Empowered for Practice: The Relationship Among Perceived Autonomy Support, Competence, and Task Persistence of Undergraduate Applied Music Students

Julie F. Troum

University of South Florida

Follow this and additional works at: https://scholarcommons.usf.edu/etd

Part of the American Studies Commons

Scholar Commons Citation
https://scholarcommons.usf.edu/etd/1795

This Dissertation is brought to you for free and open access by the Graduate School at Scholar Commons. It has been accepted for inclusion in Graduate Theses and Dissertations by an authorized administrator of Scholar Commons. For more information, please contact scholarcommons@usf.edu.
Empowered for Practice: The Relationship Among Perceived Autonomy Support, Competence, and Task Persistence of Undergraduate Applied Music Students

by

Julie F. Troum

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy School of Music College of The Arts University of South Florida

Major Professor: C. Victor Fung, Ph.D. Constance V. Hines, Ph.D. Janet L.S. Moore, Ed.D. David A. Williams, Ph.D.

Date of Approval: April 9, 2010

Keywords: music education, motivation, musical practice, self-regulation, social context

© Copyright 2010, Julie F. Troum
Dedication

Dewey (1935) stated, “Purposeful action is thus the goal of all that is truly educative,” (p. vii). This paper is dedicated to those applied studio teachers who acknowledge that satisfying practice is that which the student deems purposeful.
Acknowledgments

I would first like to acknowledge the panel of experts who reviewed the research instruments and theoretical foundation of this paper: Nadine Asin, Anja Grube-Wax, James Kuczero, Laszlo Marosi, Gary McPherson, Kristen Stoner, David Richard, and Maarten Vansteenkiste. Secondly, I would like to thank Professor Kim McCormick at the University of South Florida for her insightful discourse in the area of applied studio pedagogy, Mihaly Csikszentmihalyi for meeting with me to discuss the principles of his flow theory, and, Ed Deci for meeting with me to discuss the principles of his self-determination theory. I would also like to recognize Neil Gomes for his assistance with the web survey instrument software. Finally, I would like to thank my husband, Mark, and children, David and Jenna for taking good care of me during the dissertation process.
# Table of Contents

List of Tables iv

List of Figures vi

Abstract vii

Chapter One: Introduction 1

Social Interaction in the Applied Studio Setting 2
Role of Intrinsic Motivation on Achievement 3
Autonomy Support 4
Autonomy-Supportive versus Controlled Contexts 6
Musical Practice 6
Goal-Setting 8
Facilitating Motivation Through Competence 10
Persistence in Practice 11
Self-Regulated Deliberate Flow Model (SRDF) 13
Conceptual Framework 16
Statement of the Problem 20
Rationale of the Study 21
Purpose of the Study 22
Research Questions 23
Definition of Terms 24

Supporting Theories of SRDF 24
Main Constructs Measured in this Study 25
Delimitations 25

Chapter Two: Literature Review 27
Perceived Competence 28
Self-Efficacy Theory 28
Social-Contextual Influences on Motivation 32
Autonomy-Supportive Contexts 35
Controlling Contexts 37
Experiential Learning: Fostering an Environment for Engagement 39
The Humanistic View of Education 41
Self-Regulated Learning (SRL) 43
Fostering Self-Regulated Learning (SRL) with Teacher-Provided Structure
Goal-Setting
Acquisition of Expert Performance
Deliberate Practice
  Concentrate on Explicit and Relevant Goals
  Relevant Feedback
  Extended Practice
Summary

Chapter Three: Method
Overview
Design
Participants
Measures
  Demographic Data Form
  Self-Report Scales
  Perceived Autonomy Support (LCQ-Short Form)
  Task Persistence Measure of Musical Practice (TPMMP)
  Perceived Competence (PCS)
Content Validation of Instruments
Pilot Study
  Perceived Competence for Learning Scale (PCS)
  Perceived Autonomy Support Scale (LCQ-Short Form)
  Task Persistence Measure of Musical Practice Scale (TPMMP)
Means, Standard Deviations, Kurtosis, and Skewness
Data Collection Procedures
Data Analysis Procedures

Chapter Four: Results
Response Rates
Description of Respondents
Factor Analysis of TPMMP
Internal Consistency of Measures
  Perceived Competence for Learning Scale (PCS)
  Perceived Autonomy Support Scale (LCQ-Short Form)
  Task Persistence Measure of Musical Practice Scale (TPMMP)
Means, Standard Deviations, Kurtosis, and Skewness
Task Persistence
Perceived Competence and Perceived Autonomy Support
Question 1
Question 2
Question 3
Summary

Chapter Five: Summary, Discussion, and Recommendations
  Summary 93
  Discussion 94
  Implications of the Study 96
    Recommendations to Applied Studio Teachers 96
    Recommendations to Applied Music Students 98
    Recommendations to Music Educators 99
    Recommendations for Further Research 100

References 103

Appendices 120
  Appendix A: Electronic Consent Form 121
  Appendix B: Demographics Questionnaire 122
  Appendix C: Perceived Autonomy Support Scale Questionnaire 123
  Appendix D: Task Persistence Measure of Musical Practice Scale 124
  Appendix E: Perceived Competence Scale Questionnaire 125

About the Author  End Page
List of Tables

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 1</td>
<td>Item-Total and Inter-Item Correlation Matrix for Perceived Competence for Learning Scale (PCS)</td>
<td>70</td>
</tr>
<tr>
<td>Table 2</td>
<td>Item-Total and Inter-Item Correlation Matrix for Perceived Autonomy Support Scale (LCQ)</td>
<td>71</td>
</tr>
<tr>
<td>Table 3</td>
<td>Item-Total and Inter-Item Correlation Matrix for Task Persistence Measure of Musical Practice (TPMMP)</td>
<td>72</td>
</tr>
<tr>
<td>Table 4</td>
<td>Item Means, SD, Kurtosis, Skewness on PC, PA, and TP</td>
<td>73</td>
</tr>
<tr>
<td>Table 5</td>
<td>Survey Response Rate by Institution</td>
<td>79</td>
</tr>
<tr>
<td>Table 6</td>
<td>Selected Characteristics of Respondent Sample</td>
<td>80</td>
</tr>
<tr>
<td>Table 7</td>
<td>Factor Loadings for Task Persistence Measure of Musical Practice (TPMMP)</td>
<td>82</td>
</tr>
<tr>
<td>Table 8</td>
<td>Item-Total and Inter-Item Correlation Matrix for Perceived Competence Scale (PCS)</td>
<td>84</td>
</tr>
<tr>
<td>Table 9</td>
<td>Item-Total and Inter-Item Correlation Matrix for Perceived Autonomy Support Scale (LCQ)</td>
<td>85</td>
</tr>
<tr>
<td>Table 10</td>
<td>Item-Total and Inter-Item Correlation Matrix for Task Persistence Measure of Musical Practice (TPMMP)</td>
<td>86</td>
</tr>
<tr>
<td>Table 11</td>
<td>Item-Means, SD, Kurtosis, and Skewness on PC, PA, and TP</td>
<td>87</td>
</tr>
</tbody>
</table>
Table 12 Correlations among Perceived Competence, Autonomy Support, and Task Persistence

Table 13 Decomposition of Zero-Order Correlations in Path Analyses
List of Figures

Figure 1. Supporting Theories in the Researcher-Designed Active Agency Model of Self-Regulated Deliberate Flow (SRDF) 15
Figure 2. Model of Self-Regulated Deliberate Flow (SRDF) 16
Figure 3. Lewin Research Spiral (1948) 19
Figure 4. Hypothesized Path Model 23
Figure 5. Behavioral Outcomes of an Autonomy-Supportive Context 36
Figure 6. Behavioral Outcomes of a Controlling Context 38
Figure 7. Sample Learning Contract of Proximal Subgoals for Applied Flute 53
Figure 8. Hypothesized Path Model with Path Coefficients 76
Figure 9. Scree Plot of Task Persistence Measure of Musical Practice (TPMMP) 81
Figure 10. Path Diagram of PA, PC and TP 89
Empowered for Practice: The Relationship Among Perceived Autonomy Support, Competence, and Task Persistence of Undergraduate Applied Music Students

Julie F. Troum

ABSTRACT

The purpose of this study was to investigate the relationships among undergraduate applied music students’ perceptions of autonomy support, competence, and task persistence. One assumption of self-determination theory was that competence would increase when the social environment supported self-organization. A motivational-cognitive framework designed to promote sustained motivation in undergraduate applied music students was proposed.

Three self-report scales administered in the form of a web survey, were completed by undergraduate applied music students (N = 366) at six Florida universities. The scales were designed to measure perceived autonomy support, perceived competence, and perceived persistence in practice in the applied music studio setting. Internal consistency reliability estimates as measured by Cronbach’s alpha were high for all three measures: perceived competence (α = .89), perceived autonomy support (α = 92), and perceived task persistence of musical practice (α = .87). All three constructs—perceived competence, perceived autonomy support, and perceived task persistence showed a significant positive correlation with each other.

The use of perceived competence as a mediating variable in a hypothesized path model helps to illuminate the nature of the relationships among the three constructs. In
the path analysis model, perceived autonomy support was found to have a significant
direct effect on perceived task persistence. Thus, students who perceived that they had
strong autonomy support in the applied studio setting were more likely to perceive
themselves as more highly task persistent than students who perceived that they had less
autonomy support. Also, in the path model, student perceived competence was found to
moderately mediate the effect of their perceived autonomy support on perceived task
persistence. Thus, in the investigation of the relationship between perceived autonomy
support and task persistence, the path analysis also revealed that something in addition to
perceived autonomy support, namely perceived competence, served to explain the
relationship between perceptions of autonomy support and task persistence. It is hoped
that this study may promote further understanding of the optimal conditions in higher
education for the persistence of practice for applied music study.
Chapter 1

Introduction

It is common for an undergraduate applied music student to have one applied studio teacher during the study of his or her principal instrument. The applied studio teacher is responsible for developing a pedagogical approach to convey both the physical and mental aspects of musical performance within this one-on-one social-contextual setting (Beheshti, 2009). Evidence suggests that students’ perceptions of the social-context for learning are highly correlated with their learning behaviors (Ames, 1992; Maehr & Midgley, 1996; Stipek & Gralinski, 1996; Turner, et al., 2002). It is important to examine this social interaction in the applied studio setting, the role of intrinsic motivation on achievement, autonomy support and its contrary (controlled context), musical practice, goal setting, persistence in practice, and a model in self-regulated deliberate flow in order to empower undergraduate applied music students to practice.

Behavioral aspects of the applied studio dyad are being sought to further examine the nature of the student-teacher relationship. Student and teacher perceptions are in great demand to further understand the applied studio setting from a behavioral perspective (Parkes, 2009). A new strand of the International Society of Music Education (ISME), The Forum for Instrumental and Vocal Teaching, was created to benefit the applied studio teacher in the areas of pedagogical methods, motivation, and interpersonal relationships between teacher and student. Columbia University, New York recently
launched an online publication for teachers, researchers, performers and composers, called *Musical Perspectives*. McPherson and Zimmerman (in press) wrote on the self-regulative processes of teaching and music learning.

The teacher-student interaction can have a powerful influence on students’ learning behaviors (Ames, 1992). Student engagement is dependent on the style of interaction that is chosen by the teacher. It is therefore an important function of the teacher to design a type of learning environment and instructional activities that equip students with the ability to maintain relationships and create quality interactions that develop climates of positive socio-emotional support (Paris & Paris, 2001).

*Social Interaction in the Applied Studio Setting*

Musical motivation and the perceived competence of the musician are cultivated from the social interactions that occur in the learning environment of the applied studio setting. Once these are internalized, they may have a continued impact on motivation, affecting commitment towards practice, and ultimately, level of expertise (Hallam, 2002). Examining the interactions that take place between the applied studio teacher and students in the applied studio setting and their relationship to individual competence and persistence in practice in the study of applied music is of critical importance for instructional purposes.

Motivation is a key topic in educational psychology, having to do with the choice, intensity, and persistence to pursue a given learning activity (Maehr, Pintrich, & Linnenbrink, 2002). Hallam (2002) reviewed theories of motivation and then applied them towards the development of musical expertise. Her article, *Musical Motivation:
Towards a Model Synthesizing the Research, identified the social interactions between the individual and the environment that determine motivation. Hallam theorized that motivation in musical pursuits, musical motivation, is directly connected with the musicians’ self-perception of their musical ability and prior learning experiences. Hallam recommended that further investigation was needed to determine how to sustain musical motivation and productive practice due to the level of commitment needed for a performing career. Furthermore, Maehr and others (2002) suggested that there was a need for a synthesized framework that incorporated motivational-cognitive principles to facilitate motivation improving musical instruction.

This researcher directly responded to Hallam (2002) and Maehr and others (2002), by (a) integrating six educational learning theories and developed a model of self-directed learning, entitled, Self-Regulated Deliberate Flow (SRDF), which is presented later in this chapter and (b) describing a pedagogical approach for sustaining musical motivation during practice, to be presented later in this chapter as well. The rest of this chapter presents certain factors educational psychologists believed to have an impact on learning behaviors in an interpersonal context, and, what applied studio teachers and students can contribute towards motivating optimal practice.

Role of Intrinsic Motivation on Achievement

The choice of learners to engage in academic tasks, as well as their effort and persistence in academic tasks, has been directly related to their level of intrinsic motivation (Young, 2005). Motivation that is intrinsic in value is that which is inherently rewarding to the individual. Factors that contribute to intrinsic motivation are considered
relevant to music learning as it has been found to be a strong predictor of students’ achievement (Hallam, 2002; McPherson & Zimmerman, 2002; Schmidt, 2007).

Self-determination theorists hypothesized that the social environment and classroom practices that define the interpersonal learning climate between teacher and student will affect individual motivation, development, and performance. Furthermore, a learning climate that promotes and supports individual competence and autonomy, in particular, may facilitate enjoyment, intrinsic motivation, and intentional action (Ryan, Kuhl, & Deci, 1997).

**Autonomy-Support**

A learning climate that supports competence must also contain autonomy-support to influence individual persistence (Deci, Vallerand, Pelletier, & Ryan, 1991). According to self-determination theory (SDT), motivation arises from an autonomy-supportive environment in which the instructor provides learners with (1) positive feedback, (2) rationale, (3) choice, (4) acknowledgement of their perspective and initiative, and (5) confidence in their ability (Gagne, 2003).

One proposition of self-determination theory (SDT) is that social contexts that support the basic needs of competence, and autonomy facilitate motivation and performance, whereas social contexts that do not may lead to alienation with the instructor and diminished performance (Deci et al., 1991). In an autonomous-supportive learning context, instructors provide opportunities for choice and student-directed learning activities (Deci, Eghrari, Patrick, & Leone, 1994). Students are fully involved in planning and choosing which tasks and which skills they will emphasize. Giving students
these personal choices have been found to be a strong motivational technique (Nolen & Nicholls, 1994). Students have shown a significant increase in engagement in learning when they assume responsibility and therefore, control over the process or product (Teel, Debruin-Parecki, & Covington, 1998).

Dewey (1935) stated, “Purposeful action is thus the goal of all that is truly educative” (p. vii). A significant step toward establishing what areas will be addressed during practice may be to consult the student as to his/her purpose, aims, interest, and motivation for musical study. Students tend to accept intrinsic goals more readily in an autonomy-supportive learning context, signifying that active involvement positively promotes intrinsic goals and a deep processing of content (Vansteenkiste, et al., 2004). Furthermore, when students choose their own learning materials, they are more engaged, enabled (Roe, 1997) and produce more effort and persistence in using the applicable skills that improve expertise (Guthrie & Davis, 2003).

Providing autonomy support in the applied studio setting refers to the freedom an applied studio teacher allows the undergraduate music major to exercise control and make personal decisions regarding the goal-setting of his/her music study. Once students recognized their personal role in the learning process, they can begin to set their own individualized goals (McCombs & Marzano, 1990). Developing musicians, such as undergraduate music majors, often need the persistence and perceived self-competence to accomplish their immediate learning goals; however, without an autonomous-supportive environment they may be less likely to sustain the musical motivation to pursue defined goals and strategies (Sandene, 1997).
Autonomy-Supportive vs. Controlled Contexts

Self-determination theorists have identified two contrasting learning climates, called contexts, in which individuals function: autonomy-supportive and controlled. An autonomy-supportive learning context is one that endorses choice, is informational, encourages independent study and problem-solving, and welcomes student perspective (Trouilloud, Sarrazin, Bressoux & Bois, 2006). In contrast, a controlled learning context is typified by compliance, high pressure, inflexibility, deadlines, and lack of response to student perspective. Deci and Ryan (2008) emphasized that an interpersonal climate that is supportive and informational may positively affect intrinsic motivation rather than one that is controlling. A body of motivational research conducted within the perspective of SDT found that controlled learning contexts reduce autonomy, decrease intrinsic motivation, and lead to alienation and poor performance (Deci et al., 1991). Lehmann, Sloboda, and Woody (2007) inferred that “intrinsic motivation for musical study was reinforced in an environment that was perceived as allowing personal autonomy rather than as controlling” (p. 49). There is a need to examine SDT as to whether a learning climate that is high in autonomy support is associated with a greater level of competence and persistence during an undergraduate course in applied music study.

Musical Practice

Undergraduate music majors accomplish much of their progress on an independent basis from the inside of a practice room. The pursuit of practice is a solitary activity which is performed voluntarily to promote skill development. Jorgensen (2007) noted, typically, music “students must act as the teacher’s deputy, assigning themselves
definite tasks and supervising their own work” (p. 85). A significant concern, based upon this observation, is whether applied music students in higher education are adequately prepared to initiate independent and responsible practice (Jorgensen, 2000).

The applied studio teacher often makes an assumption that the student will demonstrate improvement at the next lesson through practice (Kostka, 2002). Musical practice occurs in an uncontrolled solitary environment without the presence of a coach as provided in sports training (Lehmann, 1997). Chua and Koestner (2008) studied solitary behavior based on autonomous motivation. They found that if solitary activities are autonomous, they are self-endorsed, producing positive outcomes. The musician must be self-determined to initiate practice by choice.

Developing musicians must view the task of practice as personally relevant before willingly committing themselves to the amount of persistence that is needed to heighten musical expertise. Students’ perceptions of the significance of the tasks and activities associated with practice would ultimately influence how much time and effort they are willing to apply (Good, 1983). Presenting tasks in a way that learners identify as personally relevant to their progress may lead to more dedication and engagement in the activities involved in practice. Past field experiments showed that intrinsic goal framing increased engagement and persistence at learning activities (Vansteenkiste et al., 2006). Therefore, the individual motives of students should be addressed when setting the goals to meet their intrinsic needs (Ames & Ames, 1984; Caraway, Tucker, Reinke, & Hall, 2003; Deci et al., 1994; Dweck, 1986; Elliot, 1999; Hsieh, Sullivan & Guerra, 2007; Schunk, 1989).
**Goal-Setting**

Hallam (2002) posited that motivation to pursue musical activities was largely influenced by the self concept and goals present in the immediate environment. Although persistence in the musician is generally affected by the individual perception of ability and the expectancy for success, goal-setting establishes priorities needed for learning acquisition to take place. Goal-setting requires that the student has a clear understanding of the learning required and a vested interest in the outcome of the learning (Paris, Brynes, & Paris, 2001). Woody (2001) suggested that teachers could contribute to efficient musical practice by presenting structure and goal-setting with a purpose. When students are enlisted to self-set their goals, they may be more personally committed in the required tasks (Bandura, 1997; Bandura & Journden, 1991).

According to SDT, personal goal setting may contribute to the personal well-being of the student because it provides direct satisfaction of three basic psychological needs: competence, relatedness, and autonomy (Deci & Ryan, 2000; Ryan & Deci, 2000). Abraham Maslow’s humanistic goal for education is congruent with SDT in terms of self-actualization, defined as reaching one’s full potential or self-fulfillment at the highest level of one’s proposed hierarchy of needs (Maslow, 1943; Maslow, 1968). Maslow (1970) described the characteristics of a “peak experience”: effortless feeling of elation, intrinsic value, self-validation, self-justification, and a loss of time and space. Csikszentmihalyi (1990) posited that individuals enter a “flow state,” becoming intrinsically motivated when their personal skills are used to the utmost when accompanied by informed and immediate feedback (Csikszentmihalyi, 1990, 1996).
When both intrinsic goals and autonomy support are present in the learning process, the student’s basic psychological needs are fulfilled. When these basic human needs are met, student persistence, performance, and learning are facilitated, having a positive effect on the growth and well-being of the individual (Ryan et al., 1997).

Goal pursuits in academic settings, within SDT, are primarily concerned with intrinsic and extrinsic motives. These motives determined the amount of learners’ engagement and persistence (Vansteenkiste et al., 2006). Intrinsic motives are more internalized and inherently rewarding, whereas extrinsic motives are poorly internalized during engagement as they are controlled by reward (Guthrie & Davis, 2003). Extrinsic goals are those which are dependent on approval (Kernis, 2003). They were found to be associated with controlled (enforced) motives (Sheldon & Kasser, 1995).

Goal orientation is defined as the motives or reasons students have for engaging in academic tasks (Ames, 1992; Deci & Ryan, 2000; Dweck, 1986; Hsieh et al., 2007). Studies suggested that conscious planning, such as goal-directed activities that are relevant to the learner, must be internalized to reach an awareness of self in order to self-direct the practice session (McCombs & Marzano, 1990). The established goals (goal content) should be connected to the intrinsic interest of the musician to influence his or her continued persistence (Zimmerman, 1998). The intrinsic goal orientation of novices, from which they derived personal fulfillment in the performance task, may have the most significant impact on individuals’ pursuit and commitment (Csikszentmihalyi, 1990).

Internalization, under SDT, is a socialization process during which the learner adopts a new behavior based on the beliefs of the instructor or others. The degree to
which a learner internalizes a new behavior is dependent upon the instructor facilitation of competence, autonomy and relatedness--the tenets of SDT (Vansteenkiste et al., 2006). The educator must provide meaningful rationale for specific goals before students will internalize the activity as their own without pressure or coercion to respect the students’ right to choose (Deci et al., 1994). Deci and others (1994) suggested three separate steps towards internalization: “(a) providing a meaningful rationale, (b) acknowledging the behaver’s perspective, and (c) conveying choice rather than control” (p. 124). Learning climates that incorporate internalization under SDT enlist researchers to explore autonomy-supportive social contexts for learning (Deci et al., 1994).

Applied music students who self-select to practice long hours in the practice room on the assigned lesson materials are regulating their behavior through identification. According to SDT, identification is the process of associating oneself with the value of a given activity and choosing to engage in the activity willingly with volition based upon its personal relevance. During this process, that is extrinsic in nature, the individual internalizes the importance of a particular activity and, subsequently chooses to engage in a particular behavior (Black & Deci, 2000; Vansteenkiste et al., 2004).

*Facilitating Motivation Through Competence*

Studies conducted in educational psychology found that learners who intentionally direct, regulate, and monitor their actions could effectively increase their expertise if they have a perceived sense of competence (Maehr et al., 2002). Students have a need for competence to facilitate motivation, called competence motivation. It is
necessary for the instructor to support the learners’ need for competence to help them to feel effective when they interact in the learning environment (Deci and Ryan, 2008).

Conroy, Elliot, and Coatsworth (2007) viewed the pursuit of competence as essential towards the improvement of skill or acquiring new skills in sports and exercise environments. Conroy and others (2007) made three recommendations to increase perceived competence in sports: (a) offer opportunities to gain a sense of competence, (b) pay attention to how athletes evaluate their competence, and (c) consider how the sport or exercise setting is structured to emphasize effort.

**Persistence in Practice**

According to expert performance research (EPR), improvement was achieved through extensive practice and musical skill was directly correlated with the amount of musical practice during the lifetime of the musician (Ericsson & Lehmann, 1996; Hallam, 2002). Although persistence was measured, under EPR, by the accumulation of practice, a higher level of musical expertise was only obtained from sustained deliberate practice, during which musicians focused on specific goals with immediate feedback and repetition (Ericsson, Krampe, & Tesch-Römer, 1993; Ericsson & Lehmann, 1996).

According to flow theory (FT), persistence is cultivated from the enjoyment experienced from the following elements: (a) clarity of goals that are designed for the activities, (b) immediate feedback to confirm the technique, (c) skills that are matched to the work/challenge, (d) awareness and intense concentration on the selected activities at hand, (e) a lack of distraction and thoughts of failure, (f) lack of self-consciousness, (g) unaware of time passage, and (h) a self-satisfying purpose for the activities is evident.
In order to sustain the amount of motivation deemed necessary for the quantity of effortful practice during deliberate practice, self-satisfaction from purposeful activities was a requisite according to the flow theory. Measuring persistence in musical practice by those factors that contribute to sustained and engaging practice as delineated in the deliberate practice approach and the flow theory may develop further understanding on how to prepare students in advance of the practice session to promote quantity of practice.

The quantity of practice, effort, and persistence were related to self-efficacy. Without strong self-efficacy, the learner could not demonstrate the necessary performance skills (Pintrich & Schunk, 1996). Higher self-efficacy would lead to persistence thus fulfilling identified goals (Bandura, 1997; Pajares, 2003). The individual measure of self-efficacy, called efficacy expectation, directly affected task performance in sports as well as in music (Relich, Debus, & Walker, 1986; Schunk & Gunn, 1986). Efficacy expectation influenced what activities an individual pursued and the level of persistence that the individual applied toward the achievement of a task (Gould, Weiss, & Weinberg, 1981).

Once learners made the conscious choice to intentionally direct and monitor their own actions to increase their expertise, they were identified as self-regulated learners. Such learners were “more likely to engage in goal-directed and self-regulated practice” essential to effective practice (Chaffin & Lemieux, 2004, p.31). Self-regulation theory posited that students who self-regulate applied goal-directed activities in the learning process (Doring, Bingham, & Bramwell-Vial, 1997). The extent to which individuals
engaged in goal-oriented behavior was a measure of their ability to self-regulate (McCombs & Marzano, 1990).

**Self-Regulated Deliberate Flow Model (SRDF)**

Based on the findings of Maehr and others (2002), one important way applied studio teachers can contribute towards motivation in undergraduate applied music students is by establishing a systematic structure and social climate for self-directed independent practice so that learners can direct, regulate, and monitor the practice session. The applied studio teacher can assist in planning for goal-directed activities by developing an organizational framework for the practice session (Miksza, 2007).

Cognitive tasks and strategies should be selected that are consistent with the intrinsic goals of the student to contribute toward adequate persistence of practice as the individual continually screens an activity for relevance and risk to preserve intrinsic goals (McCombs & Marzano, 1990). Those tasks and strategies which conflict with the intrinsic goals may be rejected by the student as irrelevant.

Grounding research in instructional, psychological, and motivational theories with respect to musical study may strengthen the pedagogical approaches of the applied studio teacher. Learning theories that apply to musical learning behavior can be constructed from outside of the field of music (Lehmann & Davidson, 2002; Taetle & Cutietta, 2002). This researcher has identified six existing cognitive and motivational learning theories that support a self-regulating, autonomous-supportive, goal-directed study for undergraduate music majors: Cognitive Load Theory (CLT) (Sweller, 1988), Deliberate Practice (DP) (Ericsson et al., 1993), Flow State (FS) (Csikszentmihalyi, 1990, 1996),

Figure 1 represents a researcher-designed sequential model derived from the key aspects of each of these learning theories entitled, Self-Regulated Deliberate Flow (SRDF). The SRDF is a step-by-step cognitive process through which proximal (short-term) goals are effectively adopted, evaluated, and modified actively during musical practice to meet the immediate needs of the musician. The SRDF model portrays the musician as fully involved in the learning process and is therefore an active agent. An active agency model is one that is self-selected to pursue one’s “goals, plans, and intentions … through meaningful actions” (McCombs & Marzano, 1990, p. 53). SRDF is part of the researcher-designed motivational-cognitive framework designed to promote sustained musical motivation in undergraduate applied music students. Figure 2 represents an abbreviated sequence of the nine steps in SRDF.
### Sequence of Self-Regulated Deliberate Flow

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
<th>CLT</th>
<th>DP</th>
<th>FS</th>
<th>GT</th>
<th>SET</th>
<th>SRL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Internalize intrinsic goal content: Adopt proximal (short-term) subgoals that meet/reflect present needs.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>2.</td>
<td>Eliminate any redundant or irrelevant tasks and distractions that impede progress.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>3.</td>
<td>Self-monitor during informative feedback</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>4.</td>
<td>Reflect (Evaluate)</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>5.</td>
<td>Apply the necessary strategies using metacognitive awareness</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>6.</td>
<td>Apply the relevant strategies that resolve obstacles</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>7.</td>
<td>Repeat, refine, and persist, focusing on internalized goals</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>8.</td>
<td>Assess the status of proximal (short-term) goals</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>9.</td>
<td>Adopt new or modify original proximal (short-term) subgoals that meet/reflect present needs.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

*Figure 1.* Supporting Theories in the Researcher-Designed Active Agency Model of Self-Regulated Deliberate Flow (SRDF).

Figure 2. Model of Self-Regulated Deliberate Flow (SRDF).

**Conceptual Framework**

The capacity to learn autonomously is highly valued in higher education (Stephenson & Laycock, 1993). The increased demand of academic tasks in higher education requires a high level of self-efficacy and persistence (Fennollar, Román, & Cuestas, 2007; Ruban & McCoach, 2005). Those students who have a high level of self-efficacy (personal capability to complete a given task) are likely to adopt mastery (learning) goals to gain competence that lead to achievement in higher education (Hsieh et al., 2007).

Deci and Ryan (2000) recognized that students have a basic need for competence before they apply themselves, called competence motivation. How much students will
apply themselves depends on their perceived competence which describes their ability in a particular area of study (Conroy et al., 2007). Focusing on perceived competence from a motivational perspective may inform the applied studio teacher about how to encourage students to initiate, direct, and sustain desired behaviors for progress in a higher education setting.

Experimental and correlational research has shown that learning environments that contain autonomy support encourage academic competence, emotional well-being, and achievement (Assor, Kaplan, & Roth, 2002; Black, & Deci, 2000; Fazey, & Fazey, 2001; Gagne & Deci, 2005; Levesque, Zuehlke, Stanek, & Ryan, 2004; Niemiec, & Ryan, 2009; Ryan & Deci, 2000; Trouilloud et al., 2006; Vansteenkiste, Lens, & Deci, 2006; Sierens, Vansteenkiste, Goossens, Soenens, & Dochy, 2009; Vansteenkiste, Simons, Lens, Sheldon, & Deci, 2004). Deci and Ryan (1985) posited that certain social and environmental conditions, such as feedback, communication, and rewards, contribute towards intrinsic motivation under the Cognitive Evaluation Theory (CET), a sub-theory of SDT. CET specifies that unless perceived competence is accompanied by autonomy, it will not influence intrinsic motivation (Ryan & Deci, 2000).

Most of the research that has been conducted within SDT in educational settings in the past decade has predicted students’ persistence, motivation, and achievement with reliability in academic contexts other than in applied music study (Reeve, Deci, & Ryan, 2004; Deci & Ryan, 2008). Little is known about the relationship of autonomy support to competence and persistence in applied music study (Lehmann, 1997).
The established goals (goal content) of the musician, which are directly linked to the intrinsic interest of the musician, may influence their continued persistence (Vansteenkiste et al., 2006; Zimmerman, 1998). Those learners, who understand their own capabilities and intrinsic needs before they practice, are more apt to apply the necessary effort to improve (Hsieh et al., 2007). When the developing musician is focused on the consciously chosen goals, they may be more likely to become intrinsically motivated to increase the amount of practice needed to achieve their immediate learning goals (Csikszentmihalyi, 1990).

A goal orientation that reflects the immediate needs of the developing musician may gradually increase the individual self-competence necessary toward activating self-regulated learning in the musical practice room. Planning and preparation for practice is one way in which the pedagogue may influence the effectiveness of the practice session (Woody, 2001). The pedagogue has an opportunity to present a systematic way of planning for the achievement of mastery goals based on existing motivational theories that focus on the improvement of ability as reflected in the researcher-designed active agency model of Self-Regulated Deliberate Flow (see Figures 1 and 2).

The applied studio teacher cannot assume that undergraduate music students inherently possess motivation based upon their choice to become music majors. The self-determination theory (SDT) (Ryan et al., 1997) suggested two preliminary steps that may foster self-direction and independence. To apply these steps to the undergraduate applied studio setting, first, the applied studio teacher should become acquainted with the motives, perspectives for study, and perceived competence of the student when planning
for structured practice. Second, the applied studio teacher should involve the undergraduate applied music student in the decision-making process to contribute toward autonomy support (Trouilloud et al., 2006). Assuming responsibility for how the learning objectives will be achieved may increase learner’s autonomy and persistence and improve self-efficacy judgment (Deci et al., 1994; Huit, 2001).

The Lewin Research Spiral (1948) illustrated a cycle of planning, action, and fact-finding that could be used towards maintaining relevant practice activities and goals. Each time the applied studio teacher and the applied music student meet, the goals can be reviewed and modified as needed (see Figure 3).

*Figure 3. Lewin Research Spiral (1948)*
Statement of the Problem

According to Jorgensen (1995, 2000), applied music students in higher education are expected to hone their performance skills in practice sessions by self-teaching. Applied music students are expected to demonstrate an improvement in ability at each subsequent lesson. Jorgensen (2000) noted that 108 of 141 (77%) applied music students in higher education reported that they received little or no training from their applied studio teacher on practice behaviors.

Kostka (2002) reported that applied studio teachers assume that students use a practice routine yet found that many applied studio teachers did not discuss a practice plan nor practice strategies with their students. Kostka surveyed 134 undergraduate and graduate college students from sixteen institutions and found that less than half had a practice routine and that only 69% of students were provided with practice strategies by their applied studio teachers. It is apparent that applied music students are responsible for sharpening their performance skills, yet applied studio teachers often differ in their respect for the students’ ability to demonstrate initiative in their own training outside of the applied studio setting (Jorgensen, 2000).

According to Deci and Ryan (2000), under SDT, individuals had a propensity to self-organize behaviors through the social environment to function effectively. An assumption of SDT is that in order to function, individuals required supports from the social environment to self-organize. Furthermore, structure satisfied the need for competence to regulate students’ behavior. Students required a clear explanation on how to regulate their study activities (Sierens et al., 2009).
Students’ effectance, defined as the belief in one’s ability, knowledge, and skills to master the tasks at hand (Niemiec & Ryan, 2009), similar to feelings of efficacy, may be supported by teachers who provide them with the relevant tools, challenging learning activities and feedback to “master the tasks at hand” (p. 139). Withholding the necessary means by which individuals can self-organize practice behaviors may ignore the individuals’ need for self-initiation to direct their own learning (Deci et al., 1994; Deci & Ryan, 2000). There is a need to address this problem regarding the lack of structure and strategic planning for practice if applied music students are expected to demonstrate improvement following practice.

Rationale of the Study

Studying self-perceptions of competence, persistence, and autonomy support in the undergraduate music major may promote further understanding of the optimal conditions in higher education that may influence the persistence of practice during applied music study. Fazey and Fazey (2001) posited these constructs to be essential to understanding autonomy in the learning process after measuring the potential of 394 first-year undergraduates in nonspecified majors for autonomy in learning as related to competence, self-esteem, motivation, and locus of control. The respondents in the study portrayed the capacity for autonomy yet were concerned about their ability to function in higher education.

The influence of social-environmental conditions on motivation, and persistence of practice is not yet known as far as it can be determined under SDT in the area of
applied music study. Consequently, it may be of interest to the applied studio teacher when predicting why certain students demonstrate higher achievement than others.

Vansteenkiste and others (2004) posited that the application of an autonomous-supportive learning environment may subsequently produce more dedicated and engaged students, promoting increased persistent practice, improved performance skills acquisition and depth of processing. Up until now, the mediating role of perceived competence in the relationship between autonomy support and persistence has garnered little attention with respect to applied music study. Student perceptions were found to be highly correlated with their learning behaviors and motivational beliefs (Stefanou, Perencevich, DiCintio, & Turner, 2004). Measuring the degree to which students’ perceive their applied studio teacher to be autonomy-supportive and the relationship to individual competence and persistence in practice in the study of applied music may lead to insights on how to sustain motivation to achieve the degree of practice necessary for a performing career.

**Purpose of the Study**

The purpose of this study was to investigate the relationships among undergraduate applied music students’ perceptions of autonomy support, competence, and task persistence. In addition, the demographic variables of sex and age were explored in relation to persistence of practice.
Research Questions

The following research questions were addressed in this study:

1. What is the degree of the relationship among perceived autonomy support, competence, and task persistence?
2. To what extent does perceived competence mediate the relationship between perceived autonomy support and task persistence?
3. To what extent do students’ sex and age predict perceived task persistence?

It was hypothesized that the perceived competence of an applied music student mediates the relationship between perceived autonomy and task persistence. Since autonomy and competence are necessary conditions to sustain intrinsic motivation, and intrinsic motivation is necessary for persistence, it is likely that perceived competence mediates the relation between perceived autonomy and task persistence (Niemiec & Ryan, 2009) (see Figure 4).

Figure 4. Hypothesized Path Model
Outcome variable = task persistence; mediating variable = perceived competence; predictor variable = perceived autonomy support
Definition of Terms

The first six terms that are defined below relate to those theories which are mentioned in the researcher-designed Model of Self-Regulated Deliberate Flow (SRDF) (see Figures 1 and 2). The three remaining definitions represent the main constructs that are being measured in this study.

Supporting Theories of SRDF. Cognitive Load Theory (CLT) refers to that which resides within the working memory that impedes an individual’s ability to process information during the acquisition of complex cognitive tasks (Sweller, 1988).

Deliberate Practice (DP) is a form of structured practice, designed by a teacher, during which the individual intentionally trains with concentration, immediate feedback, repetition and refinement to attain a level of performance using goal-directed activities (Ericsson et al., 1993; Ericsson & Lehmann, 1996; Lehmann, 1997; Miksza, 2007).

The concept of “flow” is described as the state in which one is focused on consciously chosen goals that pertain to a task. The “flow” state (FS) contains an inherent enjoyment in the purposeful pursuit of focused goals. During “flow,” the individual is immersed in the relevant tasks that achieve the defined goals.

Goal theory (GT) holds that through self-evaluation, one influences the learning process using self-directed incentives or guides (see Figures 1 and 2). When goals contain a challenge, they increase motivation across domains, including music (Bandura, 1997; Locke & Lathan, 1990; Mento, Steel, & Karren, 1987).
Self-efficacy theory (SET) is the perceived assessment of one’s competence to apply and organize the necessary means by which to reach a selected outcome (Bandura, 1986).

Self-regulated learning (SRL) is defined as the choice of students to engage in self-directed learning, thus requiring the autonomy of learners who intentionally direct, regulate, and monitor their actions to increase their expertise.

*Main Constructs Measured in this Study.* Perceived autonomy is the degree to which students assess their control and choice of their behavior (Deci & Ryan, 1985). Perceived competence is the degree to which students report their ability as adequately meeting the requirements of a given achievement behavior (Harter, 1987). Task persistence, pertaining to the duration and factors contributing to a musician’s engagement in the activity of practice, is described as lengthy, focused, intensive, challenging, self-satisfying, enjoyable, and dedicated.

*Delimitations of Study*

Participants were limited to undergraduate music majors within the state of Florida. The demographics of the respondent sample contained relevant characteristics along with the number of participating institutions contributed to the generalizability of the outcomes. The self-report scales were deployed in the same sequence for each participant but could have been provided in a varied sequence through the web survey software to avoid a potential order effect on the data. Each participant was prompted to complete the demographic data form at the beginning of the web survey. Presenting the
demographic data form as the final section of the instrument could have prevented personal data from influencing the self-report scales.
Chapter 2

Literature Review

Performance achievement is generally the ultimate goal of applied studio instruction yet it cannot be realized without an ample commitment to practice according to expert performance researchers. Persistence in musical activities, such as practice, is influenced by the feedback and individual competence the student derives from the complex social interactions that take place in the applied studio setting (Hallam, 2002). Perceived competence, the assessment of one’s ability to strive for achievement, is necessary for motivation (Deci & Ryan, 2000). What leads to the motivation for practice called musical motivation? How does the applied studio teacher foster the long term commitment of the student to sustain musical motivation? Based upon the studies of Jorgensen (2000) and Elliot and Dweck (2005), institutions of higher learning should address these questions through cognitive learning theories, such as self-regulated learning, to understand the importance of student initiative and responsibility and the social context of learning as people attain competence through self-regulation. These questions are addressed by the following topics in this chapter: Perceived Competence, Self-Efficacy Theory, Social-Contextual Influences on Motivation, Autonomy-Supportive and Controlling Contexts, Experiential Learning, Humanistic View, Self-Regulated Learning, Goal-Setting, Acquisition of Expert Performance, and Deliberate Practice. This chapter concludes with the structured regimen of practice that may guide
the applied music student toward optimizing and sustaining purposeful practice.

*Perceived Competence*

The construct of perceived competence was studied within SDT under autonomy-supportive and controlling contexts to measure how sufficient individuals viewed their ability or skill. Feeling competent and understanding the value of a task was necessary before individuals choose to autonomously regulate themselves (Deci & Ryan, 2008). Fazey and Fazey (2001), likewise, reported that a high self-perception of competence is necessary to act autonomously and that autonomy is dependent on the self-perceptions of competence for a particular task.

SDT theorists posited that developing perceived competence supported or enhanced intrinsic motivation (Conroy et al., 2007). The roles of those who influenced perceived competence, such as the teacher or coach in social learning contexts were of interest due to the impact on achievement motivation (Elliot & Dweck, 2005). Self-efficacy, which is discussed next, regarded the learners’ prediction on how well they could organize these skills to meet the requirements of a task (Bandura & Schunk, 1981). *Self-Efficacy Theory*

The construct of self-efficacy is used by social cognitive theorists to describe self-beliefs in ability to be successful on specific tasks (Conroy et al., 2007). A social cognitive theory of human functioning, developed by clinical psychologist, Albert Bandura (1977) examined the influential role of self-efficacy on individual differences in persistence. Since then, the measurement and application of self-efficacy on human effort
have been well documented across the domains in education, health, sociology, management, and sports (Beck, 2008).

Perceived self-efficacy represents a belief in the sum of acquired skills to operate under a variety of conditions (Bandura, 1997), whereas perceived competence applies to the perception of ability and effectiveness pertaining to achievement within a specific setting (Trouilloud et al., 2006). Efficacy beliefs play a key role in the assessment of competence (Bandura, 1997). “Students’ self-efficacy beliefs in their own competence and capacity to master tasks on the long road to success determine how, and in what ways, they will be able to persist in the face of difficulty …” (McPherson & McCormick, 2006, p. 332). Replicating a previous study in 2003, McPherson and McCormick (2006) measured the self-efficacy of 686 musicians, aged between 9-19 years one day prior to their music examinations, concluding that personal self-efficacy was necessary towards achievement in the performance-based examinations. McPherson and McCormick suggested that studying self-beliefs might further assist music researchers to better understand the process of how self-assurance was developed when students encounter challenging tasks during musical study.

An expectancy of success was incorporated in Atkinson’s (1964) theory of achievement motivation (ATM). ATM identifies a causal judgment that affects perceived self-efficacy based upon past performance failures or successes. Highly self-efficacious individuals attributed achievement to effort, whereas, those who possessed a low sense of self-efficacy attributed achievement to ability (Bandura, 1997).
Schmidt (2007) identified a motivation construct which he titled, musical self-efficacy (MSE) relating perceptions of competence to the area of performance achievement. He surveyed 456 students in grades 6-12 in four school districts who performed in music ensembles on six separate motivational constructs. The participants demonstrated a high level of self- and group-efficacy and a commitment to their ensembles.

Pajares (2003) reviewed the literature on self-efficacy and motivation. Self-efficacy could be influenced by actively engaging in a given task; however, tasks appeared more difficult to individuals whose perceived competence was lower. These individuals most often attributed their task achievement to ability rather than effort, and consequently, were unwilling to devote the necessary effort to gain expertise. Before participating in a difficult task, the individual often assessed the risk of failure, governed by their self-beliefs. Kurtz (2007), a former graduate of the New England Conservatory, wrote the book entitled, Practicing, A Musician’s Return to Music, in which he described: “Practicing is striving … practicing is also a risk, a test of character, a threat of deeply personal failure” (p. 9).

Prediction of student behavior in school contexts has typically been associated with self-beliefs, attitudes, and intentions by social psychologists. Self-beliefs, that form an individual’s self-efficacy judgment, were thought to significantly impact academic motivation. Perceptions of self-beliefs were influenced by these four sources: social comparisons, social persuasions, anxiety, and most of all, past experiences (Pajares, 2003). Bong and Clark (1999) reviewed the literature on self-efficacy and academic self-
concept. They found that individuals evaluated themselves in comparison with past experiences, including past performances and accomplishments in work-related settings. According to the attribution theory (AT) (Weiner, 1980, 1985, 1986), these accumulated experiences and events represented a current self-perception that interpreted the potential success or failure of one’s efforts.

Self-efficacy judgment (SEJ) represented the perceived assessment of having the relevant technical or musical skills to organize and apply to a given task (Maehr et al., 2002). Self-efficacy judgments concerning academic tasks were formulated by evaluating one’s personal “capabilities, skills, and knowledge to master school-related tasks” (Maehr et al., 2002, p. 357). Bandura (1982) believed that the individual developed self-efficacy from these sources: personal experiences, observation of others, and external influences. According to Maehr and others (2002), self-efficacy in music was the “explicit judgments of having particular technical or musical skills necessary to perform or learn a specific piece of music” (p. 357) or in reference to “some type of goal” (p. 357).

The skill acquisition of a musician is often compared with that of an athlete; both activities require the individual to meet physical and mental demands. In the domain of sports, self-efficacy is most commonly cited to affect individual task performance (Smith, Kass, Rotunda, & Schneider, 2006). Moritz, Feltz, Fahrback, and Mack (2000) performed a meta-analysis of the relationship between self-efficacy and performance in sport from 45 studies and obtained a .38 mean correlation in the strength of the relationship. The findings suggested that past performances were the strongest predictor of self-efficacy. The decision to engage in a task was further enhanced by self-efficacy. The amount of
effort applied toward the task was contingent on the expectation of completing the task and the associated reward for the task as in external rewards. External rewards for musicians, such as monetary compensation, social recognition, and competition, also provide incentives for improvement as opposed to inherent enjoyment in the work itself (Ericsson et al., 1993).

The expectancy-value theory (EVT) stated that individuals assign judgment before they ascribed themselves to engage in an activity based upon previous failure or successful experiences (Ajzen & Fishbein, 1980; Atkinson, 1964; Rotter, 1982; Vroom, 1964). The attitudes were that developed from previous experiences, in turn, might guide the individual toward an expectation of either success or failure in a given task or behavior. The expectancy value theory (EVT) differed from the attribution theory (AT) in that students would pursue a task based upon the reward that was associated with successfully completing the task (Feather, 1969; Fishbein & Ajzen, 1975). The theory for reasoned action posited that the will to pursue an activity was determined by the perceived outcome and the valuation of that outcome (Ajzen & Fishbein, 1980). Ajzen (1991) then introduced the theory of planned behavior in which he added the construct of perceived behavioral control, by which the individual assessed the probability of success based upon the ease or difficulty of the task.

*Social-Contextual Influences on Motivation*

The conditions that foster motivation were of interest to social psychologists who examined environmental factors and social conditions for what undermines or enhances perceived competence and self-efficacy. Deci and others (1991) reported, after observing
students in classrooms, laboratory, and homes over the previous 20 years, that the way
students perceived the motivational learning climate strongly impacted student outcomes.

Motivation and perceived competence in musical pursuits are dependent on the
social interactions that occurred in the educational environment of the applied studio
setting; however, there has been little research on the impact of the learning environment
and musical motivation (Hallam, 2002). Three decades of research concerning self-
determination theory (SDT) have explored how academic performance could be
influenced by factors in the social environment. Individual motivation, development, and
performance were dependent on the contextual conditions in the learning climate in
which the student functions.

One subtheory of SDT, the cognitive evaluation theory (CET), specifically
addressed the potential for intrinsic motivation in terms of social environmental factors
(Deci & Ryan, 1985). CET posited that people needed autonomy and competence;
therefore, social-contextual factors that encourage autonomy and competence enhanced
intrinsic motivation. When social factors diminished feelings of autonomy and
competence, intrinsic motivation was decreased and people felt controlled (Gagne &
Deci, 2005).

Intrinsic motivation was the choice to engage in an activity for one’s own
satisfaction rather than for others (Chaffin & Lemieux, 2004). The construct of intrinsic
motivation, in the domain of education, was the individual’s propensity to learn for
inherent interest and enjoyment. Intrinsic motivation required certain conditions to
sustain it in the social environment, some of which were “choice, acknowledgement of
feelings, and opportunities for self-direction;” all of which contributed towards autonomy (Ryan & Deci, 2000, p. 70). “Sustainable motivation is called ‘autonomous’ because it emerges from one’s sense of self and is accompanied by feelings of willingness and engagement” (Stone, Deci & Ryan, 2008, p. 4). Ryan and others (1997) described autonomy from an organizational perspective. They posited that individuals to varying degrees, self-directed themselves toward satisfying their own needs and values. “The greater one’s autonomy, the more one acts in accord with self-endorsed values, needs, and intentions . . .” (p. 702).

Intrinsic motivation for musical study flourished in a learning context that allowed for personal autonomy, although some applied studio teachers did not permit their students to have an active decision-making role in their own learning development (Hallam, 1994; Lehmann et al., 2007). The use of intrinsic goals encouraged the likelihood of more dedicated and engaged musicians (Vansteenkiste et al., 2004). When both intrinsic goals and autonomy support were present in the learning process, the student’s basic psychological needs were fulfilled. When these basic human needs were met, student persistence, performance, and learning were facilitated.

Students tended to accept intrinsic goals more readily in an autonomy-supportive learning climate, signifying that active involvement positively promotes intrinsic goals and a deep processing of content (Vansteenkiste et al., 2004). The interpersonal learning climate was conveyed by the orientation of the teacher towards autonomy support or controlling style (Deci & Ryan, 2008).
**Autonomy-Supportive Contexts**

Autonomy referred to processes that were initiated and governed by the self, thus implying self-regulation (Ryan et al., 1997). An autonomy-supportive context was one which instructors provide opportunities for choice and initiation to the student to direct their own learning. Furthermore, high pressure tactics were avoided and immediate feedback was provided to motivate behavior (Deci et al., 1994).

The interpersonal climate of an educational setting was reflective of the orientation of the teacher. Instructors who exemplified an autonomy-supportive social environment were those who provided opportunities for self-initiation and choice (Vansteenkiste et al., 2006). SDT posited that students in an autonomy-supportive learning context were more apt to endeavor in goal pursuits than those in a controlled learning context in which the teacher directed all learning (Ryan & Deci, 2000). The use of autonomous-supportive learning satisfied the basic psychological needs of students and might subsequently produce more dedicated and engaged students, promoting increased persistent practice, improved performance skills acquisition, and depth of processing (Vansteenkiste et al., 2004). Figure 5 shows the behavioral outcomes that result from an autonomy-supportive context under SDT.
Figure 5. Behavioral Outcomes of an Autonomy-Supportive Context

Vansteenkiste and others (2004) observed 200 first-year college students, who were given an intrinsic goal during their teacher education degree, in an autonomy-supportive vs. a controlling condition. They determined that college students were more likely to persist and engage in a task when an intrinsic goal was presented to them in an autonomy-supportive environment rather than one that is controlling.

Undergraduate music majors are required to study a principal instrument one-on-one with a member of the applied music faculty during their degree program. Kennell (2002) referred to the relationship of student and teacher as an expert-novice apprenticeship. Applied studio instruction provided the transfer of desired skills, knowledge, and capabilities overseen by the master teacher. A collaborative relationship between instructor and music student paved the way toward a less controlling environment in which the depth of learning was promoted.
Controlling Contexts

Controlling contexts involved pressuring individuals to behave in specific ways using coercive strategies through intimidation, coercive language, deadlines, inflexible conditions, and rewards to engage in study or an activity (Vansteenkiste et al., 2006). These strategies might have negative consequences toward well-being and achievement, including lowered self-esteem and depression, reported Grolnick and Ryan (1987), who studied 91 fifth grade children under controlling and noncontrolling settings. The controlling context in this study was imposed by coercing students to read the assigned text so they could recall it for a forthcoming test. Students were then intimidated by a statement like: “I want to see how much you can remember. You should work as hard as you can because I’ll be grading you on the test to see if you’re learning well enough” (Grolnick & Ryan, 1987, p. 893). The detriments to student motivation, resulting from a teacher-directed environment, are stated herein.

A controlled environment could be described as one in which the teacher directed the learning activities. Environmental constraint conditions, such as extrinsic reward systems, performance goals, and social comparisons, tended to distract the learner from the task. Some examples of extrinsic reward systems were: (a) expected reward, (b) expected evaluation, (c) surveillance, (d) time limits, and (e) competition (Hennessey & Amabile, 1988). External pressure in the environment could adversely affect progress and enjoyment of work; however, the desire for social recognition and competition might motivate some students to increase their level of musicianship and practice (Ryan &
Deci, 2000; Woody, 2001). Figure 6 shows the behavioral outcomes that result from a controlled context under SDT.

Figure 6. Behavioral Outcomes of a Controlling Context

Jorgensen (2000) summarized various studies, in the area of higher education, to examine if applied music students have the opportunity for independent and active learning. In one study he reviewed, nine piano students were asked to estimate the degree to which they demonstrated initiative by taking an active role in the lessons by estimating a percentage of active participation. Students estimated their active participation to be 36% of the lesson time. Jorgensen concluded that the piano teacher dominated the majority of the activity and the initiative during the lessons. Jorgensen cautioned music educators that suppressing students’ responsibility to direct the learning process ignored “highly accepted theories about the importance of active participation from the student for an optimal outcome of learning” (p. 70).
**Experiential Learning: Fostering an Environment for Engagement**

Experiential learning is a self-initiated process during which the learner has full access to the relevant materials and the setting necessary for practical learning acquisition (Kolb, Boyatzis, & Mainemelis, 2000). Early educational philosophers and psychologists, Dewey (1933), Lewin (1948), and Piaget (1967) laid the foundation for the experiential learning theory (ELT). Kolb and Fry (1975), inspired by the work by Lewin (1948), designed a four-stage, continuous, experiential learning cycle of the adult learning process which they claimed could begin at any one of the following stages: (1) concrete, (2) abstract, (3) reflection, and (4) active experimentation. The concrete stage represented knowledge that was derived from direct practical experience; the abstract stage represented knowledge acquired by knowing; the reflection stage referred to the meaning that is derived from practical experience; and active experimentation stage referred to putting knowledge into practice (Atherton, 2009).

An instructor who employed an instructional approach, based upon experiential learning theory, would ordinarily ask the students what they want to learn, identify their concerns, and assist the students in finding the practical resources and contacts necessary to fulfill their individual needs (Rogers & Freiberg, 1994). ELT stated that students would pursue a task with more persistence when it was relevant to their personal interests (Rogers, 1969).

Promoting a positive learning climate means addressing the intrinsic needs of the learner. Educational philosopher, John Dewey (1933), emphasized the importance on the quality of interaction between the instructor and student in his chapter entitled, “School
Conditions and the Training of Thought,” in which he discussed the attitudinal climate that arose from the interpersonal instructor-student contact. Dewey described this attitudinal climate more distinctly as the mental attitudes and habits of the instructor as “conditioning influences of the school environment” (1933, p. 46). It may be helpful to understand how teachers may cultivate a positive attitudinal environment in which student needs are fulfilled and validated.

Brown (2008) wrote a paper describing the model for student-centered instruction in music education. One component of the model was to establish a discourse between the teacher and student that entails listening, acknowledging, and validating student concerns and interests that include involving the student as the decision-maker. This type of discourse may help to facilitate the learning process, foster student independence and acknowledge the student’s capability. Student-centered instruction is one example in which students make decisions and contribute strategies on how they may learn. When students take responsibility toward the learning process, they become more self-sufficient.

Gumm (2003) wrote a book on music teaching style in which he discussed that one way the instructor validated students concerns and needs was by cultivating a responsive relationship between teacher and student. He posited that a key goal of the teacher may be to encourage students to function on their own. Allowing the students to provide their opinions, problem-solve, and make choices during the learning process validates their significant role.
The Humanistic View of Education

A humanistic view of education is one in which students have a choice in the tasks and activities that structure the learning process (Huitt, 2001). According to Rogers’ theory of learning (1969), that emphasized adult learners, experiential learning was facilitated when both the teacher and the adult learner were fully involved in the process. The teacher-facilitator should select the learning climate, establish the points of emphases, and present an organizational framework in conjunction with the needs and ability of the adult learner. The adult learner routinely directed, controlled, and assessed their own progress through self-evaluation (Rogers, 1969; Rogers & Freiberg, 1994; Smith, 1997, 2004).

Educational psychologists who embraced a humanistic view for education, such as Carl Rogers, theorized that the role of the teacher was as facilitator. According to Rogers, the facilitation of learning was reliant on “the personal relationship between the facilitator and the learner” (Kirschenbaum & Henderson, 1990, p. 305). Rogers believed that the purpose of the environment was to engage the learner and that the attitude of the facilitator should reflect an understanding of the learner. Rogers and Freiberg (1994) identified three key skills of a facilitator of learning: “(1) realness, (2) prizing, and (3) empathy” (p. 160). Realness referred to presenting oneself as a genuine person without a façade; prizing referred to having an appreciation of the student as a separate person; and empathy referred to an understanding, awareness, and respect for the students' point-of-view.
According to Rogers (1969), the teacher-facilitator must organize the resources and set a positive learning climate in which the student participated fully in the process. Rogers and Freiberg (1994) agreed that in order for significant learning to take place, education should have personal relevance or meaning to the whole person. Meaning was determined by whether the learner’s needs were being met by the instructor. Significance was met by whether the learner was personally involved in the process.

The YouthLearn Initiative at the Education Development Center [EDC], (2003) recommended that when developing a supportive learning climate, there were four areas that might bear consideration: (a) mission, (b) systematic organization, (c) collaborative interaction, and (d) policies for academic expectation. The academic progress of the student relied on the support within this context. All four areas may have implications for the applied studio setting. For example, the mission of applied music study may contain concepts and values that define the core of the pedagogical method. Dewey (1933) described this as “current educational aims and ideals” (p. 47). The instructor should prescribe a “flexible command of subject matter” in order to establish the curriculum tailored to the needs of the student (Dewey, 1933, p. 54), viewing the student’s practical needs as the most urgent.

The validation of the student’s needs may avoid student’s indifference to the planned curriculum (Dewey, 1933, p. 49). Assor, Kaplan, and Roth (2002) found that 862 elementary and secondary students could equally differentiate autonomy-supportive or controlling teacher behaviors. Three ways teachers can seek student initiative emerged from this study, emphasizing the need for an autonomy support: (a) foster relevance for
each learning activity proposed, (b) allow student to voice dissatisfaction with learning tasks, and (c) choose tasks consistent with goals/interests of the student.

A collaborative interaction and systematic organization might consist of the means through which the applied studio teacher and applied music student would communicate on the established responsibilities, and schedules using an approach of “active inquiry” where the opinions and needs of the student were valued and acknowledged (Dewey, 1933, p. 55). Similarly, Rogerian counseling, a type of psychotherapy named after psychologist, Carl Rogers, engaged open, active listening, and was applicable in education to acknowledge student concerns, viewpoints, and needs.

According to Wiggins (2007), when students understood their role within the learning setting, they were fully engaged, becoming agents of their own learning. McCombs and Marzano (1990) called this development a “sense of self,” resulting in the “self-as-agent concept” influencing the degree to which the learner directed and regulated their behavior (p. 56).

**Self-Regulated Learning (SRL)**

Music performance has been a discipline that required “high levels of self-regulation and mental…” capacity (McPherson & McCormick, 2006, p. 334). Expert music performers demonstrated self-regulated thinking, such as systematic planning practice sessions, strategies, problem solving, and evaluation (Hallam, 2001). Winne and Hadwin (1998) proposed a cognitive-behavioral model of the four phases of self-regulated learning: (1) task definition (assessment), (2) goal setting and planning (use of immediate resources), (3) enactment of strategies, and (4) adaptation (application of
strategies), suggesting that after learners defined a task, they planned to address the task using study strategies, later adjusting the strategies based upon personal feedback. Winne and Hadwin viewed a self-regulated learner in terms of: (a) an agent for learning, (b) evaluating progress through reflection, (c) engagement in reciprocal goal setting, (d) a clear focus on how to achieve goals, (e) application of procedural knowledge to familiar obstacles, and (f) application of metacognitive strategies.

Sierens and others (2009) considered self-regulated learning to be a goal-directed process that included self-reflection and evaluation. Self-regulation occurred when the musician was aware of specific practice goals, received feedback, and possessed personal motivation (Lehmann et al., 2007). Self-reflection required the musician to react and respond during the practice experience, a self-regulating process called metacognition (McPherson & Zimmerman, 2002; Zimmerman, 1998). The concept of metacognition involved the self-monitoring of progress and self-adjustment in performance following immediate feedback.

Re-evaluating was one way in which a person assessed learning goals and efficiency (Schraw, 1998). Teaching students the metacognitive information and information processing strategies that controlled their individual performance might increase their competence, content absorption, and the effectiveness of instruction when working independently (Glaser, 2000; Winne, 1995).

Expert performers acquired metacognitive strategies to control their progress, such as planning and predicting. Students determined working strategies that would assist them during individual practice through a process of self-monitoring, called
metacognitive awareness. Metacognitive awareness occurred when the learner internalized the established learning goals and was willing to apply the necessary strategies toward the task (Winne, 1995). Once the music learner had developed a metacognitive awareness, practice time could be maximized by applying only those personal strategies that effectively achieved a higher level of skill (Ericsson et al., 1993; Lehmann, 1997).

Schraw (1998) posited that metacognitive knowledge was teachable. He reported specific studies in which instruction on metacognitive skills contributed towards an improvement in learning. Metacognitive awareness, Schraw posited, with regard to procedural knowledge, referred to the method or system of accomplishing tasks through self-monitoring. Procedural knowledge referred to the steps, sequences, and actions required to perform a task. Those who possessed a high degree of procedural knowledge tended to do well at sequencing and therefore functioned more efficiently at the given task.

Rohwer and Polk (2006) deemed reflective and analytical skills necessary when students were not under direct instructional supervision for efficient practice, based on multiple studies. Professional musicians were found to be better at reflective skills than their younger counterparts. Metacognitive skill, as it pertained to musical study, was the awareness of one’s own individual practice strategies. Metacognitive awareness was accomplished through internalizing goals during which one was willing to apply the necessary strategies (Lehmann, 1997).
Ericsson and Lehmann (1996) determined that expert performers acquired metacognitive skills during extended intense practice, such as planning, anticipating, and reasoning during which music learners adapted as they improved. These adaptive strategies were formulated to address obstacles that were encountered during practice. Performance was improved when the student was taught skills for metacognitive regulation by the instructor (Schraw, 1998).

Ross, Green, Salisbury-Glennon, and Tollefson (2006) wrote a theoretical framework of metacognitive self-regulation based upon the past research on the relation of self-regulation to achievement. Ross and others summarized that the adjustment of one’s strategies during self-monitoring was a metacognitive process. The refinement of strategies was crucial to exceed academically. Conscious changes were made to instructional strategies as the ability to self-monitor improved. As expertise improved, so did metacognitive knowledge, therefore, more advanced students tended to possess more metacognitive knowledge.

_Fostering Self-Regulated Learning (SRL) with Teacher-Provided Structure_

According to Sierens and others (2009), cognitive strategies might be used in an autonomy-supportive environment to contribute structure to the learning process. Sierens and colleagues hypothesized that those teachers who provided structure in form of clear guidelines and strategies, fostered self-regulated learning (SRL), and satisfied the students’ need for competence. Students enrolled in teacher education and secondary school ($N = 526$), ranged from 15 to 27 years of age, completed one scale questionnaire for each of the following constructs using a 5-point response scale: (a) perceived teacher
autonomy support, (b) perceived teacher structure, (c) cognitive strategy use, and (d) self-regulation. The findings indicated that autonomy support \( r = .25 \), cognitive strategy use \( r = .59 \), and structure \( r = .35 \).

Jorgensen (2007) defined practice strategies as “consciously applied” thoughts and behaviors during practice through which musicians “select, organize, integrate, and rehearse new knowledge and skills” (p. 85). Nielsen (1999) observed the strategy use of two advanced organists in their third year of college as they prepared for their final exams. The study revealed that gifted instrumental students used strategies during the practice session, such as pinpointing relevant areas for practice and organizing the learning materials. Nielsen wrote a classification of learning strategies during practice identifying two categories: (a) primary and (b) support strategies. Primary strategies referred to selecting and organizing relevant learning materials in relation to existing knowledge, and support strategies referred to concentration, managing anxiety, and efficiency.

Leon-Guerrero (2008) studied self-regulation strategies used by 16 adolescent instrumental musicians while practicing in order to gain understanding on how instructors could direct students to be more productive. Students were able to verbalize 15 separate self-regulating strategies during their practice sessions, indicating their ability to self-regulate. The implications of the study were that it was beneficial to instruct students on how to utilize self-regulatory processes during practice to assist students in the accomplishment of their goals. Another implication of this study was that music
educators encourage students to verbally reflect and evaluate during performance to
better inform both the educator and the student of their self-regulating strategies.

Kostka (2002) studied the attitudes and expectation for use of practice time, practice strategies, and practice routines by surveying 127 college-level applied studio teachers and 134 music majors. Applied studio teachers reported that they expected students to use a practice routine yet less than half of the students actually used one, indicating that the planning and structuring of practice might not have been provided to them. Kostka also found that although college-level applied studio teachers reported discussing specific practice strategies with their students, only 59% of students reported this as accurate. Miksza (2007) examined the observed practice behaviors of 60 high school wind players in relation to performance achievement. Students who demonstrated higher levels skill were those who were more organized during practice. Miksza recommended that applied studio teachers both formulate lesson plans that direct students in the application of strategies and model efficient and inefficient practice strategies when training instrumentalists.

Lehmann and Davidson (2002) wrote an introduction to the research on skill acquisition in the New Handbook of Research on Music Teaching and Learning. Both writers concurred that optimized practice was attributed to the advancement of musical skill. Furthermore, they postulated that it was imperative that the applied studio teacher provide a self-guided system to the developing musician to promote efficiency and quality of practice.
Many instrumental students in higher education receive little or no training from their applied studio teachers on practice behavior. Jorgensen (2000) asked 141 students at his institution the extent to which they were satisfied with the efficiency of their practice. He found that 2% of the students reported that they were always satisfied; 42% stated that they were often satisfied; 50% reported that they were sometimes satisfied, while 6% indicated that they were seldom satisfied. Seventy-seven percent of the students studied stated that they wanted to learn more about how to practice, especially with respect to concentration and efficiency. Based upon his findings, Jorgensen (2000) recommended that applied studio teachers allocate time towards observing students during practice to develop students’ independence.

Helping students to independently direct and control their own learning process through metacognitive thought is conducive to an autonomous-supportive environment. When the self-directed musician chose to apply metacognitive skills to achieve personal goals, the process was defined as self-regulated learning (McCombs & Marzano, 1990). Typically, self-regulated learners used planning and self-monitoring to adapt to a specific task. Learners sought self-regulatory tools to satisfy their need for competence when adapting to a given task (Elliot & Dweck, 2005). They tended to possess both a high level of self-efficacy and intrinsic motivation (Ross et al., 2006). If students readily evaluated their learning progress through reflection, they might be more inclined to engage in reciprocal goal setting of even more challenging and higher goals for the self (McCombs & Marzano, 1990).
**Goal-Setting**

Lehmann (1997) wrote an overview on how expertise is developed in music through optimized practice. Goal-setting and the evaluation of goal outcomes were viewed as most significant when striving for efficient practice. Miksza (2007) wrote on the importance of the quality of practice. Students who were more organized in their practice tended to achieve at a higher rate, therefore, instructors should ensure that students be equipped with focused goals.

Deci and others (1994) suggested focusing on goals that were intrinsic in nature to encourage engagement and competence. Bandura (1997) posited that individuals were more likely adhere to goals when those goals were designed from their self-interests. The more the goals were self-set, the more effort a student would be willing to fully commit to pursue them. According to Csikszentmihalyi (1990), when goals matched the intrinsic needs and abilities of the individual, they became fully invested, and were thereby empowered for persistent and meaningful independent practice.

When goals were internalized, they were self-selected because the individual identified them with importance. An individual adopted these self-selected goals to regulate their behavior through a process called identification. Identification was the process of associating oneself with the value of a given activity and choosing to engage in the activity willingly with volition based upon its personal relevance, such as self-selected goals. During this process, the individual internalized the importance of a particular activity and, subsequently, chose to engage in a particular behavior (Black & Deci, 2000; Vansteenkiste et al., 2004; Vansteenkiste et al., 2006). Locke and Latham
(1990) wrote a goal-setting theory of motivation that had received “substantial empirical support,” according to Gagne and Deci (2005). Having specific goals is not sufficient; “… people’s performance is maximized when people understand what behaviors will lead to the goals and feel competent to do those behaviors” (Gagne & Deci, 2005, p.341).

Specificity might be the key when identifying attainable goals, including the amount of effort required to achieve them. Specific goals might have a motivating effect by cultivating positive attitudes towards the required tasks to achieve them (Bryan & Locke, 1967). Subgoal-based planning was allowing musicians to develop expertise using problem-solving activities that focus on small, manageable, short-term areas of study at a given time (Chaffin & Lemieux, 2004). The use of proximal subgoals helped to provide incentives on smaller, attainable goals for immediate and present action (Bandura, 1997). Organized action, such as proximal subgoals, further perceived competence by demonstrating personal capability in the learning environment (Bandura & Schunk, 1981). Bandura and Schunk studied 40 children from six elementary schools using proximal and distal goals. They found that lofty distal (distant) goals were easily postponed and had no effect whereas proximal subgoals tend to progressively cultivate greater self-satisfaction in mathematical performance. Likewise, the use of proximal subgoals during applied music study might affect greater satisfaction during independent practice sessions.

Learning contracts were one way of managing learning goals and activities in higher education, according to Stephenson and Laycock (1993, 2002). Stephenson and Laycock described the educational function of learning contracts in their book, *Using
Learning Contracts in Higher Education. Learning contracts were negotiated between students and others to document clear, intentional, and achievable goals. Preparing the learning contract in collaboration with the students allowed the teacher to participate and review the relevance in the development of student plans. As a result, students recognized the roles of themselves and the teacher in the educational process. Stephenson and Laycock (1993, 2002) posited that the students benefitted by clarifying learning goals and developing “a strong sense of ownership of their studies” (p. 18).

Learning contracts may also be considered in an applied studio setting. The applied studio teacher and students should document proximal subgoals on a weekly basis at each applied music lesson in conjunction with the immediate needs of the students. Each subgoal is time-dated for the upcoming lesson, in the form of an assignment, with an associated focal point or task needed to achieve the said goal. Figure 7 presents an example of a learning contract between an applied studio teacher and an undergraduate applied flute student with the use of proximal goals.
Csikszentmihalyi (1979, 1990, 1996) postulated that it was essential that the selected goals matched the skills and perceived capabilities of the individual to avoid boredom or frustration. Musicians needed to feel equipped to face obstacles and apply the necessary skills and strategies for success during practice; therefore, when designing goals, it is important to consider the perceived capabilities of the individual, called perceived competence. Surprisingly, if students had the skills and ability to master a task, they might still view it as unattainable due to their perceived level of competence (Bandura, 1997).

Once a goal has been adopted, it is essential to have feedback to maintain substantial motivation (Bandura, 1997; Bandura & Cervone, 1983; Becker, 1978; Strang, Lawrence, & Fowler, 1978; Troum, 2006, 2009). Positive performance feedback, when it was informational in content, was found to enhance intrinsic motivation and contribute...
toward the need for competence (Deci & Ryan, 2008). On the day before he was being honored for his lifetime achievement by the National Flute Association, flutist Sir James Galway at 70 years old was asked by the researcher what motivated him to pursue the tremendous hours of practice when he was a developing musician. He replied that, “I knew I had a gift and I didn’t want to waste it.” (J. Galway, personal communication, August 15, 2009). Social psychologists might hypothesize that Sir Galway received the positive feedback for his ability from those in his immediate learning environment which, in turn, enhanced his sustained musical motivation for practice.

Bandura (1997) asserted that the individual must have strong self-efficacy to intensify the persistence necessary to meet challenging goals. Bandura stated that perseverance was greater when there was a stronger sense of personal efficacy. Pajares (2002) also stated, “The higher the sense of efficacy, the greater the effort, persistence, and resilience” (p. 116). Those with high self-efficacy tended to persevere despite adversity or obstacles. Students would intensify their efforts when they felt capable to meet presented challenges; therefore, instructors might refrain from being highly critical when students attempt a new or challenging skill or the need for competence may be jeopardized (Vansteenkiste et al., 2006). Overt criticism instead of belief in the student’s capability was found to lower achievement and in various experimental and correlational research studies. In contrast, providing positive feedback promoted an environment of caring and respect for the student facilitating competence and intrinsic motivation (Deci, Koestner, & Ryan, 1999; Ryan & Deci, 2000). Building performance skills, called skill
acquisition, is discussed in the following paragraphs within the wide body of social-cognitive research available on developing expert performance.

**Acquisition of Expert Performance**

Since the 1800s, expert performance researchers (EPR) had sought to research skill acquisition; however, in the 1990s, the expert performance movement emerged seeking to understand environmental, physiological, and emotional characteristics that contribute to expert task acquisition in many domains including chess, medicine, auditing, computer programming, bridge, physics, sports, typing, juggling, dance, and music. EPR psychologists determined that improvement in skill was related to instructional training, extensive practice, acquiring strategies relevant to the task, individual motivation, and informative feedback during practice (Ericsson, 1999, 2002; Ericsson & Lehmann, 1996). The review below synthesizes some of these aforementioned findings.

What expertise researchers found was that one’s potential was fulfilled through motivation, early opportunity, persistence, and resource rather than biological factors. Ericsson and Lehmann (1996) defined expert performance as “consistently superior performance on a specified set of representative tasks for a domain” (p. 277). An expert musician was defined as an individual who possessed the ability to consecutively reproduce a musical performance with superior precision and expressivity (Ericsson et al., 1993).

Lehmann and others (2007) defined musical achievement as the “amount of formal practice accumulated over the life span” (p. 39). Expert performance was
generalized to include those who demonstrated at least 10 years of experience across
related hours of practice over the lifetime of the musician to achievement of musical skill:
music teacher for 4,000 hours, professional musician for 8,000 hours, and international
violinist for 10,000 hours. As a youth pianist, Misha Dichter practiced for 12 hours a day
to develop his competence (Zimmerman, 1998). The key difference in skill acquisition
among expert performers was attributed to the hours of individualized training through
repetition and refinement (Ericsson et al., 1993).

*Outliers*, a recently released book by Malcolm Gladwell, included sociological
findings to address the conditions for academic and work-related success. Gladwell
(2008) found that achievement was related to natural ability, early experiences, timing,
environment, cultural heritage and, most importantly, hard work. The musical group, The
Beatles, was used as a model of musical success, noting the extraordinary number of
performances the Beatles gave before their first break in 1964. The Beatles performed
live an estimated 1200 times. “Most bands today don’t perform 1200 times in their entire

Ericsson and others (1993) found that high levels of musical performance was
mediated by a structured regimen called deliberate practice (DP), citing the explicit goal
as improvement. Ericsson and others distinguished DP from play, claiming that it was not
inherently enjoyable due to its effortful activity and lack of immediate reward. Serena
Williams, one of two Williams’ sisters who had dominated the sport of tennis over a
number of years, said of enjoyment and the tennis court: “It’s a stage, I’m a performer
and I love to perform and being in front of the crowds and hearing them cheer for me. The problem is; there usually aren’t any crowds at practices” (Futterman, 2009, p. W1). Ms. Williams was referring to practice as an unenjoyable and solitary experience. “Musical performance establishes a relationship between the performer and an audience. But musical practice is solitary, a relationship with yourself” (Kurtz, 2007, p. 17).

Ericsson and others (1993) computed the amount of musical practice in the diaries of 10 advanced college violinists in reference to how much time was spent on 12 specific activities that were related to the pursuit of musical study and 10 specific activities that were not music-related. Participants were also asked to rate these activities with regard to relevance, effort, and pleasure. The violinists who developed the highest level of expertise spent more time on music-related activities. All “violinists rated practice alone as the most important activity related to improvement of violin performance” but recognized that practice required effort (p. 375). Lehmann (1997) hypothesized with Ericsson and others that these results would not have occurred without formalized practice, therefore, the applied studio teacher might consider designing relevant practice activities that might motivate the developing musician to selectively engage in DP (Lehmann, 1997). The key elements of DP were (a) set specific goals and strategies, (b) concentrated on technique, (c) repetition of the task, and (d) immediate informative feedback. They were expanded further on DP by these topics: Concentrate on Explicit and Relevant Goals, Relevant Feedback, and Extended Practice.
Deliberate Practice

Ericsson and others (1993) claimed that the concept of DP referred to the individualized training activities designed to improve individual performance expertise through repetition and refinement. The maximum benefits to DP were acquired by concentrating on present goals and strategies, repeating the task, obtaining immediate and meaningful feedback, and by concentrating on technique and outcome. The prescribed activities for DP should be designed and monitored by an expert in the field. A sustained amount of deliberate practice, called extensive practice, has been reported to lead to a higher level of musical expertise (Lehmann & Davidson, 2002).

Concentrate on Explicit and Relevant Goals. DP involved identifying those key techniques that encoded information meaningfully and contributed toward improvement of the task (Ericsson, 1996). Ericsson and others (1993) posited that the training activities required the musician to internalize relevant practice activities that specifically addressed one’s intrinsic needs. According to Hallam (1995, 1998), these practice activities, should include a wide variety of strategies individualized to the learner.

A metacognitive approach elicited students’ active participation in the learning process by maintaining their primary focus on those elements that were critical and relevant to the task while allowing students to evaluate and self-monitor their personal progress. The musician acquired and employed metacognitive strategies, such as control, planning, and monitoring during extended practice.

Knowing the relevance of the activity could be a source of motivation (Deci et al., 1994). After an instructor presented new material to a student, that student reconstructed
it for his or her own relevance. Material that was relevant, instead of redundant, was used to construct schemas. Once schemata were established in working memory, routines became a part of the toolbox of the student, requiring less time for processing problems. Over time, as students gained expertise, they identified which sources of information were integral to the task and would likewise identify the relevant tasks in order to improve skill level (Ericsson & Lehmann, 1996).

A cognitive load, based on Cognitive Load Theory (CLT), represented redundant or irrelevant tasks that were known to reduce one’s ability to learn. The reduction of cognitive load occurred when irrelevant factors were eliminated (Sweller, 1988). When learners were provided with relevant sources of information, they proceeded more efficiently through a given task. Consequently, when a learner was provided with redundant material, the cognitive load was increased (Sweller & Chandler, 1991). Some examples of cognitive load pertaining to musical study were irrelevant or redundant practice strategies and materials and unattainable goals (Sweller & Chandler, 1991; Ericsson & Lehmann, 1996; Merriënboer & Sweller, 2005).

*Relevant Feedback.* Once a goal has been adopted, it was essential to have feedback to maintain substantial motivation. Explicit instruction that monitored, diagnosed or informed the learner was imperative before there could be any repetition of the task. Repetition of an activity would not lead to improvement unless the subject was aware of said relevant feedback (Ericsson et al., 1993; Csikszentmihalyi, 1990, 1996). According to SDT, instructors should “provide timely positive feedback” (Deci et al., 1994, p. 21) in an autonomy-supportive context, thereby, intrinsic motivation would be
enhanced, increasing the students’ well being. The factors contributing toward persistence, motivating an individual to remain engaged in practice for an extended period of time, are presented below under the heading of extended practice.

Extended Practice. High levels of skill acquisition were related to engagement in pertinent practice activities along with effortful practice. This type of lengthy and focused practice, called extended practice, might result in neurological and other physiological adaptation (Ericsson & Lehmann, 1996).

Maehr and others (2002) labeled the behavioral indicators of motivation, one of which was persistence. Persistence was intrinsically motivated by self-improvement and personal satisfaction, high self-efficacy, achievement connected with personal effort, and extensive practice. Music educators recognized that students who displayed indicators of continuing engagement or motivation were demonstrating persistence. When musicians showed persistence, they were demonstrating continuing motivation (Maehr et al., 2002). When students found the process of practice rewarding, they were expressing enjoyment in their own involvement (Lehmann et al., 2007).

Summary

In summary, the literature showed that the motivational climate represented the context within which students assessed their own self-determination toward achievement. The facilitator of learning, in this case, the applied studio teacher, has been fully charged with providing a supportive environment which carried the potential to increase or undermine autonomy, competence, and persistence necessary for musical skill acquisition. The tools and techniques that were provided to the undergraduate music
major should ensure self-regulation for self-directed study during the time in which they were isolated for independent practice if improvement of ability was expected. The self-regulated learner pursued manageable subgoals that allow for self-guided, persistent extended practice. Armed with short-term proximal goals that meet their immediate intrinsic needs, students might develop the focused awareness and the purpose to intentionally persist in practice for the extended periods needed to hone their skills.

Individual student perceptions have been used widely to predict and examine the classroom experience especially in relation to student motivation outcomes (Ames, 1992). Students’ perceptions influenced their engagement in teacher defined activities (Ryan, Connell, & Deci, 1985; Ryan & Grolnick, 1986). Good (1983) emphasized how tasks and activities were designed and presented by the instructor influenced how much time students would invest. Students often demonstrated effort based upon their perceived competence and personal relevance. Deci and others (1991), proponents of the self-determination theory (SDT), believed that sustainable motivation and performance were maximized within social contexts that provided for autonomy and for feelings of competence.

In the remaining portion of this study, participants in this study were asked to self-report the teacher-student interaction (learning climate) as well as their individual competence and persistence as it related to musical practice during an undergraduate course of applied music study. It was hoped by learning the strength of the relationship between the main constructs of the study, applied studio teachers may become more
acutely aware of the impact of the social context of the applied studio setting on the persistence of practice.
Chapter 3

Method

Overview

The purpose of this study was to investigate the relationships among undergraduate applied music students’ perceptions of autonomy support, competence, and task persistence. Studies under the rubric of the self-determination theory (SDT) have postulated that social contexts that support the basic needs of competence and autonomy facilitated motivation and performance. Measuring the degree to which students’ perceived their applied studio teacher to be autonomy-supportive and the relationship to individual competence and persistence in practice may lead to insights on how to sustain motivation to achieve the degree of practice necessary for a performing career. In addition, the demographic variables of sex and age were explored in relation to persistence of practice. Students’ self-report data gathered from three scales, administered in the form of a web survey, were analyzed to assess the strength of the interrelation of these constructs.

Design

A correlational research design was used to determine the degree to which perceived autonomy support was related to perceived competence and task persistence in musical practice. Self-report data on the constructs were collected using a web (online) survey. A mean score for each respondent was computed for each of three constructs:
perceived autonomy support (PA), perceived competence (PC), and task persistence (TP). The predictor variable was PA, and the criterion variable was TP. The mediating variable, between PA and TP, was hypothesized as PC. A path analysis was used to compute the path coefficients.

Participants

All undergraduate music majors, whether enrolled in applied music, vocal or instrumental study at two small private, one large private, and three large public universities in Central, North and West Florida, were invited to participate in the study. A total of 1,842 undergraduate music majors received an e-mail through their undergraduate faculty advisor at each institution inviting them to volunteer for participation in the study. A total of 366 undergraduate music majors, 18-64 years of age, responded to the invitation to participate in this study, yielding a response rate of 20%. All participants completed at least one semester of applied music study in order to take part in this study.

Measures

Three instruments (self-report scales) and a demographic data collection form administered as a web survey, entitled Musical Practice Questionnaires, were used for data collection purposes. An electronic consent form (see Appendix A) accompanied the web survey. The web survey was developed using online survey software by Select Survey. Select Survey enabled the researcher to preview, design, deploy a web survey and analyze data in an online format. Access to the data was restricted to the researcher-designers by activating a high security level on the instrument. A description of the components of the Musical Practice Questionnaire (web survey) follows.
Demographic Data Form: This form (see Appendix B) was designed to obtain demographic information on respondent’s sex, age, and primary instrument.

Self-Report Scales: Three self-report scales designed to assess the undergraduate music major’s perception of autonomy support, competence, and task persistence (see Appendices C-E) were included in the web survey. Two of the self-report scales that measured perceived autonomy support and competence, the Learning Climate Questionnaire (LCQ) and the Perceived Competence for Learning Scale (PCS) respectively, were adapted by the researcher specifically for applied music study. Both self-report scales were available to researchers for download by the authors, Edward L. Deci and Richard M. Ryan as found on the SDT website, “Self-Determination Theory: An Approach to Human Motivation & Personality” from the University of Rochester http://www.psych.rochester.edu/SDT/. The following is a description of each of the three self-report scales designed to measure perceived autonomy support, task persistence of musical practice, and perceived competence.

Perceived Autonomy Support (LCQ-Short Form). The short form of the Learning Climate Questionnaire (LCQ-Short Form) was a 6-item, self-report scale designed to measure perceived autonomy support from an individual instructor at the college level. The short, 6-item version of the LCQ (see Appendix C) was selected by the researcher over the longer 15-item version to keep all three self-report scales of a similar length in the study. Both the 6-item and the 15-item versions were developed by the same authors at the University of Rochester available at the above website. The participants were asked to indicate their extent of agreement or disagreement with each of six statements on the
LCQ related to their experience with their applied studio teacher using a 7-point response scale that ranged from 1 = strongly disagree to 7 = strongly agree. The following adaptation was made by the researcher to the end of the first question as seen in quotations to reference the topic of this study: I feel that my instructor provides me choices and options “about what I practice.” The five remaining questions assessed the applied studio teacher’s ability to communicate understanding, convey confidence, encourage questions, and listen to concerns. A scale score for each respondent was obtained by computing the mean of the individual’s ratings on all six items on the scale. This scale score was used for data analysis purposes. A higher scale score indicated a higher level of perceived autonomy support. The internal consistency of the 6-item LCQ short form was just slightly lower ($\alpha = .91$) than that of the longer 15-item version ($\alpha = .93$ and $\alpha = .94$) for two different test administrations (Black & Deci, 2000).

**Task Persistence Measure of Musical Practice (TPMMP).** The Task Persistence Measure of Musical Practice (TPMMP) (see Appendix D) was a 7-item, researcher-constructed, self-report scale designed to measure the extent to which students self-report effortful and sustained practice when practicing on an independent basis. The scale began with the general stem: “My practice sessions can be described as…” followed by the individual descriptors: (1) lengthy, (2) focused, (3) intensive, (4) challenging, (5) self-satisfying, (6) enjoyable, and (7) dedicated. Each of these descriptors contributes to the persistence of practice according to the deliberate practice approach (Ericsson et al., 1993; Lehmann, 1997), and to the flow theory (Csikszentmihalyi, 1990). Participants were asked to respond to each description of a practice session by indicating his or her
extent of agreement or disagreement with the one-word descriptor using a 7-point response scale that ranged from 1 = strongly disagree to 7 = strongly agree. A scale score for each respondent was obtained by computing the mean of the individual’s ratings for all 7 descriptors (items) on the scale. This scale score was used for data analysis purposes. A higher mean score indicated a higher level of task persistence during musical practice.

**Perceived Competence (PCS).** The Perceived Competence for Learning Scale (PCS) is a 4-item scale designed to measure respondents’ feelings of competence in mastery of lesson materials in a specific college course (see Appendix E). Each item was constructed to be task-specific to the area being studied; in this case, applied music study. The four items related to (a) confidence, (b) capability, (c) ability to achieve goals outlined in the course, and (d) how well the individual met the challenge. Participants were asked to respond to each statement using a 7-point response scale that ranged from 1 = Not at all true to 7 = Very true. A scale score for each respondent was obtained by computing the mean of the individual’s ratings on all four items on the scale. This scale score was used for data analysis purposes. A higher mean score indicated a higher level of perceived competence. Perceived competence was found to be positively related to persistence in completing academic tasks (Pintrich & DeGroot, 1990); therefore it was used as a predictor of persistence in this study.

Moritz and others (2000) recommended that self-efficacy, similar to perceived competence, should be assessed in a task-specific manner to ensure validity and reliability following their meta-analysis review of self-efficacy and sports performance.
Bandura (1997) suggested that a reliable scale should contain sufficient points to allow for the individual to differentiate while recording the strength of their belief in reference to a specified task. Williams and Deci (1996) expanded this instrument from four to five competence items to investigate the ability beliefs of medical students; these researchers reported an internal consistency reliability estimate for the 5-item scale of above $\alpha = .80$. Williams, Freedman and Deci (1998) found the same level of internal consistency while investigating the management of glucose levels among patients with diabetes.

Content Validation of Instruments

All three scales were submitted for review to a panel of experts that consisted of three applied studio teachers, one conductor, three social psychologists, and two music educators. The purpose of the panel of experts was to review each of the scales for adequacy of content coverage of the domain and the match between the item and the domain being measured and provide feedback as to whether any of the items were in need of modification or were not appropriate for measuring the construct. Social psychologists who were listed on the faculty of the SDT site were also consulted to determine whether the instruments from the SDT site were applicable for the intended constructs. Based on the feedback received from this review process, all of the items within the self-report scales were found appropriate for the domain. However, the following changes regarding the structuring of the scales were suggested and applied. Redundant questions were removed; a stem for the task persistence scale was added for ease and clarity; and a definition of practice sessions was added. An electronic format for
administering the survey was recommended and used instead of a hard copy format to reach the maximum number of participants.

*Pilot Study*

During the spring semester of 2009, a pilot study was conducted to test the administration of the web survey instrument with a small group of undergraduate music majors \((N = 26)\) who were enrolled in applied music study at a small private university in Central Florida. The e-mail from the faculty advisor included a letter of invitation to participate in the pilot study, along with the link to the web survey instrument. In the letter of invitation it was suggested that students might gain an increased understanding about why and how practice was pursued.

The pilot sample included undergraduate music majors enrolled in applied music study \((N = 26)\) between the ages of 18 and 38 years \((M = 21.69, \ SD = 4.60)\), with a median age of 20 years. The sample breakdown by sex was 38% \((n = 10)\) male and 62% \((n = 16)\) female. The primary instrument for subjects in the sample was 50% \((n = 13)\) instrumental (non-vocal) and 50% \((n = 13)\) vocal. Internal consistency reliability estimates were computed for each of the three scales, using Cronbach’s alpha, and are reported below in Tables 1-3.

*Perceived Competence for Learning Scale (PCS).* The inter-item correlations and item-total correlations for this 4-item scale are reported in Table 1. The item-total correlations on the PCS were found to be high, ranging from .79 to .94. The inter-item correlations on the PCS ranged from .43 to .80. Cronbach’s alpha was \(\alpha = .84\), indicating a relatively high degree of internal consistency among the items in this scale.
Table 1

*Item-Total and Inter-Item Correlation Matrix for Perceived Competence for Learning Scale (PCS)*

<table>
<thead>
<tr>
<th>Question #</th>
<th>PC1</th>
<th>PC2</th>
<th>PC3</th>
<th>PC</th>
</tr>
</thead>
<tbody>
<tr>
<td>PC1</td>
<td></td>
<td></td>
<td></td>
<td>.81</td>
</tr>
<tr>
<td>PC2</td>
<td>.75</td>
<td></td>
<td></td>
<td>.94</td>
</tr>
<tr>
<td>PC3</td>
<td>.43</td>
<td>.66</td>
<td></td>
<td>.79</td>
</tr>
<tr>
<td>PC4</td>
<td>.52</td>
<td>.80</td>
<td>.49</td>
<td>.82</td>
</tr>
</tbody>
</table>

*Note.* All coefficients are significant at the 0.01 level (2-tailed).
PC = perceived competence; PC1 = question 1 on the scale.

*Perceived Autonomy Support Scale (LCQ-short form).* The inter-item correlations and item-total correlations for this 6-item scale are reported in Table 2. The item-total correlations on the LCQ were found to be high, ranging from .88 to .95. The inter-item correlations on the LCQ were found to be high, ranging from .73 to .90. Cronbach’s alpha was $\alpha = .96$, indicating a high degree of internal consistency among the items in this scale.
Table 2

*Item-Total and Inter-Item Correlation Matrix for Perceived Autonomy Support Scale (LCQ)*

<table>
<thead>
<tr>
<th>Question#</th>
<th>PA1</th>
<th>PA2</th>
<th>PA3</th>
<th>PA4</th>
<th>PA5</th>
<th>PA</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA1</td>
<td></td>
<td>.94</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PA2</td>
<td>.82</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.92</td>
</tr>
<tr>
<td>PA3</td>
<td>.78</td>
<td>.73</td>
<td></td>
<td></td>
<td></td>
<td>.88</td>
</tr>
<tr>
<td>PA4</td>
<td>.90</td>
<td>.83</td>
<td>.85</td>
<td></td>
<td></td>
<td>.93</td>
</tr>
<tr>
<td>PA5</td>
<td>.88</td>
<td>.85</td>
<td>.82</td>
<td>.87</td>
<td></td>
<td>.95</td>
</tr>
<tr>
<td>PA6</td>
<td>.84</td>
<td>.86</td>
<td>.73</td>
<td>.74</td>
<td>.83</td>
<td>.91</td>
</tr>
</tbody>
</table>

*Note.* Correlation is significant at the .01 level (2-tailed)
PA = perceived autonomy support; PA1 = question 1 on the scale

Task Persistence Measure of Musical Practice Scale (TPMMP). The inter-item correlations and item-total correlations for this 7-item scale are reported in Table 3. The item-total correlations on the TPMMP were found to be high, ranging from .76 to .89. The inter-item correlations on the TPMMP were found to be moderate, ranging from .50 to .87. Cronbach’s alpha was $\alpha = .92$, indicating a high degree of internal consistency among the items in this scale.
Table 3

Item-Total and Inter-Item Correlation Matrix for Task Persistence Measure of Musical Practice (TPMMP)

<table>
<thead>
<tr>
<th>Question #</th>
<th>TP1</th>
<th>TP2</th>
<th>TP3</th>
<th>TP4</th>
<th>TP5</th>
<th>TP6</th>
<th>TP</th>
</tr>
</thead>
<tbody>
<tr>
<td>TP1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.76</td>
</tr>
<tr>
<td>TP2</td>
<td>.51</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.84</td>
</tr>
<tr>
<td>TP3</td>
<td>.55</td>
<td>.71</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.78</td>
</tr>
<tr>
<td>TP4</td>
<td>.52</td>
<td>.58</td>
<td>.68</td>
<td></td>
<td></td>
<td></td>
<td>.79</td>
</tr>
<tr>
<td>TP5</td>
<td>.50</td>
<td>.75</td>
<td>.55</td>
<td>.65</td>
<td></td>
<td></td>
<td>.86</td>
</tr>
<tr>
<td>TP6</td>
<td>.58</td>
<td>.70</td>
<td>.52</td>
<td>.58</td>
<td>.85</td>
<td></td>
<td>.88</td>
</tr>
<tr>
<td>TP7</td>
<td>.71</td>
<td>.70</td>
<td>.57</td>
<td>.59</td>
<td>.70</td>
<td>.87</td>
<td>.89</td>
</tr>
</tbody>
</table>

Note. All coefficients are significant at the .01 level (2-tailed).
TP = task persistence; TP1 = question 1 on the scale.

Means, Standard Deviations, Kurtosis, and Skewness

An overall inspection of the item means revealed that individuals rated themselves highest in perceived competence and lowest in perceived task persistence. The item means also revealed a score above 4 on all three variables. The levels of agreement for each 7-point scale were as follows: 1 = strongly disagree (LCQ and TPMMP) or not at all true (PCS), 4 = neutral (LCQ and TPMMP) or somewhat true (PCS), and 7 = strongly agree (LCQ and TPMMP) or very true (PCS).

As was indicated earlier in the description of the scales, respondent’s overall score for each scale was the computed scale score (mean of ratings on the items on the scale) which ranged from 1 to 7.
The item means and standard deviations are reported on all three scales in Table 4. In addition, measures of skewness and kurtosis for each of the scales are reported. Positive kurtosis values for the PC, PA indicate somewhat leptokurtic distributions for these variables. The PC and PA distributions were negatively skewed. However, these values were considered to be within reasonably acceptable ranges.

Table 4

*Item Means, Standard Deviation, Kurtosis, and Skewness on PC, PA, and TP*

<table>
<thead>
<tr>
<th>Measure</th>
<th>M</th>
<th>SD</th>
<th>Kurtosis</th>
<th>Skewness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived Competence (PC)</td>
<td>6.24</td>
<td>.84</td>
<td>1.29</td>
<td>-1.33</td>
</tr>
<tr>
<td>Perceived Autonomy Support (PA)</td>
<td>5.68</td>
<td>1.53</td>
<td>1.36</td>
<td>-1.36</td>
</tr>
<tr>
<td>Task Persistence (TP)</td>
<td>5.20</td>
<td>1.10</td>
<td>-0.50</td>
<td>-0.53</td>
</tr>
</tbody>
</table>

*Note. N = 26*

Item means represents the average score on each measure that ranged from 1 = strongly disagree to 7 = strongly agree.

Data Collection Procedures

Participants consented to participate in the study by using the link provided in the invitation at the beginning of the web survey instrument. They next proceeded to the first section of the survey, the electronic consent form (see Appendix A). Following the successful completion of the electronic consent form, the participant was forwarded to section two, to complete the demographic data form (see Appendix B). Following the successful completion of the demographic data form, the participant was forwarded to
section three to complete the three self-report scales (see Appendices C-E).

The first section of the instrument, the electronic consent form (see Appendix A), indicated that participation in the study was completely voluntary and confidential. No individual participant or applied studio was identified in the reporting of the results. In addition, the participants were informed that the study was being used to complete a dissertation study on the topic of musical practice.

Specific instructions to complete each scale were provide at initiation. The web survey instrument program allowed the participant to proceed to the next section of the survey only when all responses for the current section were entered. Each section of the web survey instrument advanced in the following sequence following full completion of all responses: (1) electronic consent form, (2) demographics data form, (3) perceived autonomy support scale, (4) task persistence scale, and (5) perceived competence scale. The web survey took the subjects approximately between 2 and 5 minutes each to complete. Individual participants were thanked for participating in the study following a successful completion of the survey.

Once all sections of the web survey instrument were completed by the participant using the link provided, the data were exported into a Microsoft Excel file by the researcher using an access ID and password. The data generated from the web survey instrument were confidential and could not be linked to a specific participant. The web survey was limited to one response for each participant. The number of respondents from each participating university was determined by creating a new link each time the
instrument was deployed for use. The names of the participating universities in which participants were enrolled are reported in Chapter 4.

Since the instrument was transmitted by e-mail, it was anticipated that there would be no verbal or social interaction between subjects. It was therefore assumed that the participants would not have influenced the responses of one another.

The researcher received IRB approval on February 24, 2009. The instrument was launched for the pilot study on February 25, 2009. The instrument for the main study was launched and data analyzed from March 2009 through November 2009.

Data Analysis Procedures

Data gathered by the web survey were retrieved and exported for the researcher using the online web survey software, Select Survey, in the form of a Microsoft Excel file. Data analysis was performed by sorting the data by individual respondent.

Prior to addressing the research questions, participants’ responses to the Task Persistence Measure of Musical Practice (TPMMP) scale were subjected to factor analytic procedures to determine the underlying factor structure of this scale which was developed by the researcher within the context of this study. An exploratory common factor analysis model was utilized. Squared multiple correlations were used as the initial communality estimates. This correlation coefficient accounts for the amount of variance a given variable shared in common with all other variables in the data set. Principal axis factor extraction technique was the method used for factor extraction. The number of factors to be retained was determined by examination of eigenvalues, visual examination of the scree plot, and interpretability of the factor solution.
The analyses used to answer each of the research questions are specified below:

**Research Question 1:** What is the degree of the relationship among perceived autonomy support, competence, task persistence?

To answer this research question, Pearson product-moment correlation coefficients were computed.

**Research Question 2:** To what extent does perceived competence mediate the relationship between perceived autonomy support and task persistence?

Perceived competence of applied music students was hypothesized to mediate the relation between perceived autonomy and task persistence. The hypothesized path analysis model that was employed assumed a weak causal ordering of the variables (see Figure 8). The arrows indicate the hypothesized direction of causality among the variables.

![Figure 8. Hypothesized Path Model with Path Coefficients](image)

Outcome variable = task persistence; mediating variable = perceived competence; predictor variable = perceived autonomy support
Perceived autonomy support is an exogenous variable and perceived competence and task persistence are endogenous variables in the hypothesized model. Perceived competence is hypothesized to mediate the effect of perceived autonomy support on task persistence. Perceived autonomy support was hypothesized to have a direct causal effect on task persistence.

Multiple regressions analyses were employed to test the hypothesized relationships in the path analysis model. The direct and indirect effects of perceived autonomy support on perceived competence and task persistence were obtained using path coefficients (standardized regression coefficients). These path coefficients were obtained by computing multiple regression equations in which the criterion variable was in turn, (a) perceived competence with perceived autonomy support as the explanatory variable, and (b) task persistence with perceived autonomy support and perceived competence as the explanatory variables.

*Research Question 3:* To what extent does students’ sex and age predict task persistence?

Multiple regression analysis procedures were used to examine the relationship between demographic and predictor variables, sex and age, and the criterion variable, task persistence.
Chapter 4

Results

In this chapter I reported the results of the data analyses conducted to address the research questions posed in this study. Data analyses were conducted using the GradPack version SPSS 17.0 statistical processing software.

First, the response rate from the web survey instrument is reported after which a description of the demographic characteristics of the respondent sample based upon the demographic data collected is given. Next, I report the results of an exploratory factor analysis of the Task Persistence Measure of Musical Practice (TPMMP) conducted to examine the underlying factor structure of the scale. Reliability estimates of the self-report scales used for data collection purposes are reported. Internal consistency reliability estimates were computed for each of the three scales, using Cronbach’s alpha. Finally, the results of the analysis of data conducted to address each of three research questions are presented. A summary of the results concludes the chapter.

Response Rates

An online form of data collection was used in this study. Although e-mail surveys have shown superior efficiency and cost over postal surveys, response rates were declining for all types of surveys due to the overgrowth of survey research (Sheehan, 2001; Sax, Gilmartin, Lee & Hagedorn, 2008). Student survey response rates at higher
educational institutions have been found to vary between a low of 14% to a high of 70% (Porter & Umbach, 2006).

The link to the web survey instrument was sent to 1,842 undergraduate music majors from six institutions in the state of Florida for this study. The survey had an overall response rate of 20%. The response rates ranged from 12% to 29% across the institutions. The response rate by each participating institution is reported in Table 5.

Table 5

Survey Response Rate by Institution

<table>
<thead>
<tr>
<th>Institution</th>
<th>Survey Links Sent</th>
<th>Surveys Returned</th>
<th>Response Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Florida State University</td>
<td>645</td>
<td>138</td>
<td>21</td>
</tr>
<tr>
<td>*Rollins College</td>
<td>116</td>
<td>26</td>
<td>22</td>
</tr>
<tr>
<td>*Stetson University</td>
<td>240</td>
<td>70</td>
<td>29</td>
</tr>
<tr>
<td>*University of Miami</td>
<td>406</td>
<td>68</td>
<td>17</td>
</tr>
<tr>
<td>University of North Florida</td>
<td>101</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>University of South Florida</td>
<td>334</td>
<td>40</td>
<td>12</td>
</tr>
<tr>
<td>Overall</td>
<td>1,842</td>
<td>366</td>
<td>20</td>
</tr>
</tbody>
</table>

Note. Private Institutions marked with *.

Additional remarks that were inserted in the researcher-provided cover letter by two of the six institutions might have reduced the number of respondents. For example, one institution referred to the electronic survey as an “exercise” thus framing the participation in the study as homework. One of the larger institutions may have impacted the response rate by stating that there was no penalty if they chose not to participate.
Added statements as such were beyond the control of the researcher and might have contributed towards a lower response rate.

**Description of Respondents**

Selected characteristics of the respondent sample are reported in Table 6. The research sample included undergraduate music majors enrolled in applied music study (N = 366) between the ages of 17 to 64 years (M = 20.8, SD = 3.92), with a median of 20 years. As shown in Table 6, the majority of the sample ranged from 20 to 24 years; over 93% were 24 years or less in age. The breakdown by sex was 58.2% female and 41.8% male. The primary instrument for the majority of the sample (68.9%) was instrumental (non-vocal); the primary instrument for the remaining 31.1% of the sample was vocal.

Table 6

*Selected Characteristics of Respondent Sample*

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>153</td>
<td>41.8</td>
</tr>
<tr>
<td>Female</td>
<td>213</td>
<td>58.2</td>
</tr>
<tr>
<td><strong>Age (In Years)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 20</td>
<td>131</td>
<td>35.8</td>
</tr>
<tr>
<td>20-24</td>
<td>212</td>
<td>57.9</td>
</tr>
<tr>
<td>25-29</td>
<td>14</td>
<td>3.8</td>
</tr>
<tr>
<td>30-34</td>
<td>2</td>
<td>0.5</td>
</tr>
<tr>
<td>35+</td>
<td>7</td>
<td>2.0</td>
</tr>
<tr>
<td><strong>Type of Primary Instrument</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instrumental</td>
<td>252</td>
<td>68.9</td>
</tr>
<tr>
<td>Vocal</td>
<td>114</td>
<td>31.1</td>
</tr>
</tbody>
</table>

*Note. N = 366*
Factor Analysis of TPMMP

The Task Persistence Measure of Musical Practice (TPMMP) was developed by the researcher and was subjected to an exploratory common factor analysis to determine the underlying factor structure of this scale. The principal axis factor extraction method was used for factor extraction purposes. Based on an examination of the initial eigenvalues and the scree plot (see Figure 9), the decision was made to retain only one factor. This factor accounted for 57.46% of the common variance among the items on the scale.

Figure 9. Scree Plot of Task Persistence Measure of Musical Practice (TPMMP), N = 366.
Since only one factor was retained, there was not a need for factor rotation. The resultant factor solution is shown in Table 7.

Table 7

*Factor Loadings for Task Persistence Measure of Musical Practice (TPMMP)*

<table>
<thead>
<tr>
<th>My practice sessions can be described as:</th>
<th>Factor Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. dedicated.</td>
<td>.82</td>
</tr>
<tr>
<td>2. intensive.</td>
<td>.79</td>
</tr>
<tr>
<td>3. focused.</td>
<td>.74</td>
</tr>
<tr>
<td>4. self-satisfying.</td>
<td>.73</td>
</tr>
<tr>
<td>5. enjoyable.</td>
<td>.67</td>
</tr>
<tr>
<td>6. challenging.</td>
<td>.63</td>
</tr>
<tr>
<td>7. lengthy.</td>
<td>.57</td>
</tr>
</tbody>
</table>

*Note: N = 366*

Results of the factor analysis suggest that there is one main underlying construct that is being measured by this 7-item scale. The construct is labeled task persistence. The resultant factor also suggested that the deliberate practice approach (Ericsson et al., 1993; Lehmann, 1997), and the flow theory (Csikszentmihalyi, 1990) on which the TPMMP scale was based, measured the intended construct as defined in this study. The seven descriptors (items) of the TPMMP were derived from the two theories: (a) deliberate practice (extensive practice): lengthy, focused, intensive, and (b) flow theory: challenging, self-satisfying, enjoyable, dedicated. Extended practice under the deliberate practice approach represented lengthy and focused practice, demonstrating sustained
motivation posited to improve a high level of skill acquisition whereas the flow theory emphasized continuing engagement through the personal satisfaction that was derived from purposeful and relevant activities pursued during the practice session.

Internal Consistency of Measures

Internal consistency reliability estimates were computed for each of the three scales, using Cronbach’s alpha, and are reported below. The item-total and inter-item correlations for each of the three scales are reported below in Tables 8, 9, and 10.

Perceived Competence Scale (PCS). The inter-item correlations and item-total correlations for this 4-item scale are reported in Table 8. The item-total correlations on the PCS were found to be high, ranging from .86 to .89. The inter-item correlations on the PCS were found to be high, ranging from .60 to .77. Cronbach’s alpha was $\alpha = .89$, indicating a high degree of internal consistency for the items in this scale. The Cronbach’s alphas in previous studies using this scale were reported above $\alpha = .80$ (Williams & Deci, 1996; Williams, Freedman, & Deci, 1998).
Table 8

*Item-Total and Inter-Item Correlation Matrix* for Perceived Competence Scale (PCS)

<table>
<thead>
<tr>
<th>Question #</th>
<th>PC1</th>
<th>PC2</th>
<th>PC3</th>
<th>PC</th>
</tr>
</thead>
<tbody>
<tr>
<td>PC1</td>
<td></td>
<td></td>
<td></td>
<td>.87</td>
</tr>
<tr>
<td>PC2</td>
<td>.77</td>
<td></td>
<td></td>
<td>.86</td>
</tr>
<tr>
<td>PC3</td>
<td>.60</td>
<td>.63</td>
<td></td>
<td>.86</td>
</tr>
<tr>
<td>PC4</td>
<td>.66</td>
<td>.65</td>
<td>.76</td>
<td>.89</td>
</tr>
</tbody>
</table>

*Note.* All coefficients are significant at the .01 level (2-tailed).
PC = perceived competence; PC1 = question 1 on the scale.

_Perceived Autonomy Support Scale (LCQ-short form)._ The inter-item correlations and item-total correlations for this 6-item scale are reported in Table 9. The item-total correlations on the LCQ were found to be high, ranging from .76 to .90. The inter-item correlations on the LCQ were found to be moderate to high, ranging from .49 to .83. Cronbach’s alpha was \( \alpha = .92 \), indicating a high degree of internal consistency for the items in this scale. The Cronbach’s alphas in previous studies using this scale (Black & Deci, 2000; Williams & Deci, 1996; Williams, Wiener, Markakis, Reeve, & Deci, 1994) were reported above \( \alpha = .90 \).
Table 9

*Item-Total and Inter-Item Correlation Matrix for Perceived Autonomy Support Scale (LCQ)*

<table>
<thead>
<tr>
<th>Question#</th>
<th>PA1</th>
<th>PA2</th>
<th>PA3</th>
<th>PA4</th>
<th>PA5</th>
<th>PA</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.76</td>
</tr>
<tr>
<td>PA2</td>
<td></td>
<td>.59</td>
<td></td>
<td></td>
<td></td>
<td>.87</td>
</tr>
<tr>
<td>PA3</td>
<td>.55</td>
<td></td>
<td>.79</td>
<td></td>
<td></td>
<td>.85</td>
</tr>
<tr>
<td>PA4</td>
<td>.49</td>
<td>.66</td>
<td></td>
<td>.70</td>
<td></td>
<td>.83</td>
</tr>
<tr>
<td>PA5</td>
<td>.63</td>
<td>.73</td>
<td>.68</td>
<td></td>
<td>.73</td>
<td>.90</td>
</tr>
<tr>
<td>PA6</td>
<td>.61</td>
<td>.69</td>
<td>.66</td>
<td>.68</td>
<td>.83</td>
<td>.88</td>
</tr>
</tbody>
</table>

*Note.* All coefficients are significant at the .01 level (2-tailed)

PA = perceived autonomy support, PA1 = question 1 on the scale.

Task Persistence Measure of Musical Practice Scale (TPMMP). The inter-item correlations and item-total correlations for this 7-item scale are reported in Table 10. The item-total correlations on the TPMMP were found to be high, ranging from .67 to .84. The inter-item correlations on the TPMMP were found to be moderate but acceptable, ranging from .32 to .75. Cronbach’s alpha was $\alpha = .87$, indicating a relatively high degree of internal consistency for the items in this scale.
Table 10

*Item-Total and Inter-Item Correlation Matrix for Task Persistence Measure of Musical Practice (TPMMP)*

<table>
<thead>
<tr>
<th>Question #</th>
<th>TP1</th>
<th>TP2</th>
<th>TP3</th>
<th>TP4</th>
<th>TP5</th>
<th>TP6</th>
<th>TP</th>
</tr>
</thead>
<tbody>
<tr>
<td>TP1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TP2</td>
<td>.32</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.77</td>
</tr>
<tr>
<td>TP3</td>
<td>.49</td>
<td>.69</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.81</td>
</tr>
<tr>
<td>TP4</td>
<td>.39</td>
<td>.48</td>
<td>.63</td>
<td></td>
<td></td>
<td></td>
<td>.69</td>
</tr>
<tr>
<td>TP5</td>
<td>.38</td>
<td>.56</td>
<td>.48</td>
<td>.37</td>
<td></td>
<td></td>
<td>.78</td>
</tr>
<tr>
<td>TP6</td>
<td>.35</td>
<td>.47</td>
<td>.38</td>
<td>.36</td>
<td>.75</td>
<td></td>
<td>.74</td>
</tr>
<tr>
<td>TP7</td>
<td>.56</td>
<td>.57</td>
<td>.63</td>
<td>.50</td>
<td>.57</td>
<td>.58</td>
<td>.84</td>
</tr>
</tbody>
</table>

Note. All coefficients are significant at the .01 level (2-tailed).
TP = task persistence in practice, TP1 = question 1 on the scale.

**Means, Standard Deviations, Kurtosis, and Skewness**

Means and standard deviations as well as measures of skewness and kurtosis for each of the scales are also reported (see Table 11). An overall inspection of the reported means for each scale revealed that individuals rated themselves highest in perceived competence and lowest in perceived task persistence. The scale means also revealed a score above neutral (above 4) for all three constructs. The levels of agreement for each 7-point scale were as follows: 1 = strongly disagree (LCQ and TPMMP) or not at all true (PCS), 4 = neutral (LCQ and TPMMP) or somewhat true (PCS), and 7 = strongly agree (LCQ and TPMMP) or very true (PCS).
**Task Persistence (TP).** The overall mean score for the perceived task persistence scale was 4.94. Individuals rated their practice sessions highest in terms of challenge (5.35) and lowest in terms of length (3.99). TP had a positive kurtosis value of .50 and had a negative skewness of -.63, both falling within acceptable ranges.

**Perceived Competence (PC) and Perceived Autonomy Support (PA).** Report the means and SDs for these scales. Positive kurtosis values for PC = 1.89, PA = 1.57, indicated a leptokurtic (peaked) distribution. The negative skewness values PC = -1.29, PA = -1.32, indicated a negatively skewed distribution. Kurtosis and skewness fell within acceptable ranges for perceived competence and perceived autonomy support.

Table 11

*Item Means, Standard Deviation, Kurtosis, and Skewness on PC, PA, and TP*

<table>
<thead>
<tr>
<th>Measure</th>
<th>M</th>
<th>SD</th>
<th>Kurtosis</th>
<th>Skewness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived Competence (PC)</td>
<td>6.01</td>
<td>1.03</td>
<td>1.89</td>
<td>-1.29</td>
</tr>
<tr>
<td>Perceived Autonomy Support (PA)</td>
<td>5.59</td>
<td>1.34</td>
<td>1.57</td>
<td>-1.32</td>
</tr>
<tr>
<td>Task Persistence (TP)</td>
<td>4.94</td>
<td>1.11</td>
<td>.50</td>
<td>-.63</td>
</tr>
</tbody>
</table>

*Note. N = 366*

Measure means represents the average score on each measure that ranged from 1 = strongly disagree to 7 = strongly agree.

**Question 1: What is the degree of the relationship among perceived autonomy support, competence, and task persistence?**

To determine the relationship among perceived competence, autonomy support, and task persistence, Pearson product-moment correlation coefficients were computed.
using mean scores from each of the three measures. All three constructs, perceived competence, autonomy support, and task persistence were significantly correlated with each another ($p < .001$). The correlation coefficients ranged from .40 to .49 (see Table 12). As expected, perceived autonomy, competence and task persistence were positively correlated; however, the correlations were moderate. Perceived autonomy accounted for 24.3% of the variance in perceived competence, while perceived autonomy support accounted for 17.7% of the variance in task persistence.

Table 12

<table>
<thead>
<tr>
<th>Variable</th>
<th>PC</th>
<th>PA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived Autonomy Support (PA)</td>
<td>.49*</td>
<td></td>
</tr>
<tr>
<td>Task Persistence (TP)</td>
<td>.40*</td>
<td>.42*</td>
</tr>
</tbody>
</table>

*Note. N = 366

*p < .01

PC = perceived competence; PA = perceived autonomy support; TP = task persistence

Question 2: To what extent does perceived competence mediate the relationship between perceived autonomy support and task persistence?

Perceived competence of applied music students was hypothesized to mediate the relationship between perceived autonomy support and task persistence. A path analysis was utilized to test this hypothesis. Perceived autonomy support is the exogenous variable in the model. Perceived competence and task persistence are the endogenous variables. Perceived autonomy support is hypothesized to have a causal effect on
perceived competence and task persistence. One path in the model leads directly from perceived autonomy support to task persistence. This path reflects the direct effect of perceived autonomy on task persistence. A two-stage path leads from perceived autonomy support to perceived competence and then to task persistence. The product of the path coefficients for these two paths yields the magnitude of the indirect effect of perceived autonomy support as mediated by perceived competence on task persistence. The intercorrelations among the variables in the path model are reported in Table 12.

Two regression models were run using multiple regression analyses. In the first regression model, perceived autonomy support was regressed on perceived competence. The $R^2$ value indicated that perceived autonomy support, accounted for 24.3% of the variance in the outcome variable, perceived competence. The resultant relationship is statistically significant, $R^2 = .243, p < .001$. The $F$-value for the overall regression equation was $F(1, 364) = 116.80, p < .001$. The path coefficient was statistically significant, $\beta = 0.49, p < .001$. The path diagram is shown below in Figure 10.

![Figure 10. Path Diagram of PA, PC and TP.](image)

Outcome variable = task persistence; mediating variable = perceived competence; predictor variable = perceived autonomy support
In the second regression model, perceived autonomy support and perceived competence, were regressed on perceived task persistence. The overall regression model was significant, $R^2 = .23$, $p < .001$. The direct path from perceived competence to task persistence was statistically significant ($\beta = .25$, $p < .001$). The direct path from perceived autonomy support to task persistence was also statistically significant ($\beta = .30$, $p < .001$). Thus, the direct path from perceived autonomy support to task persistence shows a zero-order correlation of .42 (see Table 12) and a significant path coefficient of .30.

The final step of the path analyses was to determine the indirect path from perceived autonomy support to task persistence through perceived competence. The product of both path coefficients from perceived autonomy support to perceived competence and from perceived competence to task persistence was computed to obtain the indirect path coefficient of .12. Table 13 shows the decomposition of the zero-order correlations.

Table 13

*Decomposition of Zero-Order Correlations in Path Analyses*

<table>
<thead>
<tr>
<th>Pairs of Variables</th>
<th>$\beta$ Direct Causal Effect</th>
<th>Indirect Causal Effect</th>
<th>Total Effects</th>
<th>$r_{xy}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived Autonomy Support, Perceived Competence</td>
<td>.49</td>
<td>none</td>
<td>.49</td>
<td>.49</td>
</tr>
<tr>
<td>Perceived Autonomy Support, Task Persistence</td>
<td>.30</td>
<td>.12</td>
<td>.42</td>
<td>.42</td>
</tr>
</tbody>
</table>

*Note. N=366*
As is shown in Figure 10, the direct path from perceived autonomy to task persistence shows a zero-order correlation of .42 and a significant path coefficient of .30. The indirect path from perceived autonomy support to task persistence through perceived competence yielded a significant path coefficient of .12. Thus, as is shown in Table 13, the zero-order correlation of .42 between perceived autonomy support and task persistence is composed of a direct causal effect of .30 and an indirect causal effect of .12. The results suggest that the correlation between perceived autonomy support and task persistence is accounted for by a strong direct effect of perceived autonomy support on task persistence and a somewhat moderate indirect (mediating) effect of perceived competence on task persistence.

**Question 3: To what extent does students’ sex and age predict perceived task persistence?**

Multiple regression analyses were conducted to determine the strength of the relationship between sex and age and the criterion variable, task persistence. The combination of age and sex accounted for 1.8% of the variance in task persistence, \( R = .133, R^2 = .018, p < .05 \). Age accounted for 1.7% of the variance in task persistence, \( r = .132, r^2 = .017, p < .05 \), while sex showed no statistical significance with task persistence, \( r = .014, r^2 = .000, p > .05 \).

**Summary**

Based on the analyses of the self-report data that were collected from undergraduate music majors \( N = 366 \) at three public and three private universities in Florida, perceived autonomy support was found to have a strong direct causal effect on
perceived task persistence while perceived competence was found to play a moderate mediating role between perceived autonomy support and perceived task persistence in musical practice, supporting the hypothesis. Thus, students who perceived that they had strong autonomy support in the applied studio setting are more likely to perceive themselves as more highly task persistent than students who perceived that they had less autonomy support. Also, in the path model, student-perceived competence was found to moderately mediate the effect of perceived autonomy support on perceived task persistence. Thus, in the investigation of the relationship between perceived autonomy support and task persistence, the path analysis also revealed that something in addition to perceived autonomy support, namely perceived competence, served to explain the relationship between perceptions of autonomy support and task persistence. Finally, age was found to have a statistically significant relationship with perceived task persistence (p < .05) but the practical significance was very small.
Chapter 5

Summary, Discussion, and Recommendations

Summary

The purpose of this study was to investigate the relationships among undergraduate applied music students’ perceptions of autonomy support, competence, and task persistence. The resultant Pearson product-moment correlation coefficients showed significance among perceived autonomy support, perceived competence, and perceived task persistence ($p < .001$). Results of a path analysis suggest that perceived autonomy support bore a substantive direct effect on perceived task persistence and perceived competence was found to moderately mediate the effect of perceived autonomy support on perceived task persistence. Age showed a statically significant but substantively weak relationship with perceived task persistence.

Sex differences are often studied in relation to perceptions of competence, academic achievement, and students’ ability to self-regulate (Pajares, 2002). In this study, sex and age were both examined in relation to persistence of practice. Sex did not show a significant relationship with task persistence. Age shared only 1.7% of the variance in task persistence. This suggests that these demographics have little influence on perceived task persistence compared with perceived autonomy support and perceived competence.
Discussion

The literature on SDT posited that autonomy and competence were both necessary conditions to sustain persistence (Deci & Ryan, 2008). It was hypothesized in this study that perceived competence mediated the relationship between perceived autonomy support and task persistence. Multiple regression analyses showed that perceived competence mediated the relationship between perceived autonomy support and task persistence moderately ($\beta = .12$). The correlation between perceived autonomy support and task persistence is accounted for by a strong direct effect between perceived autonomy support on task persistence. This may suggest that those social contexts which support the basic needs of competence and autonomy would likely facilitate intrinsic motivation which is necessary towards persistence in musical practice.

The review of the literature on educational and psychological learning theories resulted in a new cognitive-motivational model SRDF (see Figures 1 and 2) for the practice session. Applied studio teachers may apply relevant pedagogical approaches that could aid in the self-determination of the undergraduate music major within the learning climate of the applied studio setting. Unless instructors become aware of the importance of autonomy and competence on persistence, they may not value or contribute towards enhancing these self-perceptions.

Jorgensen (2002, 2007), Kostka (2002), and Miksza (2007) endorsed preparing students to practice as a component of applied music instruction. Jorgensen (2007) posited that one of the most important objectives in musical training is to develop a repertory of practice strategies. Documenting the required tasks, strategies, assignments,
and short-term goals represents a written resource for engaging in practice (see Figure 7). Sierens and others (2009) reported that teachers, who provided systematic structure in the form of guidelines and strategies, fostered self-regulated learning (SRL) necessary for competence. SRL was correlated with perceived autonomy support ($r = .25$), cognitive strategy use ($r = .59$) and structure ($r = .35$). Based on the significant correlation between perceived autonomy support and competence in the present study ($r = .49$), structuring practice along with strategies in an autonomy-supportive environment may help to increase perceived competence in undergraduate applied music students necessary for persistence in musical practice.

Applied music students initially seek a particular instructor for their ability as a performer; therefore, they are more likely to internalize extrinsic sources of motivation from the instructor who is capable of communicating the rationale behind the learning process and assigned activities. Consistent with the literature cited on SDT, deliberate practice (DP) and the flow theory (FT), provisions for enhancing autonomy and competence should include meaningful rationale for learning activities, acknowledging the role of the student in the learning process, and challenging tasks that are relevant to the intrinsic needs of students. As discussed in chapters one and two, the educator must provide meaningful rationale for specific goals before students would internalize the activity as their own (Deci et al., 1994). Step one of the SRDF model is to internalize intrinsic goal content: adopt proximal (short-term) subgoals that meet/reflect present needs (see Figures 1 and 2).
Implications of the Study

Based upon the results of this study and the principles of SDT, the applied studio teacher might consider cultivating an autonomy-supportive context for the applied studio setting, such as establishing a relationship that promotes a regular exchange of ideas with mutual respect (Lehmann et al., 2007), informational feedback, and a systematic structure for independent practice. Since competence was found to mediate the relation between perceived autonomy support and task persistence, finding ways to enhance perceived competence may be beneficial. One technique that was emphasized in SDT, FT, and DP was the importance of instructor feedback. Sierens and others (2009) described optimal feedback as “competence-relevant feedback” (p. 59) in that the content is informational, sincere, and non-judgmental (Stone, Deci & Ryan, 2008, p. 27). A second technique to improve perceived competence, discussed under SDT, was expressing confidence in students’ abilities as part of an autonomy-supportive environment. Thirdly, structure, such as providing learners with how to accomplish their goals, may help students to follow through with self-regulation and thus satisfy the need for competence (Sierens et al., 2009).

Recommendations to Applied Studio Teachers. The basic psychological needs of undergraduate applied music students, such as autonomy and competence, may be reflected in the amount of persistence that is applied during practice sessions. Individuals rated themselves lowest in task persistence ($M = 4.94$) and highest in perceived competence ($M = 6.01$). Since perceived autonomy support was significantly correlated with task persistence ($r = .42, p < .001$), and perceived autonomy support has accounted
for 17.7% of the variance in task persistence, the applied studio teacher may facilitate persistence by encouraging self-regulation and self-monitoring to put the learner in control of practice (Glaser, 2000).

The results of this study are consistent with the implications from the literature and therefore, principles suggested in this body of the literature not specific to music learning may be applicable to applied music studio settings. The strength of the correlations between perceived autonomy-support and task persistence \((r = .42)\) and between perceived competence and task persistence \((r = .40)\) suggest that applied studio teachers should consider the following to foster an environment for engagement: (a) acknowledge that individuals are enabled towards change and growth (Reilly & Lewis, 1983), (b) recognize that students naturally seek to organize the resources they are provided within the undergraduate applied studio setting in order to satisfy the requirements of the course, (c) provide strategies to assist the student with resources when obstacles are encountered during independent practice sessions, (d) provide clear, attainable, and relevant proximal goals and document them on a weekly basis (see Figure 7), and (e) consider the intrinsic objectives of undergraduate applied music students when selecting the proximal goals and practice materials. The applied studio teacher may be more likely to recognize and validate the intrinsic needs of the student, such as individual concerns and self-interests, by active communication. In support of the cognitive load theory (CLT), practice materials and expectations that appear redundant or irrelevant to the immediate goals might be considered a threat to progress. Sample practice strategies may assist students when effectively responding to obstacles that may occur during
practice. The emphasis on performance achievement over the students’ intrinsic goals may likely reduce the level of personal commitment.

A controlling context was found to decrease intrinsic motivation, and, consequently, lower persistence (Deci & Ryan, 2000). Ryan and others (1997) related autonomy to the inherent ability of individuals to purposefully direct themselves in accordance with “self-endorsed values, needs, and intentions” (p. 702). Perceived autonomy support was found to have a direct effect on persistence in the multiple regression analysis ($\beta = .30$, $p < .001$). According to cognitive load theory (CLT) and SDT, some of the ways to foster an autonomy-supportive context include: (a) removing redundant tasks and materials that may contribute towards cognitive load, (b) verifying that the assignments and expectations are attainable, (c) acknowledging students’ perspectives and personal goals before charting the expectations, (d) avoid making comparisons with other students within the applied studio setting, and (e) avoid coercive statements or consequences.

Recommendations to Applied Music Students. The key elements of the deliberate practice approach (DP) were found to promote individual progress in the domains of sport, medicine, chess, and others (Ericsson et al., 1993). The literature supported the importance of metacognitive awareness on competence, content absorption, and effectiveness of instruction (Glaser, 2000; Winne, 1995). Since the results of this study support the literature in DP, this researcher has adapted and expanded on the principles of DP to incorporate the theory of optimal experience from the flow theory (FT), specifically for applied music students. It would be reasonable to encourage autonomous
self-regulation during the applied music practice session in the following sequence: (1) identify subgoals for immediate attention and focus, (2) seek self-recording or peer feedback, (3) focus on techniques that accomplish the repair, (4) strategize to repair obstacles, (5) repeat and refine, and (6) evaluate and compare progress to goals (Troum, 2006, 2009).

The literature on goal theory (GT) suggested the importance of goals across domains as an incentive to learning. Goal-setting and the evaluation of goal outcomes were viewed as most significant when striving for efficient practice (Lehmann, 1997). Reflecting, adjusting, and recording the immediate goals under the supervision of the applied studio teacher as specified in the SRDF model (see Figures 1 and 2) may help in maintaining individual focus on the tasks at hand. An understanding of the tasks involved toward achieving the assigned goals as well as the relevance of said goals may increase individual satisfaction. Satisfying practice is that which students deem purposeful.

Recommendations to Music Educators. Each step that was incorporated in the SRDF model (Figures 1 and 2) was uniformly supported by six learning theories which were posited to increase motivation across domains. Tollefson (2000) recommended that pre-service and in-service educational training should include motivation theory to both engage the student and encourage student competence. Tollefson stated, “Teachers can use theories of motivation to analyze their interactions with students and to develop patterns of interactions with their students that may enhance their students’ willingness to expand effort in achievement related tasks” (p. 64). In addition, courses on practice motivation may empower music educators to direct undergraduate applied music students
to realize their individual capabilities and evolve as self-regulated learners in the practice room.

A large number of studies under SDT implied that perceived autonomy support, perceived competence, and relatedness promoted intrinsic motivation in the classroom (Levesque et al., 2004). Since perceived autonomy support, competence, and task persistence showed a statistically significant relationship in this study ($p < .001$), applied studio teacher preparation might include the pedagogical approaches toward establishing an autonomy-supportive context in the classroom and in the applied studio dyad.

**Recommendations for Further Research**

There are few known studies available on the role of competence in achievement motivation towards applied music study to support new techniques, tools, and contexts that foster competence motivation in undergraduate applied music students. Kennell (2002) stated, “The scarcity of experimental studies dealing with the instruction techniques of studio instruction demonstrates that our understanding of studio music instruction is in its infancy” (p. 249).

The present study used a correlational design to examine relationships among perceived autonomy support, competence, and task persistence. Since correlation does not establish causation, an experimental causal-comparative design is needed to investigate the causal effect of cognitive strategies for practice on the dependent variables, competence and persistence, in undergraduate applied music students. SDT posited that individuals have a fundamental need to self-organize and regulate one’s own behavior (Deci & Ryan, 2000). Documenting relevant proximal goals and strategies
contributes toward the systematic structure that may assist students toward the self-regulation of practice (Maehr et al., 2002; Mikszta, 2007). It would be worthy to pursue a study using two treatment groups subjected to an autonomy-supportive learning environment, one group with written structure and practice strategies and the other group would use uncontrolled verbal structure and practice strategies. Group I (with structure) would receive recorded (written) documentation of relevant proximal goals and tasks along with the model of self-regulated deliberate flow (SRDF) (see Figures 1 and 2). Group II (without structure) would receive relevant proximal goals and tasks, transmitted verbally, with an undocumented structure. The basic human needs framework of the self-determination theory was found to apply across cultures (Ryan & Deci, 2006; Stone et al., 2008); therefore, research samples with varied social characteristics, such as ethnicity, national origin, and social economic status, should be obtained for further comparisons. In addition, the majority of the sample in this study was limited to a narrow age range, but SDT was posited across the entire age span (Deci et al., 1991); therefore, samples from age groups, other than undergraduates, should be sought.

Future studies on the main constructs could be verified by data triangulation with an observational method. Student-completed practice records/recordings that document the quantity of practice and practice behaviors could be compared with applied studio teacher or primary researcher observation of performance skill. Subsequently, comparisons could be made between the self-reported student perceptions and the behavioral data for reliability. One such example of data triangulation is a study that evaluated the quantity of practice with the quality of performance skill using recorded
practice sessions and instructor evaluations of performance skill (Williamon & Valentine, 2000).

Jorgensen (2000) learned that a majority of applied music students expressed the need for training for practice. Kostka (2002) posited that the addition of structure during practice might result in a more pleasurable experience and long term musical study. The relationship of structure to the self-satisfaction of practice may be of interest for further investigation concerning the quantity of practice that follows.

A high level of self-regulation is advantageous in music performance according to McPherson and McCormick (2006). Since applied studio teachers generally expect undergraduate music students to be autonomous and therefore, self-regulating during independent practice, the extent to which applied music students report that they are self-regulated learners may be a valid construct to measure and investigate further.

Studying the causal-comparative and correlational results of structure on the enjoyment of practice, the extent of self-reported self-regulation, and a goal-directed praxis on perceived competence and task persistence may impart new perspectives on the training of undergraduate applied music students and music educators. Furthermore, it is hoped that these future studies may also inspire more widespread application of motivational learning theory towards productive practice and performance skill acquisition.
References


Appendices
Appendix A: Electronic Consent Form

Dear Instrumental and Vocal Student,

You have been selected to participate in a 5-minute study on the topic of musical practice as an undergraduate music student who has completed at least one semester of applied vocal or instrumental study with an applied music instructor. Your university has approved this dissertation study to encourage research in the area of musical practice and expertise.

You may gain more understanding about why and how you pursue practice by completing the three questionnaires that follow. Your participation in this study is completely voluntary and confidential.

Click the Next button below to begin the online questionnaires.

Best wishes on your musical progress,

Julie F. Troum, researcher
Ph.D. Candidate in Music Education, University of South Florida
Musical Practice Questionnaires

Page 2

1. Select Gender:*  
   - [ ] Male  
   - [ ] Female

2. Age:*  
   Please type your age using numerals below:

3. Primary Instrument:*  
   - [ ] Vocal  
   - [ ] Instrumental (no voice)
Appendix C: Perceived Autonomy Support (LCQ)

Musical Practice Questionnaires

Perceived Autonomy Support

This questionnaire contains items that are related to your experience with your applied music instructor. Instructors have different styles in dealing with students, and I would like to know more about how you have felt about your encounters with your instructor. Your responses are confidential. Please be honest and candid.

4. Learning Climate*

<table>
<thead>
<tr>
<th></th>
<th>strongly disagree</th>
<th>2</th>
<th>3</th>
<th>neutral</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) I feel that my applied music instructor provides me with choices and options about what I practice.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) I feel understood by my applied music instructor.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c) My applied music instructor conveys confidence in my ability to do well in the course.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d) My applied music instructor encourages me to ask questions.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e) My applied music instructor listens to how I would like to do things.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>f) My applied music instructor tries to understand how I see things before suggesting a new way to do things.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix D: Task Persistence Measure of Musical Practice (TPMMP)

Musical Practice Questionnaires

Page 4

**Task Persistence**

Directions:
Indicate the extent to which you agree or disagree with the following statements by selecting one number from 1-7. Choose the number that corresponds to the personal commitment you apply toward your practice sessions. Please be as accurate as possible in indicating your personal responses.

Definitions:
"Practice Sessions" is defined as the time spent privately working on your lesson assignments.

5. My practice sessions can be described as:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree 1</th>
<th>2</th>
<th>3</th>
<th>Neutral 4</th>
<th>5</th>
<th>6</th>
<th>Strongly Agree 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) lengthy.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) focused.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c) intensive.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d) challenging.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e) self-satisfying.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>f) enjoyable.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>g) dedicated.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

124
Appendix E: Perceived Competence (PCS)

### Perceived Competence

Directions: Please respond to each of the following items in terms of how true it is for you with respect to your learning in your applied music course. Please be as accurate as possible in indicating your personal responses using the scale.

<table>
<thead>
<tr>
<th></th>
<th>not at all true 1</th>
<th>2</th>
<th>3</th>
<th>somewhat true 4</th>
<th>5</th>
<th>6</th>
<th>very true 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>a)</td>
<td>I feel confident in my ability to learn the lesson materials.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>b)</td>
<td>I am capable of learning the lesson materials in this course.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>c)</td>
<td>I am able to achieve my goals in this course through practice.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>d)</td>
<td>I feel able to meet the challenge of performing well in this course.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
About the Author

At the time of publication, Julie F. Troum is the general music instructor at Lake Mary Montessori Academy in Central Florida. She has served as adjunct faculty in the area of elementary music methods at the University of Central Florida in Orlando from 2004-2008 and at Rollins College, Winter Park, Florida in 2008. The preliminary proposal of this paper was presented at SEMPRE in Sheffield, England in 2007, at ISME: World Conference in Bologna, Italy in 2008, and at the 2nd European Conference of Developmental Psychology of Music in London in 2008. Following her guest speaking engagement at the Chicago Flute Club Flute Festival in November of 2009 and at the New York Flute Fair in March of 2010 on “Self-Regulated Practice,” Dr. Troum has begun work on her first book for musicians and studio music teachers, entitled, “The Self-Regulated Musician,” that incorporates her motivational-cognitive approach towards organized practice along with ways to encourage musical persistence. Born in Chicago, Illinois, as Julie Faith Cohen, she now resides in Orlando, Florida, with her husband, Mark S. Troum, Esquire.