and motive</td>
<td>n=1, match on val</td>
</tr>
<tr>
<td>3</td>
<td>n=4, 2 on goal and val, 1 on mot and val, 1 on goal and motive</td>
<td>n=1, on motive</td>
</tr>
<tr>
<td>4</td>
<td>n=1 on motive and val</td>
<td>n=2, 1 on val, 1 on motive</td>
</tr>
<tr>
<td>5</td>
<td>n=3, 2 on goal and motive, 1 on goal and val</td>
<td>n=2, 1 on val, 1 on motive</td>
</tr>
</tbody>
</table>

Note: mot=motive, val=valence

Table 21. Breakdown of matches by Likert-item, Performance-approach

<table>
<thead>
<tr>
<th>Likert Item</th>
<th>Match 2- where</th>
<th>Match 1- where</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>n=1, goal and motive</td>
<td>n=2, on val</td>
</tr>
<tr>
<td>2</td>
<td>n=3, on val</td>
<td>n=3, on val</td>
</tr>
<tr>
<td>3</td>
<td>n=4, all on goal and motive</td>
<td>n=2, 1 on val, 1 on motive</td>
</tr>
<tr>
<td>4</td>
<td>n=3, 2 on goal and motive, 1 on goal and valence</td>
<td>n=1, on val</td>
</tr>
<tr>
<td>5</td>
<td>n=2, 1 on mot and val, 1 on goal and mot</td>
<td>n=1, on motive</td>
</tr>
</tbody>
</table>

Note: mot=motive, val=valence

Tables 22-26 present results of analyses designed to examine students’ interpretation of the items by looking at mismatches of the item’s interpretation by the students with that intended by the researchers on the aspects of goal (e.g., mastery, performance, extrinsic), motive (e.g., mastery, performance, extrinsic) and valence (i.e.,
approach, avoidance). This was examined for each of the five items included in the second part of the survey, which asked students to respond to each item and then provide an example from their experience. Results indicate that both mastery-avoidance items have the largest number of participant mismatches, indicating that in general, participants are not interpreting the mastery-avoidance items as intended by the researcher.

Table 22. Counts of Students' Interpretation that Mismatched the Mastery-approach item

<table>
<thead>
<tr>
<th>Mismatch across all</th>
<th>Mismatch on 2</th>
<th>Mismatch on 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>0</td>
<td>4</td>
<td>24</td>
</tr>
</tbody>
</table>

Table 23. Counts of Students' Interpretation that Mismatched the Mastery-avoidance, intrapersonal item

<table>
<thead>
<tr>
<th>Mismatch across all</th>
<th>Mismatch on 2</th>
<th>Mismatch on 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage N</td>
<td>Percentage N</td>
<td>Percentage N</td>
</tr>
<tr>
<td>0</td>
<td>7</td>
<td>37</td>
</tr>
</tbody>
</table>

Table 24. Counts of Students' Interpretation that Mismatched the Mastery-avoidance, task-based item

<table>
<thead>
<tr>
<th>Mismatch across all</th>
<th>Mismatch on 2</th>
<th>Mismatch on 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>2</td>
<td>8</td>
<td>23</td>
</tr>
</tbody>
</table>

Table 25. Counts of Students' Interpretation that Mismatched the Performance-avoidance item

<table>
<thead>
<tr>
<th>Mismatch across all</th>
<th>Mismatch on 2</th>
<th>Mismatch on 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>13</td>
</tr>
</tbody>
</table>
In order to determine which items were more likely to be interpreted correctly, percentages for each student mismatch by their Likert-choice endorsement was calculated for each item, the results of which are presented in Tables 27-31. Results from further analyses to address which aspect (the goal, the motive, and/or valence), students mismatched on are found in Tables 32-36.

For the mastery-approach item, results indicate that students who endorsed the mastery-approach goals item with a response of ‘4’-“Usually like that” or ‘5’-“Always like that”, had the highest number of participants mismatching on 1 aspect, which was most commonly the motive. Participants who did not endorse the mastery-approach goals item, indicated by a response of a ‘1’-“Never like that” or a ‘2’-“Not usually like that”, had fewer mismatches.

Results for the mastery-avoidance intrapersonal item indicate that for those students who report themselves as endorsing this mastery-avoidance goal as evidenced by a response of a ‘4’-“Usually like that” or ‘5’-“Always like that”, had the highest number of participants mismatching one aspect of those intended by the researchers. The aspect most commonly mismatched was the valence (approach). A similar pattern was found for those responding to the mastery-avoidance task-based item with a ‘4’-“Usually like that” or a ‘5’-“Always like that.”

Table 26. Counts of Students’ Interpretation that Mismatched the Performance-approach item

<table>
<thead>
<tr>
<th>Mismatch across all</th>
<th>Mismatch on 2</th>
<th>Mismatch on 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>n</td>
<td>N</td>
</tr>
<tr>
<td>1</td>
<td>3</td>
<td>11</td>
</tr>
</tbody>
</table>

In order to determine which items were more likely to be interpreted correctly, percentages for each student mismatch by their Likert-choice endorsement was calculated for each item, the results of which are presented in Tables 27-31. Results from further analyses to address which aspect (the goal, the motive, and/or valence), students mismatched on are found in Tables 32-36.

For the mastery-approach item, results indicate that students who endorsed the mastery-approach goals item with a response of ‘4’-“Usually like that” or ‘5’-“Always like that”, had the highest number of participants mismatching on 1 aspect, which was most commonly the motive. Participants who did not endorse the mastery-approach goals item, indicated by a response of a ‘1’-“Never like that” or a ‘2’-“Not usually like that”, had fewer mismatches.

Results for the mastery-avoidance intrapersonal item indicate that for those students who report themselves as endorsing this mastery-avoidance goal as evidenced by a response of a ‘4’-“Usually like that” or ‘5’-“Always like that”, had the highest number of participants mismatching one aspect of those intended by the researchers. The aspect most commonly mismatched was the valence (approach). A similar pattern was found for those responding to the mastery-avoidance task-based item with a ‘4’-“Usually like that” or a ‘5’-“Always like that.”
For the performance-avoidance item, for participants who endorsed performance-avoidance with a response of ‘4’-“Usually like that” or ‘5’-“Always like that”, the highest number of participants mismatched on one aspect, most commonly the valence (approach). For the performance-approach item, for participants who endorsed performance-approach with a response of ‘4’- “Usually like that” or ‘5’-“Always like that”, similar numbers of participants were seen mismatching on two aspects and mismatching on one aspect.

Table 27. Counts of Student Mismatches by Likert-choice, Mastery-approach

<table>
<thead>
<tr>
<th>Likert-choice</th>
<th>Mismatch across all</th>
<th>Mismatch on 2</th>
<th>Mismatch on 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(n)</td>
<td>(n)</td>
<td>(n)</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>5</td>
<td>0</td>
<td>0</td>
<td>9</td>
</tr>
</tbody>
</table>

Table 28. Counts of Student Mismatches by Likert-choice, Mastery-avoidance, Intrapersonal

<table>
<thead>
<tr>
<th>Likert-choice</th>
<th>Mismatch across all</th>
<th>Mismatch on 2</th>
<th>Mismatch on 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(n)</td>
<td>(n)</td>
<td>(n)</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>2</td>
<td>6</td>
</tr>
</tbody>
</table>

Table 29. Counts of Student Mismatches by Likert-choice, Mastery-avoidance, Task-based

<table>
<thead>
<tr>
<th>Likert-choice</th>
<th>Mismatch across all</th>
<th>Mismatch on 2</th>
<th>Mismatch on 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(n)</td>
<td>(n)</td>
<td>(n)</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>5</td>
<td>0</td>
<td>1</td>
<td>4</td>
</tr>
</tbody>
</table>
Table 30. Counts of Student Mismatches by Likert-choice, Performance-avoidance

<table>
<thead>
<tr>
<th>Likert-choice</th>
<th>Mismatch across all (n)</th>
<th>Mismatch on 2 (n)</th>
<th>Mismatch on 1 (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

Table 31. Counts of Student Mismatches by Likert-choice, Performance-approach

<table>
<thead>
<tr>
<th>Likert-choice</th>
<th>Mismatch across all (n)</th>
<th>Mismatch on 2 (n)</th>
<th>Mismatch on 1 (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 32. Breakdown of Mismatches by Aspect, Mastery-approach

<table>
<thead>
<tr>
<th>Likert-choice</th>
<th>Mismatch on 2-which aspect Aspects (n)</th>
<th>Mismatch on 1-which aspect Aspects (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>Motive (1)</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>Motive (3)</td>
</tr>
<tr>
<td>3</td>
<td>Motive and Goal (1)</td>
<td>Motive (9)</td>
</tr>
<tr>
<td></td>
<td>Valence and Motive (2)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>Valence (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Motive (6)</td>
</tr>
<tr>
<td>5</td>
<td>Valence and Motive (1)</td>
<td>Motive (4)</td>
</tr>
</tbody>
</table>

Table 33. Breakdown of mismatches by Aspect, Mastery-avoidance, intrapersonal

<table>
<thead>
<tr>
<th>Likert-choice</th>
<th>Mismatch on 2 Percentage (n)</th>
<th>Mismatch on 1 Percentage (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Motive and Goal (1)</td>
<td>Valence (1)</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>Valence (3)</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>Motive (5) Goal (1)</td>
</tr>
<tr>
<td>4</td>
<td>Valence and Motive (6)</td>
<td>Valence (9)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Motive (3)</td>
</tr>
<tr>
<td>5</td>
<td>0</td>
<td>Valence (5)</td>
</tr>
<tr>
<td>Likert-choice</td>
<td>Mismatch on 2</td>
<td>Mismatch on 1</td>
</tr>
<tr>
<td>---------------</td>
<td>---------------</td>
<td>---------------</td>
</tr>
<tr>
<td></td>
<td>Percentage (n)</td>
<td>Percentage (n)</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>Motive (1)</td>
</tr>
<tr>
<td>2</td>
<td>Motive and Goal (2) Motive and Valence (1)</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>Valence (5) Motive (2)</td>
</tr>
<tr>
<td>4</td>
<td>Motive and Goal (1) Motive and Valence (2)</td>
<td>Valence (5) Motive (4)</td>
</tr>
<tr>
<td>5</td>
<td>Motive and Valence (2)</td>
<td>Valence (6)</td>
</tr>
</tbody>
</table>

Table 35. Breakdown of mismatches by Aspect, Performance-avoidance

<table>
<thead>
<tr>
<th>Likert-choice</th>
<th>Mismatch on 2</th>
<th>Mismatch on 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aspect (n)</td>
<td>Aspect (n)</td>
</tr>
<tr>
<td>1</td>
<td>Motive (2)</td>
<td>Motive (1)</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>Valence (2) Motive (2)</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>Valence (1) Motive (1) Goal (1)</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>Valence (1)</td>
</tr>
<tr>
<td>5</td>
<td>0</td>
<td>Valence (2) Motive (1)</td>
</tr>
</tbody>
</table>

Table 36. Breakdown of mismatches by Aspect, Performance-approach

<table>
<thead>
<tr>
<th>Likert-choice</th>
<th>Mismatch on 2</th>
<th>Mismatch on 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Percentage (n)</td>
<td>Percentage (n)</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>Goal (2)</td>
</tr>
<tr>
<td>2</td>
<td>Motive (1)</td>
<td>Motive (6)</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>Valence and Goal (1) Valence and Motive (1)</td>
<td>Valence (1) Motive (1)</td>
</tr>
<tr>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Table 37 presents counts of participants who were coded as a ‘0’ for each of the three aspects, indicating participants who did not indicate a goal, motive, or valence. Resultsl indicate a greater number of participants providing incomplete data for the performance items, compared to the mastery items.

Table 37. Counts of Participants (N) who were coded as a '0' across the three aspects for each item

<table>
<thead>
<tr>
<th></th>
<th>Goal</th>
<th>Motive</th>
<th>Valence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mastery-Approach Item</td>
<td>48</td>
<td>36</td>
<td>22</td>
</tr>
<tr>
<td>Mastery-Avoidance, Intrapersonal</td>
<td>38</td>
<td>38</td>
<td>32</td>
</tr>
<tr>
<td>Mastery-Avoidance, Task-Based</td>
<td>52</td>
<td>47</td>
<td>27</td>
</tr>
<tr>
<td>Performance-Approach</td>
<td>63</td>
<td>56</td>
<td>65</td>
</tr>
<tr>
<td>Performance-Avoidance</td>
<td>59</td>
<td>54</td>
<td>58</td>
</tr>
</tbody>
</table>
CHAPTER 5. DISCUSSION

Although research has established the relevance and prominence of mastery-approach, performance-approach, and performance-avoidance goals, there is still much to consider regarding the more recent construct of mastery-avoidance goals. This construct is under-explored in terms of its empirical distinction from the other achievement goals, the components of its conceptual definition, its prevalence of adoption by younger students and in various contexts, as well as its relationship to different outcome variables in the educational environment.

Therefore, this dissertation investigated mastery-avoidance goals among middle school students in the domains of science and instrumental music by addressing the following research questions: (RQ1): Are mastery-avoidance goals empirically distinct from the other achievement goals? (RQ2): Is there an empirical distinction between the different competence standards in mastery-avoidance goals? (task-based vs. intrapersonal, and avoid loss vs. avoid no gain) (RQ3): Is the empirical distinction of mastery-avoidance from mastery-approach and performance-avoidance goals similar in different subject domains (science & instrumental music)? (RQ4): What is the prevalence of adoption of mastery-avoidance goals among middle school students in science and instrumental music and how does it compare to the prevalence of the other achievement goals? (RQ5): What is the relationship of mastery-avoidance goals and the classroom environment as assessed by classroom goal structures? (RQ6): What are the patterns of association between mastery-avoidance goals with both adaptive and maladaptive educational outcomes, including intrinsic and extrinsic motivation, academic efficacy,
and academic achievement, among middle school students? The dissertation aimed further to investigate students’ phenomenological meaning of mastery-avoidance goals and how these relate to the other achievement goals, particularly those that share the construct’s mastery competence standard (mastery-approach goals), and the avoidance valence (performance-avoidance goals).

Overall, the main finding of the dissertation was that students in this particular school context did make a distinction between mastery-avoidance goals and mastery-approach goals, but did not make the same clear distinction between mastery-avoidance goals and mastery-approach goals. While across domains, this similar pattern was observed, students do seem to make more of a distinction between these particular goals in music, so that there may be something about this particular domain in which students make a clearer distinction between a focus on success and an avoidance of failure. Also, mastery-avoidance goals were found to be connected with adaptive outcomes, which again, may speak to generally high motivation for these particular students. The following discussion elaborates on these findings in an attempt to answer these research questions, addresses limitations of the research conducted, as well as provides implications for achievement goal theory and directions for future research.

**Empirical Distinctions**

The distinction between mastery-avoidance goals and the other achievement goals constitutes a point of debate in the available research on mastery-avoidance goals because research has yet to determine if mastery-avoidance is really a distinct construct from mastery-approach, performance-approach, and performance-avoidance goals. Additionally there is debate about the conceptual definition of mastery-avoidance.
Specifically, research has yet to gather enough empirical support for distinctions between the different competence standards within the mastery-avoidance goals construct as it is currently defined, and whether or not these distinctions apply across achievement domains with different type of competencies.

Following other studies (Elliot & McGregor, 2001; Madjar et al., 2010; Sideridis & Mouratidis, 2008;), findings from this dissertation do indicate empirical support for mastery-avoidance goals as a distinct construct from performance-approach and performance-avoidance goals. Correlational analyses provide support for convergent and divergent validity for the distinction between mastery-avoidance goals and performance-approach and avoidance goals. Across both science and instrumental music domains, mastery-avoidance goals were significantly and positively correlated with both mastery-approach and performance avoidance goals, yet were not significantly correlated with performance-approach goals. Theoretically, these findings correspond with the shared mastery competence standard between mastery-avoidance and mastery-approach goals, and the shared avoidance valence between mastery-avoidance and performance-avoidance goals. The lack of correlations between mastery-avoidance and performance-approach goals further corresponded with the lack of shared competence standard or valence of these two constructs.

Findings from the Multi-Dimensional Scaling (MDS) analyses supported the suggested that students indeed perceived mastery-avoidance goals to be a distinct construct from performance-approach and performance-avoidance, but not so distinct from mastery-approach goals. Yet, the results from the MDS analyses did indicate that students seemed to perceive one task-based and two intrapersonal items as being
somewhat separate from the mastery-approach goals items. This may suggest that the
mastery-avoidance goals construct has a broader meaning than that for mastery-approach
goals, or that students’ interpretation of the items did not completely align with that
intended by the researchers, calling into question this clear definition of mastery-
avoidance goals. This interpretation received further support from the qualitative findings
that suggested that students’ interpretation of the items were not aligned well with what
was intended by the researchers.

The findings also suggested that students may have made overall distinctions
between different competence standards within mastery-avoidance goals—specifically,
between the task-based and intrapersonal items, as well as between the avoid loss and
avoid no gain items. These findings, however, cannot be taken as conclusive. In the
science domain, students’ responses manifested some overlap of an intrapersonal avoid
loss and task-based avoid no gain items, suggesting similarity of interpretation. And more
generally, the findings from this single study cannot be taken to indicate strong support
for such an empirical distinction. This study is the first, however, to make an explicit
distinction between the avoid loss versus avoid no gain standards, and the findings
provide impetus for further investigations that would clarify whether these different
standards can be considered to constitute a coherent construct, and under what
circumstances different standards may overlap more or less with students’ interpretation
of mastery-approach goals.

Regarding differences in mastery-avoidance goals in different subject domains
with different types of competence, students in both science and instrumental music made
clear distinctions between mastery-avoidance and performance-avoidance goals.
Interestingly, results of the MDS analyses that indicated larger dispersion of the mastery-avoidance goals items relative to the mastery-approach goals items, and larger dispersion of the performance-avoidance goals items relative to the performance-approach goals items, suggested that the meaning of both avoidance constructs were broader than the approach constructs. The findings may reflect specific meanings of these achievement goals among students in this particular educational environment, or a more general characteristic of these achievement goals—an issue for investigation in future research.

While the overall pattern of results regarding the distinction between mastery-avoidance and mastery-approach goals was similar for science and instrumental music, the findings in music seemed to indicate a slightly greater distinction between mastery-avoidance and mastery-approach goals relative to findings in science. However, these findings were not robust, and the overall finding that students often do not make a clear distinction between approach and avoidance constructs corresponds with other similar findings in the literature (Karakus et al. 2011; Madjar et al. 2011).

There are several possible reasons for why the particular students in the current sample did not make a clear distinction between mastery-approach and mastery-avoidance goals. As supported by both the quantitative and qualitative results, students do not seem to interpret the mastery-avoidance items as intended by the researchers. One possible reason for this could be the age of the students, who may interpret this construct differently from older students who may have more nuanced understanding of different competence standards (Murayama, Elliot, & Yamagata, 2011). Another possible reason for this finding is the timing of the survey administration. Depending on the particular classroom environment and the stakes of different types of evaluations, proximity of
evaluative tasks (such as a test in science or a concert in instrumental music) may affect students’ concerns and interpretation of items along different standards of competence, and lead to more or less distinctions between mastery-avoidance and mastery-approach goals. For example, if the educational environment emphasizes task-based performance rather than improvement, students may be more concerned with task-based standards, than with their intrapersonal development.

**Prevalence of Mastery-avoidance Goals**

Research findings about the prevalence of mastery-avoidance goals among young students have been mixed, with some studies finding middle school students endorsing mastery-avoidance goals (Madjar et al., 2010), and other studies not finding this endorsement among younger students (Bong, 2009). Even when students have endorsed mastery-avoidance goals, this must be considered within the context of endorsing the other achievement goals, as well as the meaning students are making out of the goals they are endorsing, which is some cases are an interpretation of mastery-avoidance goals as mastery-approach goals (Ciani & Sheldon, 2010).

The students in the current sample endorsed the mastery-avoidance goals items at a rate comparable to their endorsement of mastery-approach goals items, and more so than their endorsement of the performance-approach and avoidance goals items. This may suggest that mastery-avoidance goals are relevant and prevalent among middle school students, in both the science and instrumental music domains.

Importantly, the mastery-avoidance construct used in these analyses included only the task-based items. Therefore, while the findings suggested that mastery-avoidance goals were prevalent and relevant among these students, the construct was different from
the one whose conceptual definition was being investigated in this dissertation. These results are similar to those by Ciani and Sheldon (2010), who found that, while half of their participants endorsed mastery-avoidance goals, qualitative investigation revealed that they actually interpreted the mastery-avoidance goal items as mastery-approach goals.

Mastery-avoidance goals seemed slightly more prevalent in instrumental music with these particular students. This could be influenced by the nature of the domain and how competence is defined in instrumental music. It could also be influenced by that particular classroom climate or the standards of success that the teacher is emphasizing in the classroom. As mastery-approach goals are also similarly endorsed across domains, this may also speak again to students’ interpretation of mastery-avoidance goals and the lack of distinction found by this dissertation between the two mastery goal constructs.

Mastery-avoidance Goals and Teachers’ Goal Structures

Prior research has found that there is a correspondence between students’ personal achievement goal adoption and their perceptions of the goals emphasized in their classrooms (Anderman & Midgley, 1997; Roeser et. al, 1996; Urdan, 2004). For example, students who perceive the teacher as emphasizing a mastery goal structure, or the educational environment as emphasizing improvement, effort, and understanding, are more likely to endorse mastery goals. Students who perceive the teacher to be emphasizing a performance goal structure, or the educational environment as emphasizing outperforming others, are more likely to endorse performance goals. While research has explored the mastery-approach, performance-approach, and performance-
avoidance goal structures as possible antecedents to the adoption of students’ personal goals, research has yet to explore the concept of a mastery-avoidance goal structure.

The findings indicated that students’ perceptions of the teachers’ mastery-avoidance goal structure was a significant predictor of their mastery-avoidance goals. This finding aligns with other findings that found relationships between students' personal achievement goals and how they view their classroom goal structure. Similarly, Teacher’s performance-approach goal structure was a significant predictor of students’ personal performance-approach goals. In addition, neither of the performance goal structures were significant predictors of students’ mastery-avoidance goals, lending additional support to the conjecture that these students do seem to have distinct perceptions of mastery and performance goals.

However, surprisingly, teachers’ mastery-approach goal structure was not a significant predictor of students’ mastery-approach goals, but it was a significant predictor of mastery-avoidance goals. Perhaps the emphasis on the competence standards of task-mastery and intrapersonal improvement may be interpreted, by some students, to highlight the avoidance of failing to achieve these standards. It could also be that students may be more likely to endorse mastery-avoidance goals if they perceive their teacher as emphasizing both the development of competence as well as avoiding its failure. If teachers place emphases on not only skill building, but also on avoiding skill loss or avoiding not forgetting, students are more apt to adopt mastery-avoidance goals.

Another possible interpretation of the current findings is that in this particular educational environment, students are highly focused on the possibility of failure, so that even when they perceive the teacher as emphasizing effort and improvement, failure is
still salient and leads to avoidance goals. Future research should investigate the relations of teachers’ goal structures and students’ achievement goals among students with different characteristics (e.g., high and low in achievement needs and fear of failure) and in different contexts and situations—for example, in contexts where evaluation and failure are very salient.

**Mastery-avoidance Goals and Academic Outcomes**

In educational contexts, mastery-avoidance goals have been found to be associated with maladaptive outcomes such as worry (Elliot & McGregor, 2001), amotivation (Nien & Duda, 2008), and fear of failure (Conroy & Elliot, 2004). However, others have found relationships between mastery-avoidance goals and positive outcomes such as effort, enjoyment, and perceived competence (Wang, Biddle, & Elliot, 2007). Generally, research has found mastery-avoidance goals to be associated with less adaptive pattern of outcomes when compared to mastery-approach goals, but more adaptive than that associated with performance-avoidance goals. This dissertation investigated mastery-avoidance goals and extrinsic and intrinsic motivation, academic efficacy, and achievement, as part of the nomological network of achievement goals.

Correlational findings from the current study suggested that, across the two subject domains, students who endorsed high levels of mastery-avoidance goals, tended also to endorse higher levels of intrinsic motivation, extrinsic motivation, and academic efficacy. As these results suggest, endorsement of mastery-avoidance goals may be associated with an overall high motivation for schoolwork in this particular group of students. However, mastery-avoidance goals were not significantly correlated with
achievement in either domain, which corresponds other findings from other studies (Barron, Finney, Davis, & Owens, 2003; Elliot & McGregor, 2001). The finding that mastery-avoidance goals are associated with high motivation for school but not with grades may seem surprising, but it is not uncommon in the literature, particularly for mastery goals (Hulleman et al., 2010). This raises questions about how and for what students are graded. Still, findings from the cluster analysis, which further supported the dominance of two general profiles of more and less motivated students did suggest that the more “adaptive” or successful profile included higher endorsements of both mastery-approach and mastery-avoidance goals, higher levels of intrinsic and extrinsic motivation, academic efficacy, and also higher academic achievement. This finding may suggest the possibility of indirect links between different motivational constructs and students grades—an important direction for future research.

Again, the finding of the current study of a general positive pattern of association between mastery-avoidance goals and adaptive outcomes, which stands in contrast to some research that has found mastery-avoidance goals to be associated with maladaptive patterns of behavior (Elliot & McGregor (2001)), may be a result of the current students not making clear distinctions between mastery-approach goals and mastery-avoidance goals. Mastery-approach goals have been consistently associated with adaptive patterns of behavior. Indeed, the finding that the cluster analysis that included the outcome variables only yielded two general profiles may point to the lack of motivational differentiation within this particular sample of students. This may point to the role of goals as being contextualized, and that these students in this particular school context do not engage in much reflection regarding their motivation. The participants were early
adolescents who are attending their neighborhood school, which constitutes for them a normative academic trajectory that does not require much reflection and academic decision-making. Patterns may be different among older students or among students who engaged in reflection and exploration of their academic motivation due to transitions or other non-normative academic decision-making. Of course, there may also be something about the school’s environment that guides students to construct motivation as either high or low, rather than nuanced.

In addition to the school environment, the role of individual differences between students should be investigated. Specifically, individuals may have a particular sensitivity to a focus on achievement or avoidance of failure, which may influence the meaning that students make of mastery-avoidance goals.

**Limitations**

Interpretation of the findings from this dissertation should be made in light of several limitations of this research. Sample size in the instrumental music class was very limited due to a large number of students who either declined to participate or did not return consent forms. Due to the smaller than anticipated number of participants in music, certain analyses such as confirmatory factor analysis and regressions exploring differences between the subject domains were not feasible. The small sample of music students in study 2 also made it difficult to interpret the qualitative results by domain.

Findings from the EFA and MDS suggested that mastery-avoidance goals are not clearly distinguished from mastery-approach goals, with each analysis showing slightly different results. The mastery-avoidance variable used in several of the analyses for these
studies consisted of only the task-based items, based on results from the EFA, thus limiting the interpretation of results. It is possible that using techniques such as a parallel analysis or considering alternative models, such as a bifactor model, could influence different decision-making points when constructing the mastery-avoidance goal variable.

Additionally, the data used in this dissertation were treated as continuous, following normative procedures in achievement goal theory. However, as the data may be ordinal, future research should examine whether the data manifest continuous or ordinal characteristics.

Another characteristic of the study that should frame the interpretation of the findings is the relative homogeneity of the sample. This may be one reason for the inconsistency of the findings with findings from prior research. This homogeneity may have been the reason for the positive correlations between mastery-avoidance goals and both intrinsic and extrinsic motivation, and also for the little differentiation between motivational profiles in the sample.

Whereas the study employed both quantitative and qualitative methods to pursue the research questions, the data gathered were still limited in their depth and richness. Pursuing in-depth meaning of constructs such as mastery-avoidance goals could benefit from richer data, such as could be collected by qualitative methods such as cognitive interviewing (Karabenick et al., 2007). This would have afforded the opportunity for greater clarification of students’ perceived meanings of the achievement goal items. It would also have afforded the possibility to ascertain that students’ written responses indeed reflected their interpretation of the items.
Another limitation of the current design was that data were collected at one time point, and just before a specific evaluative event (a unit test in science and the concert in instrumental music). The findings, therefore, are highly contextualized. While this has important theoretical implications, it also calls for longitudinal research on students’ responses at different time points, including periods where they are not close to an evaluation.

**Implications and Future Directions**

The findings have several implications for achievement goal theory and for future research. Theoretically, achievement goals concern students’ meaning of engagement in academic tasks. The findings suggest that students’ meanings do not necessarily correspond with the conceptual definition of the constructs or even the face validity of the measures. The possibility that students with different characteristics, in different contexts, or even potentially at different times during the semester, may interpret differently items of established self-report scales should be of theoretical and methodological concern to achievement goal researchers who heavily rely on such self-report measures. It points to the potential fluidity of this meaning of engagement in academic work (Kaplan et al., 2011) and calls for a more dynamic approach in assessing students’ achievement goals. It seems imperative that future research employs qualitative methods that elicit rich insight into students’ meaning, rather than rely only on quantitative indicators of reliability and validity that may be masking such differences in meaning making.

More specifically, future research would need to investigate the meaning of mastery-avoidance goals, longitudinally, among different populations of students, at different time points, and in different contexts. In order to enrich understanding of this
construct—its phenomenological manifestation, its multiple competence standards, and its relations with other achievement goals, outcomes, and the educational environment—future research should aim to investigate this construct with younger and older students, as well as in contexts that have different standards of competence—for example, in domains with different types of competencies such as languages, sports, and instrumental music. Future research should also investigate the possible manifestation of mastery-avoidance goals across time, such as at different time points along learning an academic unit, and in summative evaluative tasks where students have already learned the material versus earlier on, when evaluative tasks are more formative of learning.

Finally, research should also investigate the meaning that students make of pursuing multiple achievement goals in different contexts and situations. Conceptually, students may be considered to pursue different goals, such as mastery-approach and mastery-avoidance goals. However, the current findings and other studies suggest that students may construct more holistic interpretations that integrate different achievement goals—particularly those with similar competence standard but different valence (Murayama et al., 2011). This research, too, would benefit from in-depth qualitative investigation of students’ meanings.

**Conclusion**

This dissertation investigated questions still surrounding the construct of mastery-avoidance among a sample of middle school students from one school in the subject domains of science and instrumental music. Findings supported the distinction of mastery-avoidance goals from performance-approach and performance-avoidance goals across the domains of both science and instrumental music. However the findings did not
provide support for the distinction of mastery-avoidance goals from mastery-approach goals among these students. The findings did suggest that different competence standards within mastery-avoidance goals—specifically, task-based and intrapersonal standards—may be differently related to mastery-approach goals. As importantly, the findings suggest that students’ meaning of mastery-approach and avoidance goals may manifest in interpretation of items from established self-report scales that is different from those intended by the researcher.

The findings further suggested that whereas the students in the current sample endorsed task-mastery based mastery-avoidance goals at similar rates to mastery-approach goals, and more so than performance-approach and avoidance goals, they may have been reflecting a contextual interpretation of mastery goals that was influenced by the characteristics of their school and the time of administration—just before major evaluations both in science (a test) and instrumental music (a concert).
REFERENCES


Zhang, Y., & Wildemuth, B. M. (2009). Qualitative analysis of content. In B. Wildemuth (Ed.), *Applications of social research methods to questions in information and library science* (pp.308-319). Westport, CT.
APPENDIX A. DEMOGRAPHIC QUESTIONNAIRE

This part of the questionnaire asks questions about you and your family background. Remember, any answer you provide will be kept confidential.

Name (First and Last): __________________________

Teacher’s Name: ______________________________

Grade: ______

Sex (circle one): Female Male

Race (please circle one or more):

Asian Black or African American Hispanic/Latino(a)

Middle Eastern White/Caucasian American Indian or Alaskan Native

Native Hawaiian or other Pacific Islander Other____________________

Parents’ Education (please circle one)

Mother (or female guardian):

Graduated from High School

Did not graduate from High School

Some College/Community College

Bachelor’s Degree

Graduate Degree (Master’s, Professional, or Doctorate)

Father (or male guardian):

Graduated from High School

Did not graduate from High School
Some college/Community College

Bachelor’s Degree

Graduate Degree (Masters’, Professional, or Doctorate)
APPENDIX B. QUESTIONNAIRE ASSESSING PERSONAL ACHIEVEMENT GOALS, PERCEPTION OF TEACHER’S GOALS, ACADEMIC EFFICACY, AND INTRINSIC/EXTRINSIC GOALS

We are interested to know how students feel in school so that we can help teachers make school better for students. In this questionnaire there are questions about your experiences in science. We want you to be honest about your answers. Your answers will not be shown to the teacher. We will group the answers of all the students in your grade together, and no one will know what you answered. Thank you for taking part in our survey!

The following questions are about your experiences in your SCIENCE class.

**Mastery-approach**

Some students do their schoolwork in science in order to learn the material very thoroughly and deeply. Are you such a student in science?

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<th>1</th>
<th>2</th>
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<tbody>
<tr>
<td>Never like that</td>
<td>Not usually like them</td>
<td>Sometime yes and sometime not like that</td>
<td>Usually like that</td>
<td>Always like that</td>
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</table>

Can you please describe one example from science class when you did your schoolwork in order to learn the material thoroughly and deeply?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
Mastery-Avoidance, intrapersonal, avoid loss

Some students do their schoolwork in science so that they don’t forget what they learned already in science class. Are you such a student in science?

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<td>Never like that</td>
<td>Not usually like that</td>
<td>Sometimes yes and sometime not like that</td>
<td>Usually like that</td>
<td>Always like that</td>
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</table>

Can you please describe an example from science class when you did your schoolwork in order not to forget what you already learned in science class?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Mastery-Avoidance, task-based avoid no-gain

Some students do their schoolwork in science in order not to miss out learning what they can in science. Are you such a student in science?

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<td>Sometimes yes and sometime not like that</td>
<td>Usually like that</td>
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</tbody>
</table>

Can you please give an example from science class when you did your schoolwork in order not to miss out learning what you could in science?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

__________________
**Performance -Avoidance**

Some students do their schoolwork in science class so that others don’t think they are not good at science. Are you such a student in science?

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<td>Sometime yes and sometime not like that</td>
<td>Usually like that</td>
<td>Always like that</td>
</tr>
</tbody>
</table>

Can you please describe an example from science class when you did your schoolwork so that others don’t think you are not able in science?

**Performance-Approach**

Some students do their schoolwork in science class so that others think they are good at science. Are you such a student in science?

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<td>Sometime yes and sometime not like that</td>
<td>Usually like that</td>
<td>Always like that</td>
</tr>
</tbody>
</table>

Can you please describe an example from science class when you did your schoolwork so that others think you are good at science?

**PALS- Personal Goal Orientation-Mastery**

1. It’s important to me that I learn a lot in science this year.
2. One of my goals in science is to learn as much as I can.
3. One of my goals in science is to master a lot of new skills this year.
4. It’s important to me that I thoroughly learn my class work in science.
5. It’s important to me that I improve my skills in science this year.

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**PALS-Personal Goal Orientation- Performance Approach**

6. It’s important to me that other students in my class think I am good at science.
7. One of my goals in science is to show others that I’m good at science.
8. One of my goals in science is to show others that the work is easy for me.
9. One of my goals in science is to look good in comparison to the other students.
in my class.
10. It’s important to me that I look good compared to others in my science class.

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PALS-Personal Goal Orientation- Performance Avoidance

11. It’s important to me that I don’t look stupid in science class.
12. One of my goals in science is to keep others from thinking I’m not good in science.
13. It’s important to me that my teacher doesn’t think that I can do less well than others in science class.
14. One of my goals in science class is to avoid looking like I have trouble doing the work.

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Mastery-Avoidance

Intra-Personal, Avoid Loss:

15. It’s important to me that I do not forget what I have learned in science so far.
16. One of my goals in science class, is not to forget what I have learned.

Intra-Personal, Avoid No Gain

17. It’s important to me that I don’t learn less in science class than I was able to do in the past.
18. One of my goals in science class is not to learn less than I could do before.

Task-Based Avoid No Gain

19. It’s important to me not to miss out on learning important things in science.
20. One of my goals in science class is not to miss out on learning all that I could learn.

Task-Based Avoid Loss;

21. When learning science, it’s important to me that what I learn will not turn out to be wrong.
22. One of my goals in science class is to make sure that what I learn will not turn out to be wrong.

PALS Teachers’ Goal Structure-Mastery

23. My science teacher thinks mistakes are okay as long as we are learning.
24. My science teacher wants us to really know the material, not just memorize it.
25. My science teacher really wants us to enjoy learning new things in science.
26. My science teacher recognizes us for trying hard in science class.
27. My science teacher gives us time to really explore and try new things in science.

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**Teachers’ Goal Structure-Mastery Avoidance**

**Intra-personal avoid loss**

28. My science teacher tells us that it is important not to forget what we have learned.

29. My science teacher thinks that one of our goals should be to avoid forgetting the material.

**Intra-personal, Avoid no Gain**

30. My science teacher tells us that it’s important not to learn less than we were able to in the past.

31. My science teacher does not want us to learn less than we could do before.

**Task-based avoid no-gain**

32. My science teacher thinks that we should not miss out on learning what we can in science.

33. My science teacher wants us to avoid missing out on learning the material.

**Task-based avoid loss**

34. My science teacher wants us to avoid misunderstanding what we are learning in the class, after we have learned new material

35. My science teacher does not want us to misunderstand the material in science class, after we have learned new material.

**PALS- Teachers’ Goal Structure - Performance-Approach**

36. My science teacher points out those students who very good at science as an example to all of us.

37. My science teacher lets us know which students are the best at science.

38. My science teacher tells us how we compare to other students in science.

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**PALS-Teachers’ Goal Structure -Performance Avoidance**
39. My science teacher tells us that it is important that we don’t look stupid in class.
40. My science teacher says that showing others that we are not bad at science should be our goal.
41. My science teacher tells us it’s important to participate in science class so it doesn’t look like we can’t do the work.
42. My teacher tells us it’s important to join in discussions and answer questions so it doesn’t look like we can’t do the work.

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PALS—Academic Efficacy

43. I'm certain I can master the skills taught in science class this year.
44. I'm certain I can figure out how to do the most difficult work in science.
45. I can do almost all the work in science class if I don't give up.
46. Even if the work in science is hard, I can learn it.
47. I can do even the hardest work in science class if I try.

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Intrinsic motivation

48. I do my schoolwork in science because it's interesting.
49. I do my schoolwork in science because I enjoy it.

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50. I do my schoolwork in science because I like it.
51. I do my schoolwork in science because I think it is fun.

Extrinsic goals

52. I do my schoolwork in science because I'll get in trouble if I don't.
53. I do my schoolwork in science so that others won't get mad at me.
54. I do my schoolwork in science because I want to get a good grade.
55. I do my schoolwork in science because I want to get into the honor roll.

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## APPENDIX C. CODE BOOK

<table>
<thead>
<tr>
<th>Category</th>
<th>Construct</th>
<th>Code</th>
<th>Definition</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goals</td>
<td>No goals</td>
<td>0</td>
<td>Response includes no indication of a goal</td>
<td>“Took a packet home and practiced every single day.”</td>
</tr>
<tr>
<td></td>
<td>Mastery goals</td>
<td>1</td>
<td>Response exhibits a focus on the development of competence</td>
<td>“I practice high school pieces to get better.”</td>
</tr>
<tr>
<td></td>
<td>Performance goals</td>
<td>2</td>
<td>Response exhibits a focus on the demonstration of competence</td>
<td>“For jazz band when I would show off for a guy in the band.”</td>
</tr>
<tr>
<td></td>
<td>Conformity</td>
<td>3</td>
<td>Response exhibits a focus on completing the work</td>
<td>“I usually just finish it early so I don’t have to do it for homework.”</td>
</tr>
<tr>
<td>Motives</td>
<td>No motive</td>
<td>0</td>
<td>Response includes no indication of a motive</td>
<td>“I review the music so I have it memorized.”</td>
</tr>
<tr>
<td></td>
<td>Mastery</td>
<td>1</td>
<td>Response exhibits an orientation or focus on understanding (furthering knowledge) and/or on the student’s interest</td>
<td>“I did both of the worksheets so I could get a better grasp on the subject.”</td>
</tr>
<tr>
<td>Orientation</td>
<td>Position</td>
<td>Description</td>
<td>Example</td>
<td></td>
</tr>
<tr>
<td>----------------------</td>
<td>----------</td>
<td>-----------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Performance</td>
<td>2</td>
<td>Response exhibits an orientation towards or focus on creating an impression on others, particularly in regards to ability</td>
<td>“I did so much schoolwork to try and get the lead part.”</td>
<td></td>
</tr>
<tr>
<td>Intrinsic</td>
<td>3</td>
<td>Response exhibits an orientation or focus on the student’s enjoyment</td>
<td>- “I love music so I choose to practice the pieces.”</td>
<td></td>
</tr>
<tr>
<td>Extrinsic</td>
<td>4</td>
<td>Response exhibits an orientation or focus on external rewards (e.g. quiz/exam grade)</td>
<td>“I did all my work so that when it came to quiz time, I knew how to do it.”</td>
<td></td>
</tr>
<tr>
<td>Conformity</td>
<td>5</td>
<td>Response exhibits an orientation to do what’s expected and stay out of trouble</td>
<td>“I do my homework because I have to.”</td>
<td></td>
</tr>
<tr>
<td>Valence</td>
<td>None</td>
<td>Response includes no indication of a valence</td>
<td>“I don’t let other people influence what I think of myself.”</td>
<td></td>
</tr>
<tr>
<td>Approach</td>
<td>1</td>
<td>Response exhibits a focus on success</td>
<td>“I take home the music and practice it multiple times until I feel good and get it perfect.”</td>
<td></td>
</tr>
<tr>
<td>Avoidance</td>
<td>2</td>
<td>Response exhibits a focus on avoiding failure</td>
<td>“I made notecards and”</td>
<td></td>
</tr>
<tr>
<td>Approach &amp; Avoidance</td>
<td>3</td>
<td>Response exhibits both a focus success and avoiding failure</td>
<td>“I definitely don't want others to think I'm stupid but I also want to get good grades because it feels and looks good.”</td>
<td></td>
</tr>
<tr>
<td>----------------------</td>
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<td>----------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
</tbody>
</table>

“I never want to miss out on learning—everything I do in the day is an example of that.”

“Study them almost every night so that I don’t forget what we learned in the beginning of the year.”