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MENTAL SKILLS TRAINING FOR A LOWER-ADVANCED TO ADVANCED
PIANIST

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MENTAL SKILLS TRAINING FOR A LOWER-ADVANCED TO ADVANCED
PIANIST

A DOCUMENT APPROVED FOR THE
SCHOOL OF MUSIC

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Soli Deo Gloria

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ABSTRACT

MENTAL SKILLS TRAINING FOR A LOWER-ADVANCED TO ADVANCED PIANIST

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Considerable literature exists concerning the development of psychological skills in athletes and the impact of those skills on the attainment of maximal levels of performance. In the field of music, no literature is available that outlines a practice curriculum that trains a pianist's psychological skills such as confidence and trust during performance. With the absence of both research and application of deliberate practice techniques in musical instrument practice, the author was prompted to design a mental skills training program for pianists to practice healthy psychological performance skills. The goal of this mental skills training program is to promote a stronger, more focused, and fulfilling performance experience for the pianist.

The literature review includes deliberate practice instruction and psychological skill acquisition within a variety of fields, with primary focus on the area of athletics. Components of mental skills training programs with proven effectiveness in athletics are identified and adapted for the curriculum created here for lower-advanced and advanced pianists in practice and performance situations.

A twelve-week mental skills training program was developed for the lower-advanced to advanced pianist and is provided as chapter III to assist the pianist in developing and maintaining psychological skills that will facilitate effective practice and

optimal piano performance. This mental skills training program includes strategies to assist the performer in developing positive expectations, full concentration, clear focus on the task at hand, and a stronger sense of confidence. Additionally, strategies used effectively by athletes, are adapted for the pianist to enhance the musician's ability to deal with distractions, cope with stress, and view negative events in a positive way. Several exercises and activities are given to enable the pianist to learn and practice these strategies. A synopsis of the training program is provided in the beginning of chapter IV and the sequential order of the journal activities is outlined in the concluding appendix.

While various programs exist for musicians and others to develop specific mental skills, through meditation techniques, progressive muscle relaxation, and visualization skills, training programs that systematically and deliberately focus on the development of psychological performance skills are currently lacking. The mental skills training program included in this document aims to fill this void by providing a curriculum to teach and practice psychological performance skills within a deliberate practice format.

CHAPTER I

INTRODUCTION

Background

This document is intended primarily for the pianist whose goal is to perform at a personal optimal level. Such a pianist is a life-long learner, continually striving to improve performance skills beyond the level already attained. “We call music a performing art, although musicians spend comparatively little time on the stage. The vast majority of a musician's life is spent preparing to perform. We are, in fact, not performers but ‘practicers’ who go before the public from time to time. We should therefore try to understand practicing as an activity in and of itself.”¹ Of course, many performers assume they already understand practice simply because they engage in it regularly. When people attempt to develop and improve a skill, either for a profession or for pleasure, they are practicing. Whether individuals are golfing at a driving range, playing a video game, or learning to ride a bike, they are practicing.

In the last fifty years, there has been a vast amount of research conducted and literature written on the nature and effects of practice. Although this research has investigated a wide range of fields including type-setting, chess, writing, and visual art, the vast majority of this research examines professions within sports and music. Within the general domain of music, research projects are typically limited to the development of specific skills (i.e. sight reading, memorization, technical dexterity, time management, pedaling, etc). Despite the increase in research activity investigating the direct influence

¹ John A. Minahan, “The Art and Science of Practicing,” *Music Educators Journal* 72, no. 7 (March 1986): 23.

of practice on actual performance, there is a limited body of literature specifically related to maximal levels of music performance. In addition, no literature exists outlining a specific practice curriculum that directly affects the performer's psychological skills such as confidence and trust during performance.

The study of "deliberate practice" is a developing area of interest among sport psychologists and coaches. One of the founding fathers of deliberate practice, Anders Ericsson, a psychologist from Florida State University, describes deliberate practice as a process that is "rated very high on relevance for performance, high on effort, and comparatively low on inherent enjoyment."² Given the inherently "low enjoyment" that is characteristic of deliberate practice, it remains a process intended primarily for those striving to attain a personal level of performance. It requires a disciplined effort, yet the effort is considered fruitful only for those who persist through the method. Persistence in deliberate practice places great demands on the available resources of even the most passionate and devoted performer. These resources include human and material resources (access to teachers, access to material, access to parental or other support), motivational resources (the degree to which performance success serves to maintain the motivation to practice), and resources of effort/energy (practice can only be maintained for a limited time without resulting in injury or exhaustion).³

This document studies the effects of deliberate practice and mental skills training on human performance in a number of fields, applies deliberate practice and mental skills strategies to piano performance, and provides a sample curriculum to teach the lower-

² K. Anders Ericsson, Ralf Th. Krampe, and Clemens Tesch-Römer, "The Role of Deliberate Practice in the Acquisition of Expert Performance," *Psychological Review* Vol. 100, no. 3 (1993): 373.

³ Ibid.

advanced to advanced pianist strategies to enhance mental skills that will assist the pianist to continually improve and self-monitor his level of performance.

Purpose of the Study

Prompted by the absence of both research and application of deliberate practice techniques in music practice philosophy, the author developed a mental skills training program designed to train pianists to practice using psychological performance skills to promote a stronger, more focused, and fulfilling performance experience. This program includes a series of training activities, worksheets, and questions that guide students to structure their practice time more efficiently and effectively, increase their level of concentration and focus, and develop a more consistent performance mentality that is systematically strengthened through practice. The curriculum includes twelve sessions that are intended for weekly instruction and could be sequenced for a one-semester course schedule.

Musicians have learned a great deal about performance psychology from athletes and sports psychologists in recent years, and yet many musicians still resist adoption of some of the practice strategies commonly used by athletes. Few musicians embrace the notion that legitimate practice could include reading self-help books, exercising relaxation techniques, memorizing or analyzing a score away from the instrument, listening to an inspiring recording, or doing breathing exercises. “In the sports domain, these extra activities (e.g. learning about strategies in a ball game, watching videos of opposing teams before an encounter, going to physical therapy) are commonly

acknowledged and encouraged as improving performance.”⁴ In this document, the author examines and discusses the deliberate practice strategies and the mental skills used in sports that directly facilitate eminent levels of performance and applies those techniques to music practice for the lower-advanced to advanced pianist. The findings form the basis of a mental skills training program for the lower-advanced to advanced pianist. This curriculum offers a new method of encouraging personal optimal performance in developing musicians and performers.

Need for the Study

Discussion and debate among music professionals about appropriate and effective practice strategies is nothing new. Many articles and book chapters warn against bad practice habits and offer various strategies to motivate students to practice.⁵ Madeline Bruser, in the *Art of Practicing*, outlines a ten-step approach to make the practice experience more enjoyable by using it as an outlet for personal expression.⁶ Much of the writing on practice describes practice strategies to facilitate learning, such as memorization techniques, practice strategies for overcoming technical challenges, and organizational methods to manage practice time efficiently. However, very little material instructs pianists and teachers in practice methods that incorporate specific performance strategies, including those designed to develop psychological performance skills.

Music teachers often encounter students who have an excellent work ethic, innate musical ability, and a love of the instrument and field, but drop out of piano study before

⁴ Andreas C. Lehmann, John A. Sloboda, and Robert H. Woody, *Psychology for Musicians: Understanding and Acquiring the Skills* (Oxford: Oxford University Press, 2007), 63.

⁵ Philip Johnston, *The Practice Revolution* (Pearce, Australia: PracticeSpot Press, 2002), 93.

⁶ Madeline Bruser, *The Art of Practice: A Guide to Making Music From The Heart* (New York: Bell Tower, 1997), 29.

they realize their full potential. Mihaly Csikszentmihalyi in his book *Creativity* explains how clarity of goals for students increases their level of creativity and desire to learn. Csikszentmihalyi suggests that individuals are more apt to enjoy their work if they set small, specific goals, master those goals, and then move on to achieve more complex goals. Goal-centered practice can therefore effectively maintain interest and promote progress in developing expert musicians. Goal-oriented practice is the foundational building block of deliberate practice strategies in both sports and the arts.

Deliberate practice in the field of sports identifies specific goals, provides immediate feedback, and places as much emphasis on technique and psychological performance skills as on outcome within individual practice sessions. These three elements are easy to provide in athletic contexts because the consistent presence of the coach and teammates provides athletes with a built-in form of accountability for practice and progress. The same context is difficult to recreate in piano practice because the pianist generally practices alone without the presence of the teacher or other performers.

Ericsson, who has spent the past twenty-six years studying geniuses, prodigies, and elite performers, found that individuals in a variety of fields such as typing, chess, sports, and mathematics benefited greatly from following an intense, concentrated deliberate practice regime. For example, he found in his study of elite figure skaters and wrestlers that the most successful athletes trained within a deliberate practice regime using a combination of different practice techniques (for wrestlers, on- and off-mat training combined with weight and cardio training; for skaters, cardio training combined with ballet and on-ice drills).⁷ In their sports research, Deakin and Cobley discovered

⁷ K. Anders Ericsson, Ralf Th. Krampe, and Clemens Tesch-Römer, "The Role of Deliberate Practice in the Acquisition of Expert Performance," *Psychological Review* Vol. 100, no. 3 (1993).

that figure skaters spend a significant amount of practice time on jump-combinations that were already mastered more than running combinations that were yet to be mastered and integrated comfortably into their performance routine.⁸ Musicians also are guilty of preferentially rehearsing passages that allow them to feel confident and secure, when in reality they should practice those passages which, when visualized in a performance context, intimidate them the most.

Deliberate practice presents performers with tasks that are not yet part of their reliable performance and yet can be mastered through goal-centered hours of practice that concentrate on execution of critical elements through repetition and immediate feedback by a coach or instructor. Ericsson states, “The requirement for concentration sets deliberate practice apart from both mindless, routine performance and playful engagement, as the latter two types of activities would, if anything, merely strengthen the current mediating cognitive mechanisms, rather than modify them to allow increases in the level of performance.”⁹ Since years of structured deliberate practice are required to produce excellence and expertise in a given field, the author of this document suggests that a deliberate practice regime, incorporating mental skills training, developed for younger musicians and performers who have not yet reached their peak level of performance would be an invaluable resource for parents, pedagogues, and future musical experts. Developing an effective practice strategy early in a musician’s career could

⁸ Janice M. Deakin and Stephen Copley, “A Search for Deliberate Practice: An Examination of the Practice Environments in Figure Skating and Volleyball,” in *Expert Performance in Sports*, ed. Janet L. Starkes and K. Anders Ericsson (Champaign, Illinois: Human Kinetics, 2003).

⁹ K. Anders Ericsson, “The Influence of Experience and Deliberate Practice on the Development of Superior Expert Performance,” in *The Cambridge Handbook of Expertise and Expert Performance*, ed. K. Anders Ericsson et al. (New York: Cambridge University Press, 2006), 692.

prevent years of practice and performance habits that are only moderately effective and subsequently take years to unlearn.

Limitations of the Study

This document is limited to the study of deliberate practice and mental skills training techniques with strategies designed for musicians, specifically pianists. The study does not involve the observation of actual practice sessions, but rather formulates a practice curriculum for instructing students and teachers in future classes and workshops. This study draws from deliberate practice techniques and mental skills training used in athletics and notes the applicable similarities and connections to the field of music. The author has gathered research presented in current sport-psychology journals but does not attempt to examine every journal related to athletics.

Deliberate practice requires a performer to spend significant amounts of time in intense concentration and focus in order to produce expert results in performance. Many individuals seem to be satisfied to reach an acceptable level of performance and never progress beyond that point. They desire only the skill to be considered an amateur and possess no desire to move into the realm of professional performer. This study targets those individuals with a strong desire to improve performance skills beyond current levels and to strive towards personal optimal performance levels, possessing both the ability and aspiration to spend a significant amount of time and energy developing their craft.

Organization and Procedure

Chapter I of the document presents the foundation for the study, identifying deliberate practice principles from the field of sports with applicability to the field of music performance. The author argues that very little is written regarding the application of mental skills training within deliberate practice for music performers and that an introduction to these strategies early in a pianist's education can establish effective and efficient practice and performance habits right from the beginning.

Chapter II offers a discussion and literature review of deliberate practice instruction and psychological skill acquisition within a variety of fields, with primary focus on the area of athletics. This chapter is divided into five sections with the following headings: Eminent Performance, The Role of Deliberate Practice in Achieving Optimal Performance, Automaticity, the psychological performance skills of Confidence and Trust, and Mental Skills Training. In the "Eminent Performance" section, the author discusses literature that defines eminent performance, while considering whether eminent performance is an innate or developed ability. This section also defines the time required to attain eminence in a particular field, according to experts, discussing the motivating factors to practice and pursue eminence. The "Role of Deliberate Practice in Achieving Optimal Performance" section begins with an overview of the literature on the subject of deliberate practice. This section includes several subsections that present the primary ingredients for effective deliberate practice such as focus, goal setting, positive attitude, and feedback and includes literature that addresses the need for and development of psychological performance skills. In the "Automaticity" section, the author outlines the limitations and benefits of automatic responses during performance. Several scholars

note that automaticity in performance limits spur-of-the-moment expressivity and subconscious control of movement patterns within a work. However, others suggest just the opposite by claiming that automaticity enables performers to let go of conscious control during a performance and be fully in the present, less aware of previous mistakes. The “Confidence and Trust” section reviews available literature on the topics of confidence and trust within human performance. The “Mental Skills Training” section concludes chapter II and examines the effect of mental skills training programs on the development of psychological performance skills in a performer. This section identifies aspects of mental skills training programs that have been proven effective in athletics and adapts them for the use of lower-advanced and advanced pianists in practice and performance situations.

Chapter III, entitled “A Sample Twelve-Week Mental Skills Training Program for a Lower-advanced to Advanced Pianist,” presents applications of deliberate practice strategies utilized by experts in other fields and adapts those strategies to music practice and performance in the form of a mental skills training program for pianists. It has been known for several years in athletics that mental readiness is equally as important as skill level in preparing for competition or performance. For the performer, positive expectations, full concentration, high confidence, clear focus on the task, and heightened commitment are all-important factors that can be developed and trained. As with an athlete, a musician’s ability to deal with distractions, cope with stress, and view negative events in an optimistic way are important skills to develop. Mental skills training directly affects a performer’s confidence and ability to trust and let go of conscious control during a performance. This chapter adapts information from mental coaching programs in sports

designed to train athletes to trust their ability to deliver expert performance at the time it is needed most. The author transfers the mental coaching principles in athletics and applies those principles to a musician's performance and practice strategies. The program includes five major sections with a summary in section six (Concentration, Trust, Confidence, Automation and Expressiveness, and Practicing to Perform) and provides sample activities and educational information to implement a twelve-week program.

Chapter IV contains a summary as well as recommendations for further research. A bibliography of relevant resources follows chapter IV.

Definition of Terminology

Automaticity:

Automaticity refers to actions or processes that are unintentional, unconscious, uncontrollable, efficient, and fast. Automaticity is observed in higher levels of practice and performance. When a performer is in the final phase of learning a work, performance skills become automated and the performer is able to complete difficult tasks with minimal effort. Within the subject of deliberate practice, automaticity needs to be open-looped, with the performer still possessing the ability to add in-the-moment nuances during a live performance, continually letting go of conscious control.

Choking:

Used often in athletics to refer to weak performance in high-stakes situations, choking is defined as a decrease in performance due to excessive perceived stress. The

stress is not a direct result of any given situation but results from one's perception of the situation.¹⁰

Deliberate Practice:

Deliberate practice is a term used to describe a thoughtful, measured, and methodical approach to practice. Deliberate practice is not haphazard; it is prescriptive, goal-centered, and highly structured. A number of characteristics define what constitutes deliberate practice:

1. the purpose of deliberate practice is to improve performance skills and the individual is strongly motivated to do so;
2. for each practice session, clear specific goals are stated and strategies are selected to enable the individual to attain the goal(s);
3. a specific amount of practice time is allotted to achieve each goal;
4. the individual constantly monitors progress during the practice session so that new goals can replace goals already attained, strategies which are unsuccessful can be adjusted, etc.;
5. direct feedback is obtained from the self-reflection of the performer, or observations of the teacher, peer, or parent.

Eminent-level Performer:

Anders Ericsson describes an eminent-level performer or expert as an individual with over 10,000 hours or ten years of focused experience within a given field.¹¹ In this

¹⁰ Jin Wang, Daryl Marchant, and Tony Morris, "Coping style and susceptibility," *Journal of Sport Behavior* 27, no. 1 (March 2004): 75-92.

¹¹ Anders K. Ericsson, Ralf Th. Krampe, and Clemens Tesch-Römer, "The Role of Deliberate Practice in the Acquisition of Expert Performance," *Psychological Review* Vol 100, No. 3 (1993): 366.

document, the author defines an eminent level performer as an individual who demonstrates a consistent ability to perform at the artist level. This is a performer who maintains an established practice and performance regime resulting from ten or more years of intense, focused, concentrated practice.

Focus:

Focus defines the object or objects of one's attention and concentration, the abilities to sustain the appropriate focus or foci, to maintain the selected focus in spite of distractions, and to change focus when required. There are two distinct types of focus that people use when concentrating on a regular basis. The first has been described as the "width" of our focus and can be either broad or narrow. The second is considered "directional" focus and is either internally or externally based. It is important to be able to move seamlessly between these different types of focus.

Goal-oriented Practice:

Goal-oriented practice is observed when an individual selects a specific goal (such as playing a double-thirds passage from a specific piece with ease) and focuses only on that goal for a predetermined amount of time. It is important that goals are clear and specific and the focus of the practice session. A pianist can outline goals in a journal or worksheet and should not move on to a new goal until previous goals are accomplished.

Immediate Feedback:

Aubrey Daniels defines feedback as, “Information about performance that allows an individual to adjust his or her performance.”¹² Immediate feedback is critical to developing as an expert. In this document, the feedback is obtained through contact with a primary instructor or coach, or is acquired through careful monitoring of oneself (journal, peer, audio or visual recording, etc.). Another way to think of immediate feedback is self-regulating or self-monitoring one’s practice time and consistently reflecting upon what goals were met during a given practice session.

Lower-advanced and Advanced Pianist:

The lower-advanced and advanced performer is likely to be a pre-college pianist, performing repertoire from level ten of Alfred’s Masterwork Classics graded repertoire anthology (edited by Dr. Jane Magrath) or above.¹³ This student recently began to perform standard advanced repertoire that may be heard in a typical undergraduate music audition.

Mental Imagery:

Mental imagery includes, but is not limited to, visualization or creating a visual image in the mind. When referring to athletics or the performance of any skill, mental imagery means the composite mental image of the action, including all the senses—visual, aural, tactile, kinesthetic, etc.¹⁴

¹² Aubrey Daniels, *Bringing Out the Best in People: How to apply the astonishing power of positive reinforcement* (Toronto, Canada: McGraw-Hill, 2000), 101.

¹³ Jane Magrath, ed., *Masterwork Classics, Level 10* (Van Nuys, CA: Alfred Publishing Co., Inc., 2001).

¹⁴ Luke Behncke, “Mental Skills Training for Sports: A Brief Review,” *Athletic Insight: The Online Journal of Sport Psychology* 6, no. 1 (March 2004), under “Mental Skills Training,” <http://www.athleticinsight.com/Vol6Iss1/MentalSkillsReview.htm> (accessed September 20, 2009).

Personal Optimal Performance Level:

Unlike eminent performance level, personal optimal performance level is not reserved for the very few. Personal optimal performance level refers to the highest performance level attainable by an individual at any given time. A performer striving to reach a personal optimal performance level should view any apparent ceiling as impermanent and should endeavor to move the personal optimal performance level upwards beyond the current pinnacle.

CHAPTER II

REVIEW OF THE LITERATURE

Eminent Performance

The Meaning of Eminent Performance

An eminent level performer is an individual who demonstrates a consistent ability to perform at the artist level. This is a performer who maintains an established practice and performance regime resulting from a number of years of intense, focused, concentrated practice. Eminent performance is easily recognized. Without much time or effort, most people can identify a number of individuals who have reached and demonstrated eminence in their particular field: Thomas Edison, Bobby Fischer, Clara Schumann, Wolfgang Amadeus Mozart, Michael Jordan, Myra Hess, Tiger Woods, Michelle Kwan, Lang Lang. Ericsson, Krampe, and Tesch-Römer conclude that in order to attain “excellent status” and be seen as an expert in any field, one needs only to master existing knowledge and techniques. They make the assertion that eminent performance qualitatively surpasses what might be called expert performance. They continue: “To make an eminent achievement one must first achieve the level of an expert and then in addition surpass the achievements of already recognized eminent people and make innovative contributions to the domain.”¹⁵

Parents and teachers often say: “Practice makes perfect,” but, if “practice” is only repeating a skill over and over again, then we know that this does not guarantee eventual eminent performance. In the final years of the nineteenth century, Bryan and Harter

¹⁵ Anders K. Ericsson, Ralf Th. Krampe, and Clemens Tesch-Römer, “The Role of Deliberate Practice in the Acquisition of Expert Performance,” *Psychological Review* 100, no. 3 (1993): 366.

demonstrated that mere repetition did not advance the skills of Morse Code operators to their potentially maximum levels. However, when encouraged to make deliberate efforts, to reorganize and improve their skills beyond initial limits, they were able to do so.¹⁶

Later, Thorndike suggested: “We have too many other improvements to make, or do not know how to direct our practice, or do not care enough about improving, or some mixture of these three conditions.”¹⁷ These three factors may account for many adults failing to attain maximum levels in their areas of endeavor or their professions. He cited a number of supporting studies including one by Aschaffenburg,¹⁸ which showed substantial improvement in the skills of experienced typesetters with continued testing and refining of their techniques. Similarly, Dvorak, Merrick, Dealey, and Ford observed significant improvement in experienced typists due to deliberate efforts to further develop their skills.¹⁹ Performers who strive to perform at a very high level are lifelong learners.

In any field, the level of performance defined as “eminent” is neither static nor immutable. Running a mile in close to four minutes was considered eminent performance until Roger Bannister ran it in 3 minutes 59.4 seconds at Oxford, England on May 6, 1954. Citing examples from the Olympic Games, the World Championship of Typing, and the relative abilities to play the Tchaikovsky Violin Concerto by leading virtuosos in 1878 and by Juilliard graduates today, Ericsson *et al.* conclude that with the passage of time the skill level required for elite or eminent classification in most fields continually increases as knowledge and understanding about skill acquisition and practice

¹⁶ W. L. Bryan and N. Harter, “Studies in the physiology and psychology of the telegraphic language,” *Psychological Review* 4 (1897): 27-53.

¹⁷ E. L. Thorndike, *The psychology of learning* (New York: Teachers College, Columbia University, 1921), H: 178.

¹⁸ G. Aschaffenburg, “Praktische Arbeit unter Alkoholwirkung” [Work under the influence of alcohol]. *Psychologische Arbeit*, 1 (1896): 608-626.

¹⁹ A. Dvorak, N.L. Merrick, W.L. Dealey, and G.C. Ford, *Typewriting behavior* (New York: American Book, 1936).

methods develop. “An eminent musician can contribute new techniques and distinct interpretations of existing music, and eminent chess players discover new variants of chess openings and advance the knowledge of chess. In the arts and sciences, eminent achievements involve contributions of new ideas, theories, and methods.”²⁰

Those who achieve eminence in any field are very few in number; it is an exclusive club with extremely limited membership. On the other hand there exists a large number of people in every domain who continually strive to improve techniques and performance levels, who perceive obstacles as opportunities and persist in trying to overcome apparent limits to success by refining practice strategies, and who see goals, not as win or lose targets, but as steps along the path to achieving personal optimal performance levels. It is to this larger group, which certainly includes those who aspire to eminence, that this document is addressed.

Innate or Developed Ability (Nature or Nurture)

Robin Sharma, a success coach to billionaires and business executives, describes Michael Jordan as a basketball genius and writes, “Was his spectacular success on the court purely the result of natural gifts? Absolutely not.”²¹ Ever since Sir Francis Galton²² concluded in the nineteenth century that eventual expert-level performance, or eminence in a field, could be predicted with a high degree of accuracy as an inevitable consequence of natural ability, researchers have studied the processes necessary to attain

²⁰ Ibid., 370.

²¹ Robin S. Sharma, *The Greatness Guide* (Toronto, Canada: HarperCollins, 2006), 33.

²² Sir F. Galton, *Hereditary genius: An inquiry into its laws and consequences* (London: Julian Friedman Publishers, 1979).

eminence in fields as diverse as chess (Doll, & Mayr²³; Staszewski²⁴), long-distance running (Wallingford²⁵), tennis (Monsaas²⁶) Morse Code reception (Bryan & Harter; Keller²⁷), typing (Book²⁸; Dvorak *et al.*), figure skating (Allard & Starkes²⁹) and music (Shuter-Dyson³⁰; Sosniak³¹). Although Galton defined natural ability as being composed of a combination of intellect, zeal or eagerness to work, and power to do a large quantity of very laborious work, the view was commonly held for over one hundred years that genetically influenced innate capacities were the prime determinants of maximal performance in any field of expertise. Further, Ericsson (1993) points out that, in the century following the publishing of Galton's conclusions, most researchers assumed that, since such genetic factors do not change over time, they certainly cannot be affected or influenced by experience, practice, or training. However, recent investigations have differed in their conclusions from those offered by Galton and those who followed him.

After reviewing research in a large number of unrelated fields, Ericsson concludes: "The search for stable heritable characteristics that could predict or at least account for the superior performance of eminent individuals has been surprisingly

²³ J. Doll and U. Mayr, "Intelligenz und Schachleistung—eine Untersuchung an Schachexperten," [Intelligence and achievement in chess—a study of chess masters] *Psychologische Beitrage* 29 (1987): 270-289.

²⁴ J. J. Staszewski, "Skilled memory and expert calculation," in *The nature of expertise*, ed. M. T. H. Chi, R. Glaser, and M. J. Farr (Hillsdale, NJ: Erlbaum, 1988).

²⁵ R. Wallingford, "Long distance running," in *The scientific aspects of sports training*, ed. A. W. Taylor and F. Landry (Springfield, IL: Charles C Thomas, 1975).

²⁶ J. A. Monsaas, "Learning to be a world-class tennis player," in *Developing talent in young people*, ed. B. S. Bloom (New York: Ballantine Books, 1985).

²⁷ F. S. Keller, "The phantom plateau," *Journal of the Experimental Analysis of Behavior* 1 (1958): 1-13.

²⁸ W. F. Book, *Learning to typewrite* (New York: Gregg, 1925).

²⁹ F. Allard and J. L. Starkes, "Motor-skill experts in sports, dance, and other domains," in *Toward a general theory of expertise: Prospects and limits*, ed. K. A. Ericsson and J. Smith (Cambridge: Cambridge University Press, 1991).

³⁰ R. Shuter-Dyson, "Musical ability," in *The psychology of music*, ed. D. Deutsch (San Diego, CA: Academic Press, 1982).

³¹ L. A. "Learning to be a concert pianist," in *Developing talent in young people*, ed. B. S. Bloom (New York: Ballantine Books, 1985).

unsuccessful.”³² Ericsson cites the study in behavioral genetics by Coon and Carey, who compared the musical ability of identical and fraternal twins and found that the environmental cause-effect correlations were always stronger than the genetic ones.³³

Although child prodigies often do become elite performers in their fields in adulthood, early signs of talent often used to predict future eminent performance have proven to be unreliable, at best. A number of studies (Weisberg³⁴; Howe, *et al.*³⁵; Sloboda *et al.*³⁶) that looked at Mozart, often considered to be the epitome of child prodigies, concluded that Mozart’s success as a composer had more to do with early and constant parental involvement and laborious practice than with innate genius or talent. In sports, however, it appears on the surface that heritable characteristics do contribute significantly to the success of athletes at the pinnacle of performance in their particular field compared to the general population. It is true that elite athletes differ from the normal population in important physical ways: aerobic ability, heart size, muscle size, number of capillaries supplying blood to muscles and percentage of slow-twitch muscle fibers. Ericsson concluded that, although physical characteristics such as height and facial features are largely genetically determined, current research shows that other physical attributes, such as aerobic ability (Haskell³⁷; Fagard, Bielen, and Amery³⁸),

³² Anders K. Ericsson, Ralf Th. Krampe, and Clemens Tesch-Römer, “The Role of Deliberate Practice in the Acquisition of Expert Performance,” *Psychological Review* 100, no. 3 (1993): 365.

³³ *Ibid.*, 399.

³⁴ Robert W. Weisberg, *Creativity: Genius and Other Myths* (New York: W. H. Freeman & Co., 1993).

³⁵ M. J. A. Howe, *et al.*, “Are there early childhood signs of musical ability?” *Psychology of Music* 23 (1995): 162-176.

³⁶ John A. Sloboda, *et al.*, “The role of practice in the development of performing musicians,” *British Journal of Psychology* 87 (1996): 287-309.

³⁷ W. L. Haskell, “Exercise as a means of maximizing human physical performance and productivity,” in *Biological effects of physical activity*, ed. R. S. Williams and A. G. Wallace (Champaign, IL: Human Kinetics Books, 1989).

³⁸ R. Fagard, E. Bielen, and A. Amery, “Heritability of aerobic power and anaerobic energy generation during exercise,” *Journal of Applied Physiology* 70 (1991): 357-362.

larger hearts (Eloviano and Sundberg³⁹; Rost⁴⁰), more capillaries supplying blood to muscles (Salmons and Henriksson⁴¹), volume of lungs (Greksa⁴²), and a higher percentage of slow-twitch muscle fibers (Salmons and Henriksson; Howald⁴³) can be altered with periods of intense practice. Further investigation is required to determine whether expertise and eminence in a field are attained over time as a natural consequence of experience and practice, or as a result of specific and different forms and intensities of practice.

Attaining Eminence

The common belief that prodigiously talented individuals can attain eminent status in their field or domain quickly and with relatively little effort is not supported by research. Ericsson, Krampe, and Tesch-Römer coined the phrase “the monotonic benefits assumption” to describe their hypothesis that “the amount of time an individual is engaged in deliberate practice activities is monotonically [directly, without variation] related to that individual’s acquired performance.”⁴⁴ Although researchers generally agree that the relationship between time devoted to practice and skill acquisition and improved performance is obvious, many dispute the claim that the relationship is monotonic and suggest that other factors are important also. Terry Orlick, a leader in the field of applied sport psychology, asserts that “seven critical elements guide the pursuit of

³⁹ R. Eloviano and S. Sundberg, “A five-year follow-up study on cardio-respiratory function in adolescent elite endurance runners,” *Ada Paediatrica Scandinavia* 72 (1983): 357-360.

⁴⁰ R. Rost, *Athletics and the heart*, trans. T. J. Dekornfeld (Chicago: Year Book Medical, 1987).

⁴¹ S. Salmons and J. Henriksson, “The adaptive response of skeleton muscle to increased use,” *Muscle and Nerve* 4 (1981): 94-105.

⁴² L. P. Greksa, “Effects of altitude on the stature, chest depth, and forced vital capacity of low to high altitude migrant children of European ancestry,” *Human Biology* 60 (1988): 23-32.

⁴³ H. Howald, “Training-induced morphological and functional changes in skeletal muscle,” *International Journal of Sports Medicine* 3 (1982): 1-12.

⁴⁴ Anders K. Ericsson, Ralf Th. Krampe, and Clemens Tesch-Römer, “The Role of Deliberate Practice in the Acquisition of Expert Performance,” *Psychological Review* 100, no. 3 (1993): 368.

personal excellence: focus, commitment, mental readiness, positive images, confidence, distraction control, and ongoing learning.”⁴⁵ Zimmerman stresses the importance of continual self-monitoring and self-regulation.⁴⁶ Others reiterate that mental skills training is essential to develop optimal performance in any field (D. L. Feltz and D. M. Landers⁴⁷; J. E. Driskell, C. Cooper, and A. Moran⁴⁸; Luke Behnke⁴⁹).

Whether the field requires highly developed physical skills or focused intellectual skills or a combination of both, many investigators agree that a minimum of ten years of intense training and/or practice is required, with almost no exceptions. In their study of chess masters, Simon and Chase concluded that no player became a grandmaster (international chess master) with less than ten years of practice and preparation.⁵⁰ Krogus, in a later study, suggested that the time required to reach grandmaster status might even exceed ten years.⁵¹

Robin Sharma recalls a story about Pablo Picasso, which illustrates this very point. A woman met Picasso in the market and asked him to draw a little sketch for her since she was a devoted fan. He complied and, as he gave her the drawing, he asked for a million dollars. She protested that his request was unfair, as it had only taken him thirty

⁴⁵ Terry Orlick, *In Pursuit of Excellence*, 4th ed. (Champaign, IL: Human Kinetics, 2008), 11.

⁴⁶ Barry Zimmerman, “Development and Adaptation of Expertise: The Role of Self-Regulatory Processes and Beliefs,” in *The Cambridge Handbook of Expertise and Expert Performance*, ed. K. Anders Ericsson, Neil Charness, Paul J. Feltovich, and Robert R. Hoffman (New York: Cambridge University Press, 2006), 705-722.

⁴⁷ D. L. Feltz and D. M. Landers, “The effects of mental practice on motor skills. Learning and performance: a meta-analysis,” *Journal of Sport Psychology* 5 (1983): 25-57.

⁴⁸ J. E. Driskell, C. Cooper, and A. Moran, “Does mental practice enhance performance?” *Journal of Applied Psychology* 79, no. 4 (1994): 481-492.

⁴⁹ Luke Behnke, “Mental Training for Sports: A Brief Review,” *Athletic Insight: The online journal of sport psychology* 6, no. 1 (March, 2004).

⁵⁰ H. A. Simon and W. G. Chase, “Skill in chess,” *American Scientist* 61 (1973): 394-403.

⁵¹ N. Krogus, *Psychology in chess* (New York: RHM Press, 1976).

seconds to complete the sketch. Picasso, according to the story, responded, “My good woman, it took me thirty years to do that masterpiece in thirty seconds.”⁵²

Hayes⁵³ found that a minimum of ten years’ experience (and often much more) was required before a composer wrote an outstanding work and, similarly, Sosniak⁵⁴ in her study of twenty-two concert pianists found that they had engaged in intense practice for an average of seventeen years before obtaining international recognition. In their review of research, Chaffin and Imreh discovered that the “ten year rule” postulated by Simon and Chase was true for most fields, including: chess and mental calculation (Staszewski⁵⁵), ballet and figure skating (Allard and Starkes⁵⁶), and musical performance (Ericsson *et al.*,⁵⁷).

Ericsson also identified research with similar findings in a diverse array of fields including: mathematics (Gustin⁵⁸), tennis (Monsaas⁵⁹), swimming (Kalinowski⁶⁰), long-distance running (Wallingford⁶¹), diagnosis of X-rays (Lesgold⁶²), and medical diagnosis

⁵² Robin S. Sharma, *The Greatness Guide*, (Toronto, Canada: HarperCollins, 2006), 34.

⁵³ J. R. Hayes, *The complete problem solver* (Philadelphia, PA: Franklin Institute Press, 1981).

⁵⁴ L. A. Sosniak, “Learning to be a concert pianist,” in *Developing talent in young people*, ed. by B. S. Bloom (New York: Ballantine Books, 1985).

⁵⁵ J. J. Staszewski, “Skilled memory and expert calculation,” in *The nature of expertise*, ed. M. T. H. Chi, R. Glaser, and M. J. Farr (Hillsdale, NJ: Erlbaum, 1988).

⁵⁶ F. Allard and J. L. Starkes, “Motor-skill experts in sports, dance, and other domains,” in *Toward a general theory of expertise: Prospects and limits*, ed. K. A. Ericsson and J. Smith (Cambridge: Cambridge University Press, 1991).

⁵⁷ Anders K. Ericsson, Ralf Th. Krampe, and Clemens Tesch-Römer, “The Role of Deliberate Practice in the Acquisition of Expert Performance,” *Psychological Review* 100, no. 3 (1993).

⁵⁸ W. C. Gustin, “The development of exceptional research mathematicians,” in *Developing talent in young people*, ed. B. S. Bloom (New York: Ballantine Books, 1985).

⁵⁹ J. A. Monsaas, “Learning to be a world-class tennis player,” in *Developing talent in young people*, ed. B. S. Bloom (New York: Ballantine Books, 1985).

⁶⁰ A. G. Kalinowski, “The development of Olympic swimmers,” in *Developing talent in young people*, ed. B. S. Bloom (New York: Ballantine Books, 1985).

⁶¹ R. Wallingford, “Long distance running,” in *The scientific aspects of sports training*, ed. A. W Taylor and F. Landry (Springfield, IL: Charles C Thomas, 1975).

⁶² A. M. Lesgold, “Acquiring expertise,” in *Tutorials in learning and memory: Essays in honor of Gordon Bower*, ed. J. R. Anderson and S. M. Kosslyn (New York: Freeman, 1984).

(Patel and Groen⁶³). Ericsson *et al.*⁶⁴ conducted a study of twelve expert pianists who were students in advanced soloists classes at Hochschule der Kuenste, a Berlin music academy, and twelve amateur pianists. They found that by twenty years of age the expert pianists had accumulated 7,606 hours of practice compared to 1,606 hours for the amateurs. Sloboda *et al.* succinctly summed up their findings and those of other researchers with the statement: “We believe that we have established, beyond any reasonable doubt, that amount of relevant practice is a key variable in the determination of music performance expertise.”⁶⁵

Recent research has focused on the content of both expert and musicians’ practice regimes rather than the amount of time devoted to practice. Researchers have observed that the qualities of musicians’ practice strategies are better predictors of performance quality than the quantity of time spent in practice (Gruson⁶⁶; Williamon and Valentine⁶⁷). Nevertheless, music teachers continue to stress time spent in practice rather than goals accomplished when giving practice assignments to their students (Kostka⁶⁸; Barry and McArthur⁶⁹). In their study of seventeen graduate and advanced undergraduate piano majors enrolled in piano performance and piano pedagogy programs at the University of

⁶³ V. L. Patel and G. J. Groen, “The general and specific nature of medical expertise: A critical look,” in *Toward a general theory of expertise*, ed. K. A. Ericsson and J. Smith (Cambridge, England: Cambridge University Press, 1991).

⁶⁴ Anders K. Ericsson, Ralf Th. Krampe, and Clemens Tesch-Römer, “The Role of Deliberate Practice in the Acquisition of Expert Performance,” *Psychological Review* 100, no. 3 (1993).

⁶⁵ John A. Sloboda, *et al.*, “The role of practice in the development of performing musicians,” *British Journal of Psychology* 87 (1996): 308.

⁶⁶ L. M. Gruson, “Rehearsal skill and musical competence: Does practice make perfect?” In *Generative processes in music: The psychology of performance, improvisation and composition*, ed. J. A. Sloboda (Oxford: Clarendon, 1988).

⁶⁷ A. Williamon and E. Valentine, “Quantity and quality of musical practice as predictors of performance quality,” *British Journal of Psychology* 91 (2000).

⁶⁸ M. J. Kostka, “Practice expectations and attitudes: A survey of college-level music teachers and students,” *Journal of Research in Music Education* 50 (2002).

⁶⁹ N. H. Barry and V. McArthur, “Teaching practice strategies in the music studio: A survey of applied music teachers,” *Psychology of Music* 22 (1994).

Texas, Robert Duke, Amy Simmons, and Carla Davis concluded that “the nature of the practice defined in our observations was more determinative of retention test performance than was the amount of practice.”⁷⁰ It is because of such conclusions that this document is directed towards the lower-advanced and advanced pianist. The lower-advanced and advanced pianist will already have devoted many years to practice suggesting a desire to improve performance and a commitment to continued skill development.

Motivation to Practice and to Pursue Optimal Performance

Robin Sharma cites examples from sports, science, and art to illustrate his mantra that “focus plus daily improvement plus time equals genius.”⁷¹ However, sustaining the focus and effort necessary for the required ten (or more) years to reach eminent status is a daunting obstacle. Unlike athletes, who generally practice and train with the presence and guidance of a coach or trainer, practice by musicians is almost always alone. Without the constant coaching, correction, and encouragement that athletes receive, how are musicians motivated to persevere in practicing?

Sloboda *et al.* conclude that, “although there may be a few unusual individuals who have to be dragged away from their instrument to eat or go to school, most young children who go on to be high musical achievers do not enjoy formal practice very much and show little or none of the ‘rage to master,’ a phrase Winner (1995) uses to characterize the outstanding young visual artist.”⁷² Ericsson, Krampe, and Tesch-Römer

⁷⁰ Robert Duke, Amy Simmons, and Carla Davis, “It’s Not How Much; It’s How,” *Journal of Research in Music Education* 56, no. 4 (2009): 314.

⁷¹ Robin S. Sharma, *The Greatness Guide*, (Toronto, Canada: HarperCollins, 2006), 34.

⁷² John A. Sloboda, *et al.*, “The role of practice in the development of performing musicians,” *British Journal of Psychology* 87 (1996): 308.

theorize that serious practice is not, by its nature, pleasurable, but that the motivation for musicians to devote the time and effort necessary to continually improve skills is provided by the improvement in performance, which results from deliberate practice. They postulate that a young child, no matter how talented, would be unlikely to spontaneously engage in deliberate practice, since the necessary motivation—the awareness that such repetitive, time-consuming effort will produce superior performance—is lacking. Because of the lack of inherent enjoyment in deliberate practice, they conclude that some other motivator is required to initiate deliberate practice for younger students. They suggest that “interested individuals need to be engaged in the activity and motivated to improve performance before they begin deliberate practice.”⁷³ This is one reason why lower-advanced to advanced pianists were selected as the subjects of this document.

In his interviews with a number of international-level performers, Bloom⁷⁴ found that the following sequence typically preceded the commencement of deliberate practice by gifted young instrumentalists. Children who showed an aptitude for a musical instrument and displayed some interest in learning to play the instrument were provided with the means to try it out and were encouraged to do so without any pressure to develop their latent talent. In these early stages, parents are extremely important in encouraging the young musicians and providing the motivation for them to practice regularly at home. Teachers help the young musician to develop effective practice strategies and self-evaluation skills. As the youngster begins to develop his skill with the instrument,

⁷³ Anders K. Ericsson, Ralf Th. Krampe, and Clemens Tesch-Römer, “The Role of Deliberate Practice in the Acquisition of Expert Performance,” *Psychological Review* 100, no. 3 (1993): 371.

⁷⁴ B. S. Bloom, “Generalizations about talent development,” in *Developing talent in young people*, ed. B. S. Bloom (New York: Ballantine Books, 1985).

participation in private and public performances and competitions provides tangible targets for specific improvements. Ericsson *et al.* conclude: “At this point the motivation to practice becomes so closely connected to the goal of becoming an expert performer and so integrated with the individual’s daily life that motivation to practice, per se, cannot be easily assessed.”⁷⁵

The Role of Deliberate Practice in Achieving Optimal Performance

Background and Meaning of Deliberate Practice

Ericsson, Krampe, and Tesch-Römer, observe that “the view that merely engaging in a sufficient amount of practice, regardless of the structure of that practice, leads to maximal performance has a long and contested history.”⁷⁶ They cite the work of Bryan and Harter⁷⁷ and Keller⁷⁸ following them much later, who concluded that Morse Code operators could not overcome the apparent ceiling in their performance until training methods were restructured and improved. Similarly, Dvorak, Merrick, Dealey, and Ford observed that, with deliberate efforts, experienced typists could significantly improve their speed and accuracy.⁷⁹ John Minahan observed that, for most of the young musicians with whom he has come in contact, no teacher had made the effort or taken the

⁷⁵ Anders K. Ericsson, Ralf Th. Krampe, and Clemens Tesch-Römer, “The Role of Deliberate Practice in the Acquisition of Expert Performance,” *Psychological Review* 100, no. 3 (1993): 372.

⁷⁶ *Ibid.*, 365.

⁷⁷ W. L. Bryan and N. Harter, “Studies in the physiology and psychology of the telegraphic language,” *Psychological Review* 4 (1897): 27-53.

⁷⁸ F. S. Keller, “The phantom plateau,” *Journal of the Experimental Analysis of Behavior* 1 (1958): 1-13.

⁷⁹ A. Dvorak, N. L. Merrick, W. L. Dealey, and G. C. Ford, *Typewriting behavior* (New York: American Book, 1936).

time to help them develop an effective strategy for deliberate practice to move them toward perfection.⁸⁰

Citing laboratory research on learning and skill acquisition (Bower and Hilgard⁸¹; Gagné⁸²), Ericsson *et al.* suggest that four conditions are necessary for deliberate practice to produce the desired results:

- the practicer must be sufficiently motivated to accomplish the task and put forth the necessary effort to work toward optimal performance
- the design of the practice strategy should take into account the preexisting knowledge of the learners so that the task can be correctly understood after a brief period of instruction
- immediate informative feedback and knowledge of the results of one's performance should be provided
- the subjects should repeatedly perform the same or similar tasks.⁸³

Ericsson *et al.* cite a number of researchers who have found that, when these conditions are met, practice improves accuracy and speed of performance on cognitive, perceptual, and motor tasks (Fitts and Posner⁸⁴; Gibson⁸⁵; Welford⁸⁶).

Current literature identifies the need for a deliberate, organized, and structured approach to practice and many educators and researchers have offered models in

⁸⁰ John Minahan, "The Art and Science of Practicing," *Music Educators Journal* 72, no. 7 (March, 1986): 22-24.

⁸¹ G. H. Bower and E. R. Hilgard, *Theories of Learning*, 5th ed. (Englewood Cliffs, NJ: Prentice-Hall, 1981).

⁸² R. M. Gagné, *The conditions of learning*, 2nd ed. (New York: Holt, Rinehart, & Winston, 1970).

⁸³ Anders K. Ericsson, Ralf Th. Krampe, and Clemens Tesch-Römer, "The Role of Deliberate Practice in the Acquisition of Expert Performance," *Psychological Review* 100, no. 3 (1993).

⁸⁴ P. Fitts and M. I. Posner, *Human Performance* (Monterey, CA: Brooks/Cole, 1967).

⁸⁵ E. J. Gibson, *Principles of perceptual learning and development* (Englewood Cliffs, N. J.: Prentice Hall, 1969).

⁸⁶ A. T. Welford, *Fundamentals of skill* (London: Methuen, 1968).

response. Shockley supports a Gestalt mapping approach that starts with the overview of the basic structure of the music and then proceeds to the details.⁸⁷ DeRoche stresses the value of slow repetition to learn new music.⁸⁸ John Minahan divides practice time into five stages: “the warm-up, the run-through, hyper-consciousness, remembering the neediest, and homework.”⁸⁹ Jørgensen suggests that music learning can be described as "self-teaching" that is composed of a three-phase strategy: planning, the conduct of practice, and evaluation of practice.⁹⁰ The planning stage includes strategies for preparing emotional, motivational, physical, and musical elements. The conduct of practice stage addresses effective learning, monitoring practice and adjusting strategies, and preparing for performance. The evaluation stage involves assessing the effectiveness of the learning strategies to achieve goals in practice or in subsequent performance. In her doctoral dissertation, reflecting on the range of practice models, Nancy Barry concludes that “without empirical evidence, however, it is impossible to determine which method will be most effective (if at all) for a particular population.”⁹¹

Studies conducted in the early twentieth century demonstrated that typists desiring to improve their speed and accuracy searched actively and with success for methods to improve their performance (Book⁹²; Dvorak *et al.*⁹³). Research in other domains reveals that subjects experiment with different methods and strategies when faced with errors or

⁸⁷ R. Shockley, “A new approach to memorization,” *Clavier* (October 1986).

⁸⁸ D. DeRoche, “Stressing Fundamentals,” *The Instrumentalist* (January 1987): 56-60.

⁸⁹ John Minahan, “The Art and Science of Practicing,” *Music Educators Journal* 72, no. 7 (March, 1986): 23.

⁹⁰ H. Jørgensen, “Teaching and learning strategies in instrumental practice: A report on research in progress,” in *Transatlantic roads of music education: World views*, ed. J. A. Taylor (Tallahassee, FL: Center for Music Research, 1995).

⁹¹ N. H. Barry, “The Effects of Practice Strategies, Individual Differences in Cognitive Styles, and Sex Upon Technical Accuracy and Musicality of Student Instrumental Performance” (PhD diss., Florida State University, 1990), 3.

⁹² W. F. Book, *Learning to typewrite* (New York: Gregg, 1925).

⁹³ A. Dvorak, N.L. Merrick, W.L. Dealey, and G.C. Ford, *Typewriting behavior* (New York: American Book, 1936).

performance at a level below their expectations (Chase and Eriksson⁹⁴; Ericsson and Faivre⁹⁵; Staszewski⁹⁶). On occasions when the search for new practice methods fails to yield the desired performance improvements, Ericsson summarizes the findings of a number of researchers related to improving performance beyond an apparent plateau at suboptimal levels. “To assure effective learning, subjects ideally should be given explicit instructions about the best method and be supervised by a teacher to allow individualized diagnosis of errors, informative feedback, and remedial part training. The instructor has to organize the sequence of appropriate training tasks and monitor improvement to decide when transitions to more complex and challenging tasks are appropriate.”⁹⁷

A deliberate practice curriculum is the framework for chapter III, labeled as a “Mental Skills Training Program for a Lower-Advanced to Advanced Pianist.” The curriculum is designed to systematically teach and develop mental skills that will facilitate effective practice and optimal piano performance. This mental skills training program includes strategies to assist the performer in developing positive expectations, full concentration, clear focus on the task at hand, and a stronger sense of confidence. Additionally, strategies used effectively by athletes, are adapted for the pianist to enhance the musician’s ability to deal with distractions, cope with stress, and view negative events in a positive way.

⁹⁴ W. G. Chase and K. A. Ericsson, “Skilled Memory,” in *Cognitive skills and their acquisition*, ed. J. R. Anderson (Hillsdale, NJ: Erlbaum, 1981).

⁹⁵ K. A. Ericsson and I. A. Faivre, “What’s exceptional about exceptional abilities?” In *The exceptional brain: Neuropsychology of talent and special abilities*, ed. D. Fein and I. K. Obler (New York: Guilford Press, 1988).

⁹⁶ J. J. Staszewski, “Skilled memory and expert calculation,” in *The nature of expertise*, ed. M. T. H. Chi, R. Glaser, and M. J. Farr (Hillsdale, NJ: Erlbaum, 1988).

⁹⁷ Anders K. Ericsson, Ralf Th. Krampe, and Clemens Tesch-Römer, “The Role of Deliberate Practice in the Acquisition of Expert Performance,” *Psychological Review* 100, no. 3 (1993): 367.

Length of Practice Sessions

Richard Restak references golf coach Jim McLean, who emphasizes the importance of concentration during practice: “Practice only as long as you can concentrate. Stop when you lose focus. Short, focused practice sessions are often the most productive.”⁹⁸ Lehmann and Ericsson also conclude that deliberate practice, to be effective, can only be maintained for limited periods of time because it requires such intense effort and concentration.⁹⁹ Numerous studies show that there is little benefit when intense practice exceeds four hours per day and that benefits are reduced when practice times are greater than two hours (Chase & Ericsson¹⁰⁰; Schneider & Shiffrin¹⁰¹; Welford¹⁰²). Related to the notion of spaced practice, studies of consolidation consistently show that a period of rest or a night of sleep significantly enhances the learning process of a recently acquired motor skill (Karni *et al.*¹⁰³; Shea *et al.*¹⁰⁴; Walker *et al.*¹⁰⁵).

Dr. Bill Moore, performance psychology specialist, defines trust as more than an attitude or an innate character trait; it is a specific skill, which can be taught, learned, and practiced. “Regardless of your skill level, you can develop the ability to trust during performance that which you have trained in practice. The first step in getting there is to

⁹⁸ Richard M. Restak, *The New Brain: How the modern age is rewiring your mind* (Emmaus, PA: Rodale, 2003), 21.

⁹⁹ K. A. Ericsson and A. C. Lehmann, “Research on Expert Performance and Deliberate Practice: Implications for the education of amateur musicians and music students,” *Psychomusicology* 16 (1997): 40-58.

¹⁰⁰ W. G. Chase and K. A. Ericsson, “Skilled Memory,” in *Cognitive skills and their acquisition*, ed. J. R. Anderson (Hillsdale, NJ: Erlbaum, 1981).

¹⁰¹ W. Schneider and R. M. Shiffrin, “Control and automatic human information processing: Detection, search, and attention,” *Psychological Review* 84 (1977): 1-665.

¹⁰² A. T. Welford, *Fundamentals of skill* (London: Methuen, 1968).

¹⁰³ A. Karni *et al.*, “Dependence on REM sleep of overnight improvement of a perceptual skill,” *Science* 265 (1994): 679-682.

¹⁰⁴ C. H. Shea *et al.*, “Spacing practice sessions across days benefits the learning of motor skills,” *Hum Mov Sci* 19 (2000): 737-760.

¹⁰⁵ M. P. Walker, “Practice with sleep makes perfect: sleep-dependant motor skill learning,” *Neuron* 35 (2002): 205-211.

understand that trust is a specific skill that you can train in practice and can execute more frequently during performance.”¹⁰⁶ Although Moore directly references athletics and golf, by implication he is suggesting that, as a performance skill, trust is independent of your technical or interpretive skills at the piano. Apart from how well you have learned and practiced the technical and interpretive nuances of a piece of music, “learning to trust what you have *during* performance is still the goal and this goal is separate from ‘hitting a good shot’ or ‘shooting a good score.’”¹⁰⁷ He concludes that there are two paths that run parallel to each other: one to practice and continually refine technical and interpretive skills at the piano; the other to practice and develop your capability to trust those skills during performance.

Beginning and Maintaining Deliberate Practice

Practice, in and of itself, is not an especially exciting or self-fulfilling pastime; yet children who are earnestly trying to become proficient pianists spend a great deal of time engaged in practice. Sosniak, based on interviews with twenty-one American pianists and with the parents of sixteen of them, concludes that young pianists spend more time engaged in music than the majority of children their age spend on any one other activity. He concludes that “from the age of six, preparing for the next lesson typically involved spending somewhere between forty-five and ninety minutes a day, six days a week, at the keyboard.”¹⁰⁸

¹⁰⁶ Bill Moore, “Understanding Trust as a Performance Skill,” in *Trust-It-Golf: Getting into your game and out of your way* [Submitted for publication 2009], 1.

¹⁰⁷ *Ibid.*, 1-2.

¹⁰⁸ L. A. Sosniak, “Learning to be a concert pianist,” in *Developing talent in young people*, ed. B. S. Bloom (New York: Ballantine Books, 1985), 34.

As mentioned earlier, when children begin to play the piano, it is typically in the form of experimentation and fun. It is at this point that parental encouragement and assistance is crucial. Sosniak observes that “parents helped children develop the habits of practice, discipline, and attention to detail while the activity was still predominantly ‘fun.’”¹⁰⁹ Susan O’Neill explains that “as children begin formal instrumental music training, their musical learning moves from one of enculturation towards more self-conscious, directed effort aimed at the acquisition of specific musical skills.”¹¹⁰ From their large study of 257 young instrumentalists in England, Davidson, Howe, Moore, and Sloboda¹¹¹ conclude that the frequency of music lessons and the quantity of time spent with their music teachers contribute to motivating children to invest the time and effort in practice which is required to successfully develop musical performance skills.

Sloboda and Davidson suggest: “Unless external motivation develops into internal motivation by the early teenage years, it is difficult to sustain the commitment required to persist with musical instrument learning.”¹¹² Over the past thirty years or so a number of researchers have devoted themselves to developing and testing theories relating achievement, motivation, and personality (generally in non-musical contexts). Dweck and Elliott conclude: “Motivational factors determine such critical things as whether children actually pursue and master skills they are fully capable of mastering and that

¹⁰⁹ Ibid., 415.

¹¹⁰ Susan A. O’Neill, “The Role of Practice in Children’s Early Musical Performance Achievement,” in *Does Practice Make Perfect? Current Theory and research on Instrumental Music Practice*, ed. H. Jørgensen and A. Lehmann (Oslo, Norway: Norges musikkhøgskole, 1997), 53.

¹¹¹ M. J. A. Howe *et al.*, “Are there early childhood signs of musical ability?” *Psychology of Music* 23 (1995): 162-176.

¹¹² John A. Sloboda *et al.*, “The role of practice in the development of performing musicians,” *British Journal of Psychology* 87 (1996): 181.

they themselves value.”¹¹³ Studying children in non-musical performance settings, researchers observe two categories of behavior: maladaptive patterns of achievement behavior (termed helpless) and adaptive patterns (identified as mastery-oriented); these behavioral patterns appear to have a significant influence on performance outcomes (Smiley and Dweck¹¹⁴). Those exhibiting helpless behaviors avoid challenges, have little persistence and demonstrate deteriorating performance when failure is expected or experienced. In contrast, those displaying mastery-oriented behaviors persist in spite of failure and take pleasure in continuing to put forth a great deal of effort in their pursuit of task mastery. Researchers found these observations to hold true even when the two groups of children are equal in ability. For students exhibiting helpless behaviors, attempts to improve their persistence, their attitude when facing challenges, and their overall self-concept by providing successful experiences (Dweck¹¹⁵), by raising their perception of their own abilities (Harter¹¹⁶), or by praising their performance (Brophy¹¹⁷) have all been shown to be ineffective.

Susan O’Neill conducted her own research to investigate the relationship between children’s motivational patterns and their levels of performance achievement at the end of their first year of formal instrumental training. She concluded that: “Helpless children evaluate achievement situations in terms of performance goals where the aim is to display their competence and avoid failure and negative judgments of their performance. In

¹¹³ C. S. Dweck and E. Elliott, “Learned helplessness and intellectual achievement,” in *Human helplessness: Theory and application*, ed. M. E. P. Seligman and J. Garber (New York: Academic Press, 1980), 644.

¹¹⁴ P. A. Smiley and C. S. Dweck, “Individual differences in achievement goals among young children,” *Child Development* 65 (1994): 1723-1743.

¹¹⁵ C. S. Dweck, “The role of expectations and attributions in the alleviation of learned helplessness,” *Journal of Personality and Social Psychology* 31 (1975): 674-685.

¹¹⁶ S. Harter, “Competence as a dimension of self-evaluation: Toward a comprehensive model of self-worth,” in *The Development of the Self*, ed. R. Leahy (New York: Academic Press, 1985).

¹¹⁷ J. Brophy, “Teacher praise: A functional analysis” *Review of Educational Research* 51 (1981): 5-32.

contrast, mastery children tend to choose learning goals, which emphasize the need to increase their competence. As a result, mastery children tend to view failure as merely part of the learning process rather than something to be avoided.”¹¹⁸ O’Neill suggests that these findings should be of importance to teachers. If learning goals and personally challenging tasks are designed for each student which challenge but do not frustrate the student, teachers can create a learning environment where the student values learning goals and responds with mastery behavior. Also, if a teacher is able to identify students who tend toward helpless behavior, the teacher may be able to design teaching strategies that will encourage the formulation of appropriate learning goals and the development of more effective learning strategies and behavior.

Attitude is Important

Tom Hopkins, in his brief article, “*The Most Necessary Skill of All*, makes the point that the vital force which will drive a performer to reach for eminence is the inner desire to reach that pinnacle.”¹¹⁹ He suggests that fear of failure, lack of confidence in one’s own ability, and listening to negative voices (either internal or external) will suffocate the performer’s wants and desires, if allowed to do so. Hopkins asserts, “Apathy stifles more careers than inability ever does.”¹²⁰

Attitudes are not fixed. Gary Mack, a success coach and counselor for many top athletes, argues that we begin to learn attitudes as young children and that these attitudes change over time. He goes further, though, and contends that attitudes can be unlearned

¹¹⁸ Susan A. O’Neill, “The Role of Practice in Children’s Early Musical Performance Achievement,” in *Does Practice Make Perfect? Current Theory and research on Instrumental Music Practice*, ed. H. Jørgensen and A. Lehmann (Oslo, Norway: Norges musikkhøgskole, 1997), 65.

¹¹⁹ Tom Hopkins, “The Most Necessary Skill of All,” in *Masters of Success: Proven Techniques for Achieving Success in Business and Life*, eds. Ivan R. Misner and Don Morgan (Toronto, Canada: Entrepreneur Press, 2004), 94.

¹²⁰ *Ibid.*, 95.

and that we can train ourselves to develop positive attitudes. He believes that there are three mindsets that determine whether one's attitude will be pessimistic or optimistic:

Permanence. Optimists believe that when they lose or experience setbacks, these disappointments are temporary rather than permanent.

Pervasiveness. Unlike pessimists who let their doubts and troubles affect every area of their lives, optimists are able to put their problems in a 'box' and not let them distract them.

Personalization. Optimists internalize victories and externalize defeats. 'We played great today. We deserved to win. They were lucky tonight. We'll win tomorrow.' The pessimist does just the opposite. 'We were lucky to win tonight. It's all my fault we lost. I'm a worthless loser.'¹²¹

In the mental skills training program provided in chapter III, strategies and practice exercises that will assist the pianist to develop and maintain a positive attitude are described. Specifically, strategies to overcome or silence negative voices of self-doubt which result in a breakdown of trust are included.

Know Your Areas of Genius and Focus

Michael Jordan knew he was skilled at basketball; Thomas Edison was fully aware that he had an inventive mind; Martha Argerich understands that the piano is where she can express her genius. None of these became eminent performers by happenstance. Jordan did not divide his time among basketball, golf, swimming, and cycling; he did not try to excel at four different sports. In fact, after retiring from basketball, Jordan's career as a professional baseball player was brief and unexceptional. Neither Edison nor Argerich divided their time and energy among a number of different skill areas. Although there are exceptions, eminent performers do not attain that status by

¹²¹ Gary Mack and David Casstevens, *Mind Gym: An Athlete's Guide to Inner Excellence* (New York: Contemporary Books, 2001), 103.

diluting their focus. Richard Restak postulates that eminent performers in any field rewire their brains and he advises those who aspire to eminence: “Select a field of endeavor that appeals to you and then work with sufficient intensity to bring about major reorganizations in your brain’s circuitry.”¹²² Robin Sharma concludes that the way to reach the goal of eminent performance is to “focus on any area or skill with a relentless devotion to daily improvement and a passion for excellence.”¹²³ From his contact with superstars, celebrities, and CEOs, he observes that “one of the primary traits of their greatness is their focus.”¹²⁴ He then continues to explain that it is their focus on specific goals that is important; they know the key goals they need to achieve to attain eminence in their field.

Richard Restak compares the expert golfer’s ability to maintain focus with that of an amateur. He observes that, during practice sessions, the expert pays attention to the subtleties of the performance, and this knowledge is then transferred to the individual’s working memory. Subsequently, even when under intense pressure, his brain will focus on one or more aspects of those learned procedural skills and not be distracted. The task at hand and not ego will be the center of the brain’s attention. In contrast, Restak writes:

The amateur ... falls victim to a well-established relationship involving arousal, attention, and performance. In a state of heightened anxiety and/or arousal the amateur turns his attention inward and becomes self-focused rather than task-focused. This disrupts the execution of previously learned subunits of performance, resulting in choking under pressure.¹²⁵

¹²² Richard M. Restak, *The New Brain: How the modern age is rewiring your mind* (Emmaus, PA: Rodale, 2003), 28.

¹²³ Robin S. Sharma, *The Greatness Guide* (Toronto, Canada: HarperCollins, 2006), 172.

¹²⁴ Ibid.

¹²⁵ Richard M. Restak, *The New Brain: How the modern age is rewiring your mind* (Emmaus, PA: Rodale, 2003), 21-22.

Setting Specific Goals

Goals breed focus and, as Oare summarizes: “Goal orientation influences the affective, cognitive, and behavioral reactions of individuals in achievement situations.”¹²⁶ Green and Gallwey emphasize the importance of identifying specific learning goals for each practice session.¹²⁷ Tom Hopkins describes goals as clearly articulated “wants.” Goals describe the focus of our passion. Hopkins asserts: “If you really want something, that want will make a difference in your life. You’ll work to satisfy that want. You’ll sacrifice pleasures for it. In fact, you’ll deliberately change yourself and grow so that you can have what you really want.”¹²⁸ A number of success coaches emphasize that the goals most likely to be successfully achieved are not those that are randomly selected, but are those that are carefully and deliberately formulated (Tom Hopkins; Morgan¹²⁹).

Don Morgan identifies SMART goals as the best goals: “These are the ones you create through a deliberate and conscious process. Your goal needs to be Specific, Measurable, Achievable, Realistic, and completed within a specified Time – or SMART.”¹³⁰ He explains that you have a clearer understanding of the goal if it is very specific. To be able to evaluate your progress as you practice and to know when you have achieved the goal, Morgan says, it must be measurable and, if you want to believe and have confidence that you can attain the goal, then it must be achievable and realistic.

¹²⁶ Steven Rex Oare, “Goals and Self-Assessment in the Middle School Classroom: A study of music practice habits” (PhD diss., Michigan State University, 2007), 184.

¹²⁷ B. Green and W. T. Gallwey, *The Inner Game of Music* (Garden City, New York: Anchor Press, 1986).

¹²⁸ Tom Hopkins, “The Most Necessary Skill of All,” in *Masters of Success: Proven Techniques for Achieving Success in Business and Life*, ed. Ivan R. Misner and Don Morgan (Toronto, Canada: Entrepreneur Press, 2004), 94.

¹²⁹ Don Morgan, “Subconscious and Smartconscious Goals,” in *Masters of Success: Proven Techniques for Achieving Success in Business and Life*, ed. Ivan R. Misner and Don Morgan (Toronto, Canada: Entrepreneur Press, 2004).

¹³⁰ *Ibid.*, 98.

Finally, he emphasizes, goals are more useful when given an endpoint in time rather than being vague with a final destination sometime in the distant future.

Schunk notes that effective goals are specific, proximal, and challenging (within reasonable limits).¹³¹ Metacognitively, goals improve the student's self-regulation through their effects on motivation, self-evaluation of learning strategies, and self-appraisal of progress. Further, he suggests that the student who exhibits effective goal-setting strategies should first set a long-term goal that is then divided into subgoals that are achievable in the short term. Constantly monitoring progress, such a student modifies strategies and goals as called for and sets a new goal when the current one is achieved. In their study of junior-high instrumentalists, Tal Savion-Lemieux and Virginia Penhune agree that it is important to provide time, opportunity, and the proper structure for students to formally reflect on specific individual or group goal-setting, practice strategies, and quality of performance.¹³² Schunk observes that the process of constantly monitoring progress and setting remedial goals as needed, empowers the student because progress is attributed to stable factors within the student's own control. Stiggins also concludes that, if students are provided with unambiguous goals and performance criteria and are taught how to set clear goals and how to effectively assess their own progress and performance, their motivation improves because their internal locus of control develops allowing them to ascribe their success or failure to their own efforts.¹³³

¹³¹ D. H. Schunk, "Self-Regulation through Goal-Setting," in *Self-regulated learning: From teaching to self-reflective practice*, ed. D. H. Schunk and B. J. Zimmerman (New York: Guilford Press, 2001).

¹³² Tal Savion-Lemieux and Virginia B. Penhune, "The effects of practice and delay on motor skill learning and retention," *Experimental Brain Research* 161 (2005): 423-431.

¹³³ R. Stiggins, *Student-Involved Classroom Assessment*, 3rd ed. (Upper Saddle River, NJ: Prentice-Hall, 2001).

A widespread use of metacognitive skills during practice is a hallmark of the proficient musician. Hallam finds that metacognition is over-arching in the practice repertoire of the proficient musician and is involved in the planning, self-monitoring, and self-assessment of learning strategies.¹³⁴ The proficient student effectively employs metacognitive skills in evaluating his/her learning progress in terms of personal strengths and weaknesses, practice strategies that are available, and ability to understand the nature of the task and assess progress toward the goal.

Feedback

Robin Sharma recalls a note he saw hanging on the wall of an office in the corporate headquarters of El Al, Israel's national airline: "What gets measured gets improved."¹³⁵ Success coach and performance motivator, Aubrey Daniels, suggests that before a person can usefully measure how successfully a goal has been attained, it is necessary to pinpoint and define the results and behaviors that are required. Pinpointing defines how much of each (results and behavior) are needed and measurement determines how much of each has been achieved. Then, Daniels continues, that information can be turned into feedback.¹³⁶

Daniels defines feedback as "information about performance that allows an individual to adjust his or her performance."¹³⁷ When an athlete trains to improve performance, a coach or trainer is generally present, evaluating progress and making suggestions for improvement. However, if the comments the athlete receives do not

¹³⁴ S. Hallam, "The development of metacognition in musicians: Implications for education," *British Journal of Music Education* 18, no. 1 (2001): 27-39.

¹³⁵ Robin S. Sharma, *The Greatness Guide* (Toronto, Canada: HarperCollins, 2006), 173.

¹³⁶ Aubrey Daniels, *Bringing Out The Best In People: How to apply the astonishing power of positive reinforcement* (Toronto, Canada: McGraw-Hill, 2000).

¹³⁷ *Ibid.*, 101.

facilitate adjustment to his performance, then it is not (according to Daniels) feedback. It does not help the golfer to adjust his swing by advising him that the ball sliced from the tee into the woods. Pianists, who generally practice alone, do not have teacher feedback immediately available during practice sessions. However, sound or video recordings of practice sessions can often be used as tools for self-analysis or for teacher analysis leading to useful feedback for the performer to subsequently make improvements.

Daniels emphasizes that feedback is really an antecedent, and alone it may not sustain performance or behavior change. He explains that feedback tells the performer what needs to change in his performance. The way the performer responds to the feedback depends on the consequences he experiences. For the pianist, the consequence of practice lies in the performance. If the performance goes well and is well received by an audience, teachers, and adjudicators, the performer will likely respond to subsequent feedback from the same source positively, expecting similar results in the next performance.

Automaticity

Understanding Automaticity

“Performance psychology recognizes the developmental process in skill acquisition as a shift from conscious-controlled, unrefined movements to smoother, completely automatic movements.”¹³⁸ Among psychologists there are a number of views concerning the precise definition of “automaticity” and its application to skills and processes. There is general agreement regarding the most common features that

¹³⁸ Bill Moore, “Mental Coaching Program for Golfers” [Unpublished workbook for professional golfers], 2007, 5.

characterize automatic attributes of any task performance or process. Adjectives that are common to most definitions of automaticity are: unintentional, unconscious, uncontrollable, efficient, and fast. However, researchers do differ on how they measure the degree to which any performance is automatic.

Agnes Moors and Jan de Houwer subscribe to the gradual decompositional approach in their study of automaticity. The gradual view suggests that there are three classes into which most automatic processes fit: preconscious, postconscious, and goal-dependent. Moors and de Houwer explain that “preconscious processes require no conscious input and no intention. Postconscious processes require conscious input but no intention. Goal-dependant processes require both conscious input and an intention or another goal to get started, but no goal to run to completion.”¹³⁹ The gradual approach also postulates that the question of automatic or nonautomatic is not black and white, but that processes are automatic to a degree. The gradual decompositional view looks at each feature of automaticity separately to establish the degree to which it is present. Although subscribing to this view, Moors and de Houwer point out that “as a gradual concept, automaticity loses its ability to tell apart one type of process (automatic) from another (nonautomatic), because any process can be labeled automatic to some degree.”¹⁴⁰

Limitations of Automaticity

In speaking with Richard Restak, Anders Ericsson explains that “individuals who perform at higher levels utilize specific kinds of memory processes. They have acquired refined mental representations to maintain access to relevant information and support

¹³⁹ Agnes Moors and Jan De Houwer, “What is Automaticity? An Analysis of Its Component Features and Their Interrelations,” in *Social Psychology and the Unconscious: The Automaticity of Higher Mental Processes*, ed. John A. Bargh (New York: Psychology Press, 2007), 18.

¹⁴⁰ *Ibid.*, 19.

more extensive flexible reasoning about encountered tasks or situations. Better performers are able to rapidly encode, store, and manipulate information. None of these adjustments would be possible if expert performance were fully automated.”¹⁴¹

Ericsson and Lehmann observe that much repetition during practice sessions can certainly result in an increase in automaticity requiring less effort from the performer during performance. However, they offer a cautionary note. “Building mastery in a domain and finding the least effortful method to attain a specific performance goal are different activities. This distinction is crucial for separating a performance that has been entrenched through mindless drill from one that is flexible and adaptable through the use of mental representations—a hallmark of expert performance.”¹⁴² Gruson, in a study of forty-three Canadian piano students and three professional pianists, found that as more competent practicers developed automated skills, resulting in less conscious control of motion, the frequency of mental slips did not decrease during advanced practice sessions, but, in fact, increased.¹⁴³

Bill Moore, in his PhD dissertation entitled “Covert-Overt Service Routine,” discusses two types of processing that skilled performers use when performing a task: automatic processing and controlled processing. As a performer moves from an inexperienced state to a skilled state with a new piece of music, they move from a conscious mode to an automatic mode. “Skilled motor responses are so sophisticated that it is unnecessary to think about the actual performance of a movement pattern and

¹⁴¹ Richard M. Restak, *The New Brain: How the modern age is rewiring your mind* (Emmaus, PA: Rodale, 2003), 19.

¹⁴² K. A. Ericsson and A. C. Lehmann, “Research on Expert Performance and Deliberate Practice: Implications for the education of amateur musicians and music students,” *Psychomusicology* 16 (1997): 49.

¹⁴³ L. M. Gruson, “What distinguishes competence?: An investigation of piano practicing” (PhD diss., University of Waterloo, Canada, 1981).

therefore the movement proceeds automatically.”¹⁴⁴ For example, when an individual gets on a road bike she performs an automatic motor program that is activated through stored memory. The actual act of getting on a bike and starting down the road is filled with a series of complex motor programs, but once an individual masters the skill the task is habituated. If that same individual were to try to ride a much taller bike, she would have to modify her stored memory to adjust to the larger bike. She would not have to start from the beginning and learn how to ride a bike all over again, but would be able to draw upon the memory bank of a well-learned skill. Even though the skill may appear more effortful, she would still be able to remember the previous automatic processing learned on her own bike.

The other type of processing Moore discusses is “controlled processing.” The difference between the two is that “automatic processes are fast and accurate and perform well-learned consistent responses. Controlled processes precede automatic processes, maintain enabling conditions, and are used in problem solving. Automatic processes are difficult to change and require extended practice to develop. Controlled processes are flexible but slow and very limited in capacity.”¹⁴⁵ To use automaticity to the performer’s advantage, it is essential to allow the two processes to interact with each other so that processing during a performance can be both flexible and fast. Moore references a study by Schneider and Fisk that illustrates how vital it is that skilled performers let go of conscious control during an automatic process. The researchers studied eight subjects who were performing a dual-task category and digit-search experiment. Two of the subjects had a significant amount of difficulty performing well on the dual-task category

¹⁴⁴ Bill Moore, “Covert-Overt Service Routine,” (PhD diss., University of Virginia, 1986), 14.

¹⁴⁵ Ibid., 15-16.

but not on the single category search. After “training” the subjects’ dual-task category, their level of performance increased from thirty percent to eighty-four percent. The researchers asked them why they experienced such a higher level of performance during the second test. Both subjects indicated that it was because, in the small amount of training provided to them by the researchers, they had learned how to let go and use specific words to draw their attention back to the task at hand. This research indicates that automaticity is not to be used by performers solely as a means to detach themselves from the live performance. Instead it should be utilized as a technique that strengthens stability and trust during a performance, permitting performers to insert more spur-of-the-moment musical and expressive ideas into their playing without the fear of losing their memory or technique.

In chapter III, research and literature that has addressed automaticity in athletics is modified to encourage automatic psychological and physical responses necessary to refine piano performance skills. Mental skills training is adapted to develop automaticity in skills, which reduce performance nervousness and self-consciousness and increase a performer’s confidence and ability to remain focused under pressure.

Confidence and Trust

Bill Moore suggests that there are five levels of self-belief. Each has an effect on a person’s confidence and trust and they range from a level with wide-ranging and stable characteristics to a level with specific and unstable characteristics.

- Self-concept is an all-encompassing belief that remains largely unchanged over time. Self-concept describes who a person is and includes all of the personal characteristics that a person ascribes to himself.
- Self-esteem, which is often used incorrectly as synonymous with self-concept, is more specific and somewhat less stable than self-concept. A person's self-esteem grows out of the value the individual places on his personal characteristics and, therefore, can be altered by events and life experiences.
- Self-confidence is even more specific and grows out of each individual's view of his general capability to succeed when faced with a challenge. Since a person's self-confidence is built from past successes, self-confidence is less stable than self-esteem because current performance outcomes can increase or decrease self-confidence.
- Task-confidence is similar to self-confidence but is more specific and even less stable because it relates to a particular task. A person may exhibit high self-confidence but demonstrate lower task-confidence when facing a specific situation.
- Trust is specific to the task being addressed but it is also time-dependant. A person may be extremely confident that a particular challenge can be successfully met, but at the moment of performance may not trust his skill enough to execute the challenge at the critical moment. Thus, trust is extremely unstable.¹⁴⁶

Moore advocates that trust should be a performer's primary goal. "Your best performances occur when you are totally absorbed in and connected to the task at hand,

¹⁴⁶ Bill Moore, "Understanding Trust as a Performance Skill," in *Trust-It-Golf: Getting into your game and out of your way* [Submitted for publication 2009].

free from expectations, fears, doubts and other conscious activity.”¹⁴⁷ He defines trust as releasing conscious control of the particular performance skill being attempted and allowing subconscious processes to perform the task. Gary Mack, performance coach to athletes in a number of sports, recalls a situation during a sudden-death playoff at the 1999 Masters tournament between Scott Hoch and Nick Faldo. On the first playoff hole Hoch needed a two-foot putt to win. Mack describes the scene:

It was twenty-four inches—tops—almost straight in, but Hoch looked like Minnesota Fats circling a green felted billiard table, chalking his cue and adding every angle before making a four-bank trick shot. It was growing late. Instead of unconsciously speeding up, as some athletes do under stress, Hoch slowed down. Chi Chi Rodriguez said, ‘Take less time to read the scorecard and more time to read the hole.’ Good advice, but Hoch read the hole as if it were *War and Peace*. Finally, the golfer stepped up to his ball. Settled into his stance. Eyes flicked anxiously from ball to hole, hole to ball, back and forth. ... At last, Hoch drew back the putter blade. There was more prayer than conviction in his stroke. Click. The ball slid three feet past the hole.¹⁴⁸

Mack concludes that, when a performer does not trust his abilities in a situation, intellectual confusion results; it’s better to be decisive than correct. Mack emphasizes that, when a performer practices, it’s essential that the brain, as well as the body, be trained. “The conscious practice of routines leads to the unconscious habits of success.”¹⁴⁹ Applying the same principles to music, trusting in your skills as a musician, which have been developed through hours of rigorous practice, once you sit down at the piano, “it’s time to get your head out of the way so your body can perform.”¹⁵⁰

Deactivate the analytical mind; exchange the thinking mode for the trusting mode.

¹⁴⁷ Bill Moore, “Mental Coaching Program for Golfers” [Unpublished workbook for professional golfers], 2007, 3.

¹⁴⁸ Gary Mack and David Casstevens, *Mind Gym: An Athlete’s Guide to Inner Excellence* (New York: McGraw-Hill, 2001), 164-165.

¹⁴⁹ *Ibid.*, 166.

¹⁵⁰ *Ibid.*, 167.

As mentioned previously, trust is not the same as confidence. Confidence is built upon an assessment of past experiences and performance outcomes and the demands or challenges being faced at the moment. It depends on a process of evaluation and analysis of a performer's personal skill and abilities and results in either a positive or negative expectation relative to the immediate situation and the current performance demand. "Trust on the other hand, is a lack of expectation and exists in the moment without any past or future. Trust also implies a 'leap of faith' into the unknown."¹⁵¹ Releasing conscious control of correctness is central to being able to trust during performance. Although conscious control is a key component during practice when technique is being refined and cognitive and metacognitive skills (planning, self-monitoring, self-instruction, etc.) are being developed, during performance, in order for trust to assume its place of primacy, such conscious control must be abandoned. Of course, it is counter to human nature to let go of control and "trust your system to 'get it right' without monitoring and controlling correctness."¹⁵²

Moore maintains that trust is a psychological skill that can be learned, refined, and practiced, just like any other skill, and he describes a number of trust-developing practice drills. "The goals of these drills are to: a) embrace trust as a specific performance skill that you can train and improve, b) develop a reference point so that you know when you are trusting in your skills and when you are not, and c) identify when and how trust breaks down in terms of the specific skills and performance situations."¹⁵³

Although the drills described by Moore are specific to golf and golfers, drills with similar

¹⁵¹ Bill Moore, "Mental Coaching Program for Golfers" [Unpublished workbook for professional golfers], 2007, 3.

¹⁵² Ibid.

¹⁵³ Ibid., 4.

purposes, for pianists, are developed in the mental skills training program included in chapter III.

Mental Skills Training

The Necessary Training Program within Deliberate Practice

Preparation for performance, whether in athletics or music, has tended to focus on physical readiness in areas such as fitness, dexterity, technique, etc. However, many researchers, coaches, and the athletes themselves, are pointing to mental preparedness as a key factor in athletic success. Mental skills training is effective in improving an individual's control of mental and emotional elements as well as coordination of physical movement (Martens¹⁵⁴; Rushall¹⁵⁵). The increased control provided by such training has also been found to improve confidence and general wellbeing (Boyd and Zenong¹⁵⁶) and to motivate one to persist in efforts to improve performance (Wuff and Toole¹⁵⁷). However, when such control is decreased (perhaps by injury), frequently an individual's confidence and future performance also are reduced (Rotella and Heyman¹⁵⁸). Therefore, "as its first premise, mental skills training relies on a methodology of self-mastery, generated through self-knowledge, to enhance the psychological state of the

¹⁵⁴ R. Martens, *Coaches Guide to Sport Psychology* (Champaign, Illinois: Human Kinetics, 1987).

¹⁵⁵ B. S. Rushall, *Mental Skills Training for Sports: A manual for athletes, coaches, and sport psychologists* (Australia: Sports Science Associates, 1992).

¹⁵⁶ M. Boyd and Y. Zenong, "Cognitive-affective and behavioral correlates of self-schemata in sport," *Journal of Sport Behavior* 22, no. 2 (1999): 288-296.

¹⁵⁷ G. Wuff and T. Toole, "Physical assistance devices in complex motor skill learning: Benefits of a self-controlled practice schedule," *Research Quarterly for Exercise and Sport* 70, no. 3 (1999): 265-274.

¹⁵⁸ R. J. Rotella and S. R. Heyman, "Stress, injury, and the psychological rehabilitation of athletes," in *Applied Sport Psychology: Personal growth to peak performance*, ed. J. M. Williams (Mayfield, California: Palo Alto, 1986), 343-364.

individual.”¹⁵⁹

Rushall states that “psychology is the key to athletic excellence.”¹⁶⁰ Similarly, psychological skills and mental readiness have been found to be the best predictors of Olympic success (Orlick and Partington¹⁶¹), baseball pitching performance (Smith and Christenson¹⁶²), and peak performance in golf (Cohn¹⁶³). Orlick and Partington interviewed seventy-five Canadian Olympic athletes with another one hundred sixty completing questionnaires in their “mental links to excellence” study. They found that the daily training regime for these elite athletes included mental skills training with daily goal setting, mental imagery, optimistic and positive thoughts, and attentional focus strategies. Similarly, Gould, Eklund, and Jackson, in their study of the 1988 U. S. Olympic wrestling team, observed that the athletes’ all-time best performances coincided with positive expectations, full concentration, high confidence, a task-relevant focus, increased arousal and intensity, and heightened effort and commitment.¹⁶⁴ They concluded that the most significant difference between medalists and non-medalists was the degree to which mental coping strategies were practiced and internalized.¹⁶⁵ Subsequent studies following the 1996 Olympic Games in Atlanta came to similar conclusions. Athletes who met or exceeded their expectations consistently ascribed importance to psychological preparedness and emphasized the value of strong

¹⁵⁹ Luke Behncke, “Mental Training for Sports: A Brief Review,” *Athletic Insight: The Online Journal of Sport Psychology* 6, no. 1 (March 2004): 2.

¹⁶⁰ B. S. Rushall, “Sport Psychology: The key to sporting excellence,” *International Journal of Sport Psychology* 20 (1989): 165.

¹⁶¹ T. Orlick and J. Partington, “Mental Links to Excellence,” *The Sport Psychologist* 2 (1988).

¹⁶² R. E. Smith and D. S. Christenson, “Psychological Skills as Predictors of Performance and Survival in Professional Baseball,” *Journal of Sport and Exercise Psychology* 17 (1995).

¹⁶³ P. J. Cohn, “An Exploratory Study on Peak Performance in Golf,” *The Sport Psychologist* 5 (1991).

¹⁶⁴ D. Gould, R. C. Eklund, and S. A. Jackson, “1988 U. S. Olympic Wrestling Excellence: I. Mental preparation, precompetitive cognition, and affect,” *The Sport Psychologist* 6 (1992).

¹⁶⁵ D. Gould, R. C. Eklund, and S. A. Jackson, “1988 U. S. Olympic Wrestling Excellence: II. Thoughts and affect occurring during competition,” *The Sport Psychologist* 6 (1992).

performance focus, the ability to deal with distractions, mental preparation to cope with stress, and the capability to view negative events in a more optimistic light (Gould *et al*¹⁶⁶; Greenleaf, Gould, and Dieffenbach¹⁶⁷). Summarizing the findings of these and other research sources, Krane and Williams conclude that, although there are individual variations, the general psychological profile linked with successful athletic performance is depicted by the following characteristics:

- high self-confidence and expectation of success
- self-regulation of arousal (energized yet relaxed)
- feeling in control
- total concentration
- keen focus on the present task
- viewing difficult situations as exciting and challenging
- productively perfectionist (i.e. have high standards, yet flexibility to learn from mistakes)
- positive attitude and thoughts about performance
- strong determination and commitment¹⁶⁸

Although it has been recognized for many years that psychological skills are as important for optimal performance as technical skills, a small amount of literature is available addressing this need as it pertains to music—specifically piano performance. In the curriculum provided in chapter III, several exercises and activities, adapted from

¹⁶⁶ Gould, D., D. Guinan, C. Greenleaf, C. R. Medbery, and K. Peterson, “Factors Affecting Olympic Performance: Perceptions of athletes and coaches from more and less successful teams,” *The Sport Psychologist* 13 (1999).

¹⁶⁷ C. Greenleaf, D. Gould, and K. Dieffenbach, “Factors Influencing Olympic Performance: Interviews with Atlanta and Nagano U.S. Olympians,” *Journal of Applied Sport Psychology* 13 (2001).

¹⁶⁸ Vikki Krane and Jean M. Williams, “Psychological Characteristics of Peak Performance,” in *Applied Psychology: Personal growth to peak performance*, ed. Jean M. William, 5th ed. (New York: McGraw-Hill, 2006), 221.

similar exercises successfully employed in athletics, are described to assist the lower-advanced to advanced pianist to understand and improve concentration and focus, self-confidence, and trust. The twelve-week training program is designed to provide pianists with tools that can be continually utilized and refined in practice and performance over a lifetime.

Motivational Factors Involved in Mental Skills Training Programs

Two classes of motivational factors, extrinsic rewards and intrinsic motivation, affect the desire for an athlete to improve performance.¹⁶⁹ Extrinsic rewards include external motivations such as prizes, money, and security as well as the less material rewards of recognition and peer respect, while intrinsic motivations have to do with the desire for self-development and the desire to challenge and improve oneself. Weinberg, Martens, and Rushall all promote intrinsic, rather than extrinsic, motivation to improve performance and to achieve specific performance goals. Extrinsic rewards are out of the control of the individual and sometimes lead to the development of an egocentric mentality and decrease in objectivity thereby inhibiting the ability to learn from failures and face challenges. Goals based upon external factors have been found to be a source of stress and anxiety because of the uncontrollable nature of such factors.¹⁷⁰ Depending on extrinsic motivation also seems to be a contributing factor in the condition of learned helplessness where continued failures are experienced with no identifiable external cause

¹⁶⁹ R. S. Weinberg, "The Relationship Between Extrinsic Rewards and Intrinsic Motivation," in *Psychological Foundations of Sport*, ed. J. M. Silva and R. S. Weinberg (Champaign, Illinois: Human Kinetics, 1984), 177-187.

¹⁷⁰ D. Burton, "Winning Isn't Everything: Examining the impact of performance goals on collegiate swimmer's cognitions and performance," *The Sport Psychologist* 3 (1989): 105-132.

(Prapavessis and Carron¹⁷¹). On the other hand, intrinsic motivation has its root in a desire to achieve for achievement's sake and allows the athlete to view performance more objectively as a means of self-development and to be more motivated to persist in training and practice. "Under intrinsic motivation, a greater scope for self-development and self-improvement exists in comparison to external rewards because intrinsic motivation assists in changing perception of external events, rather than external events precipitating a change in perception."¹⁷² Goal setting is stressed as an important factor in the twelve-week mental skills training program found in chapter III. For each journal exercise in the training program, a specific goal is clearly stated to enable the pianist to measure the degree to which psychological performance skills improve.

Characteristics of Mental Skills Training Methods

Mental skills training methods are generally identified as either cognitive or somatic. Cognitive approaches include mental rehearsal, mental imagery and visualization, and visuo-motor behavior rehearsal, while somatic methods include progressive muscle relaxation and meditation. The mental skills training focus of this document will largely be cognitive methods.

Most mental skills training methods employed to improve performance involve some form of mental rehearsal, with the individual rehearsing the motor skill or technique required for practice or training or for the performance, itself. Schmidt (1975;¹⁷³ 1976¹⁷⁴) suggests motor patterns or movement sequences need to be cognitively controlled so that

¹⁷¹ H. Prapavessis and A. Carron, "Learned Helplessness in Sport," *The Sport Psychologist* 2 (1988): 1-15.

¹⁷² Luke Behncke, "Mental Training for Sports: A Brief Review," *Athletic Insight: The Online Journal of Sport Psychology* 6, no. 1 (March 2004): 3.

¹⁷³ R. A. Schmidt, "A Schema Theory of Discrete Motor Skill Learning," *Psychological Reviews* 82 (1975): 225-260.

¹⁷⁴ R. A. Schmidt, "Control Processes in Motor Skills," *Exercise and Sport Science Reviews* 4 (1976): 229-261.

pre-programmed mental commands in the form of generalized motor patterns can be retrieved from memory and executed when required without any interference or input from sensory information. Behncke explains that sensory input must be excluded because “conscious intervention is too slow to accommodate changes in motor coordination.”¹⁷⁵ Nascon and Schmidt propose that, in addition to rehearsing a particular motor skill or sequence, it is also important to mentally rehearse necessary psychological conditions, such as level of arousal and attention, so that such mental states conducive for performance can be easily accessed as required.¹⁷⁶ An obvious advantage of mental rehearsal is that the risk of over-exertion or injury is reduced because the amount of actual physical exertion or repetitive movement experienced in traditional practice regimes is lessened.¹⁷⁷

The regions of the brain responsible for movement and motor coordination are also involved in mental imagery, or representing those motor actions in conscious thought without executing the actual physical movement (Decety¹⁷⁸; Jeannerod¹⁷⁹). It is not sufficient to only possess procedural knowledge (that is, the knowledge of knowing how to do mental imagery), but it is equally important to have conceptual knowledge (that is, an understanding of the process by which successful mental imagery is achieved). These two forms of knowledge are necessary for mental imagery to be

¹⁷⁵ Luke Behncke, “Mental Training for Sports: A Brief Review,” *Athletic Insight: The Online Journal of Sport Psychology* 6, no. 1 (March 2004): 4.

¹⁷⁶ J. Nascon and R. A. Schmidt, “The activity-set hypothesis for warm-up decrement,” *Journal of Motor Behavior* 3 (1971): 1-15.

¹⁷⁷ C. R. Warr, “Perceptions of overtraining by experienced Australian coaches” (paper presented at the Proceedings of the National Coaching and Officiating Conference, Brisbane, Australia, 1996).

¹⁷⁸ J. Decety, “The neurophysical basis of motor imagery,” *Behavioral Brain Research* 77 (1996): 161-180.

¹⁷⁹ M. Jeannerod, “Mental Imagery in the Motor Context,” *Neuropsychologia* 33, no. 11 (1995): 1419-1432.

performed successfully (Currie and Ravenscroft¹⁸⁰). Mental imagery techniques are the basis of many of the activities and exercises in the mental skills training program found in chapter III. Through exercises such as self-talk and visualization scripts the performer is able to prepare psychologically for upcoming performances.

Visuo-motor behavior rehearsal occurs when mental imagery techniques are combined with physical practice. This form of mental practice takes place in three stages: “first, an initial relaxation phase to retrieve a psychological state conducive to mental imagery, second, visualizing performance through various imagery techniques, and finally, performing the actual skill under realistic conditions.”¹⁸¹

Somatic methods of mental practice focus on self-awareness and begin with concentrating on physical feeling to increase one’s consciousness of movement or non-movement. Progressive muscle relaxation focuses on an individual’s awareness of specific muscle contraction or relaxation and has been successfully used to reduce performance anxiety (Khasky and Smith¹⁸²). Progressive muscle relaxation is taught by having the individual contract and relax specific muscles in a prescribed order. Generally this begins with facial muscles and then moves on to larger muscles. Variations in this order may occur depending on the individual and on the performance activity.

Meditation has been demonstrated to be another method of enhancing awareness of self in sport performance (Thiese and Huddleston¹⁸³). By focusing on particular aspects of physical sensation, one is enabled to be more aware of the relationships

¹⁸⁰ G. Currie and I Ravenscroft, “Mental simulation and motor imagery,” *Philosophy of Science* 64 (1997): 161-180.

¹⁸¹ Luke Behncke, “Mental Training for Sports: A Brief Review,” *Athletic Insight: The Online Journal of Sport Psychology* 6, no. 1 (March, 2004): 8.

¹⁸² A. D. Khasky and J. C. Smith, “Stress, Relaxation States, and Creativity,” *Perceptual and Motor Skills* 88, no. 2 (1999): 409-416.

¹⁸³ K. E. Thiese and S. Huddleston, “The Use of Psychological Skills by Female Collegiate Swimmers,” *Journal of Sport Behavior* 22, no. 4 (1999): 602-608.

between physiological roles and psychological activity. For example, if the individual observes that specific muscles tense before a certain task and have a negative impact on the successful performance of the task, then meditation can help identify what is happening psychologically within the individual so that remedial measures can be undertaken in practice to avoid a poor performance. No matter what strategy is employed to develop meditative skills, they all begin with an understanding that the physical self is a tangible expression of the psychological self (Layman¹⁸⁴).

Although researchers frequently study the efficacy of cognitive and somatic performance-improvement techniques separately, it is generally concluded that the two are interconnected. Further, although they have been shown to enhance one's self-awareness and ability to self-monitor performance behavior, both cognitive and somatic methods require that the performer possesses an initial ability to self-monitor in order for subsequent mental skills training to have significant influence on improving performance skills.¹⁸⁵ The journal and self-reflection exercises within the mental skills training program in chapter III provide the performer with tools to improve abilities in self-monitoring.

¹⁸⁴ E. M. C. Layman, "Meditation and Sports Performance," in *Sport Psychology: An Analysis of Athlete Behavior*, ed. W. F. Straub (Ithaca, NY: Movement, 1978), 169-176.

¹⁸⁵ Luke Behncke, "Mental Training for Sports: A Brief Review," *Athletic Insight: The Online Journal of Sport Psychology* 6, no. 1 (March, 2004): 1-19.

CHAPTER III

SAMPLE TWELVE-WEEK MENTAL SKILLS TRAINING PROGRAM FOR A LOWER-ADVANCED AND ADVANCED PIANIST

Introduction

The purpose of this curriculum is to provide lower-advanced to advanced pianists with a systematic practice regime based on deliberate practice strategies designed to promote increased psychological performance skills during performance. The twelve-week curriculum is divided into five major sections with a summarizing sixth section: Concentration and Maintaining Focus, Trust, Confidence, Automation and Expressiveness, and Practicing to Perform.

For each section, guidance is provided to the pianist working through the curriculum. Each weekly session is divided into three sections: Background, Foundational Skills, and Self-reflection Exercises. Introductory information for the session is provided under “Background” and discusses the characteristics and principles underlying each topic. “Foundational Skills” outlines the structure and procedure that should be used for the journal exercises. The “Self-reflection Exercises” conclude each session and are designed for self-evaluation by the pianist during practice time throughout the week.

Each pianist will maintain a “workbook journal” and a “performance journal” as part of this curriculum. The workbook journal should be used for all of the journaling exercises provided in each section of the curriculum. The performance journal will be used for the self-reflection exercises designed to monitor progress as the student proceeds

through each section of the curriculum. The following table presents a brief summary of the material found in each section of the mental skills training program.

Synopsis of the Twelve-Week Mental Skills Training Program

SECTION	WEEK	SUMMARY
<u>Section One</u> Maintaining Concentration and Focus	Week One	The pianist begins to understand the mental/psychological factors involved in focus and concentration. Three journal activities aid the pianist in discovering where their focus and concentration are directed during practice and performance.
	Week Two	Week two provides the pianist with activities designed to increase the level of focus and concentration. The pianist will complete the “Expanding Awareness Exercise” aimed at expanding the amount of time an individual can focus on one subject.
	Week Three	This week offers another practice technique designed to increase a performer’s level of concentration during performance. The pianist will develop a “Mind Map” for a piece being prepared for future performance. A mind map offers visual cues and stopping points in a performance where the individual can refocus performance energy and maintain a larger picture of the entire piece.
<u>Section Two</u> Trust	Week Four	Trust is one of the most essential elements of a successful performance. This section defines trust, describes its relationship to high-level performance, and establishes characteristics of trust as skills to be acquired.
	Week Five	Week five outlines the “Breakdowns in Trust” that make letting go of conscious control very difficult for a performer. This section includes several exercises that illuminate a performer’s lack of trust during performance.
	Week Six	To address the inadequate trust illustrated during week five, week six provides several exercises designed to strengthen weak performance trust skills. The performer learns two practice formats in this section, variable and blocked practice, which strengthen memorization and coping skills during practice and performance.

SECTION	WEEK	SUMMARY
<u>Section Three</u> Confidence	Week Seven	This week outlines factors that affect a performer’s confidence with a specific focus on varying levels of self-belief. Activities are focused on developing a positive mental attitude in a performer.
	Week Eight	This section provides activities that train confidence in a performer. The notion of “self-talk” is discussed in detail in this section and journal exercises are used to aid the performer in training positive self-talk skills during practice and performance.
<u>Section Four</u> Automation and Expressiveness	Week Nine	Section four discusses automaticity during performance and the importance of developing positive automatic psychological responses during performance. Journal exercises are used to develop a variety of positive automatic responses in practice, which are transferrable to performance situations.
	Week Ten	This week is a continuation of the list of exercises discussed in week nine. The performer is encouraged to try two or three additional exercises. Since each exercise is designed to promote positive automatic responses during performance it is not necessary to use all of the activities on a weekly basis. One or two should be sufficient to increase positive automatic responses.
<u>Section Five</u> Practicing to Perform	Week Eleven	This section is the culmination of sections one through four. The performer learns how to use visualization scripts to strengthen mental skills during practice and performance. In week eleven, the performer writes three scripts, called “Mastery Scripts.” One is used for pre-performance practice, one for the actual performance, and one for the post-performance practice routine. These mastery scripts are visualization exercises that strengthen focus, trust, confidence, and automaticity during performance.
<u>Section Six</u> Putting it All Together	Week Twelve	During this final week of the mental skills training program, the pianist performs a piece from memory. For this performance, each pianist is instructed to prepare and use a pre-performance, performance, and post-performance mastery script. Discussion questions conclude the training program.

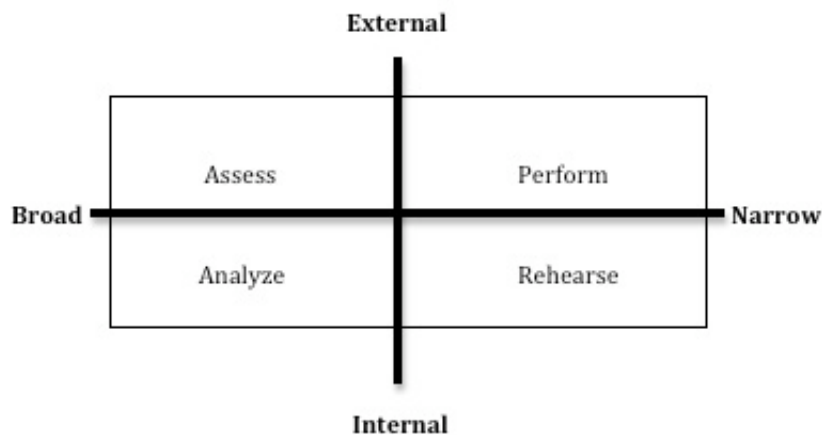
Section One – Maintaining Concentration and Focus, Weeks 1-3

Week One – Understanding the Dimensions of Attention

Background:

There are two distinct types of focus that people use when concentrating on a regular basis. The first has been described as the “width” of our focus and can be either broad or narrow. The second is considered “directional” focus and is either internally or externally based. It is important to be able to move seamlessly between these different types of focus. Figure 1.1 illustrates the four “dimensions of focus.” Figure 1.1 is divided into four distinct quadrants. It is important for a performer to move through all four quadrants during a performance.

Figure 1.1. Dimensions of Focus. Source: adapted from Robert M. Nideffer and Marc-Simon Sagal, “Concentration and Attention Control Training,” in *Applied Sport Psychology: Personal growth to peak performance*, 5th ed., ed. Jean M. Williams, 384 (New York: McGraw Hill, 2006).



For example, a performer begins a program in the first quadrant (Broad-External) by assessing all of the elements that affect the performance, such as the temperature of

the hall, the placement of the piano, the lights on the stage, the physical stamina required for the performance of the program, etc. In quadrant two (Broad-Internal) the performer analyzes all of the elements assessed in the first quadrant, such as the height of the bench or what needs to be done to maintain stamina throughout a performance (eat a snack, rest, etc.). Quadrant three (Internal-Narrow) is the place where many performers “live” during a performance. Although it is important to stay focused in quadrant three, the performer is cautioned to not work exclusively in that focus area. To strengthen the internal/narrow focus of this quadrant, the performer should practice specific stress spots of a performance that might predict the success of an entire performance. For example, when beginning a program or an individual piece, the performer understands that the first phrases play an important role because they provide the audience with their first glimpse into the performer’s interpretation of a piece. As a cautionary note relevant to this example, there is the potential for an individual to obsess on the opening phrases in a way that plants a seed of doubt that could resurface during a performance situation. Quadrant four (External-Narrow) is the final phase of focus, where the performer focuses on the task at hand—the performance (i.e. listening to the tone or sound produced without critically assessing or judging the performance). This should be a place where the performer relies on what was rehearsed in the previous three quadrants and trusts his ability to execute the performance with ease and relaxed focus and concentration. While becoming more comfortable with this concentration routine in practice settings, the performer builds a greater concentration capacity that allows more consistent and more accurate cognition during a performance.

Foundational Skills:

The three journal activities contained in this section are designed to prepare the pianist for the assignment in the self-reflection section.

Journal Activity No. 1
Concentration – Dimensions of Focus

Goal: To understand the effects of dimensions of focus on performance.

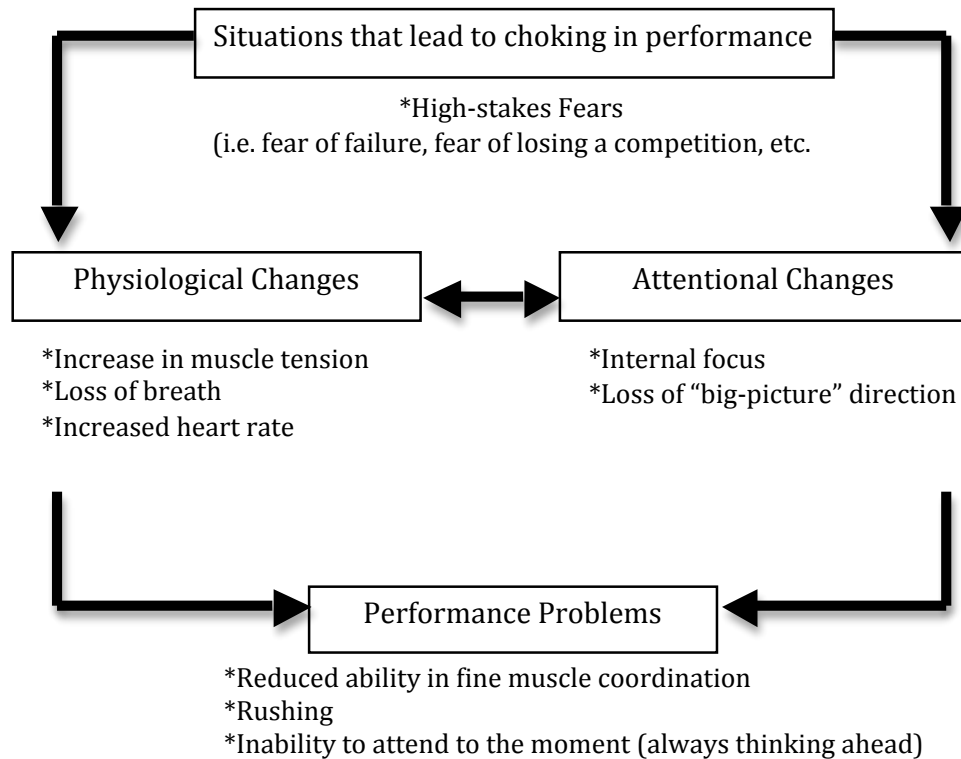
Think back to a previous performance. Do you think that you spent a significant amount of time in one quadrant or several quadrants of focus? What was the result? Where did mistakes occur?

Is there one quadrant where you consistently spend the majority of your pre-performance time? How does this enhance and/or undermine your preparation for performance?

Which quadrant negatively affects your performance the most?

An awareness of the different types of focus and of a personal predisposition to a particular type of focus strengthens a performer's ability to prevent moments of choking in a performance, and to sustain prolonged moments of concentration throughout an entire performance. Used often in athletics to refer to weak performance in high-stakes situations, choking is defined as a decrease in performance due to excessive perceived stress. The stress is not a direct result of any given situation but results from one's perception of the situation. In music, moments of choking can result in memory slips, rushing, increased muscle tension, or decreased fine motor control. Moments that lead to choking in a performance are the result of both physiological changes and attentional changes (see Figure 1.2).

Figure 1.2. Interaction between physiological and attentional processes during highly stressful situations. Source: adapted from Robert M. Nideffer and Marc-Simon Sagal, “Concentration and Attention Control Training,” in *Applied Sport Psychology: Personal growth to peak performance*, 5th ed., ed. Jean M. Williams, 387 (New York: McGraw Hill, 2006).



Journal Activity No. 2

Concentration – Interaction between Physiological and Attentional changes

Goal: To understand physiological and attentional changes that cause choking during your performance.

Following the sequence provided in Figure 1.2, create your own diagram that charts the physiological and attentional changes that occur when you perform. Begin by locating a factor that consistently causes you to “choke” during performance and outline the physiological and attentional changes that occur as a result. Finally, list some of the performance problems that result from those physiological and attentional changes.

Understanding focus, the factors that may lead to choking, and the appropriate type of focus required for every situation is important. To facilitate this, a helpful

resource for discovering the type of focus a performer predominantly operates in is *Attention Control Training* (ACT). ACT is more than just a technique.

It is a complex process that involves the following elements: 1) education—defining concentration for coaches [teachers] and athletes [musicians], and clarifying the relationship between focus of concentration and various physiological parameters like breathing and muscle tension levels that affect performance; 2) assessment—identifying the concentration requirements of the performance setting and mapping those to the concentration skills of the athlete and measuring the personal and interpersonal characteristics that will allow us to predict both types of situations likely to interfere with performance; 3) identification—of a situation specific focus for our training program, and 4) implementation and evaluation of the program.¹⁸⁶

Journal Activity No. 3

Concentration – Attention Control Training

Goal: To understand attention control and how to use it effectively in performance.

Note: Respond to Questions 1-3 with a specific piece in mind.

1. Describe how your concentration is affected by various physiological parameters. For example, “When I lose my consistency of relaxed breath, I tense up and this affects my ability to concentrate on the task at hand in my performance.”

2. Identify the concentration requirements of performing this piece or a section of the piece. What factors are likely to interfere with your concentration (i.e. audience noise, holding of breath, thinking about upcoming difficult passages in a piece, etc.)?

3. What type of focus would help maintain concentration (refer to Figure 1.1, Dimensions of Focus)? Describe what the performance might feel like when your concentration shifts between the four quadrants of concentration.

4. Now, perform the piece and in retrospect evaluate your level of concentration and focus.

¹⁸⁶ Robert M. Nideffer and March-Simon Sagal, “Concentration and Attention Control Training,” in *Applied Sport Psychology: Personal Growth to Peak Performance*, 5th ed., ed. Jean M. Williams (New York: McGraw-Hill, 2006), 383.

Self-Reflection Exercise:

Practice the same piece of music that you used as the basis for “Journal Activity No. 3.” Observe whether your levels of concentration and focus change during the week and if the factors interfering with your concentration change or remain the same. Consider whether you are able to use all four quadrants of concentration effectively in your performance. Keep track of all of these observations in your performance journal.

Week Two – Training Focus Awareness

Background:

In the first section we saw that focus is required in order to optimize performance. The most important component of focus is to master the ability to ignore both irrelevant internal and external stimuli. External stimuli might include noises like a candy wrapper opening, a baby crying, or a cell phone ringing during a performance. Internal stimuli include distracting thoughts or physical sensations such as “my arms are ready to give out,” “I can’t take a deep breath,” “I blew it.” Even though external and internal stimuli appear to be quite different, they are interrelated and constantly affect each other. Every external event can cause an internal emotional or cognitive shift. Performance will almost always suffer unless a performer can master reliable concentration skills.

“Concentration also means being totally in the here and now, in the present. When our minds drift into the past or future, we are usually not as effective in our present performance.”¹⁸⁷ Developing one’s concentration means becoming increasingly less aware of irrelevant stimuli and more aware of relevant stimuli. A performer learns how

¹⁸⁷ Vietta E. Wilson, Erik Peper, and Andrea Schmid, “Strategies for Training Concentration,” in *Applied Sport Psychology: Personal Growth to Peak Performance*, ed. Jean M. Williams (New York: McGraw-Hill, 2006), 405.

to operate in “selective awareness” during this process. Part of developing a stronger ability to concentrate is to understand that different attentional styles are uniquely suited to certain tasks in performance.

Foundational Skills:

Gauron (1984) developed a technique to help athletes experience different attentional styles. He called the exercise “the expanding awareness” exercise. Gauron’s exercise has been modified for applicability to pianists and is provided in Figure 1.3. Students who use this exercise can complete it in its entirety or break it into separate segments. Individuals should sit or lie in a comfortable position during completion of the exercise.

Figure 1.3 – *Expanding Awareness Exercise*. Source: adapted from Vietta E. Wilson, Erik Peper, and Andrea Schmid, “Strategies for training concentration,” in *Applied Sport Psychology: Personal growth to peak performance*, 5th ed., ed. Jean M. Williams, 405-406 (New York: McGraw Hill, 2006).

Step 1:

Focus on your breathing. As you exhale, concentrate on releasing all of the tension you can locate in your jaw, neck, shoulders, and hands. Now, take a longer time to exhale than to inhale. Let the air in, pause, let the air effortlessly out for a longer time than it took to come in. Notice how the abdominal region rises as the air comes in and how it falls as the air goes out. Feel as if the breathing is being done for you and you are merely a spectator.

Step 2:

Note: Listen to a live recording of a performance, including distracting noises from an audience.

Listen to each separate sound, identifying and labeling it (footsteps, voices, coughing, whispering, etc.). Now broaden your focus by listening to all of the sounds simultaneously but without trying to identify them. Listen to the blend of sound as you would in a performance using your broadest possible external awareness.

Step 3:

Now become aware of physical sensations you are experiencing, such as the feeling of the chair you are sitting on or the floor you are lying on. Mentally label each sensation as you notice it. Before moving onto another sensation, let it linger while you examine it – try to feel the source of the sensation. Next, experience all of the sensations simultaneously without identifying any particular one, using your broadest possible internal body awareness.

Step 4:

Now focus only on your emotions and thoughts. Let each thought or emotion enter gently, without forcing it. Remain calm and continue steady breathing, no matter how unpleasant or pleasant the thoughts may be. Let each thought come and go without trying to focus directly on any specific one. Now try to empty yourself of all thoughts and feelings.

Step 5:

Now open your eyes and pick an object across the room directly in front of you (wall, ceiling tile, picture). At the same time, see as much of the room and the objects in the room as your peripheral vision will allow. Picture now a broad funnel that your mind is moving in. Centered in the middle of the funnel is the object across the room from you that you are focusing on. Gradually narrow your focus by narrowing the funnel so the only thing at the small end of the funnel is the object. Now expand your focus gradually, widening the funnel, so that you can eventually see everything in the room again.

Step 6:

Note: This step is designed to help performers experience different attentional styles. The preceding exercises illustrated what it is like to keep focus in one place and then to change from the internal to the external dimension. The following exercise should be used as a foundation for clarifying the most appropriate focus for specific skills and situations.

Move to an instrument. Conduct a musical movement very slowly (i.e. play C major triads up and down the keyboard). Experience the movement as if you were moving through molasses. Take 5 minutes to move up the keyboard and back down, just playing C major triads. While doing this, assess your body posture, your head position, where your weight is centered (on your thighs, tailbone, back, etc.), and where your arms are placed during the movement. Notice where the most weight is placed on your body (feet, back, etc.). Now feel the weight shift to a different part of your body (from your feet to your thighs, for example). Did you subconsciously hold your breath as you made this

shift? Feel your weight shift as you move up and down the keyboard. Do you have a relaxed breath as you shift your weight? Where is your attention? If it drifts, bring it back.

Students and performers do not naturally always know where to put their focus. They should practice Step 6 on a specific part of a piece and notice how many times their attention or focus shifts away from the task at hand. The more they notice their shifting attention, the more efficient they become at bringing their focus back to the relevant task.

Self-Reflection Exercise:

Practice steps three through six of the “Expanding Awareness Exercise” on alternating days during the upcoming week. For step six, complete the exercise using a difficult section of a piece you are working on instead of the C major triads suggested in the exercise. Do not move beyond the designated section of the piece for the entire week. Keep track of progress and changes in your performance journal.

Week Three – Mind Mapping

Background:

In the last session we were reminded of how easy it is to lose focus and concentration. A strategy that has proven helpful in building and securing concentration during performance is “mind mapping.” Mind mapping is a technique that has been used by psychologists and educators for decades. Originally mind maps were known as concept maps. Concept maps originated in the learning movement called constructivism and were developed by Joseph D. Novak and his research team at Cornell University. Concept maps provide an individual with the ability to understand complex pieces of

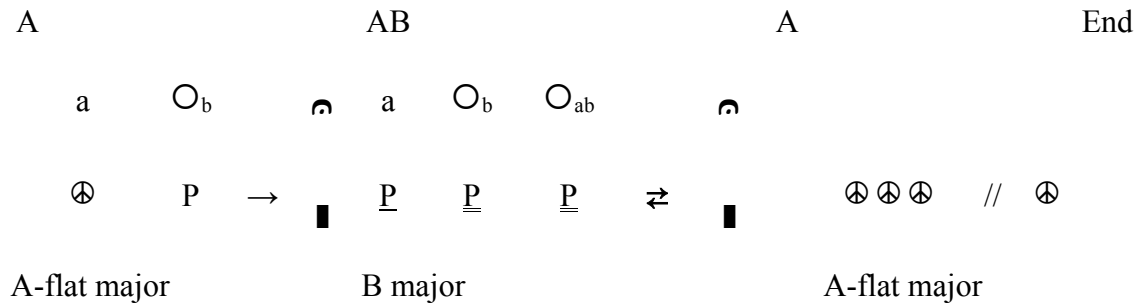
information at a glance. It is easier for the brain to process complex pieces of information when the information is presented visually. Mind maps and concept maps follow the same structural principles. Both require that the individual composing the map has a sound understanding of the material before creating the mind map. A mind map is a personalized device that aids an individual in organizing his thoughts around a specific skill. It usually consists of a diagram of words or symbols that represent key ideas, tasks or other themes. This is a highly personal technique because each individual will create a mind map differently – there is no set criteria or scheme that one must use when creating a mind map.

In music, mind mapping is an important skill to develop in order to strengthen performance concentration. A mind map should provide an overall structure for a piece, outlining significant factors that change the mood or character during a performance (drastic key changes, sudden tempo shifts, long dramatic pauses, abrupt dynamic changes, etc.). By mapping out these elements, the performer is developing a broader sense of direction that applies to the entire piece. Ideally, this will help a performer to maintain focus during the entire performance because the performer has created smaller goals and moments of releasing and regaining focus and concentration built into the interpretation of the piece. See Figures 1.4 and 1.5 for a sample musical map.

Foundational Skills:

Figure 1.4. Mind Mapping Example

Example Mind Map for *Liebestraume* No. 3 (Franz Liszt)



Map key for *Liebestraume* No. 3 Mind Map:

- ⊕ = Peaceful character initiated with relaxed breaths and a more delicate touch/tone
- = Refocus concentration
- P = Passionate character
- P = Increase in Passion
- P = Continued Increase in Passion (more agitated)
- = Keep the intensity going to the end of the section. Do not lose focus
- ⇌ = Maintain a circular focus in order to keep the intensity flowing throughout the entire cadenza
- = Complete stop/End of section. Focus should begin fresh at the start of the next section.
- ⌒ = Pause. Keep the sonorities ringing from the previous section while preparing the mind for the next section.
- // = Slight break in sound but not focus as the final, peaceful sonority is prepared.

Figure 1.5 – Explanation of *Liebstraume* Mind Map

This mind map is structured around three large sections. The performer labeled these sections ‘A,’ ‘AB,’ and ‘A’ again at the end. The middle section is called AB because it includes both elements from the A section and new thematic material. Within the first ‘A’ section there are two smaller subsections (‘a’ and ‘b’). The performer labels these two sections with two other symbols that pertain to the type of musical character needed during performance. The first ‘a’ section is marked with a peace sign, indicating that the performer should aim for a light, *dolce* sound with a peaceful, non-aggressive musical character (see Figure 1.5a for example of the first ‘a’ section).

Figure 1.5a (*Liebstraume* mm. 1-2)



In the ‘b’ section the harmonies become more ambiguous and it is marked *poco agitato* which is why the performer placed a ‘P’ underneath the ‘b’ section. The ‘P’ indicates that the performer should play with a more passionate and determined musical character (see Figure 1.5b).

Figure 1.5b (*Liebstraume* mm. 15-18)



With the ‘b’ section possessing such a different character than the ‘a’ section, the performer also placed a O sign next to the ‘b’ section. This symbol reminds the performer to refocus attention and energy in preparation for the more difficult section. Directly before the conclusion of the ‘A’ section, the performer placed a → sign, which indicates for the performer to maintain a sense of intensity and to not lose focus. This is because this is the first *cadenza-type* passage that the performer plays and it is essential that focus be maintained through the entire cadenza so that the passage does not lose energy (see Figure 1.5c).

Figure 1.5c (*Liebstraume* m. 25)

The image displays a musical score for four systems of piano music. The first system is labeled 'quasi cadenza' and features a 'Sua' marking above the right-hand staff. The second system includes an '(8)' marking above the right-hand staff and another 'Sua' marking above the left-hand staff. The third and fourth systems continue the piece with various chordal textures.

The ‘AB’ section continues with the same material from the opening except now it is in B major, not A-flat major, and has a thicker texture and a slightly faster tempo (see Figure 1.5d). This follows a similar pattern when the ‘b’ section is heard. The texture is

thicker and it is marked *stringendo* which, in a sense, adds an element of increased passion (see Figure 1.5e).

Figure 1.5d (*Liebstraume* mm. 26-27)



Figure 1.5e (*Liebstraume* mm. 37-39)



The 'ab' is a culmination of the previous increase in passion and requires the most drama from the performer (see Figure 1.5f).

Figure 1.5f (*Liebesträume* mm. 50-52)

The image displays two systems of musical notation for the piano piece 'Liebesträume' (mm. 50-52). The first system consists of a grand staff with a treble clef and a bass clef. The key signature has three flats (B-flat, E-flat, A-flat), and the time signature is 6/4. The music is marked 'passionato assai'. A dynamic marking 'S^{mo}' is placed above the treble staff, with a dashed line extending to the end of the system. The second system also uses a grand staff with the same key signature and time signature. It begins with a 'V' marking above the treble staff. A dynamic marking 'S^{mo}' is placed above the treble staff, with a dashed line extending to the end of the system. A '3' marking is placed above the bass staff, indicating a triplet. The music concludes with a final chord in the treble staff.

The \rightrightarrows sign indicates that the performer must continue the passionate character of the ‘ab’ section but must also draw it back towards the peaceful atmosphere of the opening ‘a’ section. This prepares the audience for the return of the gentle ‘A’ section (see Figure 1.5g). The work ends in the most subdued way. The composer indicates for the performer to continually get softer and this is why the performer used four peace signs in the final ‘a’ section (see Figure 1.5h).

Figure 1.5g (*Liebstraume* mm. 59-60)

Figure 1.5g shows the musical score for measures 59-60 of *Liebstraume*. The score is written for piano and consists of five systems of two staves each. The key signature is three flats (B-flat major/C minor) and the time signature is 3/4. The first system (measures 59-60) features a melodic line in the right hand with a *S^{ist}* marking above it. The left hand accompaniment includes a *quasi cad.* marking and a *dim.* (diminuendo) instruction. The second system (measures 61-62) continues the melodic line with a *S^{ist}* marking. The third system (measures 63-64) features a *leggero* marking in the right hand. The fourth system (measures 65-66) continues the melodic line with a *S^{ist}* marking. The fifth system (measures 67-68) shows the final notes of the piece, with a *S^{ist}* marking above the right hand.

Figure 1.5h (*Liebstraume* mm. 77-85)

Figure 1.5h shows the musical score for measures 77-85 of *Liebstraume*. The score is written for piano and consists of three systems of two staves each. The key signature is three flats (B-flat major/C minor) and the time signature is 3/4. The first system (measures 77-79) features a melodic line in the right hand with a *pp* (pianissimo) marking. The left hand accompaniment includes a *ppp* (pianississimo) marking. The second system (measures 80-82) continues the melodic line. The third system (measures 83-85) shows the final notes of the piece, with a *ppp* marking in the right hand.

Self-Reflection Exercise:

Complete the mind-mapping activity described below. Use the example in figure

1.4 for guidance.

1. Select a piece that you have memorized. Create a mind map without any music in front of you to avoid making the map too in-depth.
2. Identify the major sections of the work and devise symbols for them in any way that makes sense to you.
3. Locate significant changes within the piece (key changes, tempo, dynamics, etc.).
4. Create your own map key to relate the symbols used with a brief explanation for each symbol that makes sense to you within the context of the piece.
5. Finally visualize yourself playing the piece while following your mind map.

Summary of Section One – Maintaining Concentration and Focus

It is important for the performer to have a thorough understanding of focus and concentration. Various stressors can result in attentional and physiological changes that often contribute to loss of concentration and difficulties such as choking during a performance. Being aware of the focus of attention during each part of a performance helps the performer to return wandering focus to its proper place and to maintain correct focus. One tool that can facilitate the maintenance of focus during performance is mind mapping.

Section Two – Trust, Weeks 4-6

Week Four - An Introduction to Training Trust for Performance

Background: Understanding Trust

Although during practice it is crucial to give careful attention to every detail and nuance in the piece of music, during performance the focus must shift to one of trust so that the performer trusts in her ability to perform every note and shade of interpretation learned in practice.

One of the most common misunderstandings about trust is that you must wait until your swing is “good enough” before you can trust it during performance. If you wait until you think your swing is good enough, you will be waiting for the rest of your life! There will always be something in your swing you are refining or developing. Trust is a performance skill that is separate and distinct from your skill level. In other words, regardless of how well-learned or refined your swing is, learning to trust what you have during performance is still the goal and this goal is separate from “hitting a good shot” or “shooting a low score.”¹⁸⁸

“Trust” is one of the most important skills for an elite performer to have and yet is the most difficult to train and develop. In a performance context, trust can be defined as “letting go of conscious control.” When a performer releases conscious control she allows automatic processes to get involved in the performance. These automatic processes have been developed through years of training and yet performers often avoid using them to their advantage during performance. Eminent performers trust their talents and abilities. They are decisive and do not allow doubts to interfere. Gary Mack asks: “If you have doubts, if there is a lack of commitment in your mind, how is your body

¹⁸⁸ Bill Moore, “Understanding Trust as a Performance Skill,” in *Trust-It-Golf: Getting into your game and out of your way* [Submitted for publication 2009], 1.

going to know what to do?”¹⁸⁹ Even the most gifted musicians, when under pressure, sometimes become hesitant and vacillating. “They don’t trust their stuff.”¹⁹⁰

This tendency can be readily illustrated using a technical passage by Mozart or Haydn. The passage is filled with scale patterns that are common in many students’ technical regimes and yet they typically view long, technical passages as challenging and naturally try to take conscious control of the passage, neglecting the automatic processes developed over years of experience that could enable them to play the passage more easily.

Journal Activity No. 4

Trust – Understanding Trust in Your Performance

Goal: To understand trust and your ability to trust yourself during performance.

1. Think about a past performance in which you feel like you absolutely trusted your performance abilities. How did you feel during that performance? How did you feel after the performance? Did you receive any feedback from your audience indicating a difference in the way they experienced your performance?

2. Now reflect upon a performance for which you are certain that at times you did not trust your skills during the performance and maintained conscious control. Do you remember any events that led to the lapse in trust (i.e. thoughts going on in your head during the performance, making a mistake that you’ve never made before, etc.)? Looking back, what steps could have been taken to increase your level of trust during the performance?

Foundational Skills: Characteristics of Trust

“Trust is skill specific.” You may trust your scale technique in a piece but not your double thirds technique. Trust is also specific to the “moment of skill execution”

¹⁸⁹ Gary Mack and David Casstevens, *Mind Gym: An Athlete’s Guide to Inner Excellence* (New York: McGraw-Hill, 2001), 164.

¹⁹⁰ Ibid.

which often makes it unstable during a high-stakes performance situation. You may have a new technical or musical problem arise shortly before a performance. Even if you have never had that problem before, there is a seed of doubt in your mind because of an unresolved trust issue with the specific problem. If that trust issue is not resolved in practice before the performance, it may well follow you into a performance situation.

Self-reflection Exercise:

Focus on developing trust with a specific piece during your practice this week. The piece should not be a piece that you have performed countless times successfully. Select one of your most difficult works and isolate passages that cause you the most anxiety going into a performance. Practice those passages slowly with and without the music, concentrating on maintaining positive thoughts. Every time you feel a negative or anxious thought enter your thought process, stop playing and try the same passage again while remembering moments from previous positive performances where trust was not an issue. Document the changes in your performance journal.

Week Five - Breakdowns in Trust

Background:

In the last session we learned that even eminent performers sometimes don't "trust their stuff." Their trust and belief in their own ability to perform the music facing them can break down and they can allow doubts and indecisiveness to enter their minds. Identifying breakdowns in trust allows one to better understand how trust is affected and challenged during certain performance situations. Moore explains that once the source of

the breakdown is identified, it is easier to address.

Breakdowns in trust occur at two different levels: during the selection of the motor program from memory and/or during the execution of the motor program . . . Consider the pianist who enters into a difficult passage during performance, becomes excessively concerned with movement accuracy, fearful of making a mistake; she over-controls her movements causing muscle tension, which then leads to incorrect movement patterns. In this example, she had selected a good motor program but ultimately got in the way of its execution by trying to over-control the correctness of her technique.¹⁹¹

Three factors lead to a breakdown in trust and they are summarized in the next Foundational Skills section.

Foundational Skills: Understanding Breakdowns in Trust

A number of factors that lead to a breakdown in trust can be avoided.

1. *Avoiding Over-Analyzing*

This breakdown occurs because of unnecessary cognitive activity during the execution of a difficult passage in a piece. The over-analyzing may occur going into the difficult passage, during the passage, or directly after the passage. Because over-analyzing during a performance does not always lead to a breakdown in trust, this behavior is sometimes less obvious than those that occur consistently. If over-analyzing caused performers to self-destruct each time it occurred, they would be more determined to fix the problem. Performers often carry the mentality “I hope it works this time” into performances, and unfortunately this proves highly unreliable. Over-analyzing a passage during a performance is often the result of anxiety, fear, or doubt.

¹⁹¹ Bill Moore, “Understanding Trust as a Performance Skill,” in *Trust-It-Golf: Getting into your game and out of your way* [Submitted for publication 2009], 5.

Journal Exercise No. 5
Trust – Breakdowns in Trust

Goal: To understand the potential of over-analysis during performance.

List some examples of when you over-analyzed during a performance.

2. Avoiding Over-focusing

Over-focusing occurs when a performer becomes overly obsessed with mastery of a specific passage during performance. Being too focused about technical accuracy in a specific passage can result in muscle tension that inhibits optimal motor movements. This type of breakdown occurs most often in high-stakes situations where mistakes matter. An example of over-focusing is a performer who has made it through a piece almost flawlessly and arrives at the final passage of the piece. It is virtuosic and one of the more challenging sections. The performer wants to hold on to the good performance so much that she tries to hang on to every note of the passage to ensure its accuracy, but this causes shortness of breath, a rapidly beating heart, and increased muscle tension. How can the performer possibly commit to the finale under these conditions?

Journal Exercise No. 6
Trust – Breakdowns in Trust

Goal: To understand the potential of over-focusing during performance

List some examples of when you over-focused during a performance.

3. Avoiding Over-controlling Correctness

This tendency occurs when an individual tries to over-control the correctness of a

passage. The performer “presses-in” with more physical pressure in an attempt to force the accuracy. This occurs in the most technically challenging sections of a work, when an individual should try to remain physically relaxed, and yet the opposite occurs because she is trying to over-control the correctness of the passage.

Journal Exercise No. 7

Trust – Breakdowns in Trust

Goal: To understand the potential of over-controlling correctness during performance.

Describe a performance when you were over-controlling correctness.

Self-reflection Exercise:

Review the three breakdowns in trust discussed in this session. Which breakdown in trust are you most vulnerable to (over-analyzing, over-focusing, or over-controlling correctness)? During your practice this week, be aware of which breakdown in trust behavior you are prone to and focus on limiting the amount of time you spend over-analyzing, over-focusing, or over-controlling correctness. In your practice, work at refocusing your energy on positive responses to possibly negative situations. For example, one could say, “I may have over-controlled correctness in that passage but I was able to stay physically relaxed and my breath was more consistent.” Even though, the performer was still controlling correctness, she was able to stay physically relaxed which is the first step to move away from over-controlling correctness. Always point out the positive changes, no matter how small they may seem. Keep track of these changes in your performance journal this week.

Week Six - Learning to Trust Your Abilities

Background:

Concluding from his experience with athletes, Moore explains that trust is a skill to be learned, stating that “trust is a psychological performance skill that must be trained during practice in order to be executed in performance.”¹⁹² Timothy Gallwey, in the *Inner Game of Tennis*, identifies two types of information processors that greatly affect a performer’s level of trust: Self-1 and Self-2. He identifies Self-1 as the “thinker” and Self-2 as the “doer.” These two processors work together in everyday situations. For example, have you ever driven home from a long day at work or school and entirely missed the street to your house? You have driven this route countless times and yet you probably missed the turn because your mind was engaged elsewhere. Self-1 was to blame in this situation. Your mind could have been solving a problem that arose during the day or thinking about dinner preparations, while Self-2 was tending to the task at hand and driving the car. If performers spend the majority of their time in a performance monitoring correctness, analyzing elements of the performance, or self-instructing, they are allowing Self-1 to govern their performance outcome. It is not to say that Self-1 does not have an important role. Self-1 should be the dominant information processor during the beginning stages of learning a piece where skill analysis is an important part of the development phase. “During performance, ideally Self-2 is dominant, operating below conscious awareness, selecting and executing the sequence of movements that make up your actual performance. When Self-1 is dominant during performance, Self-2 doesn’t

¹⁹² Bill Moore, “Trust: Your Mental Performance Goal,” in *Performance Psychology Workbook: Your Guide to Psychological Skills Training for High Performance* (unpublished workbook used in Moore Performance Consulting, 2007), 80.

have a chance to do what it does best – ‘play!’ When Self-1 is dominant during performance, it muddies your mind with unnecessary instruction and control.”¹⁹³

Foundational Skills:

Moore describes a set of steps that aid a performer in developing stronger trust characteristics during performance. Several of those steps are included here.¹⁹⁴

Step One: Committing to Training Trust

Trust is one of the most challenging characteristics for performers to train. This is related to the fact that elite performers train for hours and hours and they develop a strong sense of ownership over their craft. It is extremely challenging to let go of the control that was developed over years of hard work and simply trust that hard work is going to pay off in the end. Embracing trust and recognizing it as an essential performance skill is the first step in the “trust training” process.

Journal Activity No. 8

Trust – Committing to Training Trust

Goal: To understand the obstacles which interfere with your level of trust during performance.

1. How will training trust affect your performance? Can you remember moments in the past where you truly trusted your abilities during performance? How did you feel following that performance?

2. What obstacles are preventing you from trusting your performance abilities? How could you practice differently to eliminate those obstacles?

¹⁹³ Ibid., 78.

¹⁹⁴ Ibid., 80-85.

Step Two: Quieting Self-1

Quieting Self-1 means quieting the conscious mind. This can be a challenge because the majority of the population spends most of their daily routine exercising Self-1 (monitoring, problem-solving, analyzing data, etc.).

Practicing non-judgmental thinking is one way to reduce Self-1 internal dialogue. When operating in Self-1 thinking, a performer judges aspects of the performance as good or bad and right or wrong. This type of judgmental thinking is very natural for performers because that is how the majority of the practice time is spent. During the developmental stage of learning a piece, it is necessary to analyze technical accuracy in a passage. A performer needs to eliminate that method of thinking during the performance.

Journal Activity No. 9

Trust – Quieting Self-1 – Practicing Non-Judgmental Thinking

Goal: To understand the positive impact of non-judgmental thinking during practice and performance.

List some ways that you can practice non-judgmental thinking during practice and pre-performance routines. For example, suggest some phrases that you should eliminate from your vocabulary such as “I’m terrible” or “I’ll never be able to play this.”

One should try to direct Self-1 rather than just banish it altogether. Telling yourself to “not think” is nearly impossible, so placing Self-1 in a place where it is permitted to operate in a way that is beneficial for the performer is very helpful in establishing a stronger sense of trust. For example, the performer could instruct Self-1 to only listen to the tone produced and each time the mind wanders toward monitoring mistakes, the performer would refocus their attention back to tone production. This could

be an easy way for a student to monitor how many times the mind is drawn to negative thinking in Self-1. If you practice this task only for ten minutes, you will begin to notice the ease with which you can refocus your Self-1 thinking to concentrate on the task at hand and not on self-destructive, judgmental types of thinking.

Journal Activity No. 10

Trust – Quieting Self-1 – Directing Self-1

Goal: To understand how to direct self-1 during practice and performance.

- 1. Directing attention to kinesthetic feeling – Focus your Self-1 thinking entirely on kinesthetic movement patterns. This can be accomplished through visualization or through practicing a section of a work very slowly, focusing only on the physical movement for each pattern.*
- 2. Monitoring judgmental thoughts – Practice the same piece and now direct your attention to monitoring negative thoughts or self-instruction. This exercise is designed to listen to your inner dialogue and without passing any judgment, let the thought pass and immediately refocus your attention to more positive thoughts.*
- 3. Focusing attention on the present – In this exercise, use verbal cueing to draw your attention back to the present and focus only on a specific skill in your performance (dynamic contrasts, musicality, technical clarity, etc.). It is important to say the verbal cues aloud. The cues should correspond with the specific skills you are focusing on during performance. For example, when focusing on dynamic contrasts, say “loud” during a forte passage and “soft” during a piano passage. You could increase the volume of your verbal cueing when you see sfz or lower the volume when you have a subito piano or pianissimo.*

Step Three: Using Different Practice Formats

When asked, “Why do you practice?” many performers will answer, “to develop my technique and improve my playing.” While practicing certainly should improve one’s technique, good practice does not necessarily translate into good performance. In this section, you will learn about two different practice formats that can help transfer

what is learned in practice to what is performed: blocked practice format and variable practice format.

Blocked Practice Format:

“When you practice by completing a number of repetitions of the same movement pattern you are essentially working on the ‘fundamental structure’ of a specific motor program.”¹⁹⁵ Blocked practicing is most effective when you perform many repetitions of a specific pattern, trying to recreate the same sensations each time. Practicing a passage over and over again, trying to perform it exactly the same each time, does not necessarily translate to a more secure performance later on. This type of practice is not sufficient to be the only practice format a performer would use. It is best suited to strengthen weaker motor programs in a piece of music. Blocked practice format also could be used in strengthening certain physiological responses in performance. For example, if a performer took a passage where she consistently rushed during performance and practiced the section repeatedly, focusing on maintaining a steady pulse and constant relaxed breath, it is likely that her motor program would change and that she would be able to avoid rushing in a performance situation.

Journal Activity No. 11

Trust – Blocked Practice Format

Goal: To understand blocked practice format and its usefulness during practice and performance.

List some examples of how you could use the blocked practice format in your own practice. How would practicing this way affect your performance? How would this type of practicing affect your level of trust?

¹⁹⁵ Ibid., 85.

Variable Practice Format:

Another name for variable practice format is “motor program retrieval.”¹⁹⁶ In this practice format, a performer must retrieve certain motor programs from memory. In blocked practice, the performer played the same section again and again. With variable practice, the performer must constantly draw upon new motor programs. For example, a way to incorporate variable practice in music practice would be to number short sections within a work (perhaps four or eight measures). In this practice format, the performer could start with section number one and after completing it, move on to section number seven and so on, playing the numbered sections out of order. This type of practice is also extremely useful in strengthening a performer’s memorization skills.

Journal Activity No. 12
Trust – Variable Practice Format

Goal: To understand variable practice format and its usefulness in securing trust during performance.

List some examples of how you could use variable practice format in your own practice. How would practicing this way affect your performance? How would this type of practicing affect your level of trust?

Self-reflection Exercise:

Experiment with both blocked and variable practice formats in your practice this week. Pick the same piece to practice with both formats. Perform the piece for a friend or family member at the beginning of the week and for the same friend or family member at the end of the week. Document any changes in your performance journal. Did you

¹⁹⁶ Ibid., 85.

feel a stronger sense of trust during the second performance? Did you notice less interference from Self-1?

Summary of Section Two – Trust

Gary Mack writes in *Mind Gym: An Athlete's Guide to Inner Excellence*,

Successful athletes trust their talents. They are committed to every swing, every stroke, every shot, and every pitch. When asked for golfing tips, I tell friends that the best advice I can give is that it's better to be decisive than right. The late Harvey Penick, one of the game's most revered instructors, said if you are indecisive, if you have doubts, if there is a lack of commitment in your mind, how is your body going to know what to do? We all have seen what can happen to the most talented athletes. Under pressure, they sometimes become tentative and indecisive. They don't trust their stuff.¹⁹⁷

As mentioned throughout this section, trust is the essential ingredient for higher levels of performance. Trust is only obtained with deliberate effort. Like dexterity and musicianship, it is a skill that must be practiced, trained, and developed. Practicing the exercises presented throughout this section will provide the performer with tools to develop stronger trust characteristics that will allow performance opportunities to be more consistent and also more enjoyable. "You must be 100 percent committed to each action. If there are doubts in your mind, your muscles won't know what to do. Let your routines switch you from thinking mode to the trusting mode."¹⁹⁸

¹⁹⁷ Gary Mack and David Casstevens, *Mind Gym: An Athlete's Guide to Inner Excellence* (New York: McGraw-Hill, 2001), 164.

¹⁹⁸ *Ibid.*, 167.

Section Three – Confidence, Weeks 7-8

Week Seven - Understanding Confidence

Background:

According to Moore, there are various levels of self-belief. Each has an effect on a person's confidence and trust and they range from a level with wide-ranging and stable characteristics to a level with specific and unstable characteristics. Moore describes these levels as follows:

- Self-concept is an all-encompassing belief that generally remains largely unchanged over time. Self-concept describes who a person is and includes all those personal characteristics that a person ascribes to himself.
- Self-esteem, which is often used incorrectly as synonymous with self-concept, is more specific and somewhat less stable. A person's self-esteem grows out of the value the individual places on his/her personal characteristics and, therefore, can be altered by events and life experiences.
- Self-confidence is even more specific and grows out of each individual's view of his general capability to succeed when faced with any challenge. Since a person's self-confidence is built from past successes, it is less stable because current performance outcomes can increase or decrease self-confidence.
- Task-confidence is similar to self-confidence but is more specific and less stable because it relates to a particular task. A person may exhibit high self-confidence generally, but demonstrate lower task-confidence when facing a specific situation. Another reason that task-confidence is less stable is because a performer is

painfully self-aware during a performance ('the task'), and is prone to allowing little mishaps to negatively affect performance.

Stewart Gordon, a well-known concert pianist and educator, writes this statement with regard to a pianist's state of self-awareness during performance:

Adrenaline makes us unusually sensitive to outside stimuli. Thus environmental factors we might ordinarily take in stride, such as temperature, lighting, acoustical properties, or getting used to strange venues or instruments, often become distractions. Second, this high degree of sensitivity will probably affect physical processes, so as we start the physical activity of the performance, we feel a sense of strangeness or newness, as if we were doing it for the first time and were unsure if we would be able to get started or keep going.¹⁹⁹

When a performer becomes painfully self-aware, their first impulse is to examine all of the negative aspects of a performance or situation. Therefore, if a performer can develop a stronger positive mental attitude, she can resist more of the negative impulses in her thought processes. The first several exercises in this section should be used to strengthen a performer's positive attitude, developing a stronger sense of self-confidence.

Foundational Skills:

Defining a Positive Mental Attitude:

Everyone knows at least one individual who possesses a positive mental attitude. Such a person's presence is infectious because of the positive "energy" that others want to draw from. This energy state contains both an emotional and a physical energy that contribute to the positive mental attitude. Moore writes, in his *Performance Psychology Workbook* (2007), that "when you view your attitude as consisting of two intersecting, energy continuums, an emotional energy continuum of positive or negative and a

¹⁹⁹ Stewart Gordon, *Mastering the Art of Performance* (Oxford: Oxford University Press, 2006), 117.

physical energy continuum of high or low, you then have four “attitude quadrants.”²⁰⁰

Moore mentions that there are both high positive and low positive attitudes and they are both desirable during specific moments in a performance. See Figure 3.1 for the four attitude quadrants.

Figure 3.1. Four Quadrants of Positive and Negative Attitudes. Source: Bill Moore, “Positive Mental Attitude,” in *Performance Psychology Workbook: Your Guide to Psychological Skills Training for High Performance* (unpublished workbook used in Moore Performance Consulting, 2007), 35.

HIGH NEGATIVE Angry Anxious Defensive Frustrated	HIGH POSITIVE Invigorated Confident Challenged Joyful
LOW NEGATIVE Doubtful Tentative Hopeless Defeated	LOW POSITIVE Attentive Focused Relaxed Peaceful

It is obvious from Figure 3.1 that positive and negative attitudes are not just mental. They also strongly influence physicality during performance. For example, if a performer is tentative or doubtful (low negative quadrant), she is likely to tense her muscles and have shallow breathing. When a performer is relaxed and focused (low positive quadrant), she is able to control her breath more consistently. Just because an attitude is considered to be “high positive” does not mean that it will always positively affect a performance. If an individual is highly invigorated (high positive quadrant) this

²⁰⁰ Bill Moore, “Positive Mental Attitude,” in *Performance Psychology Workbook: Your Guide to Psychological Skills Training for High Performance* (unpublished workbook used in Moore Performance Consulting, 2007), 34.

could affect her excitement during a performance and could cause her to rush or lose physical control of her technique. There needs to be a balance between the high positive and low positive quadrant to create a consistent performance sphere.

Journal Activity No. 13

Confidence – The Balance between High Positive and Low Positive Attitudes

Goal: To understand the value of high and low positive attitudes in your practice and performance.

Note: Apply this activity to a section of a piece that you are currently working on.

Select one attitude from the high positive quadrant (i.e. confident) and one attitude from the low positive quadrant (i.e. relaxed). Study a difficult section of a piece you are working on. As you look through the score, focus your attention on confident emotions as you visualize playing those difficult sections. Use verbal cues to instill those confident emotions (i.e. “I feel confident in my ability to play this challenging section” or “I am able to play this section with ease and control”). Go through the same method with low positive attitudes (i.e. “I feel relaxed because I trust my abilities to play this difficult section” or “My mind and my body feel relaxed as I play the passage with control and ease”).

Choosing to Possess a Positive Mental Attitude:

A tendency for performers, when discussing positive attitudes, is to lay the blame elsewhere if they happen to develop a negative mental attitude. For example, a performer, distracted by a young child sitting in the front row of a concert hall swinging feet vigorously, eating candy, and whispering very loudly (a common occurrence in a live performance), might tend to become angry and frustrated (high negative attitudes). A performer who gets lost in a piece as a result of the distraction is likely to place the blame on the child or the parent instead of taking responsibility for the choice made to focus on the distraction. Everyone makes a choice to think positively or negatively, and a performer more naturally inclined to think of every situation in a negative light, needs to

develop skills to reframe situations with a positive mental attitude. Performers are often surprised at how positive attitudes affect levels of confidence and self-esteem during performance, but it only makes sense—if musicians are focused on the positive instead of the negative, they are naturally going to view themselves and their skills in a positive attitude as well.

Journal Exercise No. 14
Confidence – Developing a Positive Attitude

Goal: To understand mental and physical characteristics of both positive and negative attitudes.

List some mental and physical characteristics that are present when you have a positive attitude (refer to the four attitude quadrants for ideas and guidance):

List some mental and physical characteristics that are present when you have a negative attitude (refer to the four attitude quadrants for ideas and guidance):

Positive Self-Coaching:

An easy way to control your negative inner dialogue is to interject with positive self-coaching. Self-coaching statements should empower you with confidence and trust. For example, one might say, “I’ve prepared this passage well, it is secure, and I’ve performed it countless times perfectly in practice. I know I will do well!” Self-coaching can still be positive and yet ineffective. To illustrate this, when a performer thinks “It is okay, everything will be fine, and I’ll make it through this performance,” inadvertently the suggestion is being made that the preparation for the event is inadequate. You need to think of strong statements that your negative inner dialogue will not question.

Journal Exercise No. 15

Confidence – Positive and Negative Self-Coaching

Goal: To understand how to positively coach yourself during performance.

Think of a situation that could make you feel uneasy during a performance (i.e. memory slip, distraction causes you to lose your performance goal, etc.). Take that situation and coach yourself both positively and negatively.

Positive Self-Coaching

Situation:

Positive Self-Coaching Statement in Response to the Situation:

Negative Self-Coaching

Situation:

Negative Self-Coaching Statement in Response to the Situation:

Confidence is what separates good performers from great performers and confidence is a skill that athletes can learn and control. When athletes feel confident, they are able to focus more completely on the ‘task at hand.’ They are not as preoccupied with distracting thoughts and are better able to refocus following mistakes or unexpected situations. Confident athletes also manage their negative emotions more effectively and are more adept at expressing positive emotion following good plays.²⁰¹

With regard to athletes, Moore notes that every athlete has the necessary tools to become confident. The tools, he suggests, are “free will, self-awareness, and

²⁰¹ William E. Moore, “Confidence,” in *Case Studies in Applied Sport Psychology: An Educational Approach*, ed. Mark A. Thompson, Ralph A. Vernacchia, and William E. Moore (Dubuque, Iowa: Kendall/Hunt Publishing Company, 1998), 64.

imagination.”²⁰² Just as it was mentioned that performers have control over their positive and negative attitudes, they also possess the ‘free will’ or capacity to experience confidence during performance. Confidence is a result of selecting the correct emotional and physical responses during performance. A lack of confidence in a performer is generally the result of that individual reacting to a performance situation with a negative attitude or response. In Journal Exercise No. 15, you discussed the characteristics that are present when you have negative and positive mental attitudes. Identifying these characteristics is essential in the process of managing self-awareness during performance. Once you are aware of your natural tendencies in response to stressful situations, you are able to develop those areas that are currently weak. Imagination “enables us to create feelings, pictures, and thoughts beyond our present reality.”²⁰³ Possessing the ability to use your imagination to affect positive emotional and physical responses during performance is an important tool in creating a confident mindset.

Week Eight – Training Confidence in Performance

Background:

Psychologists have studied “self-talk” (some have called it “mental-talk”) for over a century. People frequently engage in self-talk when they are talking themselves through a difficult procedure or task. Psychologists have found that positive self-talk can have a significant positive effect on the task at hand whereas negative self-talk can have an equally significant negative impact on the task. Psychoanalyst, Aaron Beck, developed the idea of self-talk. The focus of Beck’s study was primarily the effect

²⁰² Ibid., 65.

²⁰³ Ibid.

preconceived ideas and self-talk had on depression. Subsequent researchers have found that self-talk can have a profound effect on, not only a person's mood, but also the level of success in a variety of tasks and procedures. Beck concluded that "a person who is trained to track his thoughts . . . can observe repeatedly that his interpretation of a situation precedes his emotional response to it."²⁰⁴ From this, Beck deduced that the thoughts that pass through an individual's mind in any given circumstance are generally not the result of reasoning or thinking through the circumstance. Instead, they are automatic thoughts that seem to come from an external source but are in reality habits of thinking that originate in the individual's own mind. If an individual's automatic thoughts tend to be negative, Beck demonstrated that training in positive self-talk could result in more positive automatic thoughts and improved performance in the given activity.

Foundational Skills:

Aaron Beck worked closely with another psychoanalyst named Albert Ellis. Ellis developed the "ABC model" that described an individual's psychological experiences during a particular "activating event." The model is as follows:²⁰⁵

- A = Activating Event (the event that triggers thought responses)
- B = Beliefs About the Event (automatic thoughts)
- C = Consequences (physical or emotional response to those automatic thoughts, such as depression, muscle tension, etc.)

²⁰⁴ Aaron T. Beck, *Cognitive Therapy and the Emotional Disorders* (New York: Meridian, 1979), 28.

²⁰⁵ Ian R. Ridgway, "Cognitive Therapy: Aaron T. Beck" (lecture 7, Tabor College, Melbourne, Australia, 2006-2007).

Beck suggests that identifying the automatic thought within the activating event is only the first step. He indicates that behind every negative automatic thought is a “thinking distortion.” For example, if a performer has a negative experience playing a work by Beethoven and makes the conclusion that he simply cannot play Beethoven, based on the negative performance, the thinking distortion is over-generalization. If a performer plays a program nearly flawlessly but leaves out a large section of music in the last piece of a program because of a memory slip and leaves the recital hall, declaring that “I failed” or “I can’t perform,” the thinking distortion in this situation is all-or-nothing thinking. The following journaling activities will assist you in identifying your personal thinking distortions.

Journal Activity No. 16
Confidence – Negative ABC Model

Goal: To understand how negative automatic thoughts affect responses to performance events.

Following the ABC model established by Ellis, think of a performance that triggered a negative response (i.e. performance that affected future performances negatively). List some of the automatic thoughts that occurred as a result of that performance. What were some of the consequences to that activating event? Identify the thinking distortion that may have occurred as a result of that event.

Beck demonstrated that individuals could be trained to think positively—to change a thinking distortion into a real and positive way of thinking. For example, if the thinking distortion is “I can’t play octaves,” it is important for the individual to first recall all the innumerable occasions when octaves were successfully played and to mentally rehearse “I have played, can play, and will play octaves extremely well because I am a skilled

pianist.” This positive thought needs to be rehearsed over and over until it becomes an automatic thought.

Journal Activity No. 17
Confidence – Positive ABC Model

Goal: To understand how to visualize a positive ABC Model.

Take the “Negative ABC Model” from the previous activity and change it to a positive ABC model. Every negative automatic response mentioned in journal activity no. 17 needs to be, in vivid, descriptive language, transformed into a positive automatic response. For example, “I missed the technical challenge in the Coda, but I recovered well and I feel confident in my ability to play this challenging work.”

Visualize a positive performance experience. Describe the positive automatic thoughts that resulted. What positive belief did this experience generate?

Self-reflection Exercise:

Before you begin each practice session this week, write out a positive ABC model. The model should describe performances that have not yet occurred. Describe an activating event (i.e. piano jury, competition, master class, etc.). Follow this description with your belief about this event (i.e. “I’ve played many successful juries and this jury will be the same,” “I feel prepared for this competition and I will perform musically, confidently, and in control of my technique,” etc.). The final step is to describe the consequence of this event (i.e. feelings of joy, excitement, confidence, satisfaction, etc.).

Summary of Section Three – Confidence

Confidence is built upon an assessment of past experiences and performance outcomes and the demands or challenges being faced at the moment. It depends on a process of evaluation and analysis of a performer’s personal skill and abilities and results

in either a positive or negative expectation relative to the immediate situation and the current performance demand. As mentioned previously, confidence is a skill that can be learned and developed by performers. By developing a positive attitude and using strategies such as self-coaching and self-talk, a performer can transform automatic negative responses to positive responses during performance.

Section Four – Automation and Expressiveness, Weeks 9-10

Week Nine – Developing Automatic Responses in Your Performance

Background:

Defining Automaticity

Moore discusses two types of processing that skilled performers use when performing a task: automatic processing and controlled processing. When moving from an inexperienced state to a skilled state with a new piece of music, a performer moves from a conscious mode to an automatic mode. “Skilled motor responses are so sophisticated that it is unnecessary to think about the actual performance of a movement pattern and therefore the movement proceeds automatically.”²⁰⁶ For example, when getting on a road bike an individual performs an automatic motor program that is activated through stored memory. The actual act of getting on a bike and starting down the road is filled with a series of complex motor programs, but once the individual masters the skill the task is habituated. If trying to ride a much taller bike, that same individual would have to modify stored memory to adjust to the larger bike. The individual would not have to start from the beginning and learn how to ride a bike all

²⁰⁶ Bill Moore, “Covert-Overt Service Routine,” (PhD diss., University of Virginia, 1986), 14.

over again, but would be able to draw upon the memory bank of a well-learned skill and, even though the skill may appear more effortful, would still be able to remember the previous automatic processing learned on the smaller bike.

The other type of processing Moore discusses is “controlled processing.” The difference between the two is that “automatic processes are fast and accurate and perform well-learned consistent responses. Controlled processes precede automatic processes, maintain enabling conditions, and are used in problem solving. Automatic processes are difficult to change and require extended practice to develop. Controlled processes are flexible but slow and very limited in capacity.”²⁰⁷ To use automaticity to the performer’s advantage, it is essential to allow the two processes to interact with each other so that processing during a performance can be both flexible and fast.

Many scholars and performance psychologists have suggested that automatic processes, during high-level performance tasks, have potential to affect a performance negatively. Ericsson and Lehmann, for example, observe that much repetition during practice sessions can certainly result in an increase in automaticity requiring less effort from the performer during performance. However, they offer a cautionary note: “Building mastery in a domain and finding the least effortful method to attain a specific performance goal are different activities. This distinction is crucial for separating a performance that has been entrenched through mindless drill from one that is flexible and adaptable through the use of mental representations – a hallmark of expert performance.”²⁰⁸ One would agree that a “robotic” performance is hardly ideal.

However, practicing and developing automatic responses into your performance can

²⁰⁷ Ibid., 15-16.

²⁰⁸ K. A. Ericsson and A. C. Lehmann, “Research on Expert Performance and Deliberate Practice: Implications for the education of amateur musicians and music students,” *Psychomusicology* 16 (1997): 49.

allow for more focus and concentration to be directed to other areas of your performance, such as expressivity.

Automation in performance does not necessarily need to be directed towards technical facility. One can use automation to establish certain skills that consistently diminish nervousness and self-consciousness and add to the performer's confidence level and stability. Stewart Gordon, in his book *Mastering the Art of Performance*, outlines several tips that can be used to develop positive automatic responses during performance. They are:²⁰⁹

1. Pacing yourself during the performance
2. Refreshing during the performance
3. Keeping withdrawal impulses in check
4. Regarding competitive challenges without emotional baggage
5. Being creative under pressure

Foundational Skills: Effective Automated Performance Skills:

1. Pacing Yourself During Performance

Adrenaline is an important part of performing. Without adrenaline many performances would be dull, lacking in spirit and drive. It can, however, make the performance experience difficult if it is not kept in order and deliberately used. One of the first indications that a performer's adrenaline is taking control of a performance is an increase in speed. A performer could have a sudden adrenaline rush for a variety of reasons. Perhaps the individual is worried about an upcoming technical challenge in the piece or is simply physically, mentally, and emotionally invigorated by a particular

²⁰⁹ Stewart Gordon, *Mastering the Art of Performance* (Oxford: Oxford University Press, 2006), 120.

passage. It is essential that a performer sense moments when adrenaline is peaking. An effective way to manage adrenaline is to visualize performing a certain piece. If there are moments where your mind cannot move smoothly from section to section or if you feel your heart rate increase slightly, chances are that those moments would be affected by adrenaline during a live performance as well.

Journal Exercise No. 18

Automation and Expressiveness – Learning to Pace Yourself

Goal: To understand how to use visualization in mentally pacing your performance.

Imagine yourself performing a certain piece of music. Allow your body to become physically involved in this visualization. The minute you notice yourself struggling to smoothly move through a certain passage or you have a moment of anxiety, STOP. Go back to the beginning of the section; visualize yourself playing the passage at a slower tempo and focus on maintaining a consistent, relaxed breath. Then visualize the same passage at a performance tempo, still focusing on your breath. After performing the whole piece in this manner in your head, take the piece to the piano and go through the same process. Document any changes that occur using this type of practice.

2. Refreshing your Physical State During Performance

It is very easy to become physically and emotionally exhausted during a performance. When a performer becomes exhausted, concentration is usually the first casualty. Therefore, it is essential that performers consistently refresh their physical state during performance. Some refreshing techniques that may help during performance are:

- a. Breathe more deeply during sections of a piece that are not as physically demanding. Breathing will help to relax your mind and even your muscles.
- b. Readjust your posture slightly during performance. Refocusing your body weight slightly can refresh your focus and energy. This will help to relax muscles that were perhaps strained from overuse.

- c. Focus on relaxing tense muscles before passages that are technically demanding. If you enter a difficult passage with relaxed muscles, your ability to execute them accurately will increase.

Journal Exercise No. 19

Automation and Expressiveness – Moments of Refreshing

Goal: To understand the benefits of mentally refreshing yourself during performance.

Go through the score of a piece you are preparing to perform and mark in places where you can focus on your breath, readjust your posture, and loosen tense muscles.

3. Check for impulses to withdraw

Withdrawal impulses are completely natural when there is a surge of adrenaline. The “flight impulse” is an important part of our genetic make-up and it can preserve life in a dangerous life situation. However, it can destroy a performance. “Resorting to flight translates into quitting the performance, walking out mentally, cowering as you approach a challenge, rushing off stage, or in some measure giving up.”²¹⁰ During these moments of wanting to give up, it is important to recall the positive coaching exercises in the “Confidence” section. When a performer senses that he is becoming defeated by impulses to withdraw emotionally and mentally, he needs to speak positive words into the performance. Many performers have the experience of believing they have given the worst performance of a lifetime, and yet audience members mention how much they enjoyed the performance. Chances are, every person that came and complimented the performer was not just being nice or lying—there is a strong chance that the performer’s perception of the quality of the performance was wrong.

²¹⁰ Ibid., 121.

Journal Exercise No. 20

Automation and Expressiveness – Fighting the Withdrawal Impulse

Goal: To understand the need to avoid flight impulses in performance.

Think back to a performance when your “flight impulse” took over (i.e. removed yourself mentally, emotionally, or physically from a performance because of a less-than-perfect performance). How did this moment affect your entire performance?

Visualize the same performance. This time remove the flight impulses from the performance (i.e. flight impulse–“I stumbled and all I wanted to do was leave the stage,” change to “I stumbled but I was able to attend to the moment and remain engaged in the musicality of the performance”).

Self-reflection Exercise:

Before each practice session this week, select one of Gordon’s practice tips to develop positive automatic responses discussed in the previous three journal exercises. At the end of the week, decide which exercise was the most helpful in strengthening your positive automatic responses during practice and performance.

Week Ten – Developing Automatic Responses in Your Performance – Continued

Background:

In week nine, several exercises were introduced to train automatic responses during performance. This week we will continue to examine methods to further develop automatic responses in practice and performance.

Foundational Skills:

4. Competitive Challenges without Baggage

As performers, we are all trying to improve upon our last performance. We are, in a sense, competing against ourselves. This is healthy and, when used effectively, can

promote motivation to practice and to improve upon one's abilities. When viewing each performance as a competition, it is important to eliminate negative baggage. As part of the "flight" response associated with adrenaline increases, performers have the tendency to fabricate thoughts coming from an adjudicator or an audience member. Performers will often believe that the adjudicator's only desire is to tear apart a performance or that audiences only come to see a performer fail. Performers need to view performance as a sports competition with the presence of a coach. The coach will stereotypically provide the players with a "pep talk" before the competition. You need to be your own coach and give yourself a pep talk before you perform.

Journal Exercise No. 21

Automation and Expressiveness –The "Pep Talk"

Goal: To understand the benefits of incorporating a positive "pep talk" into pre-performance routines.

Engage in a self-generated pep talk. Exhort yourself to achieve your personal best and mention all of the ways that you have already prepared yourself for this exciting event.

5. Being Creative Under Pressure

Just like adrenaline adds an extra surge of energy to a performance, creative impulses are also more present during a live performance than during a practice session. One needs to be careful how much extra creativity to experiment with during a live performance because it is important to avoid sounding forced or unnatural. One may also want to avoid adding any additional creative elements if the piece is still fairly new. With a well-established piece in your repertoire, it can be quite invigorating to add additional musical, creative elements on the spur of the moment during performance. To

first experiment with this idea, it may be helpful to make little unrehearsed additions during a dress rehearsal or pre-performance practice session just to introduce new musical ideas away from the performance stage.

Journal Exercise No. 22

Automation and Expressiveness – Being Creative Under Pressure

Goal: To understand how being creative under pressure can improve the way a performer mentally views a performance situation.

It may be difficult to add new creative elements to a piece that you have performed countless times the same way. Experiment by listening to your favorite performer playing a repertoire piece that you plan to perform. Find one aspect of the performer's performance that excites and inspires you. Visualize yourself adding that element into your own performance.

Describe the sensation of adding a new musical element into your performance. How will performing the familiar piece with added nuances affect your performance (i.e. will it add more joy, freedom, excitement, etc.)? How will this affect the way you mentally approach this piece in performance?

Self-reflection Exercise:

Select a work you are preparing for an upcoming performance. Plan to perform the piece for a colleague, teacher, or family member. Before you perform the work, complete two different visualization scripts. These visualizations should be written in descriptive language, reflecting the physical and emotional sensations that will be part of your performance. Meditate on both written visualizations before your performance.

Visualization No. 1—"Coping Script"

This exercise is designed to prepare the performer for unexpected performance events (i.e. memory slips, technical mistakes, etc.). In your visualization, describe an unexpected moment that may occur in a performance situation. Following the

unexpected event, describe ways to physically and mentally cope during performance. For example, “I accidentally missed the retransition into the recapitulation. I kept my breath relaxed and my mind focused on finding a way back to the recapitulation. Quickly cadencing, I found my way back to the recapitulation. The memory slip was brief and I recovered smoothly, without hesitation.”

Visualization No. 2–“The Perfect Performance”

This exercise is designed to compel a performer to visualize a perfect performance. The performer does not need to visualize any coping skills or turn negative events into positive events. Everything in the perfect performance script should be positive. For example, “I begin the performance with confidence and I feel completely relaxed. The difficult scale passages fly effortlessly from my fingers and I feel in control at all times. My breathing is relaxed and I’m able to insert new musical nuances with ease and flexibility.”

Summary of Section Four – Automation and Expressiveness

Practicing and developing automatic responses into your performance can allow for more focus and concentration to be directed to other areas of your performance, such as expressivity. The journal exercises in this section provide the performer with a variety of techniques, all of which develop skills that promote positive automatic responses in practice and performance and, at the same time, facilitate expressivity and creativity in performance.

Section Five – Practicing to Perform, Week 11

Week Eleven – Developing Long-lasting Performance Stability

Background:

This is the final stage of this mental skills training program. At this point, one should be equipped to experiment freely with any and all of the exercises discussed in the previous sections of this training program. This will hopefully be the most enjoyable phase for you, as you get to experiment with all of the knowledge that you have acquired thus far.

Foundational Skills: Mastery Scripts

The first exercise in this section will be a visualization script that will strengthen your pre-performance routine (“Pre-performance Mastery Script”). In the pre-performance mastery script, the performer is visualizing a successful, well-established pre-performance routine. When a performer establishes a secure pre-performance practice routine, the individual is immediately instituting feelings of trust, confidence, and mental control before ever entering the concert hall. The pre-performance mastery script should vividly describe the warm-up sequence (physical warm-up, mental meditation, scales, technical exercises) and the repertoire spot-checks that the performer plans to cover before a performance. See figure 5.1 for an example pre-performance mastery script.

Figure 5.1. Sample Pre-performance Mastery Script

Warm-up (Mental)

I enter the practice room and sit quietly in front of the piano. I take deep, cleansing breaths in, focusing my thoughts on relaxing images. I mentally visualize the appearance of the hall and the backstage dressing room continuing to focus on taking relaxed breaths.

Warm-up (Physical)

As I begin to warm-up, I continue to focus on relaxed breathing. The scales and arpeggios feel comfortable – my body feels relaxed and secure. I play through 5 major and minor keys. Each scale and arpeggio I play, my body feels stronger and stronger.

Repertoire Spot-Checks

I slowly visualize several of my memory spots in the first piece on my program. My breath is steady and relaxed and I'm able to recall the music with ease and fluidity. The variable practice spots are easy to remember. I practice these sections first slowly and then at tempo.

Journal Exercise No. 23

Practicing to Perform – Writing a Pre-performance Mastery Script

Goal: To understand how to write an effective pre-performance mastery script.

Write a pre-performance mastery script for an upcoming performance. Include details of what exercises you will warm-up with and which memory spots you will cover in the pre-performance practice routine.

The second exercise introduced in this section will be the “Performance Mastery Script.” In a sense, you have been writing little mastery scripts in many of the journal exercises. A performance mastery script is a documented visualization of an upcoming live performance. The purpose of the performance mastery script is for a performer to vividly write about an upcoming performance. The description of the performance should be written so vividly that the performer can actually feel like he is in the performance. Everything addressed in the performance mastery script should be written in a positive frame. For example, rather than writing “I anticipate mastering the

development section technically and musically,” write, “I master the development section both technically and musically.” Every phrase should be written in the present, not past or future. Provided below (figure 5.2) is a sample performance mastery script. This performance mastery script is written for a full sixty-minute recital program. Feel free to write a script for a single piece of music as well. It does not have to be for a complete recital.

Figure 5.2. Sample Performance Mastery Script

As I walk out, I look up at the audience and smile. I take my bow and wait for them to stop applauding. I'm focusing on taking relaxed breaths. I walk to the piano and sit down. I visualize a painting that depicts the Madrid landscape before I begin playing. I hear strumming guitars in my head. I begin peacefully and feel at ease as I play. My music is full of Spanish flavors. I continue to maintain my focus and by the time I reach the *Zambra* I feel in control and ready to begin the virtuosic work. I feel the gypsy flair and I hear the stomping of feet in the music and I begin strong and in control. I begin the final dance and I feel full of joy and exuberance. I finish strong and in absolute control. I take a deep breath and bow and walk off the stage.

As I enter the stage for my second piece, I feel the joy of the characters I'm already portraying in that piece. I discuss the humor and the operatic characters with ease and I sit down and begin the piece. I hear the two contrasting characters throughout the entire piece and they keep my psyche centered. I walk off the stage and prepare myself for rest during intermission.

I sit backstage and rest quietly with Jessica. I eat my banana and I try to focus on what is to come rather than on what has just occurred. We discuss the details of walking out onto stage to remind ourselves. We feel confident and are looking forward to performing together.

The lights go down and I walk confidently onto the stage. I discuss the Louie with a sense of pride and confidence. After I finish, the lights are lowered and I hear Jessica's footsteps on the stage walking out into her position. I take a deep breath as the lights rise and smell my perfume which reminds me of the garden which I'm trying to portray in this piece. I begin as quietly as possible to create a mysterious atmosphere and I watch as Jessica's movements influence the way I play. We build up to the climax and I feel we are in perfect unison. We end in perfect synchronization. As we finish, the lights are lowered and there is a hush in the audience. We hear the applause start and the lights are raised. We smile and walk into the middle of the stage and take our bow together.

I feel relaxed as I wait for the piano to be moved back to the center of the stage. I do a few breathing exercises and take a drink of water to hydrate myself before my final workout. I look out the door and I can see the piano is in place and the audience is ready for the final piece in the program. I take a breath of my perfume to relax myself and I open the door and walk out to the center of the stage. I calmly discuss the premise of the Chopin sonata and why it has the name “Funeral March.” As I discuss the Funeral March I feel myself moving into the intense and in control character needed to play the work. I sit at the bench and take enough time to reflect on what I have said and prepare myself to start playing. I begin and I feel my strength secure and my breath calm. I finish the first movement strong and in control and I feel like I have maintained a consistent character. I am prepared for the audience to applaud.

I take enough time to gather my strength and my breath to begin the second movement. I feel a sense of playfulness even in the intense character of the movement, portraying the scherzo format. I’m aware of the pedal and am sure not to use it too much.

I hear the opening measure of the Funeral March before I begin playing. I hear the singing line at the top of the right hand chord. As I begin playing I can hear the voice soar out over the audience and am amazed at the silence in the hall. As I move into the middle section I have awareness of the naïve character that I am trying to portray and I am conscious that my body is separated from direct contact with the keys.

I finish the final chord of the march and I flow directly into the fourth movement. I can hear my instructor whispering “Shhhhhh...” and I am conscious of the softer dynamic at the beginning of this movement. I feel relaxed as I play the last movement but I do not get ahead of myself, I maintain my composure until the final forte chord. I stand up immediately after finishing and take a deep breath and smile and take my final bow. I walk off the stage confidently and am ready to enjoy a beautiful reception!

Journal Exercise No. 24

Practicing to Perform – Writing a Performance Mastery Script

Goal: *To understand how to write a performance mastery script*

1. Location of your performance – *Use very descriptive words when describing the performance space. Talk about the smells of the hall or church, the color of the carpet or flooring, the location of the piano, etc.*

2. Starting your performance – *This is an important step because the beginning is the most important part of your performance. Use descriptive words to explain how relaxed and strong you feel. Include any phrases that help you relax on the day of a performance.*

3. Middle of your performance – *Often performers feel tired or start to lose their drive and focus in the middle of a long performance. Describe how strong and energized you feel in the middle of a piece or performance.*

4. Finishing your performance – *Just like the start of the performance, it is important for the performer to finish strong. Adrenaline is always present at this point of the performance. The performer is excited to be finished and usually the piece is more virtuosic than other pieces on the program. Make sure you mention breathing and other calming factors in this part of the script.*

The final exercise in this section is entitled the “post-performance mastery script.”

A problem that many performers face following a performance is inaccurate self-talk.

This idea was mentioned previously in the confidence section of week eight. A

performer often only remembers the negative elements of a performance and obsesses

over those aspects to such a degree that they affect subsequent performances. In a post-

performance mastery script, the performer recalls all of the many positive aspects of the

performance and describes them in detail. This script should be written immediately

following the performance so that the performer can recall, in detail and with accuracy,

the positive moments of the performance. See figure 5.3 for a sample post-performance

mastery script.

Figure 5.3. Sample Post-Performance Mastery Script

I loved walking out on stage. I felt so confident and I connected with the audience immediately. I was able to immediately establish the Spanish musical character in the first piece in the Granados set. The work was portrayed with ease and with sensuous flexibility.

The humor was evident in the Mozart. I remembered smiling as I played certain parts of this piece. I think I even heard an audience member chuckle at one or two of the “musical jokes.”

The intermission was a wonderful, relaxing time. I felt like I was able to fully rejuvenate myself. I meditated on the next piece and I felt like I was completely able to prepare myself for the drastic change in musical character. The audience really enjoyed this unique piece. Jessica and I performed as one entity and the audience responded with a long period of applause.

The Chopin concluded the program perfectly. My body felt relaxed and yet still full of energy. I was able to connect each movement mentally (my focus never dissipated between movements).

I concluded the program confidently and I felt excited as I exited the stage.

Summary of Section Five – Practicing to Perform

It is vital that performers practice performance skills before arriving on the concert stage. Section five is a culmination of exercises and activities developed in previous sections of the curriculum. The mastery scripts developed in this section are designed to mentally prepare the performer for performance through detailed visualization exercises. The activities developed in this section allow the performer to experience performance sensations prior to the actual performance event.

Section Six – Conclusions, Week 12

Week Twelve – Putting it All Together for a Strong Performance

Background:

In this final session, the participants will perform a repertoire piece for the class. Each participant should choose a piece that was used in previous journal exercises and activities. Every performer is expected to compose a pre-performance mastery script and performance mastery script before the class performance. The post-performance mastery script will be composed following the performance as part of the self-reflection exercise. Following the class performance, the class will reflect on changes that occurred, both mental and physical, during the course of the twelve weeks.

Foundational Skills: Questions for Discussion

1. How has your ability to maintain focus changed over the course of the mental skills training program?
2. Have you become more aware of how your body reacts to your mental state during performance (i.e. physiological changes)? If so, how?
3. How has your ability to memorize changed over the course of the training program?
4. How has training trust changed the way you view performing?
5. What strategies do you find most effective in building trust?
6. How does positive self-talk affect your level of confidence prior to performance?
7. Which of the automatic response exercises (section four) do you find most helpful in strengthening positive thought responses in preparation for performance?
8. How accurately were the pre-performance and performance mastery scripts reflected in today's performance?

Self-reflection Exercise:

Compose a post-performance mastery script for the class performance. Follow the example provided in figure 5.3.

Summary of Section Six – Conclusions

A performer spends a great deal of time perfecting skills. In the perfection process, the first instinct of the performer is to think and process information negatively in order to strengthen and develop better performing abilities. A substantial amount of research indicates that positive thinking and positive automatic responses produce stronger, more consistent performers than negative, perfectionist thinking. The strategies and activities outlined in this curriculum are designed to teach psychological performance skills that can be internalized by performers, creating automatic patterns of positive thinking when practicing or performing. Gary Mack suggests that for such skills to be internalized they must be part of every practice session. He writes, “To perform consistently, you must prepare consistently. Act the way you want to become until you become the way you act.”²¹¹

²¹¹ Gary Mack and David Casstevens, *Mind Gym: An Athlete’s Guide to Inner Excellence* (New York: McGraw-Hill, 2001), 190.

CHAPTER IV

SUMMARY AND RECOMMENDATIONS FOR FURTHER RESEARCH

Summary

Two observable trends in research literature over the last fifty years occasioned the writing of this paper. First, during this time frame considerable research and literature has emerged concerning the nature and efficacy of training and practice in a number of performance domains, especially in athletics and music. In the field of music, the majority of research relates to the improvement of practice methods that promote development of a variety of technical skills (such as sight reading, memorization, dexterity, and pedaling). In the athletics domain, an increasing quantity of research and literature has been written regarding the importance of psychological skills in attaining optimal performance levels. Literature cited in chapter II concludes that, to perform at an eminent level, mental skills training is equally as important as practice of the actual physical skills required in the performance. Because of such research conclusions as these, coaching and training programs in most fields of athletics include psychologically centered mental skills training programs as a necessary and integral part.

Although we have learned much about performance psychology and mental skills training from athletes and sports psychologists, musicians and music teachers are slow to respond to the growing body of literature that supports the integration of mental skills training with traditional teaching and practice regimes. Openness to the mounting evidence that mental skills training significantly improves performance is found in only a handful of university-level schools of music. However, classes and seminars that address

specific mental skills, such as physical relaxation (e.g. Alexander technique), mental focus (e.g. meditation techniques), and coping skills to manage adrenaline during performance (e.g. symposium events at Julliard with Don Greene), are offered at a slightly larger number of collegiate institutions. All in all, musicians have not widely embraced the notion that a psychological skill set exists which can be trained, practiced, and advantageously incorporated into their performance and practice routines. Because of this, college-level piano performance curricula generally lack integrated psychological performance skills training programs.

The development of positive psychological performance skills is central to optimizing an individual's performance level. Mental skills cannot be treated as peripheral to the development of performance skills. Teaching, development, and maintenance of psychological performance skills should be incorporated as a fundamental part of any piano performance program. A structured mental skills training curriculum is crucial to adequately prepare a pianist who desires to reach an optimal performance level. This paper is written to address the need for such a program.

For this study, research literature that documented the effective use of psychological skills training in athletics was reviewed. Psychological skills such as goal setting, attention and focus control, positive self-talk, reflection and self-monitoring, self-confidence and trust, automaticity, and mental imagery were discussed. To assist the pianist in rebalancing practice sessions to incorporate the psychological skills listed above and enlist these skills during performance, a twelve-week training program was devised. Several exercises and activities, adapted from similar exercises successfully employed in athletics, are provided in the training program to enable the pianist to learn

and practice the strategies that are most effective in achieving individual performance goals.

The twelve-week training program in this document is designed to provide pianists with tools that can be used and refined in practice and performance. The first three weeks of the training program discuss focus and concentration. During week one, the four types of focus or dimensions of attention are discussed. The pianist is asked to determine the type of mental focus that predominates during segments of pre-performance practice sessions. During this portion of the curriculum, attention control training is also considered and the pianist is asked to identify factors likely to interfere with concentration and the type of focus required to deal with them. The material in week two continues to address the need for focus and concentration. Gauron's "Expanding Awareness Exercise" was adapted to sharpen the pianist's awareness of shifting attention and improve efficiency when bringing focus back to the relevant task. Week three presents mind mapping as a strategy to build structure and secure focus during performance. Pianists are instructed to create a mind map that captures significant factors in a piece they are performing. The important elements in the music are outlined with symbols and textual cues developed by the pianist. Liszt's *Liebesträume* No. 3 is used as the mind map example in this section of the training program.

Weeks four through six focus on the area of trust in performance. "Trust is a performance skill that is separate and distinct from one's skill level. In other words, regardless of how well-learned or refined your [piano technique] is, learning to trust what you have during performance is still the goal and this goal is separate from [playing the

correct notes] or [playing with perfect expression].”²¹² In week four, the concept that trust or letting go of conscious control is a skill that can be learned and practiced, is introduced. In this section of the training program, the pianist is made aware of the important role that trust plays in high-level performance situations. Week five examines the breakdowns in trust caused by over-analyzing, over-focusing, and over-controlling correctness. In the self-reflection exercise for week five, the pianist is directed to practice positive responses in negative situations in order to refocus energy and prevent a breakdown in trust. In week six, the pianist learns about Self-1, the thinker, and Self-2, the doer. Although Self-1 is essential in the learning stages of a piece, during performance Self-2 needs to be released to do what it does best – play.

Section three of the mental skills training program is entitled “Confidence” and weeks seven and eight present this section of the program. Week seven begins with an outline of various levels of self-belief, each significantly affecting a person’s degree of confidence and trust. The four quadrants of positive and negative attitudes are identified and positive self-coaching is introduced as a strategy to develop and maintain an appropriate positive mental attitude. Aaron Beck’s ABC model is defined in week eight. The ABC model describes an individual’s psychological experiences during a particular activating event. The pianist is asked to compose a positive ABC model that is designed to create positive automatic physiological responses during performance.

Weeks nine and ten focus on automatic responses and expressiveness during performance. Outlines of five exercises designed to develop positive automatic responses

²¹² Bill Moore, “Understanding Trust as a Performance Skill,” in *Trust-It-Golf: Getting into your game and out of your way* [Submitted for publication 2009], 1.

during performance are presented. The pianist is encouraged to engage in each activity and to observe which exercises are most effective.

The final stage of the mental skills training program is discussed in section five. Incorporating all of the skills explored in the previous sections, the pianist is asked to create three different visualization scripts in preparation for a performance. These scripts are designed to place the pianist in the performance situation and mind-set prior to the actual performance.

Each of the psychological skills described here is individually valuable. Collectively, however, the skills outlined in the mental skills training program enable the pianist to maximize performance through understanding and control of the specific mental processes that impact each performance. Upon review of the extensive mental skills training program provided in chapter III, a cautious reader might ask, “Will this program work? Is it really needed as part of a pianist’s training regime?” Motivation is a critical factor, and this program will benefit only those individuals who possess a strong motivation to perform at their personal optimal level. Although programs focusing on meditation techniques, progressive muscle relaxation, and visualization techniques already exist for musicians to develop mental skills, training programs that systematically and deliberately focus on the development of specific psychological performance skills are presently lacking.

Current research indicates that although a performer may possess all the necessary technical skills, physical strength, and dexterity, attaining their optimal performance level is extremely difficult if not impossible without well-developed psychological performance skills. Such psychological performance skills are not generally innate, but

can be taught and practiced. Studies show that, within a group of athletes of equal ability, those who receive mental training consistently outperform those without mental training. According to Alex Rodriguez in the foreword to Gary Mack's *Mind Gym*, "I believe mental preparation goes hand-in-hand with setting goals and hard work. The way I use my mind is the biggest reason I've been able to enjoy success and play at a high level in a game where you have to prove yourself every day."²¹³ Psychological skills training is an area of music training that is currently not addressed adequately. The mental skills training program included in chapter III of this document aims to address this deficiency by providing a curriculum for the instruction and development of psychological performance skills within a deliberate practice format, enabling dedicated pianists to achieve their personal maximal level of performance.

Recommendations for Further Research

This document proposes a mental skills training program for a lower-advanced to advanced pianist. The program includes information regarding a number of psychological performance skills, exercises to learn and improve the skills, and opportunities for reflection to determine the effectiveness of the skills within a deliberate and focused piano practice format. It was not within the scope of this study to systematically measure the efficacy of this training program with individual pianists. An aspiration of the author is that this document will provide an impetus for continued research and the further development of programs that integrate mental skills training with applied piano studies.

²¹³ Gary Mack and David Casstevens, *Mind Gym: An Athlete's Guide to Inner Excellence* (New York: McGraw-Hill, 2001), iv.

To continue this mode of investigation, the author suggests the following as avenues for further research:

1. A study to systematically measure the effectiveness of the mental skills training program in this document with a group of lower-advanced to advanced pianists would help provide an evaluation of the program. In order to avoid potential bias, it is recommended that the researcher not be the primary instructor of students taking part in the training program.
2. A similar study should be undertaken to develop a mental skills training program for an intermediate-level pianist and to measure the success of the program in developing effective psychological performance skills and improving overall performance skills. Development of effective performance strategies at a young age could produce a stronger, more musically consistent and confident performer in later years.
3. Considerable research has shown that well-developed psychological performance skills are indispensable to performers in a broad range of disciplines. Therefore, comparable studies should be carried out to develop mental skills training programs for musicians other than pianists.

APPENDIX

JOURNAL ACTIVITIES FROM THE TWELVE-WEEK MENTAL SKILLS TRAINING PROGRAM

SECTION ONE: Maintaining Concentration and Focus

Journal Activity No. 1 **Concentration – Dimensions of Focus**

Goal: To understand the effects of dimensions of focus on performance.

Think back to a previous performance. Do you think that you spent a significant amount of time in one quadrant or several quadrants of focus? What was the result? Where did mistakes occur?

Is there one quadrant where you consistently spend the majority of your pre-performance time? How does this enhance and/or undermine your preparation for performance?

Which quadrant negatively affects your performance the most?

Journal Activity No. 2 **Concentration – Interaction between Physiological and Attentional changes**

Goal: To understand physiological and attentional changes that cause choking during your performance.

Following the sequence provided in Figure 1.2, create your own diagram that charts the physiological and attentional changes that occur when you perform. Begin by locating a factor that consistently causes you to “choke” during performance and outline the physiological and attentional changes that occur as a result. Finally, list some of the performance problems that result from those physiological and attentional changes.

Journal Activity No. 3 **Concentration – Attention Control Training**

Goal: To understand attention control and how to use it effectively in performance.

Note: Respond to Questions 1-3 with a specific piece in mind.

1. Describe how your concentration is affected by various physiological parameters. For example, “When I lose my consistency of relaxed breath, I tense up and this affects my ability to concentrate on the task at hand in my performance.”
2. Identify the concentration requirements of performing this piece or a section of the piece. What factors are likely to interfere with your concentration (i.e. audience noise, holding of breath, thinking about upcoming difficult passages in a piece, etc.)?
3. What type of focus would help maintain concentration (refer to Figure 1.1, Dimensions of Focus)? Describe what the performance might feel like when your concentration shifts between the four quadrants of concentration.
4. Now, perform the piece and in retrospect evaluate your level of concentration and focus.

SECTION TWO: Trust

Journal Activity No. 4

Trust – Understanding Trust in Your Performance

Goal: To understand trust and your ability to trust yourself during performance.

1. Think about a past performance in which you feel like you absolutely trusted your performance abilities. How did you feel during that performance? How did you feel after the performance? Did you receive any feedback from your audience indicating a difference in the way they experienced your performance?
2. Now reflect upon a performance for which you are certain that at times you did not trust your skills during the performance and maintained conscious control. Do you remember any events that led to the lapse in trust (i.e. thoughts going on in your head during the performance, making a mistake that you’ve never made before, etc.)? Looking back, what steps could have been taken to increase your level of trust during the performance?

Journal Exercise No. 5

Trust – Breakdowns in Trust

Goal: To understand the potential of over-analysis during performance.

List some examples of when you over-analyzed during a performance.

Journal Exercise No. 6
Trust – Breakdowns in Trust

Goal: To understand the potential of over-focusing during performance

List some examples of when you over-focused during a performance.

Journal Exercise No. 7
Trust – Breakdowns in Trust

Goal: To understand the potential of over-controlling correctness during performance.

Describe a performance when you were over-controlling correctness.

Journal Activity No. 8
Trust – Committing to Training Trust

Goal: To understand the obstacles which interfere with your level of trust during performance.

1. How will training trust affect your performance? Can you remember moments in the past where you truly trusted your abilities during performance? How did you feel following that performance?
2. What obstacles are preventing you from trusting your performance abilities? How could you practice differently to eliminate those obstacles?

Journal Activity No. 9
Trust – Quieting Self-1 – Practicing Non-Judgmental Thinking

Goal: To understand the positive impact of non-judgmental thinking during practice and performance.

List some ways that you can practice non-judgmental thinking during practice and pre-performance routines. For example, suggest some phrases that you should eliminate from your vocabulary such as “I’m terrible” or “I’ll never be able to play this.”

Journal Activity No. 10
Trust – Quieting Self-1 – Directing Self-1

Goal: To understand how to direct self-1 during practice and performance.

1. Directing attention to kinesthetic feeling – Focus your Self-1 thinking entirely on kinesthetic movement patterns. This can be accomplished through visualization or through practicing a section of a work very slowly, focusing only on the physical movement for each pattern.
2. Monitoring judgmental thoughts – Practice the same piece and now direct your attention to monitoring negative thoughts or self-instruction. This exercise is designed to listen to your inner dialogue and without passing any judgment, let the thought pass and immediately refocus your attention to more positive thoughts.
3. Focusing attention on the present – In this exercise, use verbal cueing to draw your attention back to the present and focus only on a specific skill in your performance (dynamic contrasts, musicality, technical clarity, etc.). It is important to say the verbal cues aloud. The cues should correspond with the specific skills you are focusing on during performance. For example, when focusing on dynamic contrasts, say “loud” during a forte passage and “soft” during a piano passage. You could increase the volume of your verbal cueing when you see sfz or lower the volume when you have a subito piano or pianissimo.

Journal Activity No. 11
Trust – Blocked Practice Format

Goal: To understand blocked practice format and its usefulness during practice and performance.

List some examples of how you could use the blocked practice format in your own practice. How would practicing this way affect your performance? How would this type of practicing affect your level of trust?

Journal Activity No. 12
Trust – Variable Practice Format

Goal: To understand variable practice format and its usefulness in securing trust during performance.

List some examples of how you could use variable practice format in your own practice. How would practicing this way affect your performance? How would this type of practicing affect your level of trust?

SECTION THREE: Confidence

Journal Activity No. 13

Confidence – The Balance between High Positive and Low Positive Attitudes

Goal: To understand the value of high and low positive attitudes in your practice and performance.

Note: Apply this activity to a section of a piece that you are currently working on.

Select one attitude from the high positive quadrant (i.e. confident) and one attitude from the low positive quadrant (i.e. relaxed). Study a difficult section of a piece you are working on. As you look through the score, focus your attention on confident emotions as you visualize playing those difficult sections. Use verbal cues to instill those confident emotions (i.e. “I feel confident in my ability to play this challenging section” or “I am able to play this section with ease and control”). Go through the same method with low positive attitudes (i.e. “I feel relaxed because I trust my abilities to play this difficult section” or “My mind and my body feel relaxed as I play the passage with control and ease”).

Journal Exercise No. 14

Confidence – Developing a Positive Attitude

Goal: To understand mental and physical characteristics of both positive and negative attitudes.

List some mental and physical characteristics that are present when you have a positive attitude (refer to the four attitude quadrants for ideas and guidance):

List some mental and physical characteristics that are present when you have a negative attitude (refer to the four attitude quadrants for ideas and guidance):

Journal Exercise No. 15

Confidence – Positive and Negative Self-Coaching

Goal: To understand how to positively coach yourself during performance.

Think of a situation that could make you feel uneasy during a performance (i.e. memory slip, distraction causes you to lose your performance goal, etc.). Take that situation and coach yourself both positively and negatively.

Positive Self-Coaching

Situation:

Positive Self-Coaching Statement in Response to the Situation:

Negative Self-Coaching

Situation:

Negative Self-Coaching Statement in Response to the Situation:

Journal Activity No. 16

Confidence – Negative ABC Model

Goal: To understand how negative automatic thoughts affect responses to performance events.

Following the ABC model established by Ellis, think of a performance that triggered a negative response (i.e. performance that affected future performances negatively). List some of the automatic thoughts that occurred as a result of that performance. What were some of the consequences to that activating event? Identify the thinking distortion that may have occurred as a result of that event.

Journal Activity No. 17

Confidence – Positive ABC Model

Goal: To understand how to visualize a positive ABC Model.

Take the “Negative ABC Model” from the previous activity and change it to a positive ABC model. Every negative automatic response mentioned in journal activity no. 17 needs to be, in vivid, descriptive language, transformed into a positive automatic response. For example, “I missed the technical challenge in the Coda, but I recovered well and I feel confident in my ability to play this challenging work.”

Visualize a positive performance experience. Describe the positive automatic thoughts that resulted. What positive belief did this experience generate?

SECTION FOUR: Automation and Expressiveness

Journal Exercise No. 18

Automation and Expressiveness – Learning to Pace Yourself

Goal: To understand how to use visualization in mentally pacing your performance.

Imagine yourself performing a certain piece of music. Allow your body to become physically involved in this visualization. The minute you notice yourself struggling to smoothly move through a certain passage or you have a moment of anxiety, STOP. Go back to the beginning of the section; visualize yourself playing the passage at a slower tempo and focus on maintaining a consistent, relaxed breath. Then visualize the same passage at a performance tempo, still focusing on your breath. After performing the whole piece in this manner in your head, take the piece to the piano and go through the same process. Document any changes that occur using this type of practice.

Journal Exercise No. 19

Automation and Expressiveness – Moments of Refreshing

Goal: To understand the benefits of mentally refreshing yourself during performance.

Go through the score of a piece you are preparing to perform and mark in places where you can focus on your breath, readjust your posture, and loosen tense muscles.

Journal Exercise No. 20

Automation and Expressiveness – Fighting the Withdrawal Impulse

Goal: To understand the need to avoid flight impulses in performance.

Think back to a performance when your “flight impulse” took over (i.e. removed yourself mentally, emotionally, or physically from a performance because of a less-than-perfect performance). How did this moment affect your entire performance?

Visualize the same performance. This time remove the flight impulses from the performance (i.e. flight impulse–“I stumbled and all I wanted to do was leave the stage,” change to “I stumbled but I was able to attend to the moment and remain engaged in the musicality of the performance”).

Journal Exercise No. 21

Automation and Expressiveness – The “Pep Talk”

Goal: To understand the benefits of incorporating a positive “pep talk” into pre-performance routines.

Engage in a self-generated pep talk. Exhort yourself to achieve your personal best and mention all of the ways that you have already prepared yourself for this exciting event.

Journal Exercise No. 22

Automation and Expressiveness – Being Creative Under Pressure

Goal: To understand how being creative under pressure can improve the way a performer mentally views a performance situation.

It may be difficult to add new creative elements to a piece that you have performed countless times the same way. Experiment by listening to your favorite performer playing a repertoire piece that you plan to perform. Find one aspect of the performer’s performance that excites and inspires you. Visualize yourself adding that element into your own performance.

Describe the sensation of adding a new musical element into your performance. How will performing the familiar piece with added nuances affect your performance (i.e. will it add more joy, freedom, excitement, etc.)? How will this affect the way you mentally approach this piece in performance?

SECTION FIVE: Practicing to Perform

Journal Exercise No. 23

Practicing to Perform – Writing a Pre-performance Mastery Script

Goal: To understand how to write an effective pre-performance mastery script.

Write a pre-performance mastery script for an upcoming performance. Include details of what exercises you will warm-up with and which memory spots you will cover in the pre-performance practice routine.

Journal Exercise No. 24

Practicing to Perform – Writing a Performance Mastery Script

Goal: To understand how to write a performance mastery script

- 1. Location of your performance** – Use very descriptive words when describing the performance space. Talk about the smells of the hall or church, the color of the carpet or flooring, the location of the piano, etc.
- 2. Starting your performance** – This is an important step because the beginning is the most important part of your performance. Use descriptive words to explain how relaxed and strong you feel. Include any phrases that help you relax on the day of a performance.
- 3. Middle of your performance** – Often performers feel tired or start to lose their drive and focus in the middle of a long performance. Describe how strong and energized you feel in the middle of a piece or performance.
- 4. Finishing your performance** – Just like the start of the performance, it is important for the performer to finish strong. Adrenaline is always present at this point of the performance. The performer is excited to be finished and usually the piece is more virtuosic than other pieces on the program. Make sure you mention breathing and other calming factors in this part of the script.

BIBLIOGRAPHY

- Abernathy, B. and D. G. Russel. "Expert-novice Differences in an Applied Selective Attention Task." *Journal of Sport Psychology* 9 (1987): 326-345.
- Allard, F. and Starkes, J. L. "Motor-skill Experts in Sports, Dance, and Other Domains." In *Toward a General Theory of Expertise: Prospects and Limits*, edited by K. A. Ericsson and J. Smith, pp. 126-152. Cambridge: Cambridge University Press, 1991.
- Amabile, T. M. *The Social Psychology of Creativity*. New York: Springer & Verlag, 1983.
- Aschaffenburg, G. "Praktische Arbeit unter Alkoholwirkung" [Work under the influence of alcohol]. *Psychologische Arbeit*, 1 (1896): 608-626.
- Barry, Nancy H. "The Effects of Practice Strategies, Individual Differences in Cognitive Styles, and Sex upon Technical Accuracy and Musicality of Student Instrumental Performance." PhD diss., Florida State University, 1990.
- Barry, Nancy H. "The Effects of Practice Strategies, Individual Differences in Cognitive Style, and Gender upon Technical Accuracy and Musicality of Student Instrumental Performance." *Psychology of Music* 20, no. 2 (1992): 112-123.
- Barry, N. H., and V. McArthur. "Teaching Practice Strategies in the Music Studio: A Survey of Applied Music Teachers." *Psychology of Music* 22 (1994): 44-55.
- Behncke, Luke. "Mental Training for Sports: A Brief Review." *Athletic Insight: The Online Journal of Sport Psychology* 6, no. 1 (March, 2004): 1-19.
- Bloom, B. S. "Generalizations about Talent Development." In *Developing Talent in Young People*, edited by B. S. Bloom, 507-549. New York: Ballantine Books, 1985.
- Book, W. F. *Learning to Typewrite*. New York: Gregg, 1925.
- Bower, G. H. and E. R. Hilgard. *Theories of Learning*. 5th ed. Englewood Cliffs, NJ: Prentice-Hall, 1981.
- Boyd, M., and Y. Zenong. "Cognitive-affective and Behavioral Correlations of Self-schemata in Sport." *Journal of Sport Behavior* 22, no. 2 (1999): 288-296
- Brophy, J. "Teacher Praise: A Functional Analysis." *Review of Educational Research* 51 (1981): 5-32.

- Brown, R. W. "A Comparative Study of the 'Whole,' 'Part,' and 'Combination' Methods of Learning Piano Music." *Journal of Experimental Psychology* 11 (1928): 235-247.
- Brown, R. W. "The Relation between Two Methods of Learning Piano Music." *Journal of Experimental Psychology* 16 (1933): 435-441.
- Bryan, W. L., and N. Harter. "Studies in the Physiology and Psychology of the Telegraphic Language." *Psychological Review* 4 (1897): 27-53.
- Bryan, W. L., and N. Harter. "Studies on the Telegraphic Language: The Acquisition of a Hierarchy of Habits." *Psychological Review* 6 (1899): 345-375.
- Burton, D. "Winning Isn't Everything: Examining the Impact of Performance Goals on Collegiate Swimmer's Cognitions and Performance." *The Sport Psychologist* 3 (1989): 105-132.
- Chaffin, R., and G. Imreh. "A Comparison of Practice and Self-report as Sources of Information about the Goals of Expert Practice." *Psychology of Music* 29 (2001): 39-69.
- Chaffin, R., and G. Imreh. "Pulling Teeth and Torture: Musical Memory and Problem Solving." *Thinking and Reasoning* 3, no. 4 (1997): 315-336.
- Chaffin, R., et al. "Seeing the Big Picture: Piano Practice as Expert Problem Solving." *Music Perception* 20 (2003): 465-490.
- Chase, W. G., and K. A. Ericsson. "Skilled Memory." In *Cognitive Skills and Their Acquisition*, edited by J. R. Anderson, 141-189. Hillsdale, NJ: Erlbaum, 1981.
- Chi, M. T. H. *The Nature of Expertise*. Edited by R. Glaser and M. J. Farr. Hillsdale, NJ: Erlbaum, 1988.
- Coffman, Don D. "Effects of Mental Practice, Physical Practice, and Knowledge of Results on Piano Performance." *Journal of Research in Music Education* 38, no. 3 (Autumn, 1990): 187-196.
- Coon, H., and G. Carey. "Genetic and Environmental Determinants of Musical Ability in Twins." *Behavior Genetics* 19 (1989): 183-193.
- Csikszentmihalyi, Mihaly. *Creativity: Flow and the Psychology of Discovery and Invention*. New York: HarperCollins Publishers, 1996.
- Csikszentmihalyi, Mihaly, K. Rathunde, and S. Whalen. *Talented Teenagers: The Roots of Success and Failure*. Cambridge: Cambridge University Press, 1993.

- Currie, G., and I. Ravenscroft. "Mental Simulation and Motor Imagery." *Philosophy of Science* 64 (1997): 161-180.
- Daniels, Aubrey C. *Bringing Out the Best in People: How to Apply the Astonishing Power of Positive Reinforcement*. Toronto, Canada: McGraw-Hill, 2000.
- Davidson, J. W., M. J. A. Howe, and J. A. Sloboda. "Environmental Factors in the Development of Musical Performance Skill in the First Twenty Years of Life." In *The Social Psychology of Music*, edited by D. J. Hargreaves and A. C. North, 188–206. Oxford: Oxford University Press, 1997.
- Davidson, J. W., M. J. A. Howe, D. G. Moore, and J. A. Sloboda. "The Role of Parental Influences in the Development of Musical Performance." *British Journal of Developmental Psychology* 14 (1996): 399–412.
- Davidson, J. W. "Self and Desire: A Preliminary Exploration of Why Students Start and Continue with Music Learning." *Research Studies in Music Education* 12 (1999): 30-37.
- Davidson, J. W. and G. E. McPherson. "Self and Desire: Why Students Start Music Lessons." Music, Mind and Science: Fifth ICMPC Proceedings, 413–418, Seoul Western Music Research Institute, 1998.
- Davidson, L., and L. Scripp. "Surveying the Coordinates of Cognitive Skills in Music." In *Handbook of Research on Music Teaching and Learning*, edited by R. Colwell, 392-413. New York: Schirmer, 1992.
- Decety, J. "The Neurophysical Basis of Motor Imagery." *Behavioral Brain Research* 77 (1996): 45-52.
- DeRoche, D. "Stressing Fundamentals." *The Instrumentalist* (January 1987): 56-60.
- Diener, C. I., and C. S. Dweck. "An Analysis of Learned Helplessness: Continuous Changes in Performance, Strategy and Achievement Cognitions Following Failure." *Journal of Personality and Social Psychology* 36 (1978): 451-462.
- Doll, J., and U. Mayr. "Intelligenz und Schachleistung—Eine Untersuchung an Schachexperten." [Intelligence and achievement in chess—a study of chess masters]. *Psychologische Beiträge* 29 (1987): 270-289.
- Driskell, J. E., C. Copper, and A. Moran. "Does Mental Practice Enhance Performance?" *Journal of Applied Psychology* 79, no. 4 (1994): 481-492.
- Duke, R. A., C. M. Davis, and A. L. Simmons. "Musicians' Practice Strategies and Retention of Motor Skills." Paper presentation, Texas Music Educators Conference, San Antonio, Texas, 2004.

- Duke, R. A., and A. L. Simmons. "The Nature of Expertise: Narrative Descriptions of 19 Common Elements Observed in the Lessons of Three Renowned Artist-teachers." *Bulletin of the Council for Research in Music Education* 170 (2006): 7-20.
- Dvorak, A., N. L. Merrick, W. L. Dealey, and G. C. Ford. *Typewriting Behavior*. New York: American Book, 1936.
- Dweck, C. S. "The Role of Expectations and Attributions in the Alleviation of Learned Helplessness." *Journal of Personality and Social Psychology* 31 (1975): 674-685.
- Dweck, C. S., and E. Elliott. "Learned Helplessness and Intellectual Achievement." In *Human Helplessness: Theory and Application*, edited by M. E. P. Seligman and J. Garber. New York: Academic Press, 1980.
- Elovianio, R., and S. Sundberg. "A Five-year Follow-up Study on Cardio-respiratory Function in Adolescent Elite Endurance Runners." *Ada Paediatrica Scandinavia* 72 (1983): 357-360.
- Ericsson, K. A. "Deliberate Practice and the Acquisition of Expert Performance: An Overview." In *Does Practice Make Perfect? Current Theory and Research on Instrumental Music Practice*, edited by H. Jørgenson and A. Lehmann, 1-51. Oslo, Norway: Norges musikkhøgskole, 1997.
- Ericsson, K. A. "The Influence of Experience and Deliberate Practice on the Development of Superior Expert Performance." In *The Cambridge Handbook of Expertise and Expert Performance*, edited by K. Anders Ericsson, Neil Charness, Paul J. Feltovich, and Robert R. Hoffman, 683-704. Cambridge: Cambridge University Press, 2006.
- Ericsson, K. A., and A. C. Lehmann. "Research on Expert Performance and Deliberate Practice: Implications for the Education of Amateur Musicians and Music Students." *Psychomusicology* 16 (1997): 40-58.
- Ericsson, K. Anders, Ralf Th. Krampe, and Clemens Tesch-Römer. "The Role of Deliberate Practice in the Acquisition of Expert Performance." *Psychological Review* 100, no. 3, 1993: 363-406.
- Ericsson, K. A. et al. *Toward a General Theory of Expertise: Prospects and Limits*. Cambridge: Cambridge University Press, 1991.
- Ericsson, K. A., and I. A. Faivre. "What's Exceptional about Exceptional Abilities?" In *The Exceptional Brain: Neuropsychology of Talent and Special Abilities*, edited by D. Fein and I. K. Obler. 436-473. New York: Guilford Press, 1988.

- Fagard, R., E. Bielen, and A. Amery. "Heritability of Aerobic Power and Anaerobic Energy Generation during Exercise." *Journal of Applied Physiology* 70 (1991): 357-362.
- Fitts, P., and M. I. Posner. *Human Performance*. Monterey, CA: Brooks/Cole, 1967.
- Gagné, R. M. *The Conditions of Learning*. 2nd ed. New York: Holt, Rinehart, & Winston, 1970.
- Galton, F, Sir. *Hereditary Genius: An Inquiry into Its Laws and Consequences*. London: Julian Friedman Publishers, 1979.
- Gardner, Howard. *The Disciplined Mind: What All Students Should Understand*. New York: Simon & Schuster, 1999.
- Gardner, Howard. *Multiple Intelligences: New Horizons*. New York: Basic Books, 2006.
- Gibson, E. J. *Principles of Perceptual Learning and Development*. Englewood Cliffs, NJ: Prentice Hall, 1969.
- Green, B., and W. T. Gallwey. *The Inner Game of Music*. Garden City, New York: Anchor Press, 1986.
- Greksa, L. P. "Effects of Altitude on the Stature, Chest Depth, and Forced Vital Capacity of Low to High Altitude Migrant Children of European Ancestry." *Human Biology* 60 (1988): 23-32.
- Gruson, L. M. "What Distinguishes Competence? An Investigation of Piano Practicing." PhD diss., University of Waterloo, Canada, 1981.
- Gustin, W. C. "The Development of Exceptional Research Mathematicians." In *Developing Talent in Young People*, edited by B. S. Bloom, 270-331. New York: Ballantine Books, 1985.
- Hallam, S. "Approaches to Instrumental Practice of Experts and Novices: Implications for Education." In *Does Practice Make Perfect? Current Theory and Research on Instrumental Music Practice*, edited by H. Jérgensen and A. Lehmann, 89-107. Oslo, Norway: Norges Musikkøgscole, 1997.
- Hallam, S. "The Development of Metacognition in Musicians: Implications for Education." *British Journal of Music Education* 18, no. 1 (2001): 27-39.
- Hallam, S. *Instrumental Teaching: A Practical Guide to Better Teaching and Learning*. Oxford: Heinemann, 1998.

- Hallam, S. "Professional Musicians' Orientations to Practice: Implications for Teaching." *British Journal of Music Education* 12 (1995): 3-19.
- Harter, S. "Competence as a Dimension of Self-evaluation: Toward a Comprehensive Model of Self-worth." In *The Development of the Self*, edited by R. Leahy. New York: Academic Press, 1985.
- Haskell, W. L. "Exercise as a Means of Maximizing Human Physical Performance and Productivity." In *Biological Effects of Physical Activity*, edited by R. S. Williams and A. G. Wallace, 115-126. Champaign, IL: Human Kinetics Books, 1989.
- Hayes, J. R. *The Complete Problem Solver*. Philadelphia, PA: Franklin Institute Press, 1981.
- Hewitt, Michael P. "The Effects of Modeling, Self-evaluation, and Self-listening on Junior High Instrumentalists' Music Performance and Practice Attitude." *Journal of Research in Music Education* 49, no. 4 (Winter, 2001): 307-322.
- Hopkins, Tom. "The Most Necessary Skill of All." In *Masters of Success: Proven Techniques for Achieving Success in Business and Life*, edited by Ivan R. Misner and Don Morgan, 93-97. Toronto, Canada: Entrepreneur Press, 2004.
- Howald, H. "Training-induced Morphological and Functional Changes in Skeletal Muscle." *International Journal of Sports Medicine* 3 (1982): 1-12.
- Howe, M. J. A., J. W. Davidson, D. G. Moore, and J. A. Sloboda. "Are There Early Childhood Signs of Musical Ability?" *Psychology of Music* 23 (1995): 162-176.
- Howe, M. J. A., and J. A. Sloboda. "Young Musicians' Accounts of Significant Influences in Their Early Lives." *British Journal of Music Education* 8 (1991): 53-63.
- Imreh, G., and R. Chaffin. "Understanding and Developing Musical Memory: The Views of a Concert Pianist and a Cognitive Psychologist." *American Music Teacher* 46, no. 3 (1996/97): 20-24, 67.
- Jeannerod, M. "Mental Imagery in the Motor Context." *Neuropsychologia* 33, no. 11 (1995): 1419-1432.
- Johnston, Philip. *The Practice Revolution*. Pearce, Australia: PracticeSpot Press, 2002.
- Jørgensen, H. "Teaching and Learning Strategies in Instrumental Practice: A Report on Research in Progress." In *Transatlantic Roads of Music Education: World Views*, edited by J. A. Taylor, 47-51. Tallahassee, FL: Center for Music Research, 1995.

- Kalinowski, A. G. "The Development of Olympic Swimmers." In *Developing Talent in Young People*, edited by B. S. Bloom, 139-192. New York: Ballantine Books, 1985.
- Karni, A., D. Tanne, B. S. Rubenstein, and J. J. M. Ashkenasy. "Dependence on REM Sleep of Overnight Improvement of a Perceptual Skill." *Science* 265 (1994): 679-682.
- Keller, F. S. "The Phantom Plateau." *Journal of the Experimental Analysis of Behavior* 1 (1958): 1-13.
- Kemp, A. *The Musical Temperament: The Psychology and Personality of Musicians*. Oxford: Oxford University Press, 1996.
- Khasky, A. D., and J. C. Smith. "Stress, Relaxation States, and Creativity." *Perceptual and Motor Skills* 88, no. 2 (1999): 409-416.
- Kostka, M. J. "Practice Expectations and Attitudes: A Survey of College-level Music Teachers and Students." *Journal of Research in Music Education* 50 (2002): 145-154.
- Krampe, Ralf Th. and K. Anders Ericsson. "Maintaining Excellence: Deliberate Practice and Elite Performance in Young and Older Pianists." *Journal of Experimental Psychology* 125, no. 4 (1996): 331-359.
- Krogius, N. *Psychology in Chess*. New York: RHM Press, 1976.
- Layman, E. M. C. "Meditation and Sports Performance." In *Sport Psychology: An Analysis of Athlete Behavior*, edited by W. F. Straub, 169-176. Ithaca, NY: Movement, 1978.
- Lehmann, A. C., ed. *The Acquisition of Expertise in Music: Efficiency of Deliberate Practice as a Moderating Variable in Accounting for Sub-expert Performance*. Hove, England: Psychology Press/Erlbaum (UK) Taylor & Francis, 1997.
- Lehmann, A. C. *Does Practice Make Perfect?* Hove, England: Psychology Press/Erlbaum (UK) Taylor & Francis, 1997.
- Lehmann, A. C., and K. A. Ericsson. "Research on Expert Performance and Deliberate Practice: Implications for the Education of Amateur Musicians and Music Students." *Psychomusicology: A Journal of Research in Music Cognition* 16 (1997): 40-58.
- Lehmann, A. C., John A. Sloboda, and Robert H. Woody. *Psychology for Musicians: Understanding and Acquiring the Skills*. Oxford: Oxford University Press, 2007.

- Leon-Guerrero, Amanda J. "An Examination of the Self-regulation Strategies Used by Adolescent Instrumental Musicians while Practicing." PhD diss., Northwestern University, 2004. In ProQuest Dissertations and Theses, <http://proquest.umi.com.ezproxy.lib.ou.edu/pqdweb?index=0&did=766027351&SrcHMode=1&sid=1&Fmt=2&VInst=PROD&VType=PQD&RQT=309&VName=PQD&TS=1242437306&clientId=41954> (accessed May 1, 2009).
- Lesgold, A. M. "Acquiring Expertise." In *Tutorials in Learning and Memory: Essays in Honor of Gordon Bower*, edited by J. R. Anderson and S. M. Kosslyn, 31-60. New York: Freeman, 1984.
- Lim, Serene and Louis G. Lippman, "Mental Practice and Memorization in Piano Music." *The Journal of General Psychology* 118, no. 1 (1990): 21-30.
- Mack, Gary, and David Casstevens. *Mind Gym: An Athlete's Guide to Inner Excellence*. New York: Contemporary Books, 2001.
- Martens, R. *Coaches' Guide to Sport Psychology*. Champaign, Illinois: Human Kinetics, 1987.
- McPherson, G. E. "Commitment and Practice: Key Ingredients for Achievement during the Early Stages of Learning a Musical Instrument." *Bulletin of the Council for Research in Music Education* 147 (2000/2001): 122-127.
- McPherson, G. E. "Factors and Abilities Influencing the Development of Visual, Aural and Creative Performance Skills in Music and Their Educational Implications." PhD diss., University of Sydney, 1993.
- McPherson, G., and J. Renwick. "A Longitudinal Study of Self-regulation in Children's Music Practice." *Music Education Research* 3, no. 2 (2001): 169-186.
- McPherson, G. E., and J. McCormick. "Motivational and Self-regulated Learning Components of Musical Practice." *Bulletin of the Council for Research in Music Education* 141 (1999): 98-102.
- Minahan, John. "The Art and Science of Practicing." *Music Educators Journal* 72, no. 7 (March, 1986): 22-24.
- Monsaas, J. A. "Learning To Be a World-class Tennis Player." In *Developing Talent in Young People*, edited by B. S. Bloom, 211 -269. New York: Ballantine Books, 1985.
- Moore, William E. "Confidence." In *Case Studies in Applied Sport Psychology: An Educational Approach*, edited by Mark A. Thompson, Ralph A. Vernacchia, and William E. Moore, 63-88. Debuque, Iowa: Kendall/Hunt Publishing Company, 1998.

- Moore, William E. "Covert-overt Service Routines: The Effect of a Service Routine Training Program on Elite Tennis Players." PhD diss., University of Virginia, 1986.
- Moore, William E. "Understanding Trust as a Performance Skill." In *Trust-It-Golf: Getting into Your Game and out of Your Way* [Submitted for publication 2009].
- Moore, William E. "Mental Coaching Program for Golfers." [Unpublished performance psychology workbook for professional golfers], 2007.
- Moors, Agnes, and Jan De Houwer. "What is Automaticity? An analysis of Its Component Features and Their Interrelations." In *Social Psychology and the Unconscious: The Automaticity of Higher Mental Processes*, edited by John A. Bargh, 11-50. New York: Psychology Press, 2007.
- Morgan, Don. "Subconscious and Smartconscious Goals." In *Masters of Success: Proven Techniques for Achieving Success in Business and Life*, edited by Ivan R. Misner and Don Morgan, 97-99. Toronto, Canada: Entrepreneur Press, 2004.
- Nascon, J., and R. A. Schmidt. "The Activity-set Hypothesis for Warm-up Decrement." *Journal of Motor Behavior* 3 (1971): 1-15.
- Nideffer, Robert M., and Marc-Simon Sagal. "Concentration and Attention Control Training." In *Applied Sport Psychology: Personal Growth to Peak Performance*, 5th ed., edited by Jean M. Williams, 382-403. New York: McGraw-Hill, 2006.
- Nielsen, S. G. "Learning Strategies in Instrumental Music Practice." *British Journal of Music Education* 16, no. 3 (1999): 275-291.
- Nielsen, S. "Regulation of Learning Strategies During Practice: A Case Study of a Single Church Organ Student Preparing a Particular Work for a Concert Performance." *Psychology of Music* 27, no. 2 (1999): 216-229.
- Nielsen, S. G. "Self-regulating Learning Strategies in Instrumental Music Practice." *Music Education Research* 3, no. 2 (2001): 155-167.
- Nielson, S. G. "Self-regulation of Learning Strategies during Practice: A Case Study of a Church Organ Student Preparing a Musical Work for Performance." In *Does Practice Make Perfect? Current Theory and Research on Instrumental Music Practice*, edited by H. Jørgensen and A. Lehmann, 109-122. Oslo, Norway: Norges musikkhøgskole, 1997.
- Nielsen, S. G. "Strategies and Self-efficacy Beliefs in Instrumental and Vocal Individual Practice: A Study of Students in Higher Music Education." *Psychology of Music* 32, no. 4 (2004): 418-431.

- Oare, Steven Rex. "Goals and Self-assessment in the Middle School Classroom: A Study of Music Practice Habits." PhD diss., Michigan State University, 2007.
- O'Neill, Susan A. "The Role of Practice in Children's Early Musical Performance Achievement." In *Does Practice Make Perfect? Current Theory and Research on Instrumental Music Practice*, edited by H. Jørgensen and A. Lehmann, 53-67. Oslo, Norway: Norges musikkhøgskole, 1997.
- Patel, V. L., and Groen, G. J. "The General and Specific Nature of Medical Expertise: A Critical Look." In *Toward a General Theory of Expertise*, edited by K. A. Ericsson and J. Smith, 93-125. Cambridge, England: Cambridge University Press, 1991.
- Pitts, Stephanie, and Jane Davidson. "Developing Effective Practice Strategies: Case Studies of Three Young Instrumentalists." *Music Education Research* 2, no. 1 (2000): 45-56.
- Prapavessis, H., and A. Carron. "Learned Helplessness in Sport." *The Sport Psychologist* 2 (1988): 189-201.
- Raab, E. "Students Are Their Own Pupils." *Music Educators Journal* 67, no. 1 (1980): 45.
- Restak, Richard M. *The New Brain: How the Modern Age Is Rewiring Your Mind*. Emmaus, PA: Rodale, 2003.
- Rosenthal, Roseanne K., Mary Wilson, Madeline Evans, and Larry Greenwalt. "Effects of Different Practice Conditions on Advanced Instrumentalists' Performance Accuracy." *Journal of Research in Music Education* 36, no. 4 (Winter, 1988): 250-257.
- Rost, R. *Athletics and the Heart*. Translated by T. J. Dekornfeld. Chicago: Year Book Medical, 1987.
- Rotella, R. J., and S. R. Heyman. "Stress, Injury, and the Psychological Rehabilitation of Athletes." In *Applied Sport Psychology: Personal Growth to Peak Performance*, edited by J. M. Williams, 343-364. Mayfield, California: Palo Alto, 1986.
- Rushall, B. S. *Mental Skills Training for Sports: A Manual for Athletes, Coaches, and Sport Psychologists*. Australia: Sports Science Associates, 1992.
- Salmons, S., and J. Henriksson. "The Adaptive Response of Skeleton Muscle to Increased Use." *Muscle and Nerve* 4 (1981): 94-105.
- Savion-Lemiux, Tal, and Virginia B. Penhune. "The Effects of Practice and Delay on Motor Skill Learning and Retention." *Experimental Brain Research* 161 (2005): 423-431.

- Schmidt, R. A. "Control Processes in Motor Skills." *Exercise and Sport Science Reviews* 4 (1976): 229-261.
- Schmidt, R. A. "A Schema Theory of Discrete Motor Skill Learning." *Psychological Reviews* 82 (1975): 225-260.
- Schneider, W., and R. M. Shiffrin. "Control and Automatic Human Information Processing: Detection, Search, and Attention." *Psychological Review* 84 (1977): 1-665.
- Schunk, D. H. "Self-efficacy and Education and Instruction." In *Self-efficacy, Adaptation, and Adjustment: Theory, Research, and Application*, edited by J. E. Maddux, 281-303. New York: Plenum Press, 1995.
- Schunk, D. H. "Self-regulation through Goal-setting." In *Self-regulated Learning: From Teaching to Self-reflective Practice*, edited by D. H. Schunk and B. J. Zimmerman, 1-19. New York: Guilford Press, 2001.
- Sharma, Robin S. *The Greatness Guide*. Toronto, Canada: HarperCollins, 2006.
- Shea, C. H., Q. Lai, C. Black, and J. H. Park. "Spacing Practice Sessions across Days Benefits the Learning of Motor Skills." *Hum Mov Sci* 19 (2000): 737-760.
- Shuter-Dyson, R. "Musical Ability." In *The Psychology of Music*, edited by D. Deutsch, 391-412. San Diego, CA: Academic Press, 1982.
- Simon, H. A. and W. G. Chase. "Skill in Chess." *American Scientist* 61 (1973): 394-403.
- Slavin, R. E. *Educational Psychology*, 3rd ed. Englewood Cliffs, NJ: Prentice-Hall, 1991.
- Sloboda, John A. "The Acquisition of Musical Performance Expertise: Deconstructing the 'Talent' Account of Individual Differences in Musical Expressivity." In *The Road to Excellence: The Acquisition of Expert Performance in the Arts and Sciences, Sports and Games*, edited by K. Anders Ericsson, 107-126. Mahwah, NJ: Lawrence Erlbaum Associates, Publishers, 1996.
- Sloboda, John A., Jane W. Davidson, Michael J. A. Howe, and Derek G. Moore. "The Role of Practice in the Development of Performing Musicians." *British Journal of Psychology* 87 (1996): 287-309.
- Smiley, P. A. and C. S. Dweck. "Individual Differences in Achievement Goals among Young Children." *Child Development* 65 (1994): 1723-1743.
- Sosniak, L. A. "Learning To Be a Concert Pianist." In *Developing Talent in Young People*, edited by B. S. Bloom, 19-67. New York: Ballantine Books, 1985.

- Staszewski, J. J. "Skilled Memory and Expert Calculation." In *The Nature of Expertise*, edited by M. T. H. Chi, R. Glaser, and M. J. Farr. Hillsdale, NJ: Erlbaum, 1988.
- Stiggins, R. *Student-involved Classroom Assessment*, 3rd ed. Upper Saddle River, NJ: Prentice-Hall, 2001.
- Thiese, K. E., and S. Huddleston. "The Use of Psychological Skills by Female Collegiate Swimmers." *Journal of Sport Behavior* 22, no. 4 (1999): 602-608.
- Thorndike, E. L. *The Psychology of Learning* Vol. H. New York: Teachers College, Columbia University, 1921.
- Walker, M. P., T. Brakefield, A. Morgan, J. A. Hobson, and R. Stickgold, R. "Practice with Sleep Makes Perfect: Sleep-dependant Motor Skill Learning." *Neuron* 35 (2002): 205-211.
- Wallingford, R. "Long Distance Running." In *The Scientific Aspects of Sports Training*, edited by A. W. Tayler and F. Landry, 118-130. Springfield, IL: Charles C Thomas, 1975.
- Warr, C. R. *Perceptions of Overtraining by Experienced Australian Coaches*. Paper presented at the Proceedings of the National Coaching and Officiating Conference, Brisbane, Australia, 1996.
- Weinberg, R. S. "The Relationship between Extrinsic Rewards and Intrinsic Motivation." In *Psychological Foundations of Sport*, edited by J. M. Silva and R. S. Weinberg, 177-187. Champaign, Illinois: Human Kinetics, 1984.
- Weisberg, Robert W. *Creativity: Genius and Other Myths*. New York: W. H. Freeman and Co., 1993.
- Welford, A. T. *Fundamentals of Skill*. London: Methuen, 1968.
- Wilson, Vietta E., Erik Peper, and Andrea Schmid. "Strategies for Training Concentration." In *Applied Sport Psychology: Personal Growth to Peak Performance*, 5th ed., edited by Jean M. Williams, 404-424. New York: McGraw-Hill, 2006.
- Winner, E. "The Rage to Master: The Decisive Role of Talent in the Visual Arts." Paper presented at The Acquisition of Expert Performance Conference, Wakulla Springs, FL, April, 1995.
- Wuff, G., and T. Toole. "Physical Assistance Devices in Complex Motor Skill Learning: Benefits of a Self-controlled Practice Schedule." *Research Quarterly for Exercise and Sport* 70, no. 3 (1999): 265-274.

Zdzinski, S. F. "Relationships among Parental Involvement, Music Aptitude, and Musical Achievement of Instrumental Music Students." *Journal of Research in Music Education* 40, no. 2 (1992): 114-125.

Zdzinski, S. F. "Parental Involvement, Selected Student Attributes, and Learning Outcomes in Instrumental Music." *Journal of Research in Music Education* 44, no. 1 (1996): 34-48.