MEMORIZATION IN TRUMPET PEDAGOGY:
A QUALITATIVE CASE STUDY OF ITS INTEGRATION
IN THE COLLEGE-LEVEL APPLIED STUDIO

BY

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DISsertATION

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ABSTRACT

Memorization is an important component in the education of many classical musicians, but it is infrequently addressed in pedagogical literature for trumpet players. Furthermore, the area of memorization has undergone very little systematic investigation in the pedagogy of trumpeters and others for whom notation is almost exclusively relied upon in formal education. This study employed qualitative instrumental case study methods in order to describe the teaching and learning of memorization in the studios at Boston University (BU) and University of California, Los Angeles (UCLA). These studios under the leadership of Terry Everson (BU) and Jens Lindemann (UCLA) were purposefully selected based upon the teachers’ reputations for performing from memory as well as their use of memorization within their teaching.

The scarcity of literature on memorization suggests that it may rarely be an intentional part of trumpet pedagogy, even while performing from memory has been and is currently practiced by some of the most elite trumpet soloists and chamber ensembles. In an effort to broaden the discussion surrounding memorization, the literature review presents a survey of various interrelated topics from the perspective of music educators, cognitive psychologists, and others. Existing literature demonstrates that emphasis is too often given to the retrieval of memory at the expense of the other two parts of the memorization process: encoding and storage. Framing this study, then, is an understanding of memorization as a process rather than simply an end goal of performance without music.

Following a preliminary questionnaire administered to student participants at each site, trumpet lessons were observed and interviews were conducted with the teachers and fifteen student participants. A description of the teaching and learning of memorization within the studios is presented in order to consider what might be gained through the inclusion of
memorization and the challenges it presented for both students and teachers. The values, strategies, and practices of teachers passed on in the apprentice-like relationship of the studio and exchanged among students in a community of aspiring musicians are described.

The student participants at both sites exhibited a variety of inclinations and attitudes towards memorization, ranging from full embrace to a near complete aversion to the practice. Students at BU reported personal progress in memorization skills while memorization experiences were uneven for students at UCLA. Both teachers and students considered the relationship between anxiety and memorization as well as the role that the studio community may serve in developing such skills. The benefits, challenges, and methods of memorization are discussed, including Everson’s emphasis on aural and analytical strategies for memorization that evolve from a desire for students to know the entire piece, not just the trumpet part. Lindemann’s belief that performing from memory can be a tool for empowering students and effectively communicating with audiences is also described. Several areas of commonality and contrast between the teachers’ performing and teaching philosophies are discussed. Significantly, both teachers believed that memorization could be an important pedagogical tool for overcoming technical challenges, but only the students at BU were consistently required to memorize repertoire. Implications for teaching, practice, and performance are provided along with suggestions for future research.
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CHAPTER 1
INTRODUCTION

Within the Western classical music tradition of trumpet pedagogy, practicing and performing entirely from the written music is the norm for students from the earliest stages of instruction. Most school band programs, through which most students in America begin to play the trumpet, emphasize reading notated music from sight-reading to final performance. This practice contrasts starkly with the approach of professional concert artists and vernacular (i.e., popular, folk, etc.) musicians who often perform without music. Apart from marching bands and improvisatory jazz, trumpet students are rarely encouraged to memorize their performance repertoire until reaching an elite stage of concert artistry.

Performing from memory is an integral part of the tradition of concert artists, most of whom are pianists, vocalists, or string players. This tradition, dating back to Clara Wieck Schumann and Franz Liszt in the nineteenth century, has driven much of the practice and investigation of the subject (Aiello & Williamon, 2002). Even today, professional musicians in these genres grow up in a practice that recognizes the value of learning a piece through to the stage of memorization. For this reason, pianists and others have explored memorization in depth for over a century and have established various pedagogical practices for teaching it (Mishra, 2010). In contrast, even some of the finest trumpet players and pedagogues remain novices in the practice and teaching of memorization. They may see memorization as an unnecessary tool for developing their performance goals, perhaps because playing trumpet more often requires ensemble playing rather than solo performance.

Understandably, the end goal of memorization—performing without a score—has remained the object of the attention of performers, pedagogues, and researchers alike. A majority
of the research has addressed methods for attaining memorization (Mishra, 2010). Music educators and performers are often driven to study what strategies can be employed to arrive at this goal or explanations for why memorization fails, rarely expounding upon what value it has for holistic music education apart from efficient memorization and accurate performance. Memorization, after all, is not typically thought of as a process but as a product, as Dakon and Dvorak (2014) found in their study of string teachers. In spite of these teachers’ value for performing from memory this study showed that they only rarely used memorization in their teaching.

For several decades, cognitive psychologists and neuroscientists have generated a large amount of information that details the memorization process. Their findings describe a complex process based upon faculties of memory that are interwoven with all of the senses. Some music educators have integrated these discoveries in ways that can inform pedagogy and practice.

These investigations, however, remain widely unknown to many of the musicians who play instruments in which memorization is rarely applied, such as the trumpet. The systematic application or teaching of memorization is perhaps even more rare. There is currently no systematic study in the area of memorization for trumpet players and very little for any brass or other wind instruments.

This study sets out, first, to connect the broader research into memorization to players and teachers of trumpet and other instruments outside of a memorized tradition, and second, to consider what might be gained from its integration into applied studio instruction. Investigating cases of the intentional inclusion of memorization in the college level applied studio curriculum allows us to see where research and actual practice may intersect. It sheds light on a process that is not only rarely put to use in practice and performance, but has never been systematically
investigated.

This chapter will begin with my own personal journey into the process of memorization and survey the history and current practice of memorized trumpet pedagogy and performance. Noting the few attempts by trumpet players to address this topic will lead to the significance of this study and prepare for looking more closely at the areas of current research that may be applicable to performers, teachers, and students.

Personal Experiences with Memorization

This topic is inspired by several years of my own discovery in various areas that may be connected to memorization. As a professional musician and teacher I faced challenges within my conducting, rehearsing, teaching, and solo performance that alerted me to my process of music-making that was extremely dependent upon reading from notation. Observation of musicians who practiced and performed from memory pointed to the possible connection with this skill that I had never explored in my undergraduate and graduate education in trumpet performance. More recently, engaging in a nearly yearlong process of memorizing and performing a significant work of music has empowered my own trumpet playing, suggesting it to be a topic worthy of more careful investigation.

Several years ago I was to perform the first movement of Johann Nepomuk Hummel’s *Concerto* with a chamber orchestra at a local community college at which I taught. Recognizing that this was a unique opportunity to perform a concerto I knew well with a live orchestra, I decided to attempt to perform it from memory. However, these were unchartered waters for me, as I had never attempted to perform a solo work from memory. I had not considered the level of learning required to perform under the pressure and flexibility of live performance. Unsure of myself, I decided to keep the music on a stand out of the way but still within sight. In the
performance the music immediately became the object of my attention, and I quickly gave up, resulting in neither an effective nor memorized performance. For me, the lack of training and practice performing from memory up until then was a significant handicap.

Around the same period of time I began conducting large ensembles and quickly noticed an inability to release my eyes from the score to communicate visually with the musicians in the ensemble during both rehearsal and performance. Of course, this is a common challenge for young conductors for which score-reading is a critical part. Yet, I had a strong sense that my habit might be associated with my background as a classical trumpet player reliant on the details of the written page. There was not much in my playing career that challenged this habit apart from the occasional need to look at a conductor or chamber ensemble members. In fact, I noticed similar tendencies among other professional and student musicians who rarely looked up from their scores even in chamber music.

The need to perform from memory had never even crossed my mind throughout my education and several years into a freelance performance career. Perhaps like most other trumpet players, it never seemed worth my time or within my abilities to memorize my repertoire. This changed when in 2013 I attended Ronald Romm’s solo recital at the International Trumpet Guild (ITG) Conference in Minneapolis. His performance stood out from many other performances of today’s finest trumpet players. I noticed his ability to communicate effectively. Could it be a result of the fact that he performed entirely from memory? Whether it was the simple exclusion of a music stand or the depth of learning and experience he brought to the music, it seemed to me that memorization was a contributor to his strong performance.

As I embarked upon my third academic degree in trumpet performance I was challenged by my teacher to memorize a work from the very beginning stages. Accepting the challenge, I
embarked on a journey that would last nearly nine months, learning to play Henri Tomasi’s *Concerto for Trumpet* entirely from memory. It was an extremely slow and arduous process and caused me to wonder many things: If I had memorized pieces throughout my earlier years of playing, would the process be quicker or easier? How did this way of learning a piece differ from learning it always with the notes? Was this method of learning the piece really more time consuming, or was I learning a piece better in just as much time without the “crutch” of the printed page? How did interacting with music (sound) without the music (notation) change the way I made music when the notation was in front of me?

While I still have not answered all of these questions, the experience of practicing towards and performing from memory was extremely empowering. Not only did I set a high goal and accomplish it, but I sensed enormous benefits along the way. I was able to do something I had never imagined was possible. Performing without music was a new sensation in the way I experience presence, communication, and anxiety. It prompted imaginative practice without even picking up my instrument. It necessitated a knowledge of the piece of music in more ways than I had ever studied before. It caused me to wonder what trumpet players might be missing in our nearly exclusive use of notation in solo performance.

**Memorization Tradition in Trumpet Performance**

Of course, some classical trumpet players today and throughout history have regularly performed from memory. The tradition of trumpet players playing from memory stretches back even earlier than the recital and concertizing practices of the nineteenth century to at least the fifteenth century when military and ceremonial trumpet calls were often improvised, transmitted orally, and protected by professional trumpet guilds from being written down (Tarr, 2008). In this tradition performers did not learn complex music from a written score, however they did
include all of the parts of memorization, from aural acquisition through apprenticeship to performance.

Later, several trumpet and cornet players performed from memory following the popular practices of other entertainers of their time. Around the turn of the twentieth century the great American cornetist Herbert L. Clarke (1867-1945) was known to have memorized hundreds of solo pieces as a soloist with the bands of John Philip Sousa and his own (Meckna, 1994, p. 56). Later in the century Mexican-American trumpeter Rafael Mendez (1906-1981) performed thousands of concerts from memory, including many filmed for television (J. W. Hickman & Lyren, 1994). Russian trumpet virtuoso Timofei Dokshizer (1921-2005) performed often from memory as well (Mortenson, 2005) and advised playing etudes from memory (L. Davidson, 1975, p. 25). Carole Dawn Reinhart (b. 1941), an American trumpeter and teacher who spent much of her career in Europe, performed from memory from an early age (Card, 2006). While these are just a few documented examples, it is possible that many, if not most, of the very best concert trumpet players since the nineteenth century performed from memory.

Today, the few trumpet players around the world today that concertize at the highest levels often perform at least some works without notation. These include Ole Edvard Antonsen, Alison Balsom, Gabriele Cassone, Joe Burgstaller, Håkan Hardenberger, Jens Lindemann, and Ronald Romm. The Canadian Brass brought to prominence the practice of performing chamber music from memory, something that has been followed by ensembles such as Boston Brass, Mnozil Brass, and others.

Still, these represent only the most prominent professional concert artists. These are players that many music students may admire but whose career aspirations they may not share. Similar to my own previously held beliefs, memorization for them may be seen as unnecessary
or outside of their abilities. It is likely that many trumpet students will commit the most common pedagogical exercises to memory such as H. L. Clarke’s “Second Technical Study,” James Stamp’s “Warm-Up Routine,” and Vincent Cichowicz’s “Flow Study.” In addition, the years of repetition of the most popular orchestral excerpts are likely committed to memory. Perhaps this suggests that memorization is within the reach of most players and that memorization is a tool for learning.

**Memorization in Literature of Trumpet Pedagogy**

Method books for trumpet players rarely, if ever, address the process of memorization. And whereas there are several important pedagogical texts for pianists that include extensive writings on memorization (e.g., Bruser, 1997; Gieseking & Leimer, 2013), its absence in some of the most definitive surveys of trumpet pedagogy is notable. For example, neither Johnson’s (1981) highly regarded text on trumpet playing nor Campos’s (2005) text on trumpet technique nor Hickman and Pepping’s (2006) massive 503-page compendium mention memorization as an aspect of practice or performance. These and other trumpet texts highlight many detailed approaches to practicing the trumpet, but do not address acquisition of musical knowledge through memorization. This further suggests that memorization is rarely taught, encouraged, or employed among trumpet players.

There are, however, a few pedagogues who have valued it enough to include it in their writings. A brief chapter in Snell (1997) is one of the most in-depth pedagogical commentaries on memorization. As an advocate of memorizing for performance, Snell gives practical advice that includes a process of committing music to memory through “inputting,” “retaining,” and “recalling” (pp. 28-29). This earliest stage includes “conscious memorisation”—intentionally working on a piece beginning with ten-minute segments of practice—and “snapshot memory”—
“the passage as a picture, which can be visualized, then read” (pp. 27-28). Recalling the music through imagination is an important part of the final stage toward acquiring “total and permanent memory” (p. 28). Memorization has a unique application in Snell’s background as an orchestral musician as he recognizes it to be an important tool for ensemble performance when one needs to be aware of the conductor and other musicians at particular moments. As a soloist, Snell holds memorization in high regard for reasons that go beyond knowing the music better. It affects communication with the audience and allows for dramatic, expressive, and technical freedom:

Apart from the deeper knowledge of the music which it demands, and the eye-contact and interaction with the audience which it allows, by freeing the eyes the performer’s mind is freed. The removal of the page as the main focus allows the performer to attend unhindered to the real business in hand: expressing the music to the listener. When the performer plays from the music it is inevitably a barrier to the audience. It is as if the performer is only allowing the audience to overhear a private read-through.

Playing from memory frees more than just the attention. It gives a general confidence which spreads to both the expressive and technical qualities of the playing. Would an actor appear on stage to play Hamlet with the script in hand? (p. 29) He even suggests that the opposite practice of reading music contributes to poor posture and results in poor tone production. In addition, eye contact with the audience before, during, and after the performance is essential and supports Snell’s enthusiasm for memorization.

Everson’s (2006) article makes a convincing case for the practice. He offers experiential evidence from the brass studios at Boston University as well as his own opinions about the helpfulness of this method of “over-preparation – in a good sense” (pp. 52-53, italics in original).
He provides some practical suggestions for the attainment of memorization, applying mental practice and aural learning primarily. Everson’s concept of memorization relies on “good musicianship” – that is, hearing and playing by ear. Importantly, he writes, “Of course, repetition plays a major part in memorization; however, it is most effective when repetition is being used not just for the sake of memory, but for deciding how a phrase will be ‘spun’” (p. 52). Among his ultimate goals is removing the “impediment” of the music stand that separates performer and audience.

Haynie (2007) includes a brief chapter under the section on musicianship in his book. Like Everson, Haynie’s long career as a collegiate trumpet educator did in fact include memorization. Haynie cites the high level of preparation that is a natural result, as well as the improved stage presence. “Memory work will raise the bar,” he writes (p. 74). The method he describes employs visualization techniques.

All three sources hint at the indirect results of improved musicianship skills, whether they are expressive or technical. Snell and Everson both see memorization as an essential tool of effective performance communication. Visualization techniques and imagination are also prevalent themes. Yet, altogether they amount to no more than a dozen pages of experienced pedagogical wisdom directly related to memorization for trumpet players and none attempts a systematic investigation or well-rounded view of memorization. It is plausible that there are many others that use memorization in their own playing or teaching studios, but have not written about their practice.

Memorization might be seen as merely a pet interest of a few trumpet teachers. Clearly, there is little emphasis given to the practice in the literature and the practice of memorization in the curriculum may be just as rare. When Dakon and Dvorak (2014) explored the topic with
string teachers, they found that most teachers admitted that it was a helpful tool, yet few employed it with any regularity. I suspect similar results would be present in a survey of trumpet pedagogues. Is it possible that the drive to develop music reading skills, while necessary, rarely encourages the average student to look beyond learning or playing music from the written page? A player aspiring to hold a major orchestral seat—perhaps the most common, aspiration of classically-trained trumpet players at the college level—sees no need to develop such a skill and typically receives no training to that end. This study serves to broaden the scope of the discussion.

**Significance of Study**

Mishra (2010) subjected 185 articles on memorization from over a century of scholarship to content analysis. Sixty percent of the articles were written for keyboardists, 16 percent were generally focused, while the others were specific to various instruments, voice, and conducting. Importantly, memorization for brass and percussion represented just two percent of the total. This points to a clear need for the current study which by necessity must look outside of the few pieces of literature written for the trumpet. Indeed, there is a wealth of literature covering various aspects of the topic, but to my knowledge not one study systematically examines its practice in the trumpet studio. In order to magnify a generally undervalued practice, this study looks more closely at the distinct application of memorization in trumpet pedagogy by two teachers and their studios.

Boyer (1990) identifies a “scholarship of integration” which I have used to approach the review of literature. He asks, “Is it possible to interpret what’s been discovered in ways that provide a larger, more comprehensive understanding?” (p. 19). Several music educators have already begun integrating findings from neuroscientists and cognitive psychologists into their
educational research. For memorization this includes studies on how memory systems work, but I also look more broadly at memorization’s place in overall musicianship and performance practices. For over half a century now, academics have become critical of “silos” of information, in which various scholarly cultures, however unintentional, keep their discoveries from interacting with and informing one another. Snow (1965) writes, “Closing the gap between our cultures is a necessity in the most abstract intellectual sense, as well as in the most practical. When those two senses have grown apart, then no society is going to be able to think with wisdom” (p. 50). For the trumpet player, memorization may seem like a pianist’s realm far removed from his or her own. For many musicians, the life of the performer and music educator are worlds apart, and the scholarly research of educators, psychologists, and others are even more remote. Through this study I have endeavored to bring these various parts into dialogue with one another in order to inform trumpet players’ performing and teaching.

Furthermore, through the study of two different studios led by teachers who are known for performing from memory, teachers are provided with models and considerations that may be applicable to their own programs. It suggests what more can be gained from classical applied pedagogy than is typically present in the practice and performance that so often relies only on notation. While not focused on lower levels of private study, applications may be made for instruction at beginning through high school stages. In total, this research provides an opportunity for all players and teachers to seriously consider the important tool of memorization in music making and development.
CHAPTER 2
LITERATURE REVIEW

As trumpet players open their eyes to the possibility of performance from memory, they can find a wealth of literature to support and inform its practice and pedagogy. An inductive approach is helpful in order to draw out and synthesize several prominent themes that may “set the stage” for this study (Creswell, 2014, p. 29). This literature review seeks to tie together the experience of expert musicians who utilize memorization with the knowledge acquired by music educators and cognitive psychologists. Memorization is, after all, a complex web of interrelationships that are no more simplistic than the combination of basic human faculties of memory, mechanical sound production, and artistic creation. What guides this review is an understanding of memorization as a process that involves teaching, learning, practicing, and performing. I describe not only the ends of memorization (performance without music) nor simply the means to this end (strategies) but by the multiple issues surrounding teaching, practicing, and performing that I anticipated to be part of the experience of the participants in this study.

I begin by setting forth a definition of memorization and limitations to its study in this dissertation. I will then explore issues that may be helpful in its practice, correlative skills and concepts related to memorization, and finally, implications for performance. Ultimately, I have strived to establish the importance of memorization and the many facets that called for a qualitative exploration of this topic.

Definition and Delimitations

It is important, first, to consider what is meant by the term “memorization” in order to better understand what this study will consider. Dakon and Dvorak (2014) identify a tension
around how memorization is conceived by string teachers and how it is better understood by psychologists. Through the use of a survey tool (Memorization Teacher Perception Inventory) they found that memorization was often conceived as “a form of retrieval specific to visual recall (i.e., retrieval without the aid of the written score)” (p. 12). While this is certainly part of the answer, it is important to note that the focus of such a definition is on the end goal of memory recall or performance. When asked further about the benefits of memorization it was clear from the responses that the participants recognize that there is a process behind it – one that is much more diversely articulated.

Based on the literature of cognitive psychologists, Dakon (2013) utilizes a broader definition of memorization “as the act of committing information to the human cognitive mechanism responsible for encoding, storing, and retrieving such information” (p. 39). This definition, in contrast to that of the respondents in the study above, includes the entire process that for a musician would include both practice and performance over time. The three components – encoding, storing, and retrieving – encompass the entire pedagogy, practice, and performance of memorization. Indeed, this broad definition recognizes that memory is at play at some level in all practice and performance. I will utilize this definition of memorization in this literature review.

For my purposes, I also limit my exploration to a classically-based approach that values (by necessity) the written page of music. This does not eliminate topics such as playing by ear or learning by rote, but these are seen as associated topics that do not wholly represent the efforts of memorization within a classical genre. While there may be varying elements of jazz and other styles influencing the approach, non-classical styles lay beyond the scope of this study. Certainly, classical and vernacular (jazz, commercial, folk, etc.) styles may be more and more
integrated in applied studies, but my intention is to provide the primarily classically-trained trumpet teacher with the insight into memorization in their approach. Therefore, I will also adopt a somewhat narrower, pragmatic description of the topic at hand: *Memorization is the process by which a musician performs notated music without the physical score and practices towards that end.*

**Practice of Memorization**

As mentioned above, all practice may be conceived as memory building. Yet, the intention of performing without visual aids (i.e., a musical score) magnifies these issues in the practice room. In addition to general research into how memory systems work, some researchers have studied the experience of expert musicians in order to discover how memorization can be most efficiently and accurately built. I will highlight a few of the processes involved and then describe various strategies that build on these processes for musicians.

Simply studying the processes helps to break down the common misconception that memorization is “a highly individual and idiosyncratic process; it is up to each person to find his or her own path” (Chaffin & Logan, 2006, p. 116). To the contrary, researchers agree that while there are differences in memorization skills, all of us have the same memory structures as “memory varies no more from one person to another than any other trait or capacity” (Lisboa, Chaffin, & Demos, 2015, p. 1). For this reason all musicians can benefit from learning effective strategies for developing memory of music, especially teachers (Ginsborg, 2004). Kostka (2002) suggests there is a discrepancy between teachers’ perceived frequency of addressing practice strategies and the majority of students who said that practice strategies were not addressed in lessons.

**Short- and long-term memory.** Ericsson and Kintsch (1995) note that performing music
is a complex task that draws upon substantial amounts of information. It is best seen in use by experts in their fields who are often the subjects of informative research. Skilled memory theory (Chase & Ericsson, 1982) is one explanation for this expert memory suggesting that information is stored in long-term memory and is accessible through “retrieval structures” or cues in short-term memory. Because of the limited nature of short-term memory to five to nine “chunks” (Miller, 1956), the interaction of short-term and long-term memory is of great importance to understanding how both practice and retrieval in performance works.

Long-term memory does not have the limitations of capacity or duration of short-term memory but requires rehearsal (Macmillan, 2005). Building long-term memory involves hierarchical organization of familiar patterns based on previous experience (Aiello & Williamon, 2002, p. 170). However, long-term memory is useless under the requirements of live music performance unless it can be quickly activated by retrieval cues. The hierarchical structure organized by retrieval cues help to encode the musical information during practice and are reactivated in retrieval, including performance (Aiello & Williamon, 2002, pp. 170–171). This brief summary gives a sense of how both small elements of music learning (fingerings, scales, chords, arpeggios) and larger patterns (formal structure, musical style) are fundamental to the memorization process.

There are several categories of long-term memory for which there is much research and theorizing. For the purposes of this study it may be simply helpful to consider several of the different categories. These include implicit or procedural memory and explicit or declarative memory (Baddeley, Eysenck, & Anderson, 2009). The former is often perceived as “automatic,” the knowledge of doing something that has been well-learned, such as playing a familiar scale. Explicit or declarative memory includes more consciously articulated memories of at least two
types: episodic and semantic memory. Episodic might include the context associated with forming a particular memory. Semantic is the knowing about something, such as the naming of a particular scale’s notes. Later we will consider how the associations within and between these different categories of memories are important for the complex memorization that is required in music performance. For example, while the goal may ultimately involve procedural memory of a piece of music, semantic memory helps to represent the elements (such as naming a scale) and episodic memory informs the contexts for its recall (such as the place where it was last played).

**Sensory and other memory systems.** When discussing memorization, performers, educators, and other researchers often describe different types of memory based on our aural, visual, and kinesthetic senses (Mishra, 2005). These categories are referred to by various terms, but have aligned with the experience of musicians for over a century (Mishra, 2010).

Aural memory is sometimes referred to as auditory memory and is often linked to the concept of “audiation” or internal hearing of a piece of music, which will be discussed in the next section. It can include both definite pitch and a more general impression of music, such as a contour of a melody (Chaffin, Logan, & Begosh, 2009).

Based on the study of expert musicians (Chaffin, Logan, et al., 2009), visual memory is often used early on in the memorization process and is later used in the visual memories of the instrument, such as the visual location of keys on a keyboard. Like all forms of memory, musicians report various capacities and uses for them. For example, “spatial imagery,” in which part of the music is recalled from its location on a page, may organize one’s concept of a piece (p. 356). Other musicians report a much more detailed, even “photographic” memory, in which all of the details of a score are pictured in memory. However, the authors caution against such a literal concept of visual memory since “images are not neutral, objective depictions of reality but
are organized interpretations that reflect the way that the original was understood” (p. 356).

Kinesthetic memory, also referred to by some as motor memory, is often subconscious—a type of implicit memory (Chaffin, Logan, et al., 2009). It is limited in that movement is necessary to attest to its existence and typically requires one action leading to the next. For this reason and others kinesthetic memory is also often cited as most unreliable (Mishra, 2010).

Taking into consideration research outside of music by Rubin (2006), other categories may be added such as narrative or “structural” memories (Chaffin, Logan, et al., 2009), linguistic memories, and even emotional memories. Structural and linguistic memory may be what Mishra (2005) and other musicians consider analytical memory (see below).

All of the four most commonly cited types of memory for musicians (aural, visual, kinesthetic, and analytical) are diversely described as strategies for encoding, modes of storage, and methods of retrieval. For example, Mishra (2005) considers them as “learning strategies,” Aiello and Williamon (2002) as “kinds of memory”, and Chaffin, Logan, et al. (2009) as “retrieval cues.” This reinforces the integrated nature of the memorization process in which the approaches to practice and performance are inextricably linked. Psychologists observe that “performance calls on the many different cognitive and bodily systems involved in action, each of which lays down its own memory traces, subject to its own schemas” (Chaffin, Logan, et al., 2009, p. 354). The ways that a piece of music is memorized will influence the way it is recalled for performance. This is important for the learner and pedagogue to consider.

**Isolating the systems for research and practice.** Each of the four categories briefly described above have benefitted from a significant amount of exploration as researchers have tried to disentangle each one from the other in order to assess the efficiency or accuracy of each. For example, Dakon (2013) compared aural methods to visual strategies. In the study, twenty-
five middle-school level string students who had played for no more than two years were separated into two groups. Though individual, ”self-monitored” practice, students in one group learned a melody aurally by listening to an example while the others learned it visually by reading the printed music of the same melody. In this way, two of the memory systems, aural and visual, were isolated. By monitoring the students’ progress every five minutes over a total of fifteen minutes, the study tested both the particular strategies employed in the recorded practice sessions and the accuracy of the subsequent memorized performance as it correlated with the aural or visual methods. Although less than half of the total students were able to successfully memorize, both groups improved their performance throughout the practice period. The improvement was more marked for the visual treatment group (67.6% reduction in errors compared to 36.11% for the aural treatment group).

While the study may point to a stronger reliability for visual memory, it perhaps more significantly illustrates the complexity of the problem. Even though aural and visual strategies of learning were separated, the kinesthetic remained a potentially uncontrollable variable. After assessing the practice strategies for listening and motoric approaches, Dakon notes that the students assigned to the aural approach attempted the melody physically much more often than they dedicated time to listening.

For many years pedagogues have commended isolating different memory systems in order to strengthen them and/or as a method of effective practice (Hallam, 1997; Mishra, 2010). Considering the limitations to endurance by fatigue for trumpet players, this may be especially helpful. They are perhaps less able to practice for long hours compared to pianists who often use many hours of repetition this to build kinesthetic memory (Everson, 2006). For Everson, listening to a recording (reinforcing auditory memory), singing (out loud or internally), fingering
with or without the instrument (but without actually playing—a kind of kinesthetic memory tool), or even gestures beyond what would be needed to play, such as conducting (a different kinesthetic strategy), are productive methods of practice towards memorization. These strategies may make up for some of the repetitive playing in practice that trumpeters cannot always endure. This is certainly an area that calls for research that takes into consideration the unique needs and limitations of trumpet players.

Limiting practice to strictly mental resources, without making any movement or sound is called mental practice (Coffman, 1990, p. 188). This approach utilizes visualization of movement and imagination of sound (audiation) to accomplish rehearsal. Mental practice has been advocated by many pedagogues (B. Green & Gallwey, 1986; Ristad, 1982) and often borrows from sports psychology. In Coffman’s (1990) experiment with college level pianists, mental practice alone (according to the definition above) was inferior to physical practice alone (playing while hearing the results). However, alternating physical and mental practice was just as effective as only physical practice alone. Coffman’s study supported a previous experiment with college trombonists that found evidence for the usefulness of combined physical and mental practice (Ross, 1985).

All of these strategies involve removing a certain amount of physical or auditory feedback and/or limiting the complexity required in full performance. By leaving such gaps they all require a certain amount of imagination. They are all in fact, “forms of elaboration and rehearsal” that draw upon various levels of aural, visual, and kinesthetic processes through the use of visualization (Ginsborg, 2004, p. 127). The studies support that experience of many musicians that practicing away from playing the instrument may be a strategic element of memory-building practice.
Analysis. Analysis may be the most often recommended method for secure memorization (Mishra, 2010). Expert musicians often attest to using this approach (Aiello, 2000), however for some it can be subconsciously part of their learning process (Williamon & Valentine, 2002). Structural memory is similar to what is called “narrative memory,” recognizing the structures, hierarchy, and organization of a work (Chaffin, Logan, et al., 2009). Such memories may be held in linguistic memory (a type of declarative memory) but may be triggered by other forms of semantic memory (pictures or dance, for example). Program music may also connect in this way to a piece of music.

In the formal sense, analysis is based upon the conventions of music theory (e.g., harmony, form). Through study of expert musicians, researchers have identified two basic benefits of analysis: 1) schema such as scales and chords allow for organization of new material into chunks and 2) organization (often musical form) provides for a hierarchical order of events (Chaffin, Logan, et al., 2009). Of course, analysis cannot stand on its own since performance requires a integration of such knowledge with technical skills at performance tempo.

Chaffin and others have endeavored to describe the actual conscious and subconscious employment of analysis in the practice of experts and students (Chaffin, 2011; Chaffin & Imreh, 2001, 2002; Chaffin & Lisboa, 2009; Chaffin, Lisboa, Logan, & Begosh, 2010; Chaffin & Logan, 2006; Imreh & Chaffin, 1997; Lisboa et al., 2015). Many of these studies utilize a process by which a musician’s practice is analyzed for starts and stops. As the practice of a piece of music develops, the musician’s organization of practice reflects understanding of a piece’s structure. This guides not only the practice of the piece but also the performance of it. The use of analysis is one way in which memorization pedagogy may integrate other areas of musicianship. Aiello and Williamon lament, “It seems as if some students tend to compartmentalize what they
learn in theory classes, analysis classes, and their piano lessons into separate domains, not seeing that there is a common denominator to musical knowledge” (2002, pp. 176–177). Later, we will consider other areas of musicianship that may be related to memorization.

Multiple coding and associative chains. As musicians advance in expertise they are more likely to understand the weakness of a single mode of memorization. A phenomenological study by Hallam (1997) looked at the memorization strategies employed by professional and student musicians through semi-structured interviews. Students of varying levels reported on visual, aural, and kinesthetic processes, but none reported on analysis as part of the memorization process. In contrast, the more experienced professionals seemed to be aware of the unreliability of an automatic approach that simply relies upon repetition until a piece is learned, and therefore added cognitive analysis of a piece.

The experience of successful memorizers points to the importance of mixed-modal strategies or “multiple coding” (Hallam, 1997). By using several of the four or more methods of encoding, storage and retrieval, musicians are more likely to practice efficiently and perform accurately. For “the more ways in which musical information is encoded, the more associations and connections will be formed to that information and, therefore, the more likely an individual is to remember it” (Aiello & Williamon, 2002, p. 175). The slim pedagogical literature for trumpet also supports multiple strategies for memorization (Everson, 2006; Haynie, 2007).

For pianists, the highly repetitive movements required in practice often serve as the primary path towards memorization. This is the method most often relied upon by novices (Imreh & Chaffin, 1997), and while it is the most natural way toward the acquisition of memory, it is also the quickest to fail under pressure (Noyle, 2000). Aiello and Williamon (2002) point to research that shows that kinesthetic memory is only essential in quick passages that require
automaticity. In the area of kinesthetic learning, there is no comparative research with other instruments such as trumpet, which may offer far fewer opportunities for kinesthetic learning. It might be reasoned that because their kinesthetic habituation is limited to three fingers, subtle slide movements, and mostly hidden, minute muscle changes in the embouchure, oral cavity, and/or breathing apparatus, it is not an easily acquired “crutch” for memorization as it is for pianists. Furthermore, the piano keyboard allows more visual stimuli for building memory than the limited perspective of the mouthpiece end of the trumpet. Such differences between instruments may help to explain why memorization is not so obviously attainable for trumpeters. Furthermore, a combination of approaches towards memorization is perhaps even more essential for trumpet players.

“Associative chaining” is the process by which one event leads to the memory for the next event (Chaffin & Logan, 2006, p. 117). It is based on a theory of retrieval structures and involves various types of memory. Many musicians claim memorization happens quite spontaneously through the natural process of learning, essentially building a chain of associations. However, this chaining is often limited and inflexible, relying upon a specific order to the events. Every event must proceed as planned otherwise the musician risks breaking the chain and causing a memory slip. Actual performance conditions, however, often involve unexpected events and unique emotional responses that require flexibility. A broken link may break the chain and the only way that it can be reactivated is by starting again at the beginning.

A fix for this potential fault is to build chains that are “content addressable” (Chaffin, Logan, et al., 2009, p. 352). This involves retrieval aids or “performance cues” that are built not only from the previous music, but include other elements of memory (Chaffin, Demos, & Crawford, 2009). The researchers suggest four types of performance cues to be considered:
structural (referring to form or sections), expressive (representing feelings), interpretive (referring to individual choices such as dynamics or tempo), and basic cues (including physical execution that may depend on the nature of the instrument). When practiced over time these elements are integrated into a memory that may be activated at the speed and smoothness of performance tempo. They are reliable because they do not only depend on one type of memory and allow for direct access to various points in a piece of music. Chaffin et al. use such strategies to distinguish “learning”—the spontaneous process described above—from “memorizing”—the deliberate construction of content addressable associate chains.

**Deliberate practice.** As mentioned above, much of the research systematically investigates the practice and performance of expert musicians in order to develop theories and strategies for memorization. Strategies such as multiple coding and performance cues rely largely on the theory of “deliberate practice” (Ericsson, Krampe, & Tesch-Römer, 1993). In the theory of deliberate practice, the common conception of “natural” or innate talent has much less bearing on the development of expertise than the conditions that provide for the most effective learning. The characteristics of deliberate practice include motivation, taking into account preexisting knowledge, immediate feedback, structured repetition of similar tasks, and explicitly stated goals (Ericsson et al., 1993).

Acceptance of this perspective may be essential to the development of memorization in at least three ways: First, that extraordinary feats of memory are highly practiced extensions of the specialized skill of memorization, not a unique ability only available to some people. Secondly, memorization requires more than simple repetition or rote learning. Ericsson et al. (1993) are adamant about this distinction, citing studies that “show that providing a motivated individual with repeated exposure to a task does not ensure that the highest levels of performance will be
attained” (p. 367). Lehmann and Ericsson (1997) similarly caution that “encouraging young musicians to memorize their music by rote might in fact be counterproductive because it may prevent—or at least discourage—the use of higher level musical representations” (p. 54). This not only helps to explain why repetition is not often enough for successful performance from memory, but also validates the necessity of intentional, multiple coding practice towards performance from memory. Thirdly, instruction in memorization is a key ingredient for passing on habits of deliberate practice. “Assessment of subjects’ methods shows that inadequate strategies often account for the lack of improvement” (Ericsson et al., 1993, p. 367). The solution may lie in the pedagogue’s ability to convey the conditions by which they (the experts) best develop. These essential ingredients of deliberate practice are identified by Lehmann and Ericsson to include practice assignments suited for the individual student, relevant feedback, and increasing challenges (Lehmann & Ericsson, 1997).

Psychologist Rubin-Rabson supported this type of practice many years earlier when carrying out a multi-part study of memorization by pianists (1939, 1940a, 1940b, 1941a, 1941b, 1941c, 1941c, 1941d). The final study (Rubin-Rabson, 1941d) tests the usefulness of “over-learning” a piece of music by having the musicians practice 50, 100, and 200 percent more than what was first required to memorize a piece of music. The results showed that practicing beyond 50 percent did not substantially improve the accuracy of memorized performance. In conclusion, Rubin-Rabson writes,

In the voluntary acceptance by piano students of the inevitability of long hours of practice, an enormous amount of time is wasted not only in inefficient learning techniques but in constant repetition of already learned material. Unquestionably sheer ‘doing’ is requisite to the perfection of a comprehensive finger technique; nevertheless, a
distinction must be made between time spent in actual learning which may or may not increase dexterity concomitant with the learning, and an emphasis on hand maneuvers which will provide the maximum technical growth in a given amount of practice. (p. 694)

Trumpet players may be relieved to know that extraordinary amounts of repetition may not be the most important ingredient for memorization. Instead, a lesser but more focused amount of deliberate practice may achieve memorization.

**Structuring the learning of a piece.** A common question in the literature is how a piece is best learned. To what degree should a piece be learned in segments, holistically, or through various combinations of the two? For many of the expert performers, formal analysis, and sometimes informal structures of a piece, serve to direct practice strategies (Chaffin & Lisboa, 2009). Segmentation attempts to leverage the ability of our minds to remember information that is reduced to manageable chunks. This must be reconciled with the need for music to be performed as a whole, recognizing the interconnectedness of the parts, both cognitively through analysis and literally through uninterrupted performance. A balanced approach is promoted by the observation of experts who alternate between both (Chaffin, Imreh, & Crawford, 2002). For example, in their observation of a concert musician, Chaffin and Lisboa (2009) noticed the use of both “section-by-section” practice and “integrative” practice that put the sections together into larger pieces (p. 123).

In addition to segmented and holistic strategies, Mishra (2002) observed an additive approach and serial approach. The former adds measures onto segments previously learned whereas the latter involves restarting a piece when errors occur. The results showed that those who were more efficient at memorizing utilized holistic or additive strategies compared to the less efficient group who employed segmented and serial strategies. A later study by Mishra
confirmed the efficacy of holistic strategies over the others, however the music used by
the participants was neither technically demanding nor lengthy.

It is difficult to assess the exact ways memory may be best practiced within the many
demands of real-life practice. What is clear from Mishra (2002) as well as other studies is that
using technical challenges to guide practice is less efficient than allowing smaller or larger
musical sections to lead to a complete understanding of a piece. In an effort to assess accuracy
and efficiency, this research often leaves out other musical considerations, such as the
expressivity and components of music education that lead to the development of metacognition.
This latter category refers to learning how to learn. Hallam (2001) suggests that while there is no
one way experts practice, they understand themselves, their goals, context and have various
approaches to solve problems, develop skills, and monitor processes. The following section will
provide a larger picture of how memorization might develop the skills necessary for
metacognition.

Learning More than Memorization

In the first section of this chapter we considered various issues involved in the practice of
memorization including a brief understanding of how memory works from a psychological
perspective and how these principles are leveraged by experts. Building upon this foundational
understanding, we will now turn to some broader goals that support the use of memorization as
part of musical development. Recent research offers insight into how memorization interacts
with other skills and how it affects musical cognition and meaning.

Memorization’s relationship with other musical skills. How is memorization related to
the development of other musical skills? Through a series of longitudinal studies, McPherson
(1993, 1995a, 1995b, 1997, 2005; McPherson et al., 1997) collected data on over 100 high
school clarinetists and trumpet players using tests to evaluate five different musical skills: performing rehearsed music, sight-reading, playing from memory, playing by ear, and improvising. McPherson used the results of these studies to advance a framework for a more “balanced approach” to teaching music performance through which “the goals associated with teaching a musical instrument should encompass more than the rehearsal-performance routine that too often limits what is covered in school instrumental music programs” (McPherson, 1995a, p. 56). Since “music is essentially an aural experience” he supports “a broad range of performance activities” (p. 62).

McPherson created measures to evaluate each of the five musical skills and then used the data to evaluate the correlations between them. For memorization, he created the “Test of Ability to Play From Memory” based upon “the capacity to reproduce without the aid of notation at the time of performance an existing piece of music learnt from musical notation” (McPherson, 1995b, p. 146). The test involved brief two and four measure melodies that were reproduced after less than a minute of study or rehearsal. It is important to note that this test of memorization was intentionally limited to learning from notation. There is good reason for this since it is, of course, the most common way for musicians of a Western classical tradition to learn. However, neither a strict definition of memory involving encoding, storing, and retrieving nor the description of memorization used in this study (“the process by which a musician performs notated music without the physical score and practices towards that end”) necessarily limits the encoding or learning process to notation. Regardless, what is informative for this study is 1) McPherson’s inclusion of memorization within a model of skills necessary for music education, and 2) the connections between this skill and the other musical skills.

McPherson divides the five musical skills into two categories. The first includes sight-
reading, performing rehearsed music, and playing from memory that are part of a “visual orientation for musical performance learning,” emphasizing re-creation from notation (McPherson, 1995a, p. 57). The second includes playing by ear and improvising that are part of an “aural/creative” approach (p. 57). He notes that the visual orientation, including the skills in the former category, has dominated music teaching over the last century. However, in the eighteenth and nineteenth centuries musicians both re-created existing music and composed or improvised their own. McPherson’s data support a pedagogical approach like that of earlier centuries in which the five areas “act to enable, strengthen, and facilitate the development” of the whole (p. 62).

In addition to tests for each musical skill, McPherson administered a survey to collect data on musical background variables such as early exposure to music, length of study, and participation in ensembles as well as self-reported habits including singing, composing, playing from memory, playing by ear, and mental rehearsal. Among the many results is the one that showed that time of study correlates with better re-creative performing skills (sight-reading, performing rehearsed music, and playing from memory). On the other hand, “variables which require an ability to ‘think in sound’” correlate with the other, aural/creative skills of playing music by ear and improvising (McPherson, 1995b, p. 157). “Report of frequency of playing from memory, playing by ear, improvising, singing, composing, and mental rehearsal were all significantly correlated with these abilities” (p. 157).

These and other results led to the construction of a model based on path analysis of the data and how each skill influenced the others (McPherson et al., 1997). The data pointed to “a relatively strong and evenly matched total effect between an ability to sight-read and play from memory (.48), and an ability to play by ear and play from memory (.51; .32 plus .19)”
(McPherson et al., 1997, p. 123). As a result, playing from memory is placed at the center of the model, not because he emphasizes it more than other skills, but because it seems to be a bridge between the visually oriented skill of sight-reading and the aurally oriented skill of playing by ear (see Figure 1). For these researchers, playing from memory remains a part of a visual orientation, perhaps because of the narrow definition and test applied to it. However, the researchers conclude, “these results demonstrate the balance between visual and aural skills that is essential for playing music from memory” (p. 123).

Figure 1. Theoretical model to describe the relationship among five types of musical performance (McPherson et al., 1997, p. 106).

Sight-reading skills. The model above provides well-reasoned and data-driven support
for the connection between sight-reading and memorization skills. A study by Nuki (1984) also supports the correlation of sight-reading and memorization. This quantitative case study assessed requisite abilities and best practices for memorization. Thirty university level student pianists were given a specially composed piece to sight read and then allowed up to an hour to memorize it. In addition to observation and a survey, their sight-reading and memorized performances were ranked. The results showed a high correlation between the quality of the sight-read performance and the memorized performance.

However, a meta-analysis of literature studying sight-reading by Mishra (2014) notes a weak correlation with memorization in most other literature. Yet, the author recommends a closer look at the literature helps to clarify the discrepancies and suggests that there may be other factors in the relationship that could be explored (p. 241). Certainly, if memorization of notated music is the goal, reading ability will be a factor in the learning of that music and sight-reading would logically be important at least in the efficiency and short-term acquisition of the skill.

**Ear-playing and other aural skills.** McPherson’s research provides some of the best evidence of the correlation between ear-playing skills and memorization. Other studies have also explored this connection. For example, Priest (1989) set out to evaluate an assumption that playing by ear is undervalued and underutilized by teachers. He suggests that this blind spot in pedagogy results “in a near total reliance on notation” (p. 173). Priest’s qualitative study involved interviews with ten musicians of a variety of genres and instruments, surveying their musical background. He inquired about the various ways these musicians played by ear described as “without notation being used at the time” (p. 174). This broad definition includes a range of activities from imitation to improvisation to playing from memory.

What was uncovered were a range of experiences that are often separate from formal
musical training and sometimes perceived to be at odds with the predominantly notation-based approaches. “In two cases playing without notation came late and is described as a ‘born again’ experience, liberating musicians who had felt constrained. While some have by now managed to fuse the two ways of playing, others have not” (p. 178). Priest argues “all musical playing is by ear, learned sometimes by imitation, sometimes by invention and sometimes by a combination or synthesis of both of these” (p. 188). He explains that even playing from notation is imitative in that it is copying the sound symbolized by the notation. Along with invention is “interpretation, defined as imaginative, expressive performance of an individual nature…likely to come about as a true synthesis of invention and imitation” (p. 189). Priest presents his ideas in a model that situates various musical skills under the two categories (see Figure 2).

![Pedagogical model of instrumental learning](image)

**Figure 2.** Pedagogical model of instrumental learning (Priest, 1989, p. 189).

Like McPherson’s model, this one places memorization of written music in the midst of
other areas of musicianship. The observations by Priest align with the experiences of Everson (2006), who believes that memorization and playing by ear are closely related. “I try to play *everything* by ear, as it were—even when I’m reading music” (p. 52, italics in original). Everson suggests playing familiar songs by ear as a path to improved musicianship. Priest’s broad understanding of playing by ear and Everson’s own experience highlight the possible connections between these two musical skills.

Woody and Lehmann (2010) carried out a more rigorous exploration of “ear-playing” as employed by “vernacular and formal ‘classical’ musicians” (p. 103). The subjects were collegiate musicians who fell into one of these two categories based upon their past music learning experiences. Two melodies were played for each participant. Each was to be reproduced from memory, one by singing and the other by playing on the students’ instrument. The first task, therefore, required aural memory whereas the second required aural memory and the technical abilities of production. The method measured the number of trials required to accomplish each task and also collected verbal reports on the musicians’ experience. The results showed that vernacular musicians were significantly more adept at both tasks. Interview data suggested that this finding may be associated with the premise that the formal musicians were less accustomed to making music through imitation, improvisation, transcription, or “any other ear-intensive activities” (p. 111). The formal musicians were even slower at the second task (playing) than the first (singing), leading the authors to conclude that they had not developed as strong a connection between their aural memory and motor production. The verbal reports further indicated that the vernacular musicians processed the music through a conceptual framework based upon their experience compared to the formal musicians who more often reported “note-by-note” strategies involving intervals or scale degrees (p. 112). The authors further suggest that the more efficient,
conceptual strategies made use of the multiple coding discussed earlier. While this study may only explore short-term music memory tasks, it illustrates the relationship between more aurally based habits such as playing by ear and the development of aural memory for reproduction.

Finally, Nuki’s (1984) experiment with pianists’ memorization found a correlation between higher grades in solfège (aural skills) and ability to memorize a piece. A subset of composition students “exelled in sight-reading, memorization, and required the shortest amount of time for memorization” (p. 158). These participants also reported relying on “visual memorization” interpreted by the author to mean that they were “able to hear the music with an ‘inner ear’” (p. 160). Such findings lead us to consider how memorization may be related to the musicians’ imagination of sound.

**Thinking in sound.** Much has been written in an attempt to describe how one internally thinks of the actual sounds of music before playing, while playing, and even after playing. Considering them briefly here may help to highlight the ways in which they are at play in memorization through the concept of aural memory in encoding, storage, and retrieval as described above.

Drawing on the work of Mainwaring, McPherson (2005) emphasizes the need for musicians to “think in sound,” defined as musicians’ ability “to aurally represent in their minds what they see, hear or wish to create on their instrument” (p. 10). Mainwaring (1941) cites the common ability to read silently, but notes that in music teaching, students are taught not so much the symbols as representatives of “absolute sound” as “stimulus of an activity” (e.g., keys or valves pressed) (p. 211). This is sometimes described as “button-pushing” or simply reading music in order to advance mechanical results without regard to the primary objective—creating music. Froseth (1994) considered this an undesirable, “eye-bound” process of music-making,
calling it “a sophisticated form of musical typewriting” (preface, inside cover).

It may be important when looking at memorization in pedagogy to consider this topic. Learning how to create sound (both the aural and physical skills of making sound) and reproduce sound from symbols (the reading skills that dominate re-creative art forms) requires a balance or sequencing that is highly debated. The discussion often centers around the earliest stages of music education where experts tend to agree that instrumental learning should begin with sound and proceed to an understanding of the symbols (McPherson & Gabrielsson, 2002). The later stages of instruction receive less attention in this area, begging the question of how performance from and/or without the printed page may limit or promote musical development.

**Ear-to-hand coordination.** The close linkage of the three sensory faculties involved in music making (kinesthetic, aural, and visual) lead to one more related concept. Based upon his own and others’ research, McPherson (1995a) suggests that “the key to success in musical performance is the degree to which musicians learn to coordinate both ear and hand, and to perform on their instruments the auditory image formed in their minds” (p. 61). Froseth (1994) developed a series of exercises in order to strength aural skills through “ear-to-hand coordination.”

Neurological and psychological research has supported this concept. One study (Drost, Rieger, Brass, Gunter, & Prinz, 2005) investigated this “ideomotor” phenomenon. For trained musicians, the connection between action (pressing piano keys in the study) and effect (the sound of intervals) has been reinforced so that simply imagining the effect will trigger the action. Recognizing that “auditory and motor imagery are integrated in the brain,” Brodsky, Kessler, Rubinstein, Ginsborg and Henik (2008) also studied the connection between notation (visual imagery) and auditory imagery (p. 443). They describe “notational audiation” that creates a
direct link between visual symbols such as from notation to the auditory effect.

All of this confirms what musicians often describe as automatic movement that does not require conscious motor control. The interaction of sound, symbol, and action (McPherson & Gabrielsson, 2002) may be uniquely at play when memorization is utilized. How sound and action are together developed continues to be explored.

**Audiation and musical meaning.** Gordon (2001), it is important to note, is critical of memorization as it is often learned by rote, believing it to be “primarily related to fingerings and other technical matters and not to the audiation of the music itself” (p. 5). Memorization here is understood to rely exclusively on kinesthetic memory (Gordon, 2012, p. 17). Not only is this kind of memorization missing the component of aural memory, but it also lacks musical meaning. “Assimilating and comprehending (not simply rehearing) music” is essential to Gordon’s concept of “audiation” that extends beyond imitation or inner hearing (Gordon, 2012, p. 3). For Gordon, memorization is too often simply something mechanically produced and void of understanding.

At the same time, Gordon also recognizes the possibility that audiation involving written music or “notational audiation” may similarly fail to occur when one reads a piece of music as if they were “simply decoding symbols” without an awareness “of patterns and context that constitute the music” (Gordon, 2012, p. 7). Once again, musical meaning may be missing as a result of an unawareness of “context or content,” including tonality, tonal patterns, meter, rhythmic patterns, tempo, tone quality, harmony, form, style, expression, and instrumentation (Gordon, 2012, pp. 11–12).

How notation “mediates” or influences the meaning of a piece of music has been explored in a theoretical way through Hultberg’s (2002) qualitative study exploring how student
and professional pianists constructed musical meaning from printed music. Data was collected through the performance of both music selected by the participants and new pieces assigned by the researcher. After the performances were recorded, the participants were invited to provide comments from the piano with the score and then while viewing the recordings.

Hultberg categorized two approaches that mediated the approach to the score by the participants as reproductive and exploratory. In the former approach the musicians’ physical and aural capacities served to reproduce the visual instructions in the score, at times surrendering their own musical ideas to the details on the page. The printed score prescribed and controlled a correct way of performance. By contrast, the latter approach relied on “personal judgement and familiarity with music practice even if this meant that they had to disregard the editor’s instruction” (pp. 189-190). Assuming the score was incomplete, the musicians’ own expressivity and “implicit musical meaning” was central to their music-making (p. 191, italics in original). “In marked contrast to the dominance of visual observations in reproductive statements, various combinations of visual, motor, aural, and emotional observation were made in explorative statements” such as naturalness in the fingers, harmonic implications, nationalistic styles, and impressions utilizing various subjective descriptors (p. 191). One participant even added a chord and fermatas, believing that he had “license” to express an imagined scene (p. 191). The reproductive and exploratory approaches were not fixed but were flexible, shifting throughout their reflections and layering one approach on top of another.

Hultberg was surprised to find that the experienced musicians all used reproductive statements that she traced to the residual effects of training. From this observation Hultberg puts forth a “Theory of Instrumental Training” (p. 194) containing three models. In the first model teachers approach the score reproductively. As a result, the student’s own meaning making is not
required, and the teaching becomes a one-way transmission of ideas. In the second model the teachers possess a context for interpretation based on tradition and markings in the score. The result is an invitation to “participate in a dialogue with the printed score” in which the teachers are “indispensable decoders” in service to the student (p. 195). More independence is developed as students mature, yet Hultberg notes that they may give up playing before much initiative is developed. Teachers in the third model reflect a familiarity with a piece from both composer and interpreter perspective. This approach is also dialogical in that students are “co-creative interpreters in a communication with the composer” (p. 195). The result is a habit of independent co-creation rather than simply dependent re-creation. This approach towards teaching is mutually communicative and reflects a respect for students.

Hultberg and Gordon are working from slightly different definitions of “musical meaning,” yet both suggest that notation or the lack thereof has an affect on a musician’s ability to move beyond the rudiments of musical replication. Disregarding Gordon’s narrow definition of memorization involving merely kinesthetic reproduction, it is possible that learning and performing without notation could affect musical meaning in some of the ways suggested by Hultberg. Such a question of whether or not musical meaning is directly affected by memorization either through teaching or learning has not been explored. The performance and pedagogical literature on memorization points to beliefs that interpretation is developed to a higher degree when notation is no longer the primary vehicle of performance (Everson, 2006; Macmillan, 2005; Williamon, 1999). Other implications of memorization on performance will be discussed in the next section.

Memorization in Performance

In the previous section, several important topics of musicianship relating to memorization
were explored including other musical skills and how one thinks about music, both its sound and
meaning. In this final section I will consider prominent themes related to memorization in
performance. These include communication, expression, automaticity, and flow—oft-cited goals
that may be especially present in memorized performance. The final aspect of important
consideration is anxiety.

Attention, communication, and expression. One of the most common reasons
musicians give for memorizing music is the ability to communicate effectively without the
encumbrance of printed music. This benefit is either physical, by putting aside a music stand or
the need to turn pages, or one of attentiveness, by directing attention to sound itself rather than
the intermediaries of sound, such as notated symbols. Trumpeter Jens Lindemann, for example,
attests to both when he advocates for “getting the horn and your attention out of the stand”
(Reaban, 2006, paragraph 17).

Chamber and even large ensemble musicians also attest to the importance of the
connection, both visually and aurally, between musicians that may be enhanced through
memorization. For example, sharing from his own experience playing in the Chicago Symphony
Orchestra with principal trumpeter Adolph Herseth, Hagstrom (2014) admits, “I found that I
could not achieve the level of awareness I needed unless I had my part prepared to a level where
reading the notation was not taking too much of my focus away from listening to him very
closely” (p. 78).

Studies have assessed the benefits of performing from memory in the communication
between performer and audience. Davidson (1993) showed that what the audience sees should be
considered alongside the aural experience as they both contribute to the overall perception of a
performance. Tsay (2013) further supports this conclusion, and Vuoskoski, Thompson, Spence,
and Clarke (2016) suggest even more strongly that “visual performance cues seem to be just as important as auditory performance cues in terms of the subjective emotional reaction of the observer” (p. 457).

Williamon (1999) studied the communicative benefits of performing from memory and attempted to draw a benefit analysis for doing so. The study looked at whether memorization actually offered “freedom of expression” and “connection with the audience” and if these things are worth the extra effort of memorization (pp. 84-85). A cellist was video recorded across five conditions: after first learning the piece and performing with music on a stand in view, after memorization with an empty music stand, after memorization without a stand, after memorization but with music and stand in view, and after memorization and with music but without stand in view. These videos were shown to an “audience” of 86 participants that included both musicians and non-musicians. The results cautiously supported performing from memory, noting that the audience preferred the visual experience, especially if they were musicians. The benefit analysis was less clearly shown, but Williamon does demonstrate support for the somewhat obvious conclusion that the additional effort and time necessary to develop memorization produces better performances.

Expressivity of memorized performance is particularly difficult to quantify. Occasionally cited is the room that memorization allows for investigating and even improvising interpretative and expressive features in music. In Hallam (1997), a professional musician participant explained, “one learns so much by turning away from the music and almost improvising the music that you are practising in different ways” (p. 94). Everson (2006) employs a similar learning strategy: Instead of just repeating things for the sake of memorization, he encourages the student to use repetition as an opportunity to try out expressive choices. For him this
approach is not only an outcome of memorization but also a process of memorizing in itself. He notes, “if I know where I’m going [in a phrase], I’m more likely to remember how to get there!” (p. 53, italics in original).

**Automaticity.** Everson (2006) also remarks that “the more internalized the music is, the more automatic is the expression of it when the performance time arrives” (p. 52). Automaticity is a common and highly valued goal of memorization in which music is performed without a certain amount of conscious effort. In the memorization process “conscious, explicit memory initially required during the learning of a skill is supplanted by unconscious, implicit memory” (Mishra, 2010, p. 11). This is often related to (or perhaps synonymous with) procedural memory, as discussed earlier. It also seems to be related to kinesthetic memory such as in the case of rapid, technical passages (Aiello & Williamon, 2002). Yet, as mentioned earlier, “mindlessly relying on the automaticity of well-practiced motor sequences, is both risky and unlikely to produce an aesthetically satisfying performance” (Chaffin, 2011, p. 689).

While motor movements are always part of the process of music-making, automaticity is not always primarily dependent upon simple kinesthetic memory. Instead, it may involve any part of the chain of memorized events that relies on various sensory or analytical skills. For example, in one professional pianist’s practice towards memorization (Imreh & Chaffin, 1997), automaticity is required in the recalling of subsequent parts of a piece of music through the use of performance cues. The serial chaining of performance cues relies on “establishing automatic links between thought and action” (Chaffin, 2011, p. 692). Once again, this integration of memory schema—in this case some sort of analytical or linguistic memory and kinesthetic memory—is essential to performance.

Automaticity is both cited as a reason for memorization failure and a highly prized aspect
of expert performance. Failure may occur when a performer attempts to consciously control something that was previously achieved through automation. This result has been termed “choking,” the phenomenon in which “pressure-induced attention to the well-learned components of a complex, proceduralized skill disrupts execution” (Beilock & Carr, 2001, p. 723). Chaffin, Lemieux, and Chen (2006) point out the need for spontaneous, effective performance built on reliable, precise preparation. Their framework seeks to describe the balance of what is done consciously (through performance cues) and subconsciously (through automaticity). They draw a path from attention to “basic cues” that include matters of technique, to “interpretive cues” that include how the music sounds, to “expressive cues” that include expressive decisions. When the former two are automatic, the ultimate goal of expressivity within the particular performance context is best achieved (p. 215).

Flow. Communication, expression, and automaticity in performance may be related to the concept of flow. Csikszentmihalyi (2009) developed a theory of flow to describe optimal experiences that involve intense concentration, spontaneity, creativity, control, and positive emotions. The subjective experience of flow in part attempts to explain motivation in various areas of learning, sports, and music. The components of flow seem to align with some of the research on memorization in performance. For example, like reports on memorized performance of experts, flow includes “focused absorption – a merging of action and awareness – where consciousness, mind, and body become harmoniously directed” (Bloom & Skutnick-Henley, 2005, p. 24). Flow is often related to the concept of mindfulness, or “a way of directing attention, intentionally resting it upon the experience occurring at the present moment in a nonjudgmental or accepting way, that allows one to be less reactive to what is happening” (Steinfeld & Brewer, 2015, p. 84). A thoroughly memorized performance may promote, or even require, focused
attention to the performance of the music and clear intention in the execution of musical elements. The high level of preparation demanded by memorization may make it more likely that the technical challenges are embraced or diminished rather than becoming opportunities for self-judgment or doubt. “Focused yet effortless attention seems to be a contradiction in terms. Nevertheless, a flow state is characterized by a subjective experience of heightened, unforced concentration” (de Manzano, Theorell, Harmat, & Ullén, 2010, p. 302). Steinfeld and Brewer (2015) attribute flow to the neurological connections built up between “musical representations held in mind” and the physical requirements of sound production, as discussed above (p. 86).

There is scant research on flow as it relates to memorization, and the scope of this study cannot adequately address the topic. Yet, the similarities with the goals of memorized performance are worth further investigation. Since rates of flow can vary within memorized performance (de Manzano et al., 2010) it is clear that memorization is not the cause of flow. However, flow provides a positive framework for the discussion of memorization over the more-often discussed topic of anxiety, addressed in the following section.

Anxiety. For many people, the same aspects that make memorization so potent in performance—the potential for well-prepared, highly focused, expressive communication—also allow for the increased possibility of failure. Whereas “optimal arousal” (Salmon, 1990, p. 4) may be a marker of flow, music performance anxiety (MPA) has been defined as “the experience of persisting, distressful apprehension about and/or actual impairment of, performance skills in a public context, to a degree unwarranted given the individual’s musical aptitude, training, and level of preparation” (p. 3).

MPA is often discussed as either a contributor towards memorization failure, a product of memorization expectations, or both (Mishra, 2010). Forty-seven percent of college level music
and dance students and 56.8 percent of professional orchestra members surveyed by Kenny (2011) selected “concern about reliability of memory” (pp. 92-93) as a cause of MPA. In Hallam’s (1997) study of musicians’ perceptions and experiences with memorization, most subjects reported experiencing anxiety from having to perform from memory and some professional musicians avoided memorization altogether since “for some musicians, the level of anxiety generated is so great as to undermine any positive effects” (p. 96). Only the professionals seemed to have become more aware of how unreliable memorization can be, remarking on the “tremendous courage and confidence” that it requires (p. 93).

Clark, Lisboa, and Williamon’s (2014) study of musicians’ thoughts and perceptions of performance confirmed some of Hallam’s findings. The study involved interviews of professional and student musicians, asking them to reflect on both a particularly successful performance and on one that was less successful. They found that successful performances reflected many of the qualities of flow described above and included “feelings of sufficient preparation and positive mind-sets, and presented a high yet attainable level of challenge” (p. 30). By contrast, less successful performances included “inadequate preparation, negative mental outlooks, frustration, and lack of enjoyment during the performance itself” (p. 31).

One of the conclusions of the study is that students must learn “the craft of performing” in addition to playing (p. 34). Pedagogues should take note of this and the need of musicians to feel well-prepared for performance, especially when requiring performance from memory. Clark and his colleagues’ study supports Hallam’s (1997) conclusions that teachers should work with students to develop strategies for improving memorization skills. Furthermore, teachers utilizing memorization should be considerate of the students’ experience of anxiety and take it into consideration when setting up expectations (p. 96). Certainly, the balance of preparation and
challenge in the expectations for memorized performance must be carefully considered. For trumpet teachers and players who may be new to the challenges of memorized performance, this advice may be particularly important. Less-than-optimal preparation for memorization can easily result in feelings of inadequacy and provide fertile ground for negative thoughts that could affect future attempts at performance. Trumpet-specific literature addressing these concerns or exploring how they may be overcome does not yet exist.

Summary

Memorization is a broad topic, and the themes explored above represent just a survey of the important research that offers insight for the teaching of, practicing towards, and performing from memory. In summary of the literature review, six key themes arise that may be most applicable for trumpet players who are unfamiliar with the process or unconvinced of the necessity of its exploration:

1. Memorization is not a specialized skill nor is it primarily an inborn talent. Rather, it is a function common to all of us that is, in the broadest sense, at work in all practice. It is a skill that can be developed through proven strategies and deliberate practice.

2. The ways by which memorization is practiced (encoded) are inextricably linked to the performance from memory (retrieval) by way of aural, visual, and kinesthetic senses as well as analytical and other performance cues. The most secure and accurate memory utilizes multiple approaches to learning the music.

3. Memorization is not an isolated musical skill. It has been shown to be linked to other necessary skills of musicianship and may be part of a well-rounded approach to musical training.

4. In particular, memorization may be an extension of ear-playing skills, drawing most
importantly on aural memory, ear-to-hand coordination, and a familiarity with musical elements (including experience with theory, form, style, etc.).

5. Memorized performance can heighten effective and expressive communication for the performer, with the audience, and among fellow performers.

6. Anxiety must be intentionally addressed for memorized performance given the additional expectations. Teachers should consider a student’s memorization experience or lack thereof. Flow might be considered as the positive alternative to anxiety, especially when considering the process of memorized performance.

Purpose and Research Questions

For trumpet players who are not often called to or trained in memorization, these six points provide both a convincing case and guiding framework for exploring its inclusion in their music education. Until now there has been no systematic study of the memorization process as it applies to trumpet players, and while there is significant research on strategies for memorization, trumpet players are unlikely to be familiar with these approaches. To my knowledge, no other research has carefully investigated how they might be applied in similar or distinctive ways by trumpet players. Indeed, Chaffin, Logan, and Begosh (2009) note that memorization has been difficult to study because it is hidden inside the apprenticeship relationship of teacher and student. It is often thought of as “an individual and mysterious process” that is unique to each person (p. 361). Thus, the purpose of this case study was to explore memorization as it is distinctively taught, practiced, and applied to trumpet performance. The study focused on the critical stage of collegiate training within two university trumpet studios that utilize memorization in distinctive ways. Through observations, interviews, and collection of artifacts I hoped to better understand the values and experiences of trumpet teachers and the ways in which
memorization is taught.

Rather than taking an approach that attempts to evaluate things such as accuracy and efficacy in memorization through quantification, this study explored how students and teachers value, address, and develop memorization skills and strategies in pedagogy, practice, and performance. Recognizing the importance of both teaching and learning in this area, the investigation of teachers and students provided a multi-dimensional picture of memorization in action. The research questions, then, are as follows:

1. How do trumpet teachers and their students describe memorization and the value they place on it in their teaching, practice, and performance?

2. How are the implicit values and explicit methods of memorization modeled and taught by the teacher? How are they learned and put into practice by the students?

3. In what ways do the teachers’ and students’ perspectives on memorization align? What gaps may be present in the teaching or learning of memorization?

The findings from this case study help to inform university level trumpet educators in several dimensions of applied memorization pedagogy, practice, and performance, providing clues to why and how memorization may be effectively implemented into the curriculum. In addition, insight into the issues explored may be transferred to other teachers and students of music as they consider the benefits and challenges in memorization.
CHAPTER 3  
METHODOLOGY

I have shown in the literature review how musical memorization research is far reaching as it has been studied through quantitative and qualitative research from both music educators and performers. The discoveries of cognitive psychologists and others have helped to inform teaching, practice, and performance as related to memorization. This study builds upon the current research through systematic investigation of memorization through a qualitative instrumental multiple case study.

Study Design

This study follows a qualitative path that seeks to understand the complex problems involved in the area of memorization for trumpet players. Qualitative research values the meaning given to the practice by the individuals involved and communities of learning involved (Creswell, 2014, p. 4). For this reason it is particularly applicable to the musical arts, in which the creators ascribe meaning to their craft. Barrett (2007) notes that “qualitative researchers seek to understand the phenomenal world through the study of events, actions, talk, and interactions, and when the context of study is a music classroom, through sound and gesture as well” (p. 417).

Qualitative research often employs an inductive approach in which both questions and interpretations are drawn from the data (Creswell, 2014, p. 4). “Qualitative researchers build their patterns, categories, and themes from the bottom up by organizing the data into increasingly more abstract units of information” (p. 186). Both the literature review and data collection were approached inductively, seeking to understand the points of view that arose from previous research and lived out by the participants. At later stages, qualitative inquiry involves deductive approaches as evidence is organized to support the interaction of research questions, literature,
and data. In this way the analysis is recursive, emergent, and reflective as my speculations are refined through the process of interacting with the phenomenon observed (Creswell, 2014, pp. 185–186).

Furthermore, case study is particularly well-suited for the investigation of such multi-dimensional topics as applied performance-based pedagogy (Stake, 1995). It is used in this study to explore the complex experience of particular individuals within communities of learning. Barrett (2014) states that case study’s “highly contextual nature lends itself well to educational settings, in which there is likely to be considerable entanglement of phenomenon and context” (p. 114, italics in original). The particular way memorization is taught within the expectations and traditions of a university studio is interrelated with aspects of context such as the institution, professor, and cohort of students. The addition of a second bounded site and participants make this a multiple case study through which the memorization in pedagogy may be addressed in more varied ways. Case study requires a sustained amount of time with the participants in their context in order to generate sufficient data.

Case study also invites the collection of multiple kinds of data through multiple methods of data collection (Creswell, 2014, p. 185). Data in this study includes field notes, audio and video recordings, and other materials gathered through embedded observation, interviews, and collection of artifacts. Varied sources coming from purposefully selected participants in which memorization is utilized allow for a depth of data in an otherwise narrowly defined and relatively rarely occurring context (Creswell, 2014, p. 189).

This is an instrumental case study in that the cases are an instrument for learning more about a particular topic (Stake, 1995, p. 3). The study will be bounded by the participants, but more narrowly by the phenomenon of memorization as carried out by those involved. Although
there are significant differences in the prevalence of memorization between the two sites, it was not originally designed as a comparison between the use and absence of the practice since both studios were selected based on their teachers’ advocacy for it. Furthermore, this study does not attempt to exhaustively explore the diversity and breadth of trumpet studios across all institutions of higher education. The narrow boundaries of case study in these universities within a particular semester prevent drawing definitive conclusions for the application to other contexts at other times (Creswell, 2014). However, the informed reader will be able to add the phenomenon described in this study to his or her own collection of experiences, “thus making a slightly new group from which to generalize, a new opportunity to modify old generalizations” (Stake, 1995, p. 85). In this way, the study offers “particularizations” rather than generalizations (pp. 8-9).

**Researcher Role**

Within the qualitative case study model, my own experience and expertise in trumpet teaching and performance have become tools for understanding such a highly specialized system as a university trumpet studio. The researcher in the qualitative model is thought of as an instrument through which meaning is formed (Barrett, 2007). Interpretations of the researcher are essential (Stake, 1995). The lens through which I viewed first the literature and then the experiences of the participants evolved through to the analysis and reporting stages. Barrett describes these three stages or “transformations” in the accumulation of data resulting in “primary evidence of the phenomenon interwoven with the researcher’s reasoned interpretation” (Barrett, 2007, p. 418): 1. collecting data (observations, interviews, artifacts, etc.) 2. constructing data in records (notes, transcriptions, etc.) and 3. analyzing, coding, and interpreting the data to draw out themes.

In this way, the researcher repeatedly takes things apart through analysis, giving them
meaning as they are put back together for the reader (Stake, 1995, p. 71). This requires the identification of patterns and a verification that the data is consistent with these patterns, otherwise known as “correspondence” (p. 78). While the central purpose of this study is not evaluative, the interpretation of the data necessarily includes some evaluation (p. 96). Since this study will focus on the value individuals give to the processes of memorization and the ways in which that is acted out, I will take a constructivist approach toward understanding this phenomenon (Creswell, 2014, p. 8). Exploration of the participants’ perspectives and accurate descriptions of the memorization process in action will provide a rich description of the meaning that is given to the phenomenon by the participants.

**Study Sites and Participants**

Since memorization for trumpet players has been shown to be rarely discussed in the literature, it follows that it is not often utilized in the collegiate trumpet studio. For this reason, it was important to purposefully select studios for which memorization was an essential part (Creswell, 2014, p. 189). Two teachers and their studios stand out as exceptional cases for the research of this topic. Trumpeters Jens Lindemann and Terry Everson both have a documented history of performing from memory in their own professional careers (Goff, 1993; Kenney, 1989) and a strong belief in cultivating their students’ ability to perform from memory (Everson, 2006; Reaban, 2006). Students in Lindemann’s studio at University of California, Los Angeles (UCLA) may copy his own practice of memorization, and Everson’s studio along with the other brass studios at Boston University (BU) routinely require students to memorize jury and recital repertoire (Everson, 2006). Naturally, their individual philosophies and methods vary, as do their cohort of students and academic contexts, providing a fertile ground for a multiple case study of memorization.
Within each studio, I sought to purposefully select eight student participants who major in undergraduate or graduate music studies (Creswell, 2014, p. 189). Students were selected to represent a variety of levels of study (undergraduate freshmen through masters and doctoral students), music degree programs (performance and education), and experience with memorization. This was intended to help make limited data collection time most efficient and produce a manageable amount of data with which to work (Stake, 1995, p. 51). It also generated data that reflected the range of student perspectives and experiences within each studio. The inclusion of graduate students and at least one transfer student provided unique comparisons with reported experiences at other institutions. Due to factors beyond my control including student response and scheduling limitations, there were eight participants at BU and seven participants at UCLA as represented in Table 1.
Table 1

*Summary of Student Participants*

<table>
<thead>
<tr>
<th>Number</th>
<th>Assigned pseudonym</th>
<th>Level</th>
<th>Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BU Student Participants</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>unnamed</td>
<td>Doctoral Student</td>
<td>Performance</td>
</tr>
<tr>
<td>2</td>
<td>Daniel</td>
<td>Freshman</td>
<td>Performance</td>
</tr>
<tr>
<td>3</td>
<td>unnamed</td>
<td>Master’s Student</td>
<td>Performance</td>
</tr>
<tr>
<td>4</td>
<td>Samantha</td>
<td>Sophomore</td>
<td>Performance and Economics</td>
</tr>
<tr>
<td>5</td>
<td>unnamed</td>
<td>Sophomore</td>
<td>Performance</td>
</tr>
<tr>
<td>6</td>
<td>unnamed(^1)</td>
<td>Senior</td>
<td>Music Education</td>
</tr>
<tr>
<td>7</td>
<td>Hope</td>
<td>Junior</td>
<td>Performance</td>
</tr>
<tr>
<td>8</td>
<td>Erin</td>
<td>Master’s Student</td>
<td>Performance</td>
</tr>
<tr>
<td><strong>UCLA Student Participants</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Andrew</td>
<td>Master’s Student</td>
<td>Performance</td>
</tr>
<tr>
<td>2</td>
<td>Beth</td>
<td>Junior</td>
<td>Music Education/Music Industry minor</td>
</tr>
<tr>
<td>3</td>
<td>Sean</td>
<td>Master’s Student</td>
<td>Performance</td>
</tr>
<tr>
<td>4</td>
<td>James</td>
<td>Sophomore</td>
<td>Performance</td>
</tr>
<tr>
<td>5</td>
<td>Steve(^2)</td>
<td>Junior</td>
<td>Performance</td>
</tr>
<tr>
<td>6</td>
<td>unnamed(^1)</td>
<td>Freshman</td>
<td>Performance</td>
</tr>
<tr>
<td>7</td>
<td>Adam</td>
<td>Junior</td>
<td>Music Education</td>
</tr>
</tbody>
</table>

\(^1\) No interview was given by these participants.

\(^2\) No lesson was observed or given to this student during my visit.
Procedures

Approval from the Institutional Research Board (IRB) of the University of Illinois at Urbana-Champaign was secured prior to the commencement of this study (Appendix A). In addition, administrators at BU and UCLA were both given notice of my study visit and determined that IRB review or certification of exemption was not required. Consent forms (Appendix B) were gathered from all participants.

Both teacher participants were asked to forward a preliminary online questionnaire administered through SurveyMonkey.com to their trumpet students. This Memorization Student Perception Inventory (MSPI) (Appendix C) was adapted from Dakon and Dvorak’s (2014) Memorization Teacher Perception Inventory. Since the questionnaire was developed for string teachers, slight modification were made for trumpet players and focused on the students’ own beliefs and use of memorization. Administration of the questionnaire at BU yielded eight complete responses. Five UCLA students responded to the survey, including two that were completed with my help in the interviews. The survey was intended to serve two purposes: 1. to facilitate the selection of and communication with student participants; and 2. to provide basic information regarding the topic of memorization and their experience that I could follow up on in the interviews. Due to the limited response at UCLA, the MSPI was less successful in accomplishing these goals than at BU. Selection and communication with participants at UCLA was done through individual interaction after a brass ensemble concert and band rehearsal as well as personal introduction from their teacher during my visit.

My site visits consisted of five days at BU (April 10-14, 2017) and four days at UCLA (May 22-25, 2017). During this time I observed a lesson with most of the student participants. Field notes and a video recording of the lessons were collected. The field notes served to
describe the instances of memorization that are part of the pedagogical process and indicated sections of the lessons that I later transcribed. I also used field notes to record my reflective process, leading to future questions that were addressed in the interviews. Each day the notes were summarized in a field record, ensuring that relevant data was retained in a coherent form and continuing the process of analysis.

In most cases, the observed lessons were followed by semi-structured interviews (Appendix D) that were digitally recorded and later transcribed. These interviews varied in length, from twenty-five minutes to an hour, and allowed me to gather data on the students’ beliefs about memorization, experience before and during their studies at the university, and future goals for themselves. In addition, the interviews provided an opportunity to follow up on key moments observed in the lesson to gain insight into the students’ perceptions of the teacher’s instruction and their own learning. Two interviews with each teacher, each lasting between thirty-five minutes and two hours, were digitally recorded and later transcribed. The first was intended to focus on their experiences with memorization in both performance and teaching and their personally held values regarding it. The second interview served to expound on particular observations in lessons and follow up on themes that emerged from my visit. All interviews were actually wide-ranging based upon the interaction with each teacher. An additional interview with Lindemann in the company of two students also took place.

In addition, I observed one of the weekly Studio Classes at BU and a brass ensemble recital at UCLA. One of the lessons observed at BU was a dress rehearsal for a master’s degree recital. These events provided additional data that helped to fill in a larger picture of the practice and performing life within the trumpet studio. The only artifact collected during my visit that

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1 Two students did not complete an interview and one student’s interview took place prior to his lesson.
pertained to memorization was Everson’s trumpet lesson syllabus.

**Data Analysis, Coding, and Validation**

Stake (1995) notes that in case study method, analysis is an ongoing process. Indeed, the analysis had already begun before this project through my own experiences that flowed into the literature review process. Analysis continued throughout data collection as I strategically observed, inquired, and summarized key moments of what I witnessed. I also highlighted segments of the lessons for later transcription. During the site visits, several key concepts, themes, and strategies began to emerge that would eventually grow into a key organizational element of chapters four and five. Once transcripts of the interviews were made, I combed through the data beginning with the instructor interviews to hone, confirm, and add to the categories that had begun to develop. The process continued by highlighting and making comments within the interview transcripts, as well as copying especially illustrative quotations into the report. In this way, interview data and segments of transcribed lessons were subject to a winnowing process (Creswell, 2014).

Attention has been given to the experiences of both student and teacher in a way that provides a sense of verisimilitude. Through direct quotations and descriptive narrative I sought to provide somewhat of a “vicarious experience” that allows the reader to place themselves in the experiences of the teacher and student participants (Stake, 1995, p. 85). Reporting in this way not only promotes validity, but allows the reader to draw his or her own conclusions. I made an effort to provide sufficient context and preserve the participants’ exact verbiage as often as possible while at other times distilling their ideas for readability and concision. For example, each of the key concepts, themes, and strategies is tightly wrapped in the actual words of the individual teachers. For this reason there is no direct overlap of key concepts, themes, and
strategies between the two site reports even though there are significant similarities between
them that are discussed in chapter six.

Triangulation (Stake, 1995) of the data occurred at multiple levels. The observation and
interviews of professors and students allowed for verification of what they believe is important
and what is taught, practiced, or performed. Furthermore, by observing and interviewing teacher
and student participants I engaged in “methodological triangulation” in which various points of
view serve to “illuminate or nullify some extraneous influences” (p. 114). The study of two sites
and sets of participants also provided “data source triangulation” in order to compare and
contrast how memorization pedagogy, practice, and performance may be carried out (p. 112).

The opportunity for member checking (Stake, 1995, pp. 115–116) was provided to both
teacher and student participants via email. Transcripts of interviews were submitted to the
participants for feedback. In addition, a draft of content pertaining to the participants was
supplied following the initial draft for verification or additional comment, providing an
opportunity for clarification or additional data.

One of the most important parts of the validation process has been reporting my own
experiences and biases. As described earlier, through my own experience of memorization I have
become personally convinced of its value in my musical development. Yet, having experienced
very little education in this area, I remain curious to understand how other teachers put
memorization in action within a trumpet studio. I am equally interested in finding out how other
students experience memorization in a way that is likely distinct from my own experience.
Admittedly, by focusing on this one small aspect of the pedagogical process I risked an
overemphasis on it, and the lack of preparation in this area within my own education has tempted
me to prescribe memorization practices as a solution for others. Yet, the limited scope of this
study and the inherently narrow application of qualitative case study data has demanded boundaries for reporting on the phenomenon and limits the conclusions that may be drawn by the readers.

Confidentiality

Given the highly specialized nature of this topic and narrowly selected teacher participants, they were asked to waive confidentiality. It would be, in fact, impossible to keep the identity of the teachers and their schools hidden given their reputation that is already widely acknowledged, and I believe the community of trumpet performers and pedagogues at this level will benefit from placing the findings of this study into the context of what is already known about these teachers and their programs. The student participants, on the other hand, were assured anonymity and assigned pseudonyms. Audio recordings of the interviews were uploaded to a password-protected laptop until transcribed and then deleted. Video recordings remain in secure cloud-based storage in case they may be used in the future for conference presentations.

Conclusion

As mentioned above, much has been written on memorization in the practice and performance of music, but rarely is it addressed towards trumpet players. Even more rarely is memorization treated holistically in ways that consider the benefits to practice, performance, and broader areas of musicianship. As the literature reflects, memorization is rarely addressed by trumpet teachers and is isolated to a few teachers, schools, or individual students. The two studios that are the subject of this study have been innovative in this way and worthy of systematic research. The professors and students have been used within a case study to qualitatively analyze the pedagogy of memorization as an integral part of the higher education applied trumpet studio curriculum. This study endeavors to provide robust descriptions of both
teaching and learning. In total, it is my hope that this research will prompt trumpet players, both teachers and students, to consider seriously the important tool of memorization in music making and development.
CHAPTER 4
MEMORIZATION IN TERRY EVerson’S STUDIO AT BOSTON UNIVERSITY

In this and the following chapter I will describe the two sites of this case study. The trumpet studios at both sites are led by world-renowned artist/teachers who recruit students into their studios by virtue of their professional experience and pedagogical expertise. For this reason, I will begin by describing the teacher’s background and experience with memorization in particular followed by the students’ attitudes and experiences. Finally, I will draw out the salient concepts, themes, and strategies that were notable within the teaching and learning of each studio.

BU is a large, private research university located in Boston, Massachusetts. The School of Music is part of the College of Fine Arts and offers both undergraduate and graduate degrees in music, including performance, music education, and other areas. The website states that it provides students with “the best of both worlds: a focused, conservatory-style program and the opportunities of a major research university” (“School of Music,” n.d.). Like many large cities, Boston contains several prominent music schools including the perhaps more well-known New England Conservatory and Berklee College of Music, which specializes in contemporary music styles.

Terry Everson

The trumpet studio is solely taught by Associate Professor of Music Terry Everson (b. 1962), an experienced teacher who has been on the faculty of BU since 1999 (“Terry Everson, Associate Professor of Music, Trumpet,” n.d.). Prior to that time, he taught trumpet for four years at the University of Kentucky, among other places. In 2014 Everson was recognized with one of BU’s highest teaching honors, a Metcalf Award for Excellence in Teaching. A press
In Everson, students have one-on-one access to an artist in his musical prime and a champion and critic who challenges them to play with commitment and passion. With characteristic good humor, he nudges, inspires, and implores his students to ‘ascend to the next level of playing,’ one of those who nominated him for a Metcalf Award wrote. (Seligson, 2014)

Everson is active in the broader trumpet community as a Life Member of the ITG and member of the Executive Committee of the National Trumpet Competition (NTC). He and his students attend and perform regularly at the ITG Conference and NTC.

Everson is perhaps most well known as a trumpet recitalist, having garnered acclaim as the first winner of the Baroque/Classical and 20th Century categories of the Ellsworth Smith International Trumpet Solo Competition in 1988 (Kenney, 1989). Since then, he has recorded several compact discs of primarily modern works for trumpet and piano, and over the past several years has played multiple recitals (often from memory) as part of a “sonata cycle” with his BU colleague and pianist, Sheila Kibbe (interview, April 13, 2017). In addition, his career also includes a variety of chamber and orchestral playing, including roles as Principal Trumpet of the Peninsula Music Festival and Boston Modern Orchestra Project and as Soprano Cornetist of the Brass Band of Battle Creek. An active free-lance ensemble musician in Boston, Everson had just returned from a tour with the Boston Pops a week before my visit and during my visit was preparing to play in the orchestra for an opera with Odyssey Opera.

Everson has additional musical skills and experiences that are important to understanding his career, musicianship, and, as we will see, his pedagogy. He is an accomplished composer and arranger, fulfilling commissions for woodwind and brass ensembles as well as writing for his
own student trumpet ensembles. He and his wife (a violinist) are active church musicians as well. And while he does not often perform on piano outside of his students’ lessons and juries, his ability to play piano at a high level is an important part of his pedagogical process and outlook.

**Everson’s background performing from memory.** Ever since Everson won the Ellsworth Smith Competition by performing entirely from memory (including the 20th century portion), he has developed a reputation for performing entire sonatas and the most difficult contemporary pieces without music. When asked when he first began performing from memory, he shared a memory from his childhood:

I might have done it some before this point, but the one that really strikes me was when I was in ninth grade. It was the first time I did solo and ensemble contest playing Guy Ropartz’s *Andante and Allegro*. My family wasn’t particularly well-off and so the idea of having to hand the judges an original part (because you couldn’t give them photocopies) meant having to buy another copy of the music. I never asked my parents whether they could afford that or not. I just thought, “This would be ridiculous to buy a second copy of the music just to hand to a judge.” So I numbered my solo part and handed that to the judge, which meant that I didn’t have a solo part, because you also were not allowed to perform from a photocopy obviously.

So it was just purely by necessity that I memorized.... I mean, I kind of had it anyhow. I had to review a few places that weren’t as interesting to me because they weren’t so technical. So it was pretty much by accident as it were that I got into starting to play from memory. And then the other times I went to contest after that I ended up doing the same thing for the same reason. I just thought, ‘There’s no reason to buy an extra part just for
that purpose.’ (interview, April 10, 2017)

Everson played piano from a young age, but after studying for about a year with his mother, he related that he often played “just for fun”\(^2\) and then later for his high school choir. He never performed seriously on piano from memory. He describes his trumpet practicing in a similar way, often playing along with recordings rather than practicing diligently (in spite of the disapproval of his parents). Looking back he said, “I did so much playing of my trumpet during my practice that a lot of people would never call practice. But it was building the connection—building the connection between me and the music, between my ears and my fingers, finding patterns that way.” It seems that his ability to play without music was part of the way he learned and a reflection of the musical landscape to which he was exposed. Everson explained,

My goal at that time was to be a jazz player, commercial player. Back then my idol was Doc Severinsen, and I had often seen him soloing out in front of the band, not having music in front of him necessarily. I don’t really remember; the question never came up, ‘Was this a normal thing or not?’ [I was not] in the classical music circles, not seeing great violinists or pianists playing concertos without scores. Indeed, he credits his early desire to be a jazz and commercial musician to the development of his ability to play by ear and connect that to his fingers. “You’re just playing what you hear,” he said simply.

In college, Everson continued to perform most pieces from memory, even while his classmates often did not. In addition to being influenced by Severinsen, Harry James, and other singers and instrumentalists on television who did not use a music stand, Everson said he did it

\(^2\) Throughout this document, interview quotes that are not followed by a new citation are from the same source as the previous citation. A citation will be provided when a new participant interview, date, or other source is introduced.
because “it felt good.” “I knew the music. So to me it was kind of like, well why throw this barrier between myself and the audience that’s not necessary?” He felt it to be a more “natural” way to perform music. Everson admits that his aural skills were highly developed by the time he reached college. In spite of his “perfect pitch,” he was required to take a quarter of ear training in college “so I’d learn the [solfège] syllables” (interview, April 13, 2017).

Everson went on to compete in several prominent trumpet solo competitions, including two ITG solo contests and the Ellsworth Smith Competition, all performing from memory. He notes that at the time it was “unusual” to be performing from memory, having not seen anyone else do it (interview, April 10, 2017). The Ellsworth Smith Competition, in particular, was somewhat more of a challenge for him since it required many more pieces (seven) than the earlier ITG competitions. He notes that at that competition “it caused a stir when the stage crew went out and took the stands off. The judges were like, ‘Oh, what’s this?’” The next day of the competition “it caused more of a stir” when he performed the sonatas by Peter Maxwell Davies and Paul Hindemith from memory. Without a sense of conceit, Everson sees himself as having led the way in this area:

Nobody imagined memorizing the Peter Maxwell Davies when I did it. I didn’t try to. It happened. It was only once I realized I kind of had it that I actually went out and did it.

And now I’ve seen high school students do it from memory. (interview, April 13, 2017)

Well into his career, Everson still often performs solo works and entire recitals from memory since he believes that memorizing and learning the music are “not completely intertwined, but very much so” (interview, April 10, 2017). There are times when he chooses not to perform from memory based on his preparation time, difficulty, and newness of a work. He said,

I’ve premiered things from memory, too. Not quite as often, but I’ve done it depending
on the nature of the piece. I still haven’t played the Jan Kryzwicki *Sonata* from memory. It was written for me, and probably at least half of the performances ever given of the piece since 1994 have been by me. Still, I’ve never memorized it. There’s a certain difficulty level there that maybe the next generation will [achieve]. (interview, April 13, 2017).

**Everson’s memorization practice.** Everson confessed that his own strategies for memorizing pieces are quite “organic” and rarely intentional (interview, April 10, 2017). “It just happens because I’m observant of what I’m playing. It just kind of gets down inside me quickly,” he said. In fact, it was difficult to get him talk about memorization strategies in particular. One of the few times Everson mentioned intentionally memorizing something is when he described learning *Sonatine* by Jacques Castérède, in which he had to make a decision to slowly learn parts of it.

Digging a little bit deeper it is clear that analysis, while often falling short of formally writing things down, is also a part of his process. In both the interviews and several lessons, Everson mentioned numerous detailed examples (often along with sung excerpts) that verified his significant knowledge of the form and other compositional features of trumpet works, such as the sonatas by Karl Pilss and Eric Ewazen, George Enesco’s *Legend*, and others. Memorization, for Everson, seems to be simply part of the process of what he often said was “knowing the score, not just my part.”

Everson’s experience as both a composer and pianist seems to be intertwined with his trumpet playing. He not only studies the scores of the pieces that he is performing, but also plays them on piano as much as possible. If he can’t play the piano parts he will program them into a software program called *Cakewalk* in order to learn the make-up of the piece and create
something to practice with:

[It is] tremendously time intensive, but when you have to sit there that long and really
work at the microscopic level you start to learn it pretty well. And then you’ve got a tool
that you can play along with because most of us can’t afford to just hire a pianist just to
hang around with us all day and when I feel like it: ‘Hey, whip out the [Sonata by
George] Antheil. I want to play.’

The ability to practice, perform, and simply imagine (what he sometimes called
“playback”) a piece repeatedly is crucial to his learning process:

When I start working on a piece I start hearing it the rest of the day. My practice time in
that way and in memorization is not limited to time that I’m sitting in front of the music
with the trumpet in my hand. It’s driving home in the car and having it go in tape loop in
my head certain sections, trying to see if I have any gaps or something like that. And
again, it’s not like I’m starting out, ‘Okay, I’m going to do this to see if I have any gaps,’
it just happens. That’s always been the problem for me to be able to pass the method on
to anybody because there is no method because it’s just an organic part of life. I rarely am
in the point where I’m like, ‘Okay now let me hit play in my brain and start playing this
back.’ It’s just there already, and now I start becoming aware of it. I’m getting reps in
that way. Now if I hit a real snag then that might give me a little bit of a focus point for
next time I come back to the music to say, ‘Okay, that’s where all of a sudden everything
goes blank. How does this go again?’

The high level of detail with which he aurally perceives a piece of music is an important feature
of his capacity to memorize.

**Memorization in Everson’s teaching.** Everson’s frequent solo performances almost
exclusively from memory provide a compelling model for his students. Even more notable is how memorization assists his teaching in an extraordinary way. Unlike many teachers who sit next to their students, both looking at the page of music, Everson most often faces them on the other side of their stand or at the piano keyboard. Occasionally, he pulled out his own copy of the music, looked at the score while seated at the piano, or peeked around at the student’s music on the stand. Most of the time Everson drew on his own memory of a piece as he coached the student. And even as he was not looking at the trumpet part or score he would often roughly sing the piano part, gesture, or tap along while the student played. This was particularly impressive considering the metrical challenges of works such as Halsey Stevens’ Sonata. Oftentimes, he would also accurately demonstrate for the student by playing selected sections, still without looking at the music. At one point when Everson was coaching a new etude by James Stephenson he played some short phrases back to the student even though he had never played the etude before.

When I asked Everson about this small detail of his pedagogical practice he gave three reasons for it. First it is so that he can hear the students’ sound directly, as the audience would hear it. “I like to be out in front of my students. I like to hear what the sound’s really doing,” he said (interview, April 13, 2017). Secondly, he believes it is important to watch the student from more angles. “There are times when I’ve been on one side of a student not knowing that there is something really strange going on the other side because I never sit on that side.” Finally, he believes it is good to have his “sound model coming right back at them.” Additionally, I observed that his instructional style facilitated a seamless exchange in lessons and displayed a detailed knowledge of a piece of music. Surely it was not his goal to show off his ability to memorize or play by ear. Yet, it communicated a subtle affirmation of knowing a piece deeply,
by memory. When discussing this practice with the etudes by Théo Charlier, he said,

Most of them I know really well, so it’s like I’m talking about my friends. ‘Oh yeah, my friend Charlier No. 4’ [sings opening]. I feel freed up from the page. Sometimes I make mistakes, and sometimes I won’t remember things quite as well….

It seems for Everson that the risk of making a mistake, even in front of students, is worth the benefit of teaching from his intimate relationship with a piece of music.

**BU Trumpet Students**

The trumpet studio at Boston University typically numbers between twelve and sixteen students, most of whom major in Trumpet Performance. There were eight student participants in this case study, including five undergraduate and three graduate students, aged nineteen and older. Trumpet was the primary instrument for all of them, and all but one, a senior Music Education major, were studying Trumpet Performance. One undergraduate student was pursuing a second degree in Economics. Two of the graduate students had undergraduate degrees in Music Education while the other was continuing in Trumpet Performance.

**Shared memorization experiences.** One of the things that makes the BU trumpet studio stand out, and an important feature that drew me to this site, is the curricular requirement that is a part of every student’s learning and performing. For freshman and sophomore juries this includes the following requirement as stated on the syllabus: “At the conclusion of the semester each student will perform from memory one or more selections with piano accompaniment, as assigned by the course instructor” (Everson, 2016). For junior, senior, and graduate degree recitals the syllabus states, “**At least one major work on each degree recital must be memorized**” (italics and bold in original). Therefore, every music degree seeking trumpet student at BU, regardless of major, has experience practicing towards and performing from memory. In
actuality, the memorization requirement is modest since at most freshmen and sophomore students memorize two pieces a year and the upperclassmen and graduate students must only memorize one piece each year for their recital.

Other than the expectation that a few pieces be committed to memory Everson allows for much freedom in choosing repertoire. “I don’t like to order anybody else’s dinner for them,” he quips (interview, April 13, 2017). He values student choice when selecting repertoire: “Oftentimes they’re bringing [pieces] in to me. …The advantage to that again is that they are already interested in the piece. They’ve already got an investment in listening to it” (interview, April 10, 2017). He notices that the music played by fellow students over time stimulates and perpetuates repertoire choices. At times Everson will gently guide students to pieces that are appropriate for them and caution them against certain choices:

They might find out later on, ‘Oh, this is a lot harder to memorize than I thought’ or ‘that lick that sounded a certain way doesn’t look that way on the page.’ As long as I feel it’s pretty much along the path they should be following I say, ‘Yeah, go for that!’ (interview, April 10, 2017)

Everson is sensitive to the demands and challenges of a piece on multiple levels. Two pieces he often uses for younger students are Bernard Fitzgerald’s arrangement of Handel’s Aria con Variazioni and Thorvald Hansen’s Cornet Sonata. He has found these to be suitable, not only considering the technical demands, but also for students’ ability to grasp the patterns and form necessary for memorization. He notes that some pieces, such as David Baldwin’s arrangement of Albinoni’s Sonata 11 (St. Marc), may introduce certain challenges in form that make it difficult for younger students to learn by memory.

In addition to memorized solos, Everson assigns selections from Giuseppe Concone’s
collection of lyrical studies for undergraduate students to memorize on a nearly weekly basis. These brief, tonal songs provide opportunities for Everson to work with his students on strategies, such as feeling one’s place within the meter, in order to assist in recall. In addition, Everson typically plays the piano accompaniment to the studies along with the student. The student is immediately thrust into a collaborative music-making exercise in which the accompaniment becomes an integral part of the process of learning and performing from memory. Everson notes that this is particularly helpful for younger students who may have little experience either performing from memory or performing with a pianist. By the end of the semester, students will have gained experience and skills that will help them in the unique challenge of performing their jury pieces with piano. It provides opportunities for “listening and getting them more and more used to playing with piano, talking about intonation some, talking about the blend, and then working in the memory and/or phrasing” (interview, April 13, 2017). Ultimately, he wants the student to be “learning to listen to the piano more than themselves.”

Everson is not methodologically attached to learning weekly Concone etudes by memory. Depending on the student, he often releases the students from the exercise by their junior or senior year. At the time of my visit in April I observed only one student come to her lesson with a prepared Concone etude. (It was late in both the semester and the school year, and most of the undergraduate students had “other fish to fry,” Everson said.) The memorized etude that began sophomore Samantha’s lesson had become quite routine, requiring almost no discussion before commencing. As she stood up to play in the middle of the medium sized teaching studio Samantha handed a copy of the piano part to her teacher, who promptly sat down at the Steinway

3 The names of all student participants in this document are pseudonyms to protect their anonymity.
grand piano next to the window. They began with Samantha’s count-off. She seemed very focused, looking straight ahead as she played beautifully, almost as if it were a real performance. Once the piece moved past the opening theme her expressive playing turned a bit stiffer, as if playing by rote. Yet, her playing was very accurate and, apart from tapping her foot, she was still and completely calm.

At the end of the exercise, Everson exclaimed with lighthearted affirmation, “Only one wrong note in the whole thing—a new world record!” (lesson observation, April 12, 2017). He remarked that the mistake was isolated to a single wrong note, nothing rhythmic. Samantha explained that the high level of accuracy was because she had it memorized for the previous Friday, but then “had all this extra time [it was now Wednesday] to just really internalize it.” Accuracy is clearly not the focus of the exercise, however. Everson went on to invite her to play parts of it a second time in order to address several issues including sound quality, intonation, expression, and dispensing with the count-off. At one point, without invitation, Samantha sang a few notes to demonstrate the expressive intention that she was being encouraged to explore. The entire exercise and bit of work that followed lasted just about five minutes, after which they moved on to a more technically difficult etude by Charlier (which she did not play from memory).

The slim investment of lesson time for this exercise is notable. It was efficiently included in the lesson, however I wondered if it could require a disproportionate amount of investment in practice. When I later asked Samantha about this she told me that memorizing the etude each week only requires about ten minutes a day of work now that she has built up strategies to practice it attentively. This is time that, for her, also serves as a kind of “flow study” that followed her warm-up routine (student 4 interview, April 12, 2017). Another student, a
freshman, was less enthusiastic about the exercise. He found one week to be a short amount of time to prepare a new etude: “It’s a very small window of time. Usually I’m rushing towards the end, and I’m very uncomfortable when I’m playing it” (student 2 interview, April 11, 2017).

In addition to memorized solos and lyrical etudes students have often also performed from memory as part of trumpet ensembles in preparation for the NTC. Although not required by the competition, memorization has become a common practice for many collegiate groups in the trumpet ensemble division of the NTC. One sophomore student related his experience playing in a chamber ensemble from memory for the first time:

I think as we sort of played it more and more together, I got to know all the parts really well so I didn’t really have to think about my part, and I knew where to listen for the melody or the highest part at any given time. (student 5 interview, April 13, 2017)

This student was also surprised to discover that, even though he could not play his part independently from the group, “in context with all the other parts going, it was there.” “Which was really weird,” he added. He was able to articulate how the group benefitted from the experience:

It allowed for a lot more communication between us as players. While playing we can look across the group for cues, or if we had lines that were connecting one person to another, we can make motions. And we added extra choreography to the piece where we walked to the back of the stage and played into stands for some part and then walked back forward—split off into different groups to play different parts. And so, with music we never would’ve been able to do that. I think that gives an extra aesthetic appeal to it. …It also benefitted, I think, everyone to know everyone else’s part by the end of it, because we were playing so much without staring at our own part being like, ‘This is my
part; I need to know this.’ When you’re just hearing everything and you’re listening a lot more, rather than looking at a part…then you can understand where you fit in a lot better.

**Student attitudes toward and experiences with memorization.** Several of the students had come to value the memorization requirement in BU trumpet studio. They recognized that it was an important requirement to ensure that students do it. One student told me,

I think [learning repertoire from memory] can be something that can be easily glossed over if no one mentions it or if it’s not baked into something like it is here…. If [it] weren’t the case, I’m sure there would be a significantly smaller number of—if any—people who chose to do this kind of thing. (student 3 interview, April 12, 2017).

Another student valued memorization but resented the requirement:

I think it would help more if it were of my own accord than something I had to do. It’s like when you have to read a book in school and then analyze it to death and write a paper on it. By the end of it you’re like, ‘I used to like this book and now I can’t even look at it because it’s been such a terrible experience of beating it to death.’ So I think it’s a similar thing if I just memorize something for myself. For the sake of just knowing I would play it better once it was really in me. I think I would probably have a better time doing that, and I would enjoy it more, too, because I wouldn’t be like, ‘I have two weeks to memorize this! Ah!’ It would be a lot less stressful. (student 7 interview, April 13, 2017).

Overall, the students who completed the questionnaire had a positive attitude towards memorization. All but one student answered with some level of agreement to the statement, “I enjoy performing music on my instrument from memory.” In fact, all those who completed a questionnaire cited “musicality” and “communication with ensemble members” as areas that
“improve most when using memorization.” Moreover, all agreed that aural (“by ear”) and/or visual (“written notation”) memorization is an “important component” of their musical education.

The statement “I memorize music easily” generally divided those students who enjoyed performing from memory into two categories: those who reported that it came “naturally” and those who struggled with it to some degree. All of the students who reported being able to easily memorize music identified themselves as having perfect pitch or “really good relative pitch” (student 3 interview, April 12, 2017). One of these students, a doctoral student, learned violin and piano through the Suzuki method prior to playing the trumpet, so for him, performing without written music has always part of his experience. Another graduate student for whom memorization came easily told me this when discussing his first experience performing Herbert L. Clarke’s *From the Shores of the Mighty Pacific* from memory with his high school band:

> It wasn’t something that I actively put an effort to specifically do—the memory thing. I had just been working on the piece, and it just sort of, at some point I was just able to play it, because I just remembered it and I had been working on it for a while. (student 3 interview, April 12, 2017)

The accidental arrival at memorization capabilities and the strong aural skills of these students matches, in many ways, the experience of their teacher. However, even though they both had positive experiences performing from memory prior to their undergraduate studies, they did not often perform from memory in their undergraduate studies at other institutions where it was not required.

There were several students for whom memorization did not come easily, including a junior named Hope. She had memorized marching band music in high school but saw this as
something quite different from learning a solo work to be performed from memory. The memorization requirement at BU was “definitely scary when I got here,” she told me (student 7 interview, April 13, 2017). Yet, her first recital piece—the first two movements of Franz Joseph Haydn’s *Concerto for Trumpet*—came to her “without even really having to try,” “almost like accidental memory.” She attributed this to having known the piece for several years, listening to it often, the tonal characteristics and classical form of the composition, and much repetition (like marching band). She related her pleasant surprise when “…one night, I was like, ‘I’m going to play this without music and see how far I can get.’ And I surprised myself by how much I had up here [in my head]!” This first experience was a positive one for her in spite of a few slips that may simply have been a result of nervousness.

However, memorization of subsequent pieces was not as easily attained for Hope and required a “different tactic” each time. Her biggest challenge and ultimately an “awful experience” came the first semester of her sophomore year when she attempted to memorize the first movement of Kent Kennan’s *Sonata*. Hope confessed, “It was so bad! I could not get myself to memorize it.” “I played it in Studio [Class], the Tuesday before [the jury], and I think I kept count on both hands the amount of notes that I got right!” Everson confirmed later that the jury was one of the few in which a student was “melting down” (interview, April 13, 2017). Both of them were able to describe some qualities of the piece that make it challenging to memorize, including changing and mixed meters and several passages that are similar but in different keys. Still, Hope told me in the interview that she was dismayed by the extraordinary amounts of repetition of playing and listening that still did not result in a successful performance.

Over a year since that experience, though, Hope remained positively focused on developing her ability to perform from memory: “I’ve gotten more steady this year…. I’m
memorizing the [Sonata by] Ewazen for my recital, and that’s long. It’s long. So I’ve been a little more diligent about how I’m memorizing and working towards that” (student 7 interview, April 13, 2017). Indeed, in Studio Class that week Hope gave a solid, controlled performance of the second movement with her teacher at the piano. She appeared to make only a handful of mistakes, proving that she was able to successfully perform the eight-minute movement from a contemporary work. The other pieces she has worked on throughout her time at BU, the sonatas by Paul Hindemith and Jean Francaix, required “a lot of aural memory,” “muscle memory and valve pattern memorization,” and an understanding of form. She also described one particular strategy, essentially performance cues (Chaffin, Demos, et al., 2009) that included naming starting notes of runs and naming intervals at key points. Hope was able to describe a systematic process for learning her current piece that was much more intentional and organized than when she first began with the Haydn Concerto. Still, she seemed baffled by her perceived limitations in memorization, especially as it compared to others:

That’s one thing about memory for me that hasn’t really clicked: I can sing something—like I could sing you the whole third movement of the Ewazen right now…. But I haven’t gotten the connection between knowing it aurally and getting it into my fingers, which is funny because so many people that I talk to and [ask], ‘Do you have any memory tactics?’ And [they say], ‘Oh, just listen to it. If you can sing it, you can play it.’ I haven’t been able to get that. (student 7 interview, April 13, 2017)

Hope’s experience in an exchange program the previous semester in London where memorization was not a requirement provided an interesting contrast with her practice at BU. She had learned the first two movements of the Sonata by Ewazen in London. She described her practice there:
It’s not like I purposefully was like, ‘I’m not going to try with this because it doesn’t matter as much,’ but I think definitely my practice sessions with it were a lot less focused, I would say. And I wasn’t paying as much attention….

Returning to BU, she decided to perform the entire piece on her junior recital, setting her on a different path:

I feel like I kind of like started from scratch when I got back. …I just feel like I learned it, but I didn’t really learn it. …In hindsight I can definitely see a lack of focus with it, just generally. Like every time I played it [in London], it was just kind of like, ‘Okay, I’m playing this piece.’

She shared that it was important for her early in the memorization process “to pay attention to the shapes of things and…where things are going and having a clear and big picture, even before you get nitpicky with things.” Hope compared it to a puzzle:

I feel like when I was in London it was just like a bunch of different puzzle pieces that could have been from different puzzles or just kind of like all over and they were just on the table. Every single time I would play them I’d play this puzzle piece and I’d play this puzzle piece and this one…. But now that I’m here [at BU], it’s like I’ve seen what it’s supposed to look like on the back of the box and I’m like, ‘This is how these fit together.’

Hope’s perspective was transformed when she needed to perform it from memory:

…I’m much more aware now of like, ‘Oh, this part is like this phrase transposed or like it’s the recap.’ Or, ‘I have this now where the piano used to have this and now Ewazen put it in my part, and we switch things or whatever.’ I can finally see that big picture.

**Resistance to memorization.** There was one student who was particularly averse to memorizing music. Erin, a master’s student, compared memorizing to “herding cats” or “pulling
teeth” (student 8 interview, April 14, 2017). At the outset of the interview she told me that she had considered majoring in vocal performance, except that “I can’t memorize vocal lines.” The feeling extended to her trumpet playing and was self-admittedly amplified by her “bad week” in which she failed her recital permission hearing, in part due to a lackluster performance of the required memorized piece.

The piece Erin was preparing to play on her final master’s recital was Hansen’s *Cornet Sonata*. She told me that she had successfully “internalized” it, but continued to be frustrated by her inability to play it accurately. At this point, she attributed it to “a finger/mind issue, not a memorization issue. That’s like my fingers don’t have the muscle memory yet.” These frustrations and her negative past experience bore some similarities to those of Hope described earlier. Yet, Erin spoke almost jealously about this undergraduate classmate when she considered that improvement could be made through the practice of memorization:

But then I see the junior [Hope]—she’s playing her recital. She played the second movement of the Ewazen, and she nailed it. She played it memorized. She nailed every single note, every single rhythm, articulation. She had it. She’s three years younger than me! So maybe playing the Concone memorized from the beginning helped them train their brain how to memorize better.

It’s notable that Erin’s first experience memorizing a solo work had only come the previous year when she began studying at BU. She said that she still does not have that piece (*Concertino* by Joseph Kaminski) memorized, and the only reason she attempted to do it in the first place was because it was required. “If it wasn’t a requirement, I would not have done it,” she stated as a matter of fact. When she performed the piece in recital, she said, “the whole of the second movement was wrong. Literally, all of it was wrong.” Her frustration continued when she
performed it again earlier that school year and still had errors. But her struggles with memory actually went back further to Technical Studies exercises by Clarke that she said have always been a challenge to play from memory, as well as a trumpet ensemble competition in her undergraduate studies in which she “blew the memorized solo.” Erin’s negative experiences in memorizing were, nevertheless, overshadowing at least one positive experience she cited—performing Enesco’s Legend at the NTC. That performance “went fine,” in spite of a few “blips.” She saw a competitive benefit to performing from memory in the competition:

If I had the music in front of me, I might have been more prepared, but I definitely had an edge over a lot of the competition because I played memorized. You automatically get points, because you play memorized, because it automatically ups the level of difficulty.

Erin had theories on how her brain worked and went on to describe her process of memorization, something she called “the internalization process” that included being able to hear the trumpet and piano part in detail—“in Dolby 5.0.” Not being a piano player, however, she said she had resigned herself to the fact that she cannot “audiate” very well. Even so, Erin had developed some strategies, including one in which she sang the music with the note names while fingering. Doing this was “like I’m reading the music in my brain, as I’m playing,” she explained. Her other strategies included repetition, listening to the piece with the score, and “singing the piano part.” She said, “I don’t think I internalize the piano part until I’ve listened to it about fifteen times in one day. (That was obnoxious, but it had to be done.)”

It was apparent that the time it was taking to memorize the current piece was overwhelming to Erin even though she had chosen the piece based on its relative ease of memorability, something she had not considered when deciding to play the piece by Kaminski. Erin complained that she spent as much time on her one memorized piece as she did on all of the
other four recital pieces combined, even though they would be considered more difficult. Music performance anxiety (MPA) was certainly another factor that went into Erin’s experience with memorization, perhaps more than other students I interviewed. When asked whether she experienced anxiety with all pieces or just those performed from memory, she replied,

Any piece, but it’s harder with a memorized piece because you don’t have that safety net.

The music is the safety net. If something goes wrong, you just focus more. ‘Look at those notes….’ You can grind yourself into the music more.

She seemed uncomfortable with playing both accurately and expressively without the music while in performance. She shared,

There are moments of espressivo and there are moments where I just need to get the notes. …I had a moment in the third movement this morning, where I started to just be playful and then it just wrecked it. So, then I was like, ‘No, just focus more on the notes.’

Overall, Erin was conflicted about memorization, and vented somewhat incongruent points of view about performing from memory. She liked watching others do it, but did not like to do it herself. And she said it was not worth doing it, yet conceded that there were benefits to doing so:

The crazy thing is, I actually like performances that are memorized, when I go see pros do it. I’m like ‘Oh, they’re connecting with the audience, they’re emoting, blah blah blah.’ But it’s not worth it…. 

I still don’t like playing from memory. I don’t know if any musician does. As music gets more difficult, it’s harder to play from memory. That’s why rock stars can play from memory. It’s I-IV-I-V-I. You know, it’s basic chord changes. You can do that and sing at
the same time and it’s easier. That’s why they can do it while they’re stoned.

Ultimately, when asked if it was worth the time, she conceded, “I would say yes, because it puts you in a very, very uncomfortable situation, and you have to come out at the end of it, trial by fire.”

**Student progress in memorization.** Everson is somewhat pessimistic about the potential of students who struggle significantly with memorization. He lamented, “Nobody who’s really bad at [memorization] has necessarily gotten really great at it over the time, but I do see people getting better” (interview, April 10, 2017). Most students had difficulty gauging or often had not considered their own progress in their ability to memorize. When asked if his ability to memorize has improved, one underclassman pointed out that it is difficult to tell since the material he has had to memorize has increased in difficulty from half-page to two-page Concone etudes to sonata movements with mixed meters. But he admitted, “I feel like memorization has become less of a wall to climb, and it’s just becoming less intimidating.” (student 2 interview, April 11, 2017).

Samantha was able to describe specifically how she had progressed by learning to incorporate both the visual and aural aspects of her memory:

I have a very good visual memory, but I realized, because playing these Concones (especially if I didn’t have a whole lot of time to prepare because of various other playing obligations or just forgot about it until two days beforehand) that I would try to memorize it by the way it looks. And so in that aspect, it came easy just because I could do that to a certain extent, but it does become a problem especially when…you can’t feel time by looking at a page. So this semester I focused on trying to memorize it aurally. I’m kind of using both the visual aspect and the auditory aspect in tandem to memorize and that’s when things start working. I guess I just didn’t realize beforehand. I think I was using the
visual memory as a crutch because it was stronger than the auditory memory. But now when I’m playing the Concone etudes, I really focus on how it sounds first, before trying to memorize what the notes look like on the page…. (student 4 interview, April 12, 2017)

In addition, engagement played a part in the success of repetition for her. She shared,

I was for a while convinced that in terms of memorizing something that you played enough and you’d have it memorized. In the first couple Conconses I did, I think I spent more time on it than I do now because I didn’t have the techniques that I do now. They were kind of a mess, and I was like, ‘I’ve played through this every single day. I don’t understand what’s going on!’ And then once I had the realization that it’s because you’re just playing [them] through. If you’re actively listening and audiating what you’re seeing then it makes the connection stronger…. I still struggle with doing this all the time in my own practice, but it’s definitely a goal I have to remind myself to just stay engaged no matter what you’re doing—on the goal that you have in mind.

Samantha continued on to describe her newly discovered process:

I would look at it enough where at least just I would break it down to small phrases, look at it enough where I could sing it and then just trying to focus on what it sounds like while I’m playing and then singing it a lot. …I do find, even when I have a strong aural concept of what I’m playing, I still see it in my head. I wish I didn’t have to. I don’t know if that’s a place I could ever get to see it as well as hear it…because sometimes I feel like it’s a little distracting. Anyway, I don’t know if you could separate the two unless you memorize something solely by ear.

She went on to make a connection with her experience in an a cappella group that performed songs by memory that were often learned by ear or taught by rote.
Students like Samantha not only observed development in the practice of memorization, but through the process of memorization some students have made discoveries about their own performance. When I asked Hope if memorization affects her level of anxiety, she said insightfully,

Well no, I think it depends at what level I have it memorized, if I feel like I’m really there. I like to sing too, [so] if you asked me to sing a song that I knew by heart, like I’ve known it since I was ten, and I absolutely loved it, I wouldn’t be nervous about that. I know that I know it so well, like I literally know it by heart. (student 7 interview, April 13, 2017).

She went on to contrast the understanding of memorization in other languages (“by heart”) with rote memorization.

I think that would be the difference between like, if I were to sing a song right now, that I knew forever I would have no worries whatsoever, because it’s so ingrained in me. Like I know it so well. So I think if you get to that point with something you’re performing, then anxiety wouldn’t come from that because you know it. And you know that you know it. I think it’s just like a matter of getting yourself there for performance.

**Different strategies for different students.** At first I was surprised to see widely different responses from students to the question, “How often are memorization strategies addressed in your trumpet lessons?” Student responses spanned the entire range from “never” to “frequently.” However, looking more closely at this and other responses, I realized that it pointed to the differentiation in instruction enacted by their teacher, a fact further substantiated in the interviews.

The only students who responded “never” to the question above were students for whom
memorization came easily. Memorization for these students comes down to little more than repeated playing and listening to a piece of music. It is something that “just kind of happens,” as one student said (student 5 interview, April 13, 2017). Sometimes they played along with recordings through which they even became aware of features such as form, as well. It seems that Everson adjusts his teaching accordingly for these students so as not to spend time on something that has come easily for them. When I asked about it, Everson confirmed, “If that need doesn’t come up, I don’t talk about it much” (interview, April 10, 2017). Everson also said that he works more on memorization with undergraduate students than graduate students. Indeed, the only students who responded “frequently” were underclassmen, whereas the only students who responded “rarely” or “never” were graduate students. The sophomore student Samantha who kept up with memorizing Concone études received frequent memorization instruction.

Students who shared in the questionnaire and in the interview that they struggled with memorization were often the ones who were better able to articulate the strategies they employed. These students said that strategies for memorization were taught either “sometimes” or “frequently,” and they seemed to employ them more intentionally. They were quicker to share about these strategies, including repeated playing, repeated listening with the piano score, analyzing the form, singing their part, and working in small sections. Additionally, some students had discovered their own strategies such as working backwards, writing notes in the music, working on it before going to bed, and memorizing while standing. These students still recognized that time spent playing the piece was one of the most important strategies for memorizing it.

**Perceived benefits of memorization.** Regardless of how students perceived their own ability to memorize, they all recognized some benefit to memorizing music. When asked about
this one graduate students said, “I felt like I could sort of connect with what was going on just a little bit more, and I wasn’t worried about notes or reading anything because I had it all” (student 3 interview, April 12, 2017). Another student expressed the freedom that memorized performance affords him:

A lot of times when I play or when I perform, I close my eyes, partially to pretend that the audience isn’t there, but also partially to really get in to the music myself and focus in. Before I have it memorized, obviously, I’m like looking at my music most of the time and so I can’t necessarily get into it as much. And I think when I can really focus in on the music more, it allows me to have more liberties with really thinking about the flow and the line and the music itself rather than: ‘Am I going to hit all these notes?’ …I’ve always found it a lot easier to move around when I’m not looking at music and when I don’t necessarily have to think as much about what the notes are as much as how to play the notes. (student 5 interview, April 13, 2017)

This student also recognized the benefit of performing from memory in competition, something Everson expects of his students as well:

It sort of adds an extra level of…preparedness, that when [the judges] see someone has it memorized, they’re like, ‘Wow, they really worked towards this. They’re really on top of things.’ And you can be more expressive when you don’t necessarily need to stare at your music when you’re playing. You can feel it more. (student 5 interview, April 13, 2017)

Many students recognized the benefits of better presentation and more thorough preparation achieved through memorization, but acknowledged that it required an investment of time. When I asked Samantha if it was worth the extra time to learn a piece by memory, she began by disagreeing that it actually requires additional time: “I’m sure I could go out and play
[Fisher Tull’s Three] Bagatelles now, but I think the additional time spent getting it to a place I want would be about equal to the additional time I have to get it to be memorized” (student 4 interview, April 12, 2017). When I pressed her further she said, “Yeah, absolutely; Yeah, no doubt;” it was worth the time spent memorizing a piece of music.

Hope, whose positive and negative experiences were described earlier, openly wrestled with the challenges and benefits of performing works from memory. She said,

I think having physical music in front of you definitely impedes musicality a little bit, because it stops you from being aware of what’s going on around you. But at the same time, I think having it in front of me is like having a safety net, because I know that if I do, somehow lose what’s going on then it’s right there. [In] the Ewazen, if I start forgetting what’s going on, then it’s like I lose the musicality because I’m trying to remember the notes, and I don’t have anything in front of me to be like, ‘Where am I?’ I guess having music is good and bad. (student 7 interview, April 13, 2017)

This tension seemed to be supported her Studio Class performance and the comments of her fellow students that followed. Several classmates were congratulatory of her accurate performance (“It sounds like you know what’s going on”), but also encouraged her to be more expressive and find a “story or mood or feeling” for the piece (studio class observation, April 10, 2017). She later admitted that the performance was “reserved” and “safe.” In the end, I believe many of the students at BU would agree with Hope when she pondered out loud,

If memory came really easy to me and it wasn’t something I had to work out at all, then I would totally play everything by memory. Like everything. Chamber music—maybe not orchestral stuff—but just anything from solo to chamber. I think that would be super useful, especially chamber [music] because you can get so much more out of interacting
with people.

**Community support within the studio.** As Hope’s experience demonstrates, the weekly Studio Class provides an encouraging place for students to play from memory if they choose. Hope shared that playing the second movement of Ewazen’s *Sonata* from memory for the first time with piano there “threw me off a little bit, and I think that’s why I was so reserved.” But she went on to say,

I’m glad also that I had that initial [experience], because you just got to get the first time out of the way…. So now, it’s like the next time I play it, I’ve already done it in front of people and audience now and I’m thoroughly comfortable with the rests in the piano. I can focus the next time I do it on really making music with the phrases and stuff.

Aside from performing for each other, however, the students reported that they rarely talked about memorization amongst themselves. Hope shared, “We don’t really talk about it that much. Maybe we should because it’d be useful to see how different people go about it.” Regarding her struggles with memorization Erin said, “I don’t tell anybody anything ever about those types of issues, because that’s a sign of weakness, and we don’t do that in the trumpet world because then people start to think you’re a bad trumpet player” (student 8 interview, April 14, 2017). Accurate or not, students often had perceptions of each others’ ability to play from memory and naturally made comparisons with their own experiences.

**Key Concepts, Themes, and Strategies**

**Raising the bar.** While Everson told me that he has always encouraged students to perform from memory, he said that the curricular decision to require memorization came out of a brass faculty decision intended primarily to encourage students to prepare better for juries. The horn professor, Eric Ruske (who is also a well-known soloist), was the driving force behind the
rule implemented around 2001 across the brass studio. Everson explained,

> We were noticing that in juries people were coming in, and oftentimes there were students who were not picking jury pieces until a couple weeks before their juries. …We were concerned about the level of preparation and Eric suggested (he’s somebody who has played a lot of stuff from memory, as well, as a brass player) that we put in a memory requirement. [We now] say, ‘the jury piece has to be memorized.’ That way, you’re not going to pick it—if you’re smart—two weeks ahead of time…. So we put this in at first ostensibly as a way just to make sure people were preparing better. (interview, April 10, 2017)

Everson related that for about a year “there was much weeping and gnashing of teeth” from students about the requirement. “But after a while it just became what everybody does” and students now have come to accept the requirement, not knowing any differently.

Everson defended the expectation by comparing it with other academic studies. Requiring memorization in music is “as much of a downside as demanding high standards in any other academic pursuit…. In an academic pursuit we do have to memorize. We don’t like to think of it that way all the time, especially if we’re learning correctly” (interview, April 13, 2017). He pointed out that:

> Cramming memory is rarely successful, and if students have been relying on cramming in other areas of their studies and then try to rely on that in memorization that’s when you’re sitting in a jury and somebody just goes completely off, you know.

Since the expectation was implemented more than fifteen years ago, Everson believes that it has been effective at improving the quality of juries. He said:

> Having this requirement does help to reinforce the idea of ‘whatever it takes.’ It’s what
you got to do in the profession anyhow. It’s whatever it takes. So if this is one aspect that can help them get that mindset going, then all the better. (interview, April 10, 2017)

It was clear from the students that the expectation was effective for them in encouraging long-term preparation. Samantha described her process of listening over many months:

I try to just start listening to it, kind of casually for the first two months. When I’m learning it, listening to it with the piece in front of me so that way I can just get the general concepts but then about a month prior I try to listen to it every day when I have the trumpet in my hand and then once without. So twice a day, leading from a month beforehand—that’s generally the strategy. Sometimes it doesn’t always happen. (student 4 interview, April 12, 2017)

However, Everson conceded that the requirement has resulted in “the occasional complete meltdown where somebody gets on tape loop or they just can’t find their way” (interview, April 10, 2017). Erin and Hope’s experiences above were two examples. He attributes many failures to student perspective:

Yeah, the downsides [of a memorization requirement] are the pressure, of course, the stress. But stress can be positive or negative. I believe that most of whether that turns out to be positive or negative is much more determined by the person with the stress than the person inflicting the stress.

And although Everson does not discount anxiety completely, he believes preparation plays a large part. He said,

You can go into all the somewhat related things of performance anxiety and all that kind of stuff. Does memory help or hinder performance anxiety? That depends on how prepared you are, how much you’ve done to get over the memory hurdles. They’ve
shown that a lot of performance anxiety, not all of it, but a lot of it has to do with preparation. When you don’t feel like you can accomplish what you’ve set out to do, it doesn’t matter if you’ve got music in front of you or not, you’re going to do that. Now if you don’t have it memorized and now you’re about to walk out on the stage with no music…. Erin’s recital dress rehearsal that I observed would support Everson’s point. In my judgment, the pieces that were not performed from memory were no better executed than the piece that was performed from memory, considering the fact that some of the pieces performed with music likely posed greater technical challenges.

Samantha agreed with her teacher’s point of view on the relationship between anxiety and preparation:

I think if you have a piece thoroughly internalized and memorized, your confidence level with the overall piece should go up simply because you have it more internalized. The more memorized it is, the more prepared you are, and therefore the less anxiety. (student 4 interview, April 12, 2017)

By contrast, she continued,

But I’m sure it would cause significantly more anxiety if the piece [were] underprepared than if you were going to play an underprepared piece with the music in front of you. So there’s less room for error, I guess, because there is no crutch of having the music there in front of you.

Another student for whom memorization came easily noted that, unlike technical issues that can cause him anxiety in performance, his memory of the music is “something that I can just really count on” (student 5 interview, April 13, 2017).
Ultimately, Everson wants for his students to experience juries, recitals, and their accompanying memorization requirements as he experiences performance, not as ultimate, anxiety-inducing culminating activities:

It’s a shame that juries often do feel like pressure situations, recitals feel like pressure situations. I never felt like that when I was in school. I just always felt ready to play whatever. Exams, they never gave me a pause. And I didn’t always study hard and cram. I just took in the knowledge as it came up in class and then played with it myself on my own just for fun. So I didn’t need a day before to say, ‘How did that quadratic equation go again?’ I took in the knowledge as it came, used it in everything else and it just became an integral part. So the same way with juries and recital and stuff like that. By the time I get to a recital performance, it’s like, this is the story I’ve been telling for a while in private with Sheila [his collaborative pianist] and now here I’ll let you all in on it. (interview, April 13, 2017)

Everson admitted that, at least for his students, memorization is usually limited to repertoire prepared for the requirement. “For better or worse,” he said, “today’s students tend to be box checkers. It’s like, ‘What do I have to do for this?’ Okay that. ‘I’d love to memorize this [other piece], but you know…’” (interview, April 10, 2017). He did not seem concerned, however, that memorization is limited in this way or that students may or may not perform from memory beyond their studies at BU. For example, during my visit a graduate student was preparing to perform Bruce Broughton’s Excursions for Trumpet and Band with one of the university bands. In the past, Everson himself had performed the piece from memory and recorded it with the BU Wind Ensemble. Yet, he did not pressure the student to perform the work from memory, maintaining realistic goals for the student who had relatively recently begun
to learn the piece. Most significantly, it revealed that memorization, for Everson, is much more
of a tool to be made use of when appropriate than it is an end in itself. In the end, memorizing a
piece is not a guarantee that a performance will be better. He admitted, “It’s as possible to
perform one’s part memorized oblivious as it is to do it reading the music, and I’ve seen both”
(interview, April 13, 2017).

Knowing the piece. A fundamental concept that pervades nearly all of Everson’s
teaching is that of a highly detailed, multifaceted aural “picture” of a piece of music. This picture
is not always part of a student’s aural concept of the piece whether reading or playing from
memory:

When I ask them to sing things it comes out oftentimes very ‘approximatura,’ so then
obviously the picture in their head isn’t very clear. One of the things that relates to this
that I talk about with my students is that you think about the difference in picture quality
from black and white cathode ray tube TV to flat screen HD liquid crystal or whatever
the stuff is they got now. I’m convinced that most students are somewhere back along the
spectrum in the cathode ray tube. The good ones will sometimes get to standard def and
very few ever get to the high def .... And this doesn’t just have to do with just the reading.
It’s conceptualizing music in the first place. (interview, April 10, 2017)

He drew an analogy to how Olympic sprinter Usain Bolt must perceive time during a race:

It takes him a little over a 9.5 seconds to run a hundred meters. And the question I have
for [students] is ‘Do you think he perceives that as ten seconds, or do you imagine that
maybe he perceives that as we would perceive thirty seconds?’ …Even though he’s going
fast, he’s able to make adjustments and perceive things on some kind of longer scale than
that ten seconds that it takes for him to run that race. That’s how I feel when I’m playing,
too. I can hear all these notes that my students can’t seem to perceive yet. I keep working
with them.

This was a key point in a quick, technical passage in Broughton’s *Excursions*. Everson suggested
that the student “hear all the notes slower” (lesson 3 observation, April 12, 2017). After
demonstrating the passage for the student he related, “They’re not quite as fast as you’re afraid—
as I’m afraid of.” Everson later told him, “Comprehensibility—that’s what makes people hear
virtuosity. It’s not the fact [the notes] went by so quickly. They went by quickly, and I could
hear them and understand them.”

Having a clear picture of the piece was not just about speed, but also the level of detail.
At one point in teaching the piece above, Everson asked the student what he could “stack on top
of” the correct notes and rhythms that he was already playing “in order to get our mind off of the
technique?” The answer included dynamics and phrase “shapes.” Articulation is another detail
for which he provided the example of Charlier’s first etude. It contains a counterintuitive
articulation/pitch pattern that often poses challenges, even when reading from music:

If I can get kids to really buy into this and go slowly and learn it the right way when it
comes up, they never make the mistake again. It’s because now they actually know how
it goes and they have memorized the feel. …I had to work on that line for a while after I
realized my freshman year in college, ‘Oh wait a minute, that’s not where the action is,
that’s not where the slur is. Let me do what’s on the page and not what I hear in my head
until it gets in my head.’ Now I hear kids play something, and oftentimes I’m not even
watching Charlier etudes go by when I hear them play. I’m just listening and I just know
how they go. They’ll play something. It’s the right notes, it’s the right rhythm, but the
little red flag will pop up on me and it’s like I want to check that when they get done.
And [I] walk over and say, ‘Oh yeah, that’s where you played there. It’s one note over here.’ They’re astonished. That’s the picture. I’ve got the picture in my head. (interview, April 10, 2017).

Samantha echoed the concept in her interview, speaking to the benefit it has for memorization. She said:

Terry talks a lot about having a whole musical picture with lots of details, and at first I thought that was kind of overwhelming like, ‘Oh trying to memorize what the phrases are doing versus just the notes’ because I was like, ‘Oh that’s more things to think about,’ but it actually paints a clearer picture aurally so it’s easier to replicate. (student 4 interview, April 12, 2017)

For Everson, knowing the piece often includes a firm grasp of music theory in order to identify important compositional features. In the lessons I observed, he sometimes pointed out and quizzed students on such features, not only when they were playing pieces from memory, but also when they were simply playing a single-line, trumpet etude. For example, when Samantha was playing a transposition etude by Ernst Sachse, Everson asked her to consider what was “going on harmonically” (lesson 4 observation, April 12, 2017). Eventually he led her to the answer—an implied German augmented sixth chord. Even though she was not necessarily trying to learn it from memory, it was an important part of the teaching process and certainly could be used as tool for memory, a potential performance cue.

Some amount of score study and analysis is essential to memorizing a piece of music for Everson and his students. He explained, “Analysis is always useful for me—knowing key areas, thematic relationships, knowing (assuming it’s got a piano part or orchestral or band part or whatever) what’s going on in the other parts.” (interview, April 10, 2017). It is part of
understanding “the language.” “If you know the language of music better you’ll be able to play better. It’s not just playing the instrument, but the memory and the whole thing.” He compared it to knowing the principles of a mathematical theorem or the general timeline of music history.

“My knowledge of the fact is related to my understanding of the process” (interview, April 13, 2017). For example, Everson applied an understanding of the form to the first movement of Hansen’s Sonata following Erin’s dress rehearsal performance. Rather than simply pointing out the wrong notes in the performance, he showed her how she could use the form to assist her memory.

[In] the exposition, second theme in the first movement you had a lot of B-flats [wrong notes]. So remember the second theme is in the dominant. It’s in C. So when you’re going through that: [he sings section, emphasizing B naturals]. So remember when you’re in the second half of the exposition, it’s the dominant because that’s what people did in this form. (lesson 8 observation, April 14, 2017)

Over and over again in lessons, Everson emphasized knowing the piano part—what he calls the “conversation” (interview, April 13, 2017). His background as a pianist has certainly influenced this value on harmony, not just melody, and the piano skills that he is able to employ in lessons goes even further to provide significant, regular opportunities for learning the art of “rhetoric” or acting:

I talk to kids about actors [going on] stage without scripts. Why is it easier, maybe, for an actor to deliver some lines [as opposed to others]? Well, because maybe the line before theirs was, ‘Hey what color was that fire engine?’ You’re not likely to come off with ‘586,206.’ That’s a non sequitur! ‘Oh, it was red.’ … The conversation makes sense. If people will learn the conversation….
From the interviews, it was clear that Everson’s students understood the need and benefit of learning the whole piece including the accompaniment part, especially as entrances after rests and long notes present some of the biggest challenges when memorizing a piece. When asked about how an intentional goal of memorizing a piece affects the learning of it, Samantha said,

Definitely a larger awareness, especially with what the piano has, because I think with the notation in front of me, and especially in rests or longer held notes you have to rely on the piano to know where you’re at if you’re not actively counting rests, which is obviously not the point of playing with a pianist. So listening. I think I had to rely on the pianist more, so I think that memorizing things benefitted that the most. (student 4 interview, April 12, 2017)

Everson encouraged students to keep a copy of the score and study with it or even play along with it. He is aware of when students are simply memorizing their own part. He believes this is the “wrong way” to do memorization, treating it as if it were merely an “exercise” (interview, April 13, 2017). He said that when he adds the accompaniment, if this is their approach “they either get messed up by the piano all of a sudden (‘Oh, I’ve gotta interact?’) or they shut it out and they just play their thing and the pianist…follows them and we start together and we end together.” Therefore, a significant part of students’ education is “learning to listen to the piano more than themselves” (interview, April 10, 2017).

When I asked him if this was a skill only applicable to solo recital pieces with piano, he pointed out that these collaborative skills could be transferred to playing chamber music or with an orchestra. “I want them to learn the music, not their part,” he said, and continues on to explain and demonstrate how orchestral excerpts are played differently when the player is aware of the other parts going on while performing their individual line (interview, April 13 2017). “You can
know how to play the part and how to play the notes in time and stuff like that and still not know the music.” “We want to encourage kids, ‘Hey, know the scores of your orchestral pieces.’ So, what’s good training wheels for that? How about just the trumpet and piano?”

During my visit a freshman named Daniel was working in his lesson on the first movement of the Sonata by Halsey Stevens to perform from memory on his upcoming jury. The previous week, Everson had played piano with Daniel, but this time he decided to just listen. Daniel stood to play with his music set low on the stand to his side. He intently looked away from the music most of the time. By both student and teacher accounts, the memorization of the piece was coming along well. As Daniel played, Everson sang and tapped bits of the piano part along. The piece is particularly challenging metrically, with mixed and changing meters. After playing a section, Everson noted that Daniel was making some rhythmic errors and not holding notes out for their exact duration. Everson asked that they together sing and conduct, first while looking at the music and then without looking. Daniel returned to playing while Everson continued to conduct. Finally, he played the section again this time without Everson’s conducting and with the goal of keeping the meter changes in mind. Having demonstrated the practice process and seeing some improvement, Everson moved on to work on other elements of the piece.

Rhythm and meter stood out as the most challenging part of learning the piece, and Everson’s best solutions involved practice of the piano part. Before moving on to another piece, he told Daniel, “I realize you’re not a piano ‘artist’ like I am to be able to sit down” and play all of the piano part (lesson observation, April 11, 2017). He continued on to recommend

either picking through a line here and there or just listening to recordings and focusing, not on the trumpet part, but on the piano part. Sing with the pianist as you listen to the
recording rather than the trumpet player.

Everson then demonstrated this singing approach, providing a humorous caricature of various piano lines throughout one extended section of the piece.

Sometimes, as you hear I’m singing, you have to kind of listen for inner lines and things like this, and bass lines or little chunks that happen over top of other long things, but you get that inside of you and you start doing it from that end.

He recommended finding a fellow student who was willing to “sing the trumpet part while you sing the piano part. Take the other role. And then try the reverse and stuff like that. Collaborative practice.” Finally, he encouraged, “If you know both sides of the conversation that way, boy, when you come back… so solid, so solid! It’s a lot of work, but it’s worth it ‘cause it’s down inside, you know?”

In addition, Everson was emphatic about not counting rests. Speaking about Daniel’s lesson, he said, “We’re not just going to count ‘1 and 2 and 1 and 2 and 1.’ What does the piano do while you’re counting ‘1 and 2 and 1,’ holding a note?” (interview, April 13, 2017). Once again, he sang the piano part in the rests, pointing out by singing how the trumpet responds to the piano part. “The conversation between the trumpet and piano—don’t just count, know…how it talks back and forth. That’s the kind of thing that needs to be prepared in advance.” “If you know what the piano’s got in the middle of that then you’re golden. I never count the Stevens. I don’t count in that piece. I’m listening to piano.” At another point he told me how much he hates counting rests, even in an orchestra. He would rather “just know when to come in” or if he doesn’t he will “write a lot of cues in” (interview, April 10, 2017).

Ultimately, Everson is interested in the musical “message” or “big idea” (interview, April 13, 2017). Memorization is “another strategy to try to encourage kids to not just stop with
playing the right notes and actually say something with their music. How about being a musician instead of a brass player?” It follows, then, that his students’ comments in Studio Class were most often related to musical expression rather than technical skills. Likewise, Everson seemed most out of his comfort zone when addressing technical problems, such as embouchure building and tone production. When I asked him about all of these observations as it relates to memorization he responded:

I don’t want to memorize tongue placements. I don’t even really want to memorize fingerings. I want to memorize the message. When I’m playing that’s what I’m trying to put across. I’m trying to put across the big idea. When I need to, when my back’s against the wall, I’ll start talking about technical things. You can probably discern from watching me teach that I don’t like to go there too often. Or I like to limit my technical things to things that have to do more with flow so that the physical flow, which relates to musical flow. Because I’ve found in my own playing, the more that I’m thinking about the flow, the less the physical things get in the way.

He recognized that memorization requires some amount of recall of technical details.

There are certainly times when I’m playing when I’m going to be aware [of a] particular note. I need to remember this particular fingering pattern or tonguing pattern or something like that—for a split second to make sure I’m successful…. But it’s still in the service of the idea. Roger Voisin used to say, ‘Serve music.’ That’s our goal. Even all the technical stuff that we work on has to be stuff that’s really in service of saying something.

**Learning by ear, playing by ear.** Another important thread that is subtly woven throughout the teaching and learning at BU, both in areas of memorization and outside of it, is
learning pieces by ear and playing by ear. As mentioned above, Everson’s early experiences included a significant amount of playing by ear, often with recordings. Repeatedly, in interviews he reiterated his belief that “learning things by ear is so much better:”

I really have always believed that our training in classical music is backwards. We start from the printed page. I’m oversimplifying, but we tend to start from the printed page and then go to what it sounds like, trying to make the sound good. In jazz it starts from the ear and eventually something gets written down, or after a while, if you’re serious about it, you transcribe solos. It’s the oral tradition. (interview, April 10, 2017)

For Everson, notation is “just kind of a reminder of—it’s a trigger, a positive trigger, of what sound I’m supposed to make now and when I’m supposed to make it.” “We need the notation because we don’t have the time oftentimes in society any more to spend the time that’s necessary to get something down inside of us.” He has not made learning purely by rote part of his practice or his students’, however he mused about the possibility of learning this way. At the time of my visit he was experimenting with learning the Edvard Grieg’s *Holberg Suite* from a recording he heard.

Repeatedly, Everson encouraged students who were memorizing pieces to listen to a recording over and over again: “Keep listening to this until you are completely sick of it. And then keep listening!” he told one student with a good-natured laugh (lesson 8 observation, April 14, 2017). In the weeks leading up to his first jury, one student said that he was told, “when I pull out my phone to listen to music, don’t listen to anything else. Just try to only listen to the *Sonata* by] Hansen, just so that it’s just always in my head” (student 5 interview, April 13, 2017). The student added that when commuting to and from school, he would spend “the entire car ride just singing through it over and over and over again. Until I just had it so solidly in my head.”
Students were encouraged also to play with the recording often as well. By doing that, “you’ve got a free pianist,” Everson said (interview, April 13, 2017).

Although exercises playing by ear were not part of the lessons I observed, trumpet auditions at BU include exercises in playing by ear, something that may be rare for classical trumpet programs. Everson typically composes, either in advance or on the spot, brief phrases of music for auditionees to play back on their instrument. He does not give them the starting pitch, but strategically makes it “relatively easily, tonally accessible,” including mostly scalar and some arpeggiated material. His goal, he said, is to “find out what kind of musicians I’ve got here, not just what kind of trumpet players.”

It is no surprise, then, that Everson values ear training studies. Some students recognized some connection between ear training classes and their work with memorization, although it was not clear which was most beneficial to the other. When asked whether the practice memorization influenced other areas of her music education, Hope said only that it was a way to apply what she learned in ear training classes. On the other hand Samantha thought that memorization on the trumpet influenced these other classes: “I would almost say that the work I’ve done [on the trumpet] helps more for aural skills, which is interesting. I feel like it should kind of work the other direction,” she mused aloud (student 4 interview, April 12, 2017). Another student perceived that the Concone exercises improved his short-term memory for melodies that is required for transcribing melodies in exams. He has also transferred his skills in memorization to Group Piano and Keyboard Harmony classes, which require reading of more than one line and managing his fingers. He even noticed himself applying habits of repeated listening and “singing in my head” to prepare for music history listening exams (student 5 interview, April 13, 2017).

**Practicing when not practicing.** It has already been noted that Everson went over pieces
in his mind throughout the day. This was something that he encouraged students to do as well.

When Samantha arrived upon a particularly challenging technical passage in her lesson, Everson pointed out that it could be practiced when she walking between classes. He demonstrated blowing the articulation of the passage and explained,

> We often don’t think about practicing when we don’t have the trumpet. You know, maybe it’s sometimes best if we don’t think of it as practice. We can because it will make us feel a little bit better, pat ourselves on the back: ‘I did fifteen minutes more practice while I walked up to [the science building].’ We do have to practice a lot of techniques that have nothing to do necessarily with this piece of metal, right? (lesson 4 observation, April 12, 2017)

To the blowing he then added the fingering, which introduced another layer of challenge that could also be rehearsed away from the music. Using mental practice is both a tool for memorizing pieces and also an advantage to having something memorized. If the passage is memorized one can work through technique at times when the music is not at hand.

**Facilitating technique.** In the same lesson, Everson mentioned another benefit of having something memorized: it becomes “easier.” Intentional memory of something is a way to overcome technical challenges. Recalling again the time when he was learning Castérède’s *Sonatine* he says, “it was kicking my face” until he intentionally memorized one part that was not yet committed to memory. In Samantha’s case, Everson recommended intentionally memorizing the section that was giving her the most troubles, not just to satisfy the requirement of memorization for the jury, but to ultimately develop technical proficiency. Another student cited a similar psychological benefit:

> I think it stops you from noticing so much things that are coming up. …You see the
music and your eye sort of peripherally sees high notes (what you call high notes—things you have trouble with). It starts messing with you before you’ve even gone there. I’d say that’s less of an issue when you’ve had it memorized. …I think it just removes the uncertainty that you’re facing too soon, before you get there, I suppose. (student 1 interview, April 11, 2017)

Other musical activities for balanced pedagogy. Shortly after I began observing lessons and conducting interviews, an important consideration emerged—that is, recognizing how memorization is situated among or balanced with other areas addressed in lessons. While I was not surprised to see relatively little explicit talk about memorization, I was surprised to see time spent in many lessons on two things seemingly unrelated to memorization: duet playing and sight-reading.

Duets were part of most of the lessons I observed. Everson insisted that this was not always an intentional part of his students’ lesson since he is not particularly systematic in his approach. Yet, he told me he likes to include duets in lessons for two reasons: as a reward for students to play with their teacher and as a way to provide a model for the students. The latter goal ties in with points made earlier: learning through playing and listening are of primary pedagogical importance. The duets also served as an opportunity to exercise collaborative playing, much in the same way that Everson plays piano regularly with his students.

Sight-reading figured prominently in the teaching and learning in the BU trumpet studio either in the form of these duets or solo études assigned for that purpose. Everson attested to his own “instantaneous connection between the notation and the sound in my head,” suggesting that this is a primary goal of ear training courses (interview, April 10, 2017). Like playing by ear, sight-reading is a part of the audition process (with exercises composed by Everson as well).
When discussing sight-reading, Everson looked back again at his own development:

I just did it by doing it, by reading and reading and reading on my own, way before I got to college, just reading and reading and reading and being voracious. Kids are behind…. Almost everybody who arrives at college is behind musically. Behind where they should be if they really were serious about making it a profession, because they don’t know and nobody told them, ‘Hey, just mess around with music. Just spend a whole lot of time with music.’ [Instead,] they do what their teachers tell them: ‘It’s time to do this now. I have to practice this etude….’ (interview, April 13, 2017)

The sight-reading exercises I observed in lessons provided a distinct contrast to the learning of works to be performed from memory. Through the reading of a variety of music by sight, students develop the ability to make musical sense of things quickly. For pieces to be memorized, Everson expects sustained practice over time to learn a particular piece of music until it is “down inside of us” (interview, April 10, 2017). In many ways, sight-reading—the instantaneous, fleeting, and often surface knowledge of written music—is opposite from memorization—the gradually-formed, long-term, and deep knowledge of music, whether learned by notation or by rote. Yet, Everson points to a similar ingredient in both: time spent playing. It is perhaps two sides of the same coin that he encourages students to spend time just playing things to develop fluency in sight-reading and detailed familiarity of memorized works. He also wants students to get the bigger picture of a piece of music by playing through sight-reading exercises without stopping. When I asked Everson if he thought there was indeed a balance between regularly sight-reading new pieces and learning pieces well enough to be performed from memory he agreed:

Yeah, I think there has to be a balance. We need both skills. We need to be able to go in
with the toothbrush on the barracks floor and, just centimeter by centimeter, clean up the whole place. But we need to know how [to sight-read] because people get called for brass quintet jobs, and if they can’t read their way out of a paper bag, they’ll do it once and then [others will] say, ‘We’re never calling them again.’ (interview, April 13, 2017)

Memorization for life. “Don’t learn a piece for a jury. Learn a piece for your lifetime,” Everson likes to tell his students (interview, April 13, 2017). One of the objectives for memorizing music is so students have pieces known well for the future since they never know what they may be asked to do. For example, he mentioned one recent graduate who uses memorization in her job in the U.S. Army Old Guard Fife and Drum Corp. Ultimately, however, Everson recognizes that many of his students will not perform from memory in such a significant way as this graduate or himself:

Now they might not exhibit the same level of proficiency at all these benchmarks that I do. They might not perform from memory as well as I do. They may not keep up their theory as well or the other habits and things that I would refer to. But even if they might not be directly applicable, they are life skills. The act of being able to get up and do this is a life skill. That’s why they have Toastmasters, right? So you can get up and talk in front of people without getting all conflustered and defrabulated and all this kind of stuff. There are people out there that would kill to have the self possession to be able to go up in front of people and play a piece from memory. So, yeah, it’s a little bit more intangible, but it’s certainly a skill that carries forward in some aspect of their life at some point.

Everson noted graduates who work outside of music, including one who is an associate producer for Hollywood films and another who is a medical doctor. He said that the skills these students
learned through their studies at BU apply “not always in noticeable, tangible ways, but the thinking of the details, the presentation of things, the whole thing” do have bearing on their future. Having students perform solos is one way to “make them do something harder than they’re ever going to have to do in their real job.”
CHAPTER 5

MEMORIZATION IN JENS LINDEMANN’S STUDIO AT UCLA

As in the previous chapter, this chapter will include a brief introduction of the site, the teacher’s and students’ beliefs about and experience with memorization, and several concepts, themes, and strategies that stood out within the teaching and learning. This description of this second site is slightly shorter for two reasons: first, as will be made clear below, memorization is not required so it was not a practice that was fully shared by the students or as deeply considered. Second, the data set collected was slightly smaller due to factors beyond my control that resulted in one fewer student interview and one fewer lesson observation (six of each).

UCLA is a very large public university situated in the Westwood neighborhood of the second largest city in the United States (U.S. Census Bureau, 2016). The UCLA Herb Alpert School of Music includes three departments: Musicology, Ethnomusicology, and Music, reflecting its aspiration “to educate the whole student through productive collaborations between performance and scholarship, a cross-cultural, global understanding of the art of music, and preparatory training for a broad range of careers in music after graduation” (“Overview, The UCLA Herb Alpert School of Music,” 2016). Like other major cities, Los Angeles boasts several other prominent tertiary music schools, including the University of Southern California and The Colburn School.

Jens Lindemann

Since 2001, trumpet students at UCLA have been taught by Jens Lindemann (b. 1966), Professor and Area Head of Brass and Percussion. Born in Germany in 1966, Lindemann grew up in Alberta, Canada where he learned the trumpet through a school band program (Biggs, 2010; “Former members of the Canadian Brass,” 2000). Lindemann performed as a soloist with
the Edmonton Orchestra at the age of 16, but denies that he was a prodigy. “My gift is the gift of stubbornness,” he explained. “I inherited that from my parents who are immigrants” (interview, May 25, 2017). He was trained primarily by orchestral trumpeters James Thompson at McGill University and Mark Gould at The Juilliard School (Koehler, 2015, p. 103). Lindemann spent the better part of seven years, from the age of 17 through 24, pursuing various local, regional, provincial, national, and international competitions, during which time he competed in an estimated forty events (interview, May 25, 2017). Finally, in 1992 he won the Prague Instrumental Competition in trumpet and the Ellsworth Smith International Trumpet Solo Competition which helped to establish his career as a trumpet soloist (Colgrass, 1999; Goff, 1993). In 1996, he joined the Canadian Brass with which he concertized and recorded until 2001.

Although classically trained, Lindemann performs as a soloist in a variety of styles thereby “helping to redefine the idea of the concert artist by transcending stylistic genres and the very stereotype of his instrument” (“Jens Lindemann,” 2016). In addition to several recordings with the Canadian Brass, his discography includes recordings as soloist with orchestra, brass band, wind ensemble, piano, jazz combo, and All Star Brass, an ensemble he formed and led as Artistic Director. The variety of styles and even the flashy attire he dons have been most clearly influenced by Doc Severinsen, whom he calls his “hero” (Lindemann, 2007; Morgan, 2006). Throughout his career, Lindemann has been active in the international community of trumpet players including serving as host of the 2008 ITG Conference at the Banff Centre in Canada. Lindemann has received numerous awards including a Grammy nomination, Juno award, Echo Klassik (Germany), and was granted membership to the Order of Canada in 2014.

Lindemann came to UCLA at the same time he departed the Canadian Brass. “It was time to move on and return to my solo roots,” he said (Morgan, 2006, p. 11). Teaching alongside a
solo career was something that David Hickman personally advised Lindemann to pursue early on in order to provide a “balanced lifestyle” (interview, May 25, 2017). “We learn more from students than they ever learn from us,” he told me. In addition to his teaching at UCLA, Lindemann has also held summer classes at the Banff Centre.

**Lindemann’s background performing from memory.** Lindemann first recalls playing hymns by ear without music in church. “It never dawned on you that you were actually playing something without music,” he said. “It was more just that you were swept up in the emotional moment of what was happening. That is a key component to memorization—staying in the moment.” Later, when he was sixteen, he memorized the Concerto by Alexander Arutiunian for a performance with the Edmonton Youth Orchestra. He was motivated to do so after watching his peers, who were pianists and violinists, perform concertos from memory. At that time he thought that a “true soloist” would only perform from memory. He said that “it hadn’t yet dawned on” him that trumpet players might not perform from memory:

I hadn’t seen that Maurice Andre didn’t memorize. He played with music! Had I seen that early on I may very well have been influenced as well to say, ‘Well, our greatest trumpet soloist—you can’t deny he’s an icon—he doesn’t play from memory.’

Ultimately, it was an experience a few years later that Lindemann described as pivotal in solidifying his beliefs in memorized performance:

The first time I think some trigger went off in my brain about why memorization was important was before I had committed to memorizing everything. (I had done some memorizing, but it was just baby steps early on in college.) I did a recording. It wasn’t even a difficult piece. It was the Handel *Aria Con Variazioni*, [arranged by Bernard] Fitzgerald, on C trumpet. We did two versions of it—two full takes, and the guy said,
‘Well, we got it.’ I said, ‘We’ve got time. We’ll do one more.’ I thought, ‘Well, we’ve got it in the can so let’s go do one more.’ And I took the music stand away. So we did a third take, and I finished it, and the producer got on the microphone and said, ‘That was the take! Holy shit! You sounded so much better that time. What did you do?’ I said, ‘I took the music stand away.’ He was in the booth. He didn’t see it, right? So all he did was hear the result. (interview, May 24, 2017)

This experience caused him to discover:

- two things. One, I felt free to play because I didn’t feel the stress of, ‘I gotta get this.’
- Two, I didn’t have the music there so you automatically do this. You don’t do this because you don’t see danger coming. That, Brian, was the first time I realized the correlation between playing something memorized and playing it with the music in front of you and how much better we play. When we know what we’re doing—if you practice the piece and you’ve actually studied it and then take it away—there’s another level of freedom that will show up. That alone is reason enough to make somebody say, ‘Look, learn something memorized.’

Later, when Lindemann was single-mindedly focused on winning solo competitions, he committed fully to developing his ability to perform from memory. “I was literally obsessed with doing solo contests. That was literally all that was in my life,” he admitted (interview, May 25, 2017). So he noticed when one trumpet player at a competition in Munich in 1986 was performing from memory and “everyone talked about him” (interview, May 22, 2017). This player, Bill Foreman, advanced in the competition, whereas Lindemann “didn’t go anywhere.” When Lindemann returned home at the age of seventeen from this competition, he made a concerted decision to memorize his music. The desire to succeed, combined with the fact that not
many others were doing it at the time prompted him to take this additional step. It was really a “business decision,” he said. “I will be remembered out of a hundred players if I can be that one person that memorized” (interview, May 25, 2017). Eventually, his efforts paid off when he won the Ellsworth Smith International Trumpet Solo Competition in 1992, performing all pieces from memory just as Terry Everson had done two competitions earlier in 1988 (Goff, 1993).

Lindemann attributes his success to his parents who passed on their work ethic. “‘Work harder’—that is a gift that they gave me, and I’ve always been grateful for them,” he reflected (interview, May 25, 2017).

When Lindemann began playing with the Canadian Brass at the age of thirty his background performing from memory was helpful. This, combined with the ensemble’s approach, “refined” his ability to perform from memory, taking it to a “truly professional, high end level.” Any anxiety that he experienced early on when performing without music quickly went away:

The more you do it, the less fear you have. In my particular case, once I joined the Canadian Brass—by this point I was able to memorize a fair bit, but when I joined the Canadian Brass I lost all fear. There was no nervousness anymore at all. But that was exceptional. I had an exceptional opportunity with an exceptional group in an exceptional career that very, very few players will ever get exposed to. You see the world differently after that. You leave that and you come back to the more regular world and you’re kind of chuckling, going, ‘This isn’t stressful.’ Playing 40,000 people in London Hyde Park in the middle of summer with eight TV cameras? That was stressful. This is nothin’. (interview, May 24, 2017)

Currently, Lindemann performs most pieces from memory because he believes he will
play it better and he’s “known for doing it” (interview, May 25, 2017). At times, though, he says he does not have time nor the “room in [his] head” for memorizing all of the repertoire considering the various demands of his playing career (interview, May 22, 2017). He wishes he could memorize a lot more, and in fact, there are pieces written for him that he feels guilty that he has not learned by memory. He says that it is not that his ability to memorize has deteriorated but that he now has limited resources of time and more “life stuff” that serves as distraction (interview, May 25, 2017).

**Lindemann’s memorization practice.** Lindemann was able to describe several techniques he utilized, particularly in the early years of memorizing repertoire for competitions. One of the first things he mentioned is that he likes to begin learning a piece from the end. He explained that when you feel fatigued by the end of the piece, it is the part you know best. He also learns the piece in chunks, allowing him to “concentrate obsessively” over a section of as little as eight measures long for as long as it takes. Patiently dividing a piece into manageable pieces is important in order to “stay motivated in a positive way.” He noted, “Positivity is the most important element to successful anything and especially something like memorization where you’re working without a trapeze net.” Frustration inevitably comes the next day when the chunk that was learned has been forgotten. But Lindemann has experienced the long-term cycle of committing the music to memory:

> If you work through even the frustration of ‘Ah! I forgot that today’ you can’t see that as a negative; you have to see it as part of the process. And you’ll get better and better at accepting that when that happens—that frustration the next day after all the good work you did yesterday, the day after it’ll be better. Even then it might get worse. And then ironically if you walk away from it for, say like a week and come back to it, it comes
back even more quickly. You’re almost astounded, like ‘How did that come back?’ So there’s a correlation between practicing chunks incessantly and actually walking away from it and then coming back to it.

This cyclical process is no different from learning a piece of music with the written score, Lindemann suggests. Another advantage is that often when he returns to the written page after committing it to memory he sees it in a different way. He provided an example of sextuplets from Enesco’s *Legend* that can be grouped and tongued as two sets of three or three sets of two. His perception of these passages changed once he returned to the score after having it memorized.

Lindemann also does a lot of fingering practice away from the trumpet by simply fingering without the trumpet or using a set of old trumpet valves. This develops the connection between the pitches and the fingers. A major advantage to this method is that it “takes chop time off of your face. …You’re actually learning something very productive and keeping your face much more fresh as opposed to being tired, forcing through a passage and then subconsciously developing bad technique because you’re just spent.” This kinesthetic process went beyond the right fingers “going up and down,” but required them to “lock,” especially for highly technical pieces such as Paganini’s *Perpetual Motion*.

Eventually Lindemann reaches a point where he can see the music, including where it is on the page, while he is playing. Lindemann described this process:

I would stare at like four bars of music (play it, play it, play it) and I would turn it around and play those four bars back and quickly turn the stand around. So it was like I was trying to teach myself a form of photographic memory.

When I asked him about this further he described it as a process that requires muscle memory
and aural memory that in turn develops a visual memory:

I see where it is on the page. I see exactly where it’s positioned and then when I take it away you can still see that. It’s like you’ve imprinted that page. And then through a combination of muscle memory and aural memory you memorize what it is. It’s not that I can see the notes. But after a while you get good enough that you can actually do that, too. It’s pretty cool.

Repetitive mock performances have also been important to Lindemann’s preparation, following the philosophy of “the more you do it, the less fear you have” (interview, May 24, 2017). “When you first memorize something and you play it without music,” he said, “you’re acutely aware that there is no music there. The way to [get beyond that feeling] is to do practice runs.” By performing his competition pieces often for several friends, playing without music became more routine:

And the very first time you’ll make mistakes, but they won’t feel as critical because they’re your friends and they know you’re going to make mistakes. You want those mistakes to happen because you log immediately, ‘Ha, I had some mistakes in that area, that area, that, that, that.’ And then when you’re all done you go back and you hammer those areas in. Every time you do it ensuingly you’ll be better and better at it.

For one piece in the Ellsworth Smith Competition he recalled not doing this and noticing a “nagging” feeling. “In the back of my mind it was like, ‘This is the first time,’” he recalled.

Lindemann also mentioned the importance of knowing the piano part to assist in memorization, listening to recordings, some analysis, and playing the trumpet part on the piano to learn the intervals. Comparing himself to others, Lindemann pointed out that he does not have “perfect pitch” or a “photographic memory” (interview, May 22, 2017). He admits that he does
not have the “genius level minds” like some of his colleagues in the Canadian Brass, such as Ronald Romm or David Ohanian. He is able, instead, to identify with many of his students who may be new to performing from memory. “It’s a challenge for younger players starting out, I’ll concede that for sure” (interview, May 24, 2017).

Memorization in Lindemann’s teaching. In order to appreciate how Lindemann’s own experience with memorization is integrated with his teaching, it is important to understand his overall teaching philosophy. He articulated this philosophy in a published interview:

I promote the idea of creating an independent curriculum based entirely on what a student wants to get out of their university experience. I go at their pace, not mine. Different players have different visions of life and career, and it’s my job to help them discover themselves through the process of working together. We are all just part of an educational continuum in their lives, and the gratification of watching them find their way often makes me feel like a parent. (Biggs, 2010, p. 21)

Consequently, he also resists the common practices of juries and grading since “we are not a business where you can quantify quarterly reports” (interview, May 24, 2017).

Lindemann’s philosophy was slightly different when he first came to UCLA. He had students memorize a Concone etude each week in order to challenge them beyond what they were used to. This was influenced in part by his wife who is a pianist. He gradually relaxed the expectation to memorize “something” every quarter until he completely gave up that practice (interview, May 25, 2017). Lindemann made these adjustments because both his students and the philosophy of his teaching had changed. Regarding today’s students he said, “We have to be careful how hard we push them. They’re softer now.” He is also concerned about the overall impact of students’ coursework:
I’m always constantly worried about students—their loads, all the things that. We’re at a big research institution; they have to pull good grades—all that shit. And if they’re going to lose sleep over something that I am making them do to memorize when I know damn well they’re never going to go on to perform, why would I lay that on them as a blanket rule in the studio? (interview, May 24, 2017)

Philosophically, Lindemann now prioritizes the student’s own goals and intrinsic motivations above any curricular goals he might wish for them. He wants to give students what they want, not force something on them. For example, when discussing the possibility of giving Beth, a student for whom performing on trumpet was not a career goal, a memorization exercise he explained,

It would benefit her if I made her memorize something, but the reality is she doesn’t really want to play the trumpet. So, it would also be detrimental to force her to do something that she’s basically not going to end up pursuing. …Why would I make her do something that intentionally takes her out of her comfort zone? There are lots of other ways that I could challenge her that have nothing to do with the trumpet. Pushing her on the trumpet is going to put her in a position of stress that she is unwilling to take on, just doesn’t want to do it. …She’s interested in other avenues. So memorization is not something she will ever use.

Lindemann prefers, instead, to “inspire” students with subtle challenges and suggestions that they often accept on their own accord. He also acted as a model for the students and, in the past, created a culture in the studio in which it was something to aspire to. For example, he described a student who memorized György Ligeti’s *Mysteries of the Macabre for Trumpet and Piano* in collaboration with a fellow trumpet student who learned the piano part from memory in
preparation for the NTC. They did it not because I told them to do it, but just because memorization was so prevalent around me. It was so prevalent around the trumpet ensemble. …They just assumed, ‘Well, let’s do it.’ It was my proudest moment as a trumpet teacher thinking, I’ve actually inspired them enough to do this and I never asked them to. They just did. (interview, May 25, 2017)

When I asked what motivated them to do it, Lindemann replied, “Winning, winning. They wanted to win. I have told people for years, ‘If you want to have an edge in a solo competition, memorize your music.’” A current student also decided to learn *Mysteries of the Macabre* following Lindemann’s challenge: “Well, if you can’t do it, that’s cool,” he told the student.

In this way, Lindemann shows sensitivity to students’ readiness to memorize. He evaluated one student I observed as being ready to be pushed towards memorizing the piece he was working on, the *Concerto* by Arutiunian. Even before Oliver, an undergraduate Trumpet Performance major, was asked to turn the stand around and play parts of the first theme of the concerto from memory, I noticed that he would often play with his eyes closed. When I asked Lindemann about this later, he said that playing with your eyes closed is another one of the telltale signs I look for with people when they’re playing. You can see it early on, where they naturally just kind of go under this zone. And the minute they’re doing that you know they’re already not reliant on the page, so they’re ready. They’re ready to get pushed out of the nest. It’s another way to teach people how to subtly learn how to memorize. (interview, May 25, 2017)

Lindemann has also come to accept that performance practices are often specific to the instruments and even the genre. For example, trumpet players are often expected to transpose
whereas it is not often part of the practice for pianists or clarinetists. Similarly, students who want to be orchestral players don’t want to memorize, he said.

Over the course of my visit, Lindemann began to question his current expectations for memorization. He was increasingly eager to reintroduce memorization to students in the coming fall semester, and he openly wrestled with what to do with students who were not interested in being pushed beyond their comfort zone in this area:

So it’s a bit of a conundrum when you have someone who is so obviously not interested in doing it. You can’t change their minds. You shouldn’t even try to change their minds. So why would you then force them to do things that are still a little outside the comfort zone? Yet, the inverse is also true. That’s exactly why I should do it. Baby steps. Not to the point where it’s like, ‘If you don’t memorize this, it’s going to affect your grade.’

(interview, May 24, 2017)

In general, Lindemann preferred not to use grades as a way to motivate students. He stated, “My philosophy is everybody gets an A. Show up—you get an A. The only people that will not get an A are people that will either disrespect me or are just lazy.” Therefore, instead of having a graded jury, he holds a studio class in which students perform for each other. He cited the group lessons in the Paris Conservatory as a model for using this as a venue in the future for practicing to perform from memory. In such a community, “you start to develop a sense of trust and belief that what you’re doing is okay and it’s fun. And if you make mistakes early on they’re not dire.” He also imagined using Concone etudes again, not on a rigid weekly schedule, but perhaps over several weeks. It would be something within reach of students that he might tell them,

Look, this isn’t that hard. You don’t have to do it in a week. Do it over the next four weeks. Take your time. It’s not a big deal. If you can play the National Anthem
memorized then you can do a Concone lyrical exercise.

Although it was not my intention, by the end of my visit Lindemann’s perspective on student memorization changed. He decided, “In spite of my current philosophy, I think I was smarter a few years ago implementing memorization, and I think I will go back to it.”

**UCLA Trumpet Students**

The UCLA Trumpet Studio is made up of all students studying music whose major instrument is trumpet. Of the six students interviewed, two were majoring in Music Education while the others were majoring in Trumpet Performance. Two students were pursuing Master of Music degrees and the others were Bachelor of Arts degrees. While the focus of Lindemann’s instruction is on classical playing, the students’ interests showed some diversity. Indeed, he said he is proud of his “students who have graduated to everything from orchestras to military bands to college professors to being first call freelancers in Los Angeles to touring with top pop groups” (Biggs, 2010, p. 21).

**Varying experiences and perspectives on memorization.** Memorization of repertoire is not a curricular expectation in the trumpet studio at UCLA nor is it something that Lindemann typically requires, therefore students’ experience varied widely. Lindemann does require his students to memorize a brief routine based on a flow study by Vincent Cichowicz at the outset of their time studying at UCLA. “They do it because I say it,” he said. “It’s like a vitamin” (interview, May 25, 2017). He checks the memory of the undergraduate students by having them play this first thing in each lesson.

The only other shared experience of memorizing music for some students over the years has been in performance with the UCLA Trumpet Ensemble. As early as 2004, the group performed from memory at NTC (“How was the National Trumpet Competition?,” 2004), and in
2005, they won first place, again performing from memory. According to Lindemann, his was the “first group to memorize in the history of the NTC” (interview, May 25, 2017). He says that the group came to memorize their repertoire as a result of a mere suggestion:

I put my experience as a soloist on them. As a soloist I know I achieve better results when I memorize. It showed that I was committed. It’s a lot to ask of a whole group. The star players? It’s easy, but what about the [average players]? They can’t do it. But they all as a group were like, ‘We’re committed. We’re gonna do this!’ … I didn’t make them. I said, ‘It’s a good idea.’ And they committed. They had extra rehearsals. They came in late at night at eleven o’clock to do this thing and they won. And it blew everybody away. Everyone was especially shocked. ‘What do you mean they had no stands?’

Lindemann says that his UCLA trumpet ensembles’ performances from memory had groundbreaking effects:

That’s now become normal at NTC. In fact, almost all the winning groups in the last seven or eight years have never had music. Ever. They all say that’s the new standard. I’m also very proud that my own students took it upon themselves to do that. And it can be done by anybody if you choose to commit to doing it.

Of the students I interviewed, only one student who had also completed his undergraduate studies at UCLA shared this experience of performing in trumpet ensemble from memory.

**Positivity towards memorization.** Although students were not required to memorize their solo repertoire at UCLA, three of the six students interviewed reported that they had done so at some point. In all cases, these were also students that reported having memorized solo works prior to their studies at UCLA. For example, Andrew, a graduate student, recalled his first experience performing Geodiche’s *Concert Etude* for a performance in high school. He said, “I
just worked on the Concert Etude a lot, and by the time the solo competition came around I had already had it memorized. It wasn’t something I did consciously” (student 1 interview, May 23, 2017). It was not required, but he recalls his teacher at the time recommending it to him.

Memorization is something that comes “quickly” for him. He explained,

I really didn’t have to work at memorizing until I came here [to UCLA], and I had a lot of concerts in short succession, and I want to memorize things. But basically, up until then—and honestly most of the time in college, too—I would just kind of memorize things within a few rehearsals and be fine for the concert. I haven’t really had to work too hard at memorizing things.

Andrew went on to perform both of his undergraduate and graduate recitals from memory primarily because he experienced memorization as freeing and beneficial for expressivity and communication. He reflected,

When you have something memorized it really makes you engage with the phrasing and the musicality more, because instead of trying to translate something else, you’re telling the story yourself. And it frees your attention up to really present it. I think when you’re reading music that’s on a stand—even if you have it really well memorized and you know the part very well—if you’re playing it like you’re focusing on the music and reading the music, it’s like you’re holding the microphone up to the composer. But if you have the [music] away and you’re telling the story, you feel like you’re on the mic. I feel like it accesses a different part of your brain.

Andrew acknowledged that his absolute pitch was an important part of his ability to memorize well. He compared his ability to hear and imitate the pitches he heard with riding motorcycles:

Your body goes where your attention is and in the same way, if you have a very clear
sound in your head of what you want to sound like, like if you remember your favorite
recording, that’s like looking around the corner and looking where you want to go. If you
hear the sound, you can imitate that.

Andrew noted no difference in anxiety between performing with or without music.
However, he perceived deeper levels of knowing a piece of music, especially when memory was
tested in performance situations and “resilient to distraction.” He explained,

I can feel it when [the music is] partially memorized. I can [play] it by memory but I have
to concentrate really hard. A few weeks later, once something’s really memorized, I don’t
have to concentrate. And it’s like telling a story they’ve told enough times that you don’t
have to worry about recalling the story.

He even prefers to memorize brass quintet and trumpet ensemble music. “It frees my awareness
up to what’s going on in the rest of the group,” he suggested.

Another graduate student, Sean, performed a jazz solo in high school from memory and
then had only ever performed one other solo, Allen Vizzuti’s Cascades for Unaccompanied
Trumpet, from memory for his senior recital at another institution. It was his own idea, not a
requirement. He said it was “an experiment… to see how much work I’d have to put in to
memorize something short” (student 3 interview, May 25, 2017). Even though he says he has
“perfect pitch” and can “memorize things easily,” he approached learning the piece differently,
recognizing the challenges of rests and knowing what comes next. It required additional
repetition, he said. Looking back, he described the performance with delight:

It was great because it was the first piece on the recital, so not only was I really nervous
because of that, I was nervous because I didn’t have a stand in front of me. But you
know, as I started going, I had played it so many times, it just kind of turned in to another
run through. And I was just like, ‘Okay, I can do this. I know how it feels. I know how it sounds, and I know where I’m going.’

He strived to put words to the sensation he experienced performing from memory:

You’re in a totally different headspace when you’re not reading music because…it has to be inside you. …I feel like you can be much more musical when you don’t have music in front of you, because you’re not thinking, ‘One, two, three, four.’ You’re not counting. …You’re just thinking about the feel of it… It’s not as technical; you’re not as involved in the technical aspect of playing trumpet. You’re more involved with just singing a song.

The experience piqued his interest to continue doing it more: “It’s really incredible,” he related enthusiastically, “being able to just kind of just sing a song just from your head with an instrument in front of you. I want to do more of that. I need to do more of that.” So, when Lindemann subtly put forth the challenge to learn Mysteries of the Macabre from memory, Sean accepted. “It’s the hardest piece I’ve ever played by a lot, and so if I can memorize that, nothing else is going to be an issue,” he said confidently. He eagerly looked forward to the performance on his recital the next year, having already “put in the gritty work” to learn the hardest sections. Singing some of these challenging parts as we talked, he explained, “It’s just become fun because it’s just part of the song now. It’s a crazy, not-very-lyrical kind of bombastic song but it’s just so much fun. Part of what makes it fun is the challenge.”

Ambivalence and opposition towards memorization. Of the students I interviewed, three had mixed feelings towards memorization and one was decidedly opposed to it. All of these students had little or no experience performing purely from memory and downplayed its value in some ways. Beth, an undergraduate student who had not memorized anything other than marching band music, articulated a strong defense against the need for memorization. She said
that while doing so was “a little bit more impressive” to her,

I don’t feel that it holds that much more bearing on skill or anything. If anything it’s more of a presentational choice, and I don’t know that it necessarily takes away anything from the performance to play with music in front of you. (student 2 interview, May 24, 2017)

She described the “school of thought” that involves “free[ing] yourself of the music being in front of you” as something that was “too much” for her. There were two factors: the additional time required and her experience of “performance anxiety.” She said, “to have that additional potential opportunity to blank on something and have nothing there to catch me—no musical cues, no visual cues—it would be solely muscle memory and that’s just terrifying to me.” She speculated, “If I played a different instrument that was more visual I think it would be different because that’s just my learning style.” She valued the written music that served as a “safety net” for her and perceived performing from memory as involving only kinesthetic memory.

Several students, in fact, preferred to perform music that was “memorized” to some degree, but with the music on the stand. This is something that two students had actually done and another student said he would prefer since it is “the best of both worlds” (student 4 interview, May 25, 2017). The concern of forgetting the music led them to keep the music in front of them, “just for the sake of reference.” James, a sophomore majoring in Trumpet Performance explained,

If I were trying to memorize something and I go up on stage and try to play from memory, I would be induced with a great amount of anxiety just because I would start to think, ‘Oh, god, what if I forget a note or what if I forget where I am?’ And that would definitely get the best of me.

Steve, an upperclassman, came to college with some experience performing from
memory in marching band and parts of the *Sonata* by Paul Hindemith and the *Concerto* by Arutiunian. He said that the memory of a piece comes “subconsciously” for him: “I never actively try to memorize the piece. It just happens from practicing it so much” (student 5 interview, May 24, 2017). However, he described performances in which he stopped short of performing without the music entirely:

I performed the Arutiunian [on my junior recital]. I had the music [on the stand] but I didn’t look at the music. It was just a backup—just in case I felt like maybe we got off, me and the pianist. …I performed [Enesco’s] *Legend* for last year’s studio recital that we had, and I pretty much had that memorized. But I always like to have the music there just in case, unless I’m really, really pushed to completely abandon the music and make sure that it’s 100 percent memory.

He preferred to have the music present as a “safety net” and also coveted having a stand on the stage “as a visual aid…that can make you think that it takes the audience’s eyes away from you.” Even more than something to hold music, he saw it as “something to shield us from maybe any negative criticism or feelings the audience might have about your playing.”

Another undergraduate student, Adam, told me that his former teacher recommended memorizing the music but keeping it on a stand in performance. He explained,

So you have the notes memorized, but it’s there for the other stuff on the side. In case you need the music, it’s right there in front of you, and you should be following along with it even if you’re not really actively reading it. (student 7 interview, May 25, 2017)

Like Steve, Adam’s biggest reason for keeping the music present in performance was anxiety. When I asked Adam if he would perform his current piece from memory for his classmates at the end of the semester, he said,
I’ll have the music, but I’m not depending on the music in any way with that one. …I just want to have it there just because I have really bad stage fright nowadays. It happened from falling on my face during my first jury in college [at another institution]. I just walked out. And so since that, I’ve had really, really bad stage fright and so I don’t want to do anything that will make it worse. And while memorization is really good, and when you’re in the moment you don’t care, but going into it, not having your music makes you feel a little naked. And so it’s something I would like to have just because of my stage presence—the lack thereof.

In Adam’s lesson that day, Lindemann had him play one passage without the music as a pedagogical strategy. Adam missed one interval and later gave this as an example of why he feels the need to keep the music on the stand.

To be clear, this was not something that Lindemann advocated. In fact, he told me that keeping the music out in a memorized performance “never works” (interview, May 22, 2017). In one lesson Lindemann explained why:

When I first started memorizing I would put the music here [off to the side]. It’s like ‘I won’t check it out. It’s right there, but in case I need it.’ That was the worst thing in the world to do, because you’d be playing along and then you’re like ‘Shit, I just want to have a look.’ And then you’re so preoccupied with what do I have memorized and where am I finding it on the page then you completely screw it up. Right? (lesson 7 observation, May 25, 2017)

Later, Adam shared of an experience performing Haydn’s *Concerto*. “I think I looked at [the music] once, like for one run,” he said, “and I cracked the run, ironically” (student 7 interview, May 25, 2017). Nevertheless, these students valued the preparation afforded by memorizing the
music to some extent while retaining the reminder, or at least the comfort, of the music there. “I think that having a piece memorized and then still having the music there kind of allows you to have a different level of freedom and ability to focus on not the notes or the rhythms,” James said (student 4 interview, May 25, 2017).

In some ways, this practice of keeping the music on the stand is similar to experiences that Lindemann and others who had performed purely from memory shared. Even Andrew, who had a significant amount of experience performing purely from memory, described it in this way:

You can practice something with music and never try to memorize it and get to the point where you’ve learned it so well that you really have memorized it even though you’re looking at the music. You notice that you’ll be playing it with the music in front of you and kind of looking at it but not needing it—not really. You’re still kind of telling [the story] yourself and the music’s just there to kind of confirm what you already know is about to happen. (student 1 interview, May 23, 2017)

Lindemann shared a similar thought when he told me that his past experience performing without music helps to inform performances with music. “I know how to rip my heart out on [a] passage, even if I’m going to play it off the page,” he revealed (interview, May 25, 2017).

Two students’ reluctance to pursue performance from memory was due in part to their career goals. “Unless you are trying to be that world class soloist, like Jens where you’re expected to play the Arutiunian on the spot all the time or something, I don’t feel like it’s really necessary,” Beth argued (student 2 interview, May 24, 2017). Indeed, she had earlier admitted that she had no desire to be a trumpet performer and had realigned her career goals towards work in the music industry. James also believed that his career goals of performing his own “urban/modern” music on trumpet made performing classical solos from music irrelevant.
He shared that he currently had other goals for his trumpet playing:

Right now I’m just focused on technical stuff and the fundamental side of learning. I’ve never actually sat down and focused, like ‘Okay, I want to get better at memorization.’ Although it is something I think is very useful, I definitely think that I just haven’t spent the time to try to make it better.

He did, however, imagine performing his own music without the written page sometime in the future.

Asking students who had not performed a piece completely without music what they imagined it would take to do so yielded keen insights. Most were optimistic, albeit naïvely so, that it would be possible given the time. Beth’s idea of what it takes to learn a piece to the point of not needing the music was merely speculative. “At a certain point,” she said, “I think that if you’re going to perform a solo, you probably know it so well anyway that if you needed to play it from memory, you probably could get by” (student 2 interview, May 24, 2017). Like Beth, James thought that it would be “easy to memorize” the piece he was currently working on if only he were to focus on that objective (student 4 interview, May 25, 2017).

Students considered out loud what it would require to take this additional step of performing entirely from memory. A few students identified listening as something that they would have to do more often. For example, James said,

I think that if I were to actually, actively try to memorize a piece, the first thing I would do is just listen to the piece a lot to the point that I’m familiar with the melody, because that’s what makes the jazz pieces that I memorized so easy to play from memory.

Adam, who was working on the *Sonata No. 2* by Allen Vizzuti, mentioned that he would need to
know the piano part since he had not even heard it. He and a few other students noted the need to become attentive to the rests and form of the pieces. Steve said that it would require “more effort” and “confidence” as well:

Not only would I have to maybe actively listen a little more or really focus on the practice sessions on what I’m playing, but I would also have to work up the courage to make sure that I don’t need [the music]—that I can handle it as a whole. (student 5 interview, May 24, 2017)

Steve, like most students, said it would require more time:

I think I would take it a little more slowly. Maybe I’d slow down the process just a little bit to really take hold of everything I’m playing—every phrase and every note so that I feel 100 percent confident on stage, because you already have that fear of performing and messing up, and now you’re adding another variable.

Memorization strategies. It is no surprise that students reported during the interviews that Lindemann “rarely” or “never” addressed memorization strategies. This corresponded to what I observed in lessons especially since the process of committing music to memory was not a goal of any part of the lessons. However, this did not prevent students from applying other concepts from lessons to the memorization process or from developing their own ideas about how to go about it. For example, Steve described valuable practice strategies that prepared him to learn his solo well:

[Lindemann] didn’t purposely try to make me memorize [the Arutiunian Concerto], but through the techniques that he’s taught me as far as practicing, and taking it bar by bar, and really focusing on each phrase and note, I think that kind of forced me to memorize it anyways. Whether he knew or it or not, he was teaching me how to memorize the music
while practicing.
Steve also said that listening to recordings was an important part of Lindemann’s approach as well as “sheer repetition” that leads to “having it in your muscles.” Andrew mentioned learning the piece starting from the end, as well as doing mock performances for classmates—two ideas he gleaned from Lindemann.

Several students applied strategies from previous experiences such as marching band, drum corps, and jazz and developed their own solutions. For example, one student said that studying their music right before going to bed was effective. Another student, Andrew, said that he memorized things similar to the way I used to learn transcribed solos in jazz—a measure at time. I learn the first bar, learn the second bar, put them both together. I learn the first four bars, and I’d try to play it together. And what I’d do is every time I’d play it back: if I notice one of them got patchy or like I’d slipped a little bit, I go back and repeat that a couple of times. And my gauge for being able to move on to the next part would be if I can play it in succession without slowing down. Even if it’s slowly, if I can play it in succession without slowing down and then I would just keep adding more and more and see how much of it I can get through without looking down. (student 1 interview, May 23, 2017)

The two students who most often performed from memory, Andrew and Sean, relied primarily on repetition and playing with recordings. The latter is something Andrew had done from his first days playing the trumpet. For Sean, listening to the recording was just “to get the song in your head” (student 3 interview, May 25, 2017). At some point, he wanted to stop playing with the recording of Mysteries of the Macabre so that he could develop his own interpretation. “I want to make my own music with whatever I’m playing, and so I don’t want to just, you know,
mimic,” he said. Neither of these students seemed bothered that Lindemann did not address memorization strategies. Sean said, “I think since because of my ear—I think [Lindemann] realizes that I’m not really going to have as much trouble with it as other people who don’t have the same facility.”

**Perceived benefits of memorization.** As noted in previous comments, several students said that performing from memory offered musical freedom. Andrew was the strongest advocate. He said,

If you feel like it’s more work to memorize something, then maybe you weren’t learning the piece entirely or as well as you could in the first place. And it’s true that for sure you get to the point where you can play the piece nicely on a sheet of music without having it memorized, but still know it well enough to play it with conviction and everything. But I noticed that when I have something memorized and I play it from memory, I feel freed up to have that much more musicality. I feel like I can tell the story a little better. So it doesn’t take me extra time, it’s just how well do I want to know this piece. And for me that standard is basically memorized. I mean it’s totally worth it. (student 1 interview, May 23, 2017)

Andrew also had a unique experience in which memorization proved essential. On the day of one NTC Trumpet Ensemble competition the first trumpet player got sick. The students had to quickly rearrange the parts in order to cover what was now missing in the ensemble. According to both Andrew and Lindemann, the performance came off successfully. Andrew told me,

I wouldn’t have been able to memorize this part if I had my head stuck in my own music so much. Once I had my part memorized, when I was rehearsing it with them, I didn’t have to worry so much about what I was playing and I was more free to put my attention
on what they were doing, that I ended up memorizing his part too.

Steve also saw memorizing as a way to increase confidence:

Just knowing that I have it memorized creates this change in my mood or my approach when I’m playing the trumpet. I know that in order for me to memorize it, I’ve had to prepare it; I’ve had to practice it. So I’m already on this other level of confidence.

(student 5 interview, May 24, 2017)

Adam, who was majoring in Music Education, identified that memorization would be helpful for him when conducting. He recalled an experience in high school when he was the drum major. He helped the younger band members by memorizing their entrances and providing cues. In the future, when he conducts ensembles he imagines it being helpful in a similar way:

I think having the most music memorized as possible helps with that because you’re not so worried about turning pages and making sure you know where everyone’s coming in. You just look at them and communicate with them that way. (student 7 interview, May 25, 2017)

Extending it to the teaching of any “text,” Adam saw memorizing the material as essential in that it allowed him “to relate with people and to converse with people as opposed to conversing and relating to people with this medium between you two as a barrier.”

When I asked Sean if he thought memorization was an important part of his music education, he associated his experience memorizing trumpet solos with some jazz heads that he has learned as well as some studio work he has done that did not involve written notation. “It’s really important, vital,” he said, “if you want to be a good musician—if you want to be a working musician…” (student 3 interview, May 25, 2017). He continued:

Yes, memorization’s important because it helps [you] be more of an artist, because like I
said, you’re off the page. You’re working from within, which is where music, in theory, is supposed to come from. It’s not supposed to be like [the notes] ‘C, D, E.’

Key Concepts, Themes, and Strategies

Presentation. Essential to understanding Lindemann’s value for memorized performance is recognizing his emphasis on communication and entertainment in his own music making. In a published interview, Lindemann admitted, “I’ve always liked being a bit of an actor. I like giving off a lot of energy and making people happy” (Colgrass, 1999). Similarly, in our conversations he told me that “everything is about presentation,” going “on stage really, truly with the desire to want to show off what you have done” (interview, May 25, 2017). He went on to defend this approach:

Showing off is not a negative thing if it comes from the right place. The right place is how you bring people in. You go to a great concert: if you feel like ‘I have been elevated just by being here,’ then they’ve done something to you. They’ve shown off something that they do that makes you feel better. What is wrong with that? Absolutely nothing. He explained that it comes out of a desire to serve others. He said,

If people are going to come to a concert, they’ve spent time and money, maybe even a babysitter. It’s my job to serve them, not to serve myself. I serve myself in a practice room. I look in a mirror and I say honestly, ‘Look, you suck on that. Get to work. You know what you can’t do.’ And when it’s time to play it should be a celebration!

He points to two distinct influences: His upbringing playing in church (“You were there in front of people to give them something, to move them”) and the example of Doc Severinson, who possessed “the show and the flash” to “wow people.”

For Lindemann, performing from memory is part of this approach to performance and
something that has proved successful for him in competition. “It shows the judges you’ve gone the extra mile,” he said. “It’s showing off that you trust yourself enough that you don’t even need the music. And people respond to that. They’re curious by it.” Based on his own experience as a trumpet performer it is something distinctive:

[Memorization is] one of the things that I had that hardly anybody else did. I don’t care who you are, if you’re sitting on a jury and you’re watching eighty people come through and two people come through without a music stand, you remember, you listen, and you respect them. I know I do, because [the competitor has] gone the extra mile.

Consequently, he told his students, “If you memorize this, you will separate yourself from the pack,” and made no excuses for his pragmatism. “It wasn’t high art,” he said, “like ‘Ah, I think I’ve discovered some thing!’ No, it becomes that something special that you have that the next person doesn’t.”

At several points in our interviews Lindemann discussed the direction of eye contact when performing from memory. This was one of the areas that he developed further after joining the Canadian Brass. He noted that performers’ eyes should be neither completely closed nor attempting to make direct eye contact with audience members. Instead, he strives for and teaches a “natural” approach when you do not have music to look at music on a stand:

It’s a general look. …If I was going to play a passage I would be looking past you. I don’t actually say, ‘Oh yeah, now you’re in my sphere of focus.’ That’s an easy thing to do. Anybody can do that, but you have to teach people to do that. Otherwise, it gets in the way and it looks contrived.

Lindemann held up one group, Mnozil Brass, as the best example of brass musicians using memorized performance to accomplish the kind of experience he desires. He said,
They really break down that wall between what they’re doing on stage and the audience. It’s like there’s a 3-D effect. They are in the room. We are in the room. They have brought us in the room. Whether we like it or not, we are part of their show. … And *that* is their magic. They do everything memorized….

**Integrating kinesthetic and aural musical skills.** As mentioned earlier, Lindemann practiced “a combination of muscle memory and aural memory” when learning a piece of music (interview, May 25, 2017). He practices fingers alone as part of learning a piece of music, but also values aural learning. For example, in lessons he used what he called, “mimicry, where I will play and I just want them to sound like me.” This illustrates that he is well aware of not only the challenges of learning how a piece sounds, but also of the physical requirements of executing a piece of music including control of the air, embouchure, and fingers. Repetition is key to developing the connection between the sound and the fingers: “You do it enough times that there is a physical response that you get with the memory retention and then regurgitating that.”

Several times in our conversations, Lindemann distinguished himself from those who had perfect pitch, including two of his current students. (They had something that Lindemann jokingly referred to as the ability to “hear grass grow.”) Lindemann was careful to make these students aware of the need to be technically proficient. When discussing one of these students, Lindemann noted,

With a guy like him, seeing a pitch and hearing it is never the issue—ever! He just sees it and he puts it where his ear hears it, and that’s that. But you still have to make the horn ring. There are physicalities and technical issues to making that happen that people with perfect pitch often overlook. They just do. (interview, May 24, 2017)

He recognized perfect pitch as something helpful—but not essential—when it comes to
memorizing. He said, “Absolute pitch and memory: there’s a correlation between them, right? So those of us who don’t have perfect pitch, we have to develop our memory, our ability to trust, and then our ability to recall.”

**Breaking free of notation.** As described earlier in Lindemann’s recording session experience, he believes that memorization allows for “another level of freedom” in performance (interview, May 24, 2017). Lindemann made a connection between playing by ear, improvising, and performing from memory, all things that put aside notation. They all involve “going the next step to say ‘I’m going to trust to do that now without the music in front of me.’ That’s a form of memory and recollection,” he said. However, he admitted that they are too often excluded from his teaching.

When I asked Lindemann what benefit of memorization made him want to reengage students with the practice, he said,

> Jazz musicians don’t even think about music. The more music you put in front of them, the more stressed they get. They want to see slashes. They want to see a general picture then they want to do their own embellishment to that. Classical musicians—we are defined by what we see in front of us. At some point you wake up and go, ‘That shouldn’t define me. It shouldn’t.’ (interview, May 24, 2017)

Even though he had limited experience performing completely without music, Adam recognized similar benefits:

> The musicality of the piece will be improved because you can take some liberties with it and not have to worry about it, because it’s in all in your head and it just becomes almost an out of body experience when you really start bringing your own self in to the work. And that can really happen when the work is internalized in you already. So musicianship
and musicality really would improve if you have it memorized. (student 7 interview, May 25, 2017)

The ability to listen differently is a primary benefit of performing from memory for Lindemann. He mentioned his favorite piece for trumpet and piano, Enesco’s *Legend*, as an example of what it is like to perform a piece that he knows well from memory:

When I play that piece I am truly—and this is the highest compliment I can give to anybody that’s memorizing—I’m listening. I’m listening to the room. I’m listening to the piano player even if it’s the same piano player. It’s my wife. She has ‘isms.’ I have ‘isms.’ We catch that. If I play with a different piano player, then I’m listening to them. I don’t worry about lining things up. You line them up naturally because you’re trying to do this musical dance with one another. (interview, May 25, 2017)

If something goes wrong in memorized performance, Lindemann purposefully avoids focusing on the fact that he doesn’t have music. Instead, “you must resort to experience and the ability to just sort of get back on track quickly.” Paradoxically, the freedom given through memorized performance yields control: “It’s all about empowering and developing control. Memorization is a big part of that, because it’s the ultimate control, isn’t it? ‘Here I am!’ And you just play.”

“Psychological advantage.” Lindemann used the freedom that memorization yielded as a tool for learning different aspects of a piece of music. For example, covering up sections of music was helpful not only for developing memory but for facilitating technique. Referring to one difficult passage he said,

I’d see crazy lines like that, and I would tape over them. I’d be playing the whole piece, but I knew that line so I didn’t have to look away but I couldn’t see the notes either. I couldn’t see the danger. (lessons 7 observation, May 25, 2017)
In a similar way he found it to be a “psychological advantage” that yielded improved endurance when he learned works from the back of the piece to the beginning (interview, May 25, 2017). Although he never set the goal of memorization in the lessons that I observed, Lindemann used memorization of small sections as a pedagogical tool to help students. He distinguished this from actually memorizing a piece by calling it playing “off the page.”

For example, in one lesson Adam was struggling with a passage in Vizzuti’s *Sonata No. 2* that arrived at a high C on the trumpet. Lindemann asked Adam to turn the music stand around and play the passage from memory. At first Adam struggled over the correct fingerings, even as his teacher whistled and sang it for him. Lindemann invited Adam to briefly look at the music again, causing Adam to realize his fingering mistake. Once again, the stand was turned back around and Adam completed a successful attempt at the passage. “What you have to do is resist the urge to think that the C is the finish line,” Lindemann told Adam even as he continued to be concerned about the high note (lesson 7 observation, May 25, 2017). Eventually, after several more attempts Adam was able to hold the highest note longer to the praise of his teacher. Afterwards, Lindemann debriefed Adam on his strategy. He noted the tension in his student as the high note approaches. “Even I’m watching … and I’m getting nervous for you because I see what the line is doing. The minute we [turned the stand around] we started thinking about what technique should we use to make it work.” Lindemann later explained his strategy further: “In [Adam’s] case I don’t want him to see the high C. I don’t want him to watch the line going up” (interview, May 25, 2017).

Lindemann employed this strategy in several other lessons. In all but one case, the student struggled at first to play the passage from memory. Eventually, however, it proved to be a teachable moment through which the student realized a simpler approach to something
otherwise challenging, such as fast notes, high notes, or large slurred leaps. Lindemann explained that trumpet players often develop psychological barriers to technical challenges that may be triggered by reading the notated music. He compared it to the language that contributes to trumpet players’ fear of the upper register. “We’ve been taught incorrectly how to read music,” he argued. “It’s stupid—this whole notion of up and down, high and low. Archaic. It’s dumb. It doesn’t even make sense for piano, except that it’s the system we have.” He went so far as to adjust his language in lessons:

One day it dawned on me that I refuse to use low and high any more as terminology. I call high notes FAVE. FAVE is an acronym for Faster Audio Vibrational Experience. (Totally corny, but you’ll never forget it.) Those are high notes. Low notes are SAVE – Slower Audio Vibrational Experience. Once you start thinking of notes as being fast and slow versus high and low, your whole perception of what you’re looking at on the page changes.

Similarly, removing visual cues on the page can help influence one’s perception of the technical challenges. “The minute you have [students] memorize something they don’t see the danger,” he said. In Adam’s case, Lindemann encouraged him to memorize “the most critical part of the piece” so that he could free “himself of what the limitations had been.” Memorization is helpful because “every time you take away something on the page that could inspire a bad habit—let’s say a slur marking over a wide leap—people freak out because they’re looking at that stupid line.”

Lindemann also drew connections to other technical challenges beyond range and endurance, such as rhythm and fingering. When I asked him about rhythm, he said that when performing from memory “you’re less aware of seeing time, but you’re far more aware because
it’s around you. …I think you’re far more attuned to pulse or groove than you are if you are looking on the page.” As an example of fingering, Lindemann noted a troublesome spot at measure 46 in Arutiunian’s *Concerto* as an example:

> When you go up from the A-flat to the G-flat you’re lifting a finger so you don’t have the physical manifestation of pounding it down when you tongue the ‘tee.’ As soon as you become aware of that when you’re memorizing it, or even playing it off the page, but especially when it’s memorized, you get to that spot [and] you’re not thinking of anything except the lift of the finger, a slight break, and then the correlation between that and slapping the G-flat. So you’re empowered by the knowledge of understanding, which only took place because you spent a lot of time obsessing about the details and then took away the music. I don’t think that’s always as obvious if you’re looking at something on the page.

Lindemann attributes this phenomenon to the freedom that playing off of the written page affords:

> Memorizing is being in the now. You’re just playing. You hear something. It’s my turn to play. You’re not thinking, ‘Oh shit, four pages from now I gotta hit that high C.’ That doesn’t dawn on you because you can’t see it. You’re just playing.

This presence is what he believes helps student overcome challenges once they have a piece memorized.

> I’ve yet to meet anybody who didn’t say, ‘Once I memorized something I actually could play it with better endurance.’ Again, because there is a correlation between not looking and not worrying instead of just concentrating on what do I have to play.

When Adam was missing octave leaps in Charlier’s *Etude No. 1* Lindemann asked him to
memorize it. Adam described part of the lesson:

He’s like, ‘You’re just looking at the interval jump, the octave jump, and you’re flipping out. It’s conscious and it might also be unconscious.’ He’s like, ‘That’s big. That’s high and low, which is not how you should think of the notes anyways, but you think of it that way. And so you need to get this part memorized, so you don’t look at it—don’t see the visual. The visual is no longer informing how you play, because it’s in your brain.’

(student 7 interview, May 25, 2017)

Thoughtfully, Adam compared it to how conductors visually inform the musicians they conduct.

If you have a really loose conductor out there, who’s just relaxed and breathing with you, that feeds in to how you play. And I think if you’re looking at music that’s really black-noted, really big intervals, and everything else, you get a little tense. That informs how you play and how you approach your instrument. And so if you have it memorized, you no longer have that visual information in front of you.

Like Adam, many of the students recognized the benefit that memorization had on learning. When performing a piece from memory, Steve related,

I could look at the big picture and not necessarily think about each note that I’m playing, and so maybe that helps with a mental endurance when playing. Overall that will help you with the physical, because a lot of the times my endurance is affected mentally, not necessarily with my physical abilities. (student 5 interview, May 24, 2017)

Andrew, the graduate student who had done a lot of memorization and thought much about it, also shared his experience. After returning to playing the trumpet following physical injuries that made it difficult to play, he noticed he could overcome the challenges he experienced by adjusting his attention. “I try to play something just in the mid-register and not try to think
technically but think in terms of just ‘jazz.’” he said (student 1 interview, May 23, 2017). “It would feel so much more fulfilling even if I was only playing half notes. …If I can focus my attention on the music,” he said, “I can get the most satisfaction, and actually the best physical performance out of myself.” This realization prompted him to explore attention and the way he learned things, especially when memorizing music. Even Beth, who was not particularly convinced of the need to memorize, recognized some benefit to Lindemann’s strategies in her lessons. She had concluded that “when I’m not thinking about everything that goes in to playing something more challenging, it does come out easier” (student 2 interview, May 24, 2017).

**Demystifying, challenging, and empowering.** Acknowledging that trumpet players are not typically familiar with the practice of memorization, Lindemann said,

Ultimately what this whole project is about is just that: the demystification of memorization for trumpet players. It’s a given for pianists. They have no choice if they want to be serious. What are they gonna do? Nobody makes us do it, so we don’t have to do it. So if you’re going to learn how to do it, how do you take away the mystique? Because the orchestral cats won’t help you. (interview, May 25, 2017)

For this reason he sometimes invited students to explore memorization:

I call it going down the rabbit hole. If you want to go down there like Alice in Wonderland, there’s a cool interesting place. It’s fantasyland. It’s not even reality, but it’s cool, and not a lot of people know what it’s about.

Explaining further, he described how memorizing both small sections and entire pieces fits in his pedagogy:

If you could take away difficult variables on a page and empower a student in thinking, ‘Oh yeah, I have a technique for that’ then they have, in essence, memorized a way to
defeat a problem. And what’s cool about that is that they feel special. They feel like, ‘I got a secret. I got a trick. I’ve got something that other people don’t really have.’ And then they get really super empowered.

He had experienced for himself the confidence from developing the unique skills needed to perform some of the most technically challenging pieces from memory, such as when learning *Perpetual Motion* many years earlier.

Yet, Lindemann was keenly aware of the tension between challenge and accomplishment when he elaborated,

If you make somebody learn a certain thing, you get them a little uncomfortable. Push them a little outside the box of where they want to be. They’re going to learn something. And if it’s done with all the right intentions, you’re setting somebody up for success. They don’t know that necessarily. They just think they’re stressing out, but if they can pull something off and have this feeling of satisfaction, they’re going to be better people as a result of it. Memorization is definitely one tool that can and should be used to help young people understand that they are here at college to become enlightened people who should be empowered to make their own decisions. (interview, May 24, 2017)

Rather than imposing memorization on the student he offered, “the best I can do is to say, ‘Let me give you a tool. It’s going to be a great tool.’ Memorization can be that tool.” Ultimately this is what led Lindemann to rethink his approach:

So why you’ve convinced me that I think it’s better to do it rather than not do it and to make people do it even at a certain level is because they themselves will have a feeling of self-worth, having accomplished something. And it will also just be no big deal to do something by ear. It’s like, ‘Oh yeah, I can kind of figure that out.’
CHAPTER 6

SUMMARY, DISCUSSION, AND IMPLICATIONS

In this final chapter I will review the purpose of this study and reiterate the research questions that served as its guide. Then, I will address each question while comparing and contrasting the two study sites. The pertinent literature reviewed in chapter two will also be connected where applicable to the findings of this study as well as areas for further investigation. Finally, I will offer suggestions for memorization within the pedagogy, practice, and performance of trumpet players and others for whom memorization may not be part of their tradition.

Review of the Study, Research Questions, and Participants

My limited experience with memorization throughout most of my education and early career was followed by several key experiences that led me to begin to consider and practice memorization myself. A brief look at the pedagogical literature of classical trumpet players suggests that memorization is not often discussed even though it is practiced by some of the most elite trumpet soloists. This stands in contrast to other concert artists, particularly pianists, for whom memorization has been a nearly uniform practice at student through professional levels for over a century (Mishra, 2010). In an effort to draw the wealth of recent literature on memorization into the realm of consideration for trumpet players, I presented a survey of various topics related to memorization.

This case study, then, was designed to look at memorization within the real life experiences of two trumpet teachers and their students. The participants in this study have provided a lens through which the existing research may be viewed and a laboratory for considering the concepts in the literature that may be present within their approach. Many of the
emergent topics of the literature review were given life through the experience of the participants as I sought to uncover what might be gained through the inclusion of memorization as an integral part of pedagogy—one that so often relies only on notation.

Framing this study is an understanding of memorization as a process rather than simply an end goal of performance without music. This was supported by the perspective of cognitive psychologists who understand memorization to include three phases—encoding, storing, and retrieval (Dakon, 2013). Research confirms that emphasis is too often given to the retrieval of memory at the expense of the encoding and storage process. Practically speaking, memorization involves teaching, practicing, and performing, three areas that were described through the qualitative case study method. It is helpful here to return to my definition of memorization for the purposes of this study: the process by which a musician performs notated music without the physical score and practices towards that end.

Since musicians’ goal is to make music, memorization is often only implicitly taught and therefore difficult to study. Even so, the values, strategies, and practices of teachers are surely passed on in the apprentice-like relationship of the studio and exchanged among students in a community of aspiring musicians. Through observations, interviews, and collection of artifacts I hoped to better understand these values and observe the experiences of trumpet teachers and their students. The research questions guiding this study were:

1. How do trumpet teachers and their students describe memorization and the value they place on it in their teaching, practice, and performance?
2. How are the implicit values and explicit methods of memorization modeled and taught by the teacher? How are they learned and put into practice by the students?
3. In what ways do the teachers’ and students’ perspectives on memorization align? What
gaps may be present in the teaching or learning of memorization?

The findings from this case study are meant to highlight various aspects of pedagogy, practice, and performance as they relate to memorization.

A qualitative case study method was employed to shed light on these questions. Two studios that are led by experienced and renowned trumpet artist/teachers were purposefully selected by virtue of the teachers’ value for memorization. Those sites were the trumpet studios at Boston University led by Terry Everson and UCLA led by Jens Lindemann. All of the trumpet students in each studio were given the opportunity to complete a questionnaire (Appendix C) adapted from Dakon and Dvorak (2014). During my visits up to eight students were observed in a lesson with their teacher at each site and seven or six students at BU and UCLA, respectively, completed an interview. Both undergraduate and graduate students (including doctoral students at BU) were part of the study. Most were majoring in Trumpet Performance in addition to a few Music Education majors (one at BU and two at UCLA). In addition, I interviewed Everson and Lindemann at least two times during each visit. The semi-structured interview protocols appear in Appendix D.

The reports on each site are contained in chapters four and five. These chapters include basic background information about each site followed by a brief sketch of each teacher’s background with special attention to their development and use of memorization. The students’ attitudes and experiences were then discussed. These excerpts showed a wide variety of attitudes that ranged from full embrace of memorization to a near complete aversion to the practice, with many variations in between. At BU, all students had experienced performing from memory, but the results of the study uncovered varying previous experiences and progress throughout their studies there. The students at UCLA did not all share the experience of having performed from
memory, providing a striking contrast within the studio and, as we will discuss in this chapter, between studios. Finally, chapters four and five concluded with several key concepts, themes, and strategies that emerged within the teaching and learning in each studio. The participants’ common and unique experiences provide stimulating insights for students and teachers of all levels, particularly those for whom memorization has been an unfamiliar practice.

**Research Question 1: Descriptions and Values of Memorization**

This question asked: How do trumpet teachers and their students describe memorization and the value they place on it in their teaching, practice, and performance? Addressing the question involves the participants’ stated definitions, goals, and benefits of memorization that have often been formed through their experiences. For some, this question also sheds light on the reasons for excluding memorization. In order to address these questions in a meaningful way, I have drawn out several categories to help guide the discussion.

**Memorization as a process and tool.** Both Everson and Lindemann viewed memorization as part of the process of learning. They valued memorization for more than what it can accomplish in performance, but also as a tool for learning music and playing the trumpet well. This fact aligns with a definition of memorization that includes encoding and storage of information as well as the more commonly emphasized retrieval in performance (Dakon & Dvorak, 2014). This is most true of Everson, who had been consistently applying it within his studio for many years. He recognized the value of memorization for holding students accountable to prepare early, often, and thoroughly. Lindemann was somewhat more attuned to the end goal of performing from memory due in part to his interest in performance competitions and experience performing in genres beyond purely classical music. Even so, he often used it on a small scale as a pedagogical tool in lessons. And even though he had stopped routinely
requiring students to memorize music, his eagerness to return to the practice stemmed from the value he had for memorization in his own development.

Both teachers recognized that the process of memorization allows for and even demands practice outside of playing. Everson emphasized repeatedly listening to recordings and using mental rehearsal throughout the day. His goal for both was that students would develop a highly detailed aural image of the piece, both as a means of memorizing and as an essential element for learning the piece beyond just the trumpet part. Everson would concur with McPherson’s (2005) concept of thinking in sound and McPherson and Gabrielsson’s (2002) recommendation that learning the notation and physical skills needed to play an instrument should follow the aural image. The outcomes of this way of learning were supported by BU students’ frequent attention to expressive and interpretive issues over and above technical ones.

Lindemann often employed memorization of specific passages as a method of directing students away from the particular challenges that overwhelmed their attention when reading from the page. In fact, both teachers held a strikingly similar perspective on how music can promote endurance, whether it is due to physical or psychological reasons. These situations suggest that when students are given the objective of memorization, it may redirect their attention from individual technical issues. Indeed, at BU, memorization become a greater—or at least more prominent—challenge than other technical issues that often consume a musician’s attention. Mishra (2002) touched on this as she considered how practice may be more effective when guided by larger musical ideas versus more isolated technical problems. However, there lies a tension, since the goal of memorization cannot replace instruction of necessary techniques. At least one student noted that her memorized piece demanded more time even while she could be using those resources on more technically difficult material.
The students at BU were most aware of the process of memorization. Weekly assigned lyrical etudes seemed to be effective in helping students understand memorization as more than just a performance goal. The challenges that several of these students came up against all but forced them to develop different approaches to memorization and convinced them of its use. In stark contrast, without any reason to memorize music, the students at UCLA who were not naturally drawn to memorization had little experience with the memorization process. These students were less accustomed to using aural methods of learning. In at least one situation, it seemed clear that a student had not even listened to a piece that he had been working on for several weeks. Tellingly, when students imagined having to learn music by memory they often recognized the need to listen more to a recording. In addition, several of these students’ reliance on memorization was limited since they had never fully removed the notated music from the stand in performance.

**Performing from memory.** Of course, performing from memory is a significant part of both teachers’ careers. It was one component that contributed to their success as performers in competitions, recitals, and concerts. Everson would have it no other way, as it was a natural consequence of his early experiences and extraordinary abilities. Lindemann, on the other hand, came later to the practice and made a conscious decision to develop this ability. However, the most important reasons for performing without music differed somewhat between the two teachers. Everson emphasized the value of memorization to the performers’ musicianship; Lindemann highlighted the value of memorization for the audience as a form of communication and entertainment. These two rationales are not mutually exclusive and perhaps could even be viewed as two sides of the same coin that are interrelated with one another. Everson’s appreciation for thoroughly knowing a piece of music allows for an informed and nuanced
performance for an audience. From the other point of view, Lindemann’s desire to give the audience an enjoyable experience is dependent upon the performer’s ability to confidently and convincingly execute the music provided by the composer.

With only one exception, all students at BU were convinced of the value of performing from memory. Most accepted their teacher’s values, even while many of them will not follow in his particular footsteps as trumpet soloist or otherwise perform from memory as a requirement of their future career. Since most of the students at UCLA had not performed works purely from memory, they could not speak out of authentic instances of either learning a piece of music deeply through memorization or performing for others without notated music. Yet, they readily understood the value of learning and performing pieces from memory. The lack of any curricular expectation for memorized performance may convey to students that this was an optional part of their musical education, which would diminish its value in performance. On the other hand, the students at UCLA who performed from memory were able to take pride in doing something unique within the studio.

**The substance and styles related to ear-playing.** The prior experiences of both Everson and Lindemann drew connections between performing from memory and playing by ear, often through vernacular and improvised genres of music. Everson’s early musical experiences are notable for their richness in free musical play that was often done with recordings or by ear. This surely involved establishing patterns, or schema (Chaffin, Logan, et al., 2009), as well as ear-to-hand coordination (Froseth, 1994; McPherson, 1995a) or ideomotor connection (Drost et al., 2005). Similarly, though less prominently, Lindemann described his experience playing hymns in church by ear at an early age. Several of their students who were most adept at memorization also shared similar experiences playing music with recordings and by ear. These varied
experiences support Woody and Lehmann’s (2010) findings that musicians with vernacular musical experiences possessed stronger skills of playing by ear than classically trained musicians. Considering the research by those who have studied informal learning practices (L. Green, 2002; Jaffurs, 2006), it is no surprise that Everson developed the ability to play early on without notated music since he practiced classical music in a way that shares more in common with vernacular musicians than classical musicians. It is also helpful to recall the models by Priest (1989) and McPherson (McPherson et al., 1997) that both draw connections between playing by ear and performing from memory. Although Everson was not explicitly aware of either of these theoretical models, he recognized that memorization was integrated with other areas of musicianship.

Notably, the role models that led Everson, and to some extent Lindemann, to perform from memory were outside of the classical genre. Doc Severinsen, a musician most well known for playing on television with The Tonight Show Band, had a great influence on both Everson and Lindemann. Both noted that the most celebrated classical trumpet soloist of the end of the last century, Maurice Andre, did not even perform from memory. Lindemann’s career includes the performance of jazz styles and Everson’s compositions often reflect jazz influences. Everson and Lindemann’s values for performing from memory were influenced by other genres of music in which notated music is less important and communication without a music stand is common.

**Development of musical meaning, communication, and expression.** Both teachers make a distinction between how music is played when reading notation compared to playing without written notation. Everson and Lindemann spoke in various ways about the freedom of communication and expression they discovered when playing from an intimate knowledge of a piece of music. Drawing on the research of Gordon (2012) and Hultberg (2002), I suggested in
chapter two “that learning and performing without notation could affect musical meaning.”

While it is impossible to say if memorization itself leads to the development of this awareness, the cases in this study support this assertion. Learning towards memorization provided a fertile ground for the musical development of the students who were open to exploring performance without the printed music.

Everson’s teaching seems to fall into Hultberg’s third category of her “Theory of Instrumental Training” in which students are neither solely dependent on their teacher nor on the score for musical meaning (p. 194). The act of stepping away from the printed score allowed both Everson and his students to conceive of the pieces as a whole rather than being a slave to the detailed markings. The approach was re-creative rather than reproductive. This aligns with Gordon (2012) who seeks to move beyond “simply decoding symbols” (p. 7). In addition, Everson modeled a collaborative approach in his teaching, most clearly illustrated in his inclusion of the piano accompaniment as an essential part of a piece of music. Finally, his perspective as a composer led students to explore the piece from more than just the vantage point of the trumpet’s single line of music.

Nearly all student participants, whether they had experienced it for themselves or not, spoke to the expressivity that was a byproduct of memorized performance. It is possible that this simply reflected a popular cultural assumption. But both teachers and some students had the experience of performing without the notated score that afforded them an ability to perform music from the written page differently. It was something that was difficult to describe, but involved freedom, expression, and heightened communication. Students talked about the liberties, both mentally and physically, that they actualized when performing without music. Similar moments of discovery were expressed in Hallam (1997). For the most part, the students
who had experienced performing from memory were grateful to have had the experience for this reason. Many of those who struggled with memorization or had not experienced it yearned for such freedom of expression. Relatedly, it is worth noting Everson’s beliefs about the primacy of sound over notation. Looking to the past, he wished that the notation was servant to the sound since it was conceived of first. Therefore, he hoped his students would not be beholden to the written music except for its ability to indicate what the composer imagined.

Some students expressed an opposing belief that saw removing the written music as taking away a “safety net” that otherwise gave them confidence to perform well. Understandably, some felt that removing the score draws their attention away from musical expression to the details they are trying to recall. Such a move opened up an additional opportunity for anxiety. Indeed, some students seemed to be more careful or literal in their performance without music. I wonder if it is possible that until a certain level of preparation and confidence is gained, performing from memory could actually be a detriment. One BU student who was in the process of memorizing a piece of music seemed to be moving towards trusting her memory and redirecting her attention on musical matters. For another student at BU who felt strongly that she was incapable of memorizing well, it is no surprise that her fear held captive any freedom that could be attained from performing without the music. From this example, we may be led to consider if students who struggle significantly with memorization might not realize any benefit in performance. This would be worth further study that would necessarily include students’ perceptions of their ability to memorize as it relates with their demonstrated capacities to do so.

**Research Question 2: Teaching and Learning Memorization**

This question asks: How are the implicit values and explicit methods of memorization
modeled and taught by the teacher? How are they learned and put into practice by the students? In short, we will look at how memorization is taught and learned within each studio.

**Modeling memorization.** The fact that both teachers are well known for performing from memory both by their students and the larger sphere of trumpet players established a model to which their students could aspire. The requirement to perform repertoire from memory at BU specifically called the trumpet students to follow in Everson’s footsteps. Furthermore, he demonstrated playing without music in nearly every lesson. For many students, this was motivational, whereas at times and for others, it was discouraging and seemingly unattainable. Indeed, Everson’s consistent practice of performing even the most challenging repertoire from memory and extraordinary ability to play by ear certainly set him apart from some students that possessed more average abilities. (Even Lindemann recalled that it “freaked me out” when he first heard Everson perform the *Sonata* by Davies from memory (interview, May 25, 2017)).

Lindemann’s pedagogical philosophy provided students the freedom to follow in their teacher’s footsteps if they wished. Or, as was more often the case, students chose not to pursue performance purely from memory because their career aspirations were valued above any specific educational goal.

In short, Everson fully leveraged or imposed his example, whereas Lindemann often relinquished it in favor of individual student-directed goals. This contrast provides a thought-provoking opportunity to consider pedagogical philosophies within private instruction. Given the highly specialized nature of teaching and learning in the applied studio, should teachers assume that the ways of engaging with music that have worked so well for them will work as well for their students? Should teachers impose certain means of learning or offer multiple possibilities for developing an array of musicianship skills? Questions such as these would be worth further
Training for memorization. Notably, both teachers at some point in their teaching career utilized lyrical etudes by Concone as a way to develop memorization. Two beliefs undergirded this practice. First, most students, even at the college level, need the opportunity to memorize shorter and simpler material in preparation for learning larger works. Timofei Dokshizer also considered the memorization of etudes to be “necessary for developing one’s memory” (L. Davidson, 1975, p. 25). Second, fundamental aspects of musicianship such as phrasing, tone quality, expression, and—as practiced at BU—collaboration, could be learned simultaneously, and perhaps more deeply, through memorization. For many students, this took what might have been an elementary exercise and added an additional challenge that forced them to dwell on the etudes for a sustained period of time.

Turning towards solo repertoire, early and intentional preparation of repertoire at BU was essential to success due to the demands of memorization. Such long term planning was not as apparent at UCLA. This bears out one of Everson’s primary goals of having students memorize, which is to motivate them to prepare earlier and more thoroughly. His students engaged in repetition, whether through playing, listening, or analyzing, as a critical part of committing music to memory. Both teachers recognized the heightened importance of practice performance in developing surety when performing from memory.

Everson often recommended mental practice (Coffman, 1990; B. Green & Gallwey, 1986; Ristad, 1982) as he encouraged students to listen to their pieces as often as possible with and without the score as well as singing and otherwise imagining the music throughout the day. To be sure, most students put this advice to work for them. At times, however, Everson’s recommendation of listening may have sounded to them like a “magic bullet.” If students did not
possess a level of absolute pitch, let alone the ability to recall lengthy pieces in detail through aural means, it is reasonable that they were frustrated by this approach. Yet, Everson assumed students were also engaging in actual playing practice, aligning with Coffman’s finding that mental and physical practice in alternation are just as effective as physical practice alone. In a similar way, Lindemann practiced fingerings alone as a memorization strategy. It is a valuable tool, especially for trumpet players who are often limited by physical endurance. From this perspective, the use of aural and physical practice away from the instrument may expand one’s ability to practice for longer periods of time and make the best use of college students’ limited resources of time.

**Collaborative learning.** I observed the Studio Class at BU to be a place for testing out memorized performance. It served to develop “the craft of performing” as Clark, Lisboa, and Williamon (2014, p. 34) suggest. Although not observed, Lindemann, too, believed that repetitive mock performance is an essential need that studio class can meet and longed for a learning community that would provide a safe place for trying out and sometimes failing in memorized performance. Beyond that, he recommended that students look for other opportunities to play for others, and at least one student reported doing this. The community, therefore, afforded by the collegiate trumpet studio is critical in supporting students’ development, particularly through the mental challenge of performing from memory and the necessary task of testing for memory gaps when playing for others.

Trumpet ensemble memorization seemed to hold some of the most potent and positive learning experiences for students. The picture was one of all students working together in support of one another towards a singular goal. A few students reported such positive experiences and only one student mentioned a negative experience with performing from
memory in trumpet ensemble at another institution. Both Everson and Lindemann took pride in
the notoriety brought by their schools’ ensemble performance in competition. Since this was not
a primary focus of this study, it may be worth further investigation, especially considering what
seems to be an increasingly common practice for college trumpet ensembles.

**Attentive repetition and deliberate practice.** When talking to Everson or the students in
this study for whom memorization came easily it often sounded like repetition is all that is
necessary. Their experiences seem to stand in opposition to the theory of “deliberate practice” as
described in the literature (Ericsson et al., 1993; Lehmann & Ericsson, 1997). However, some of
those who journeyed through the struggle to memorize used words like “active,” “engaged,” and
“attention” to describe the difference between mere repetition and successful repetition that built
memory for them. These experiences provide support for the concept of deliberate practice.
Several important facets of this theory were present in Everson’s teaching of undergraduates who
were unfamiliar with practicing towards and performing from memory. The lyrical etudes and
increasing difficulty of memorized repertoire reflect structured sequencing of tasks. In addition,
Everson recognized students’ motivation when allowing them to select repertoire of their own
choosing. Finally, the strategies he supplied them equipped them to gain increasing confidence
and skills. When sequencing, motivation, or strategies were lacking, the result was significant
frustration. This was evident in the experience of one graduate student who was relatively
inexperienced practicing and performing from memory,

Lindemann’s preparation for memorized performance in competition is an excellent
example of deliberate practice. Unlike Everson, he made a strategic decision to learn pieces from
memory that was motivated by a desire to win competitions. He exercised the strategies
necessary for successful memorization and used performance for peers to provide feedback. In
his teaching, Lindemann relied on intrinsic student motivation to memorize, but rarely gave
provided them sequential tasks or strategies. This may explain why many of his students thought
performing purely from memory was unattainable.

**Strategies.** It was not surprising to me that, in general, strategies for memorizing music
were not addressed prominently in the lessons I observed. It is, after all, an implicit pedagogical
phenomenon that is not on the surface such as matters of notes, rhythm, technique, or
interpretation, and teaching students *how* to practice in general is sometimes a point of
disconnection in the college studio (Kostka, 2002). However, BU students, whether they
recognized them as memorization strategies or not, were able to articulate many of the key
concepts that are part of Everson’s approach, such as analysis, listening, and knowing the piano
part. The students who most needed strategies for memorization (typically younger and less
experienced students) were provided with more guidance than those for whom it came more
easily or who had more experience. This contrasted sharply with UCLA where students were
seldom given the tools to memorize, regardless of their skill or experience in this area. Of course,
this can be explained given the limited expectations for memory there. Yet, it causes me to
wonder if the students who were not prone to memorize repertoire would develop such skills or
at least discover something in the process if they had been given some strategies that might have
made it attainable.

As I discussed in chapter two, the four most commonly discussed types of memory for
musicians (aural, kinesthetic, analytical, and visual) can also be described as strategies for the
encoding, storage, and retrieval of musical memories. Both teachers and most students seemed to
be generally aware of these categories and sometimes even used language that described
memorization in ways that correspond to these categories (i.e. “photographic memory” or
“muscle memory”). Analytical aspects were only addressed by participants at BU. Of course, none of these systems can be isolated, but it seemed that participants often valued or were drawn to employing one over and above the others. Looking at each individually provides interesting points of comparison amongst teachers and students.

Aural learning. As discussed in chapter four, having a clear aural picture of a piece of music was by far the most important factor for Everson. It was part of Everson’s process, conscious or subconscious, to rehearse the music in his head throughout the day. He relentlessly reminded students to listen to the pieces they were working on or learn what the piano part sounded like. This was sometimes a frustration to students, perhaps because they did not possess the aural skills, musical memory, or ear-to-hand coordination (Froseth, 1994; McPherson, 1995a) necessary to turn this into notes on the trumpet. It is also possible that they did not actually trust the process or put in the amount of repetitive listening over time. Regardless, it was an unmistakable point of pedagogy that I believe attempted to correct the over-reliance on reading music that is prominent in much classical musical education (McPherson, 1995a; Priest, 1989). It is telling that when UCLA students considered what they would need to do to memorize a piece of music several of them remarked that they would need to listen to it more. It would be worth further research to measure and compare the amount of time students listened to their performance repertoire between the two studios.

Kinesthetic learning. This was a strategy most clearly practiced by Lindemann given his use of fingering apart from playing. He suggested that without absolute pitch, kinesthetic learning was an essential part of the process for him. Everson occasionally recognized the need to practice difficult fingering patterns, but in general downplayed this area. In this way he acknowledged the inadequacy of reflexive physical memory alone (Chaffin, 2011). However,
since Everson was working from his own experience and abilities I would suggest two additional reasons for not addressing kinesthetic components. First, unlike Lindemann, Everson possessed a robust form of absolute pitch in which he had no need to consider the fingerings if he knew what something sounded like. He admitted that only the most difficult fingering patterns required his attention. Second, he recognized the overwhelming need for most students to improve their aural skills over and above technical matters such as fingering. It is possible that some students at BU were disserved by Everson’s near exclusion of kinesthetic learning. Learning to press the right valves down was a time-consuming and baffling process for some students. The student at BU who was overwhelmingly frustrated with memorization often spoke in terms such as “muscle memory,” reflecting her focus on the kinesthetic dimension.

As discussed in chapter two, a common practice of amateur pianists is to rely on repetitive physical movements to build memory (Chaffin, 2011; Imreh & Chaffin, 1997; Noyle, 2000). This may be the memorization process that Gordon (2012) conceived of when he states that memorization “serves only to entrench physical movements” (p. 17). While some students in this study spoke of repeating a piece often until it is memorized, the ones for whom this was most successful were students who reported having excellent aural skills that took some form of absolute pitch. Some students at UCLA imagined that simple repetition would bring about memorization, but they had no experience to support this assumption. I did not hear such naiveté from the BU students who were all but forced to look beyond mere repetitive practice if they were to become successful at performing from memory on increasingly difficult music.

Analytical learning. The topic of form or analysis was mostly absent from the interviews and lessons at UCLA. It is possible that this was due to the limited time spent in the studio. By contrast, at BU the expectation to memorize entire pieces seemed to prompt students to consider
form, and their teacher often led them to analyze key parts of their pieces. Furthermore, the interaction between the trumpet and the piano (or ensemble) was an important consideration that came up several times at BU unlike UCLA. As one student suggested, when she is not memorizing it is possible to simply learn the individual puzzle pieces of a work of music without ever putting it all together (student 7 interview, April 13, 2017). Analytical knowledge of a piece of music is based on narrative, linguistic, or semantic memory (Chaffin, Logan, et al., 2009). Such memory may remain undeveloped when large forms of music are not conceived of holistically.

The students at UCLA who desired to memorize their music and yet performed with the printed score would be most well served by an understanding of this aspect of memorization. They were concerned about forgetting what comes next, something that is reliant on what cognitive psychologists call “associative chaining” (Chaffin & Logan, 2006, p. 117). These students seemed to view pure memorization as unattainable, likely in part because they had not considered the need to build a larger and multifaceted picture of a piece of music so that individual parts become “content addressable” through performance cues (Chaffin, Logan, et al., 2009, p. 352). For me, this provides a convincing reason to encourage students to memorize not only small sections but also entire pieces so that they are led to gain a better understanding of musical compositions. If analysis is one of the most recommended and employed methods of secure memorization by experts, as the literature suggests (Aiello, 2000; Mishra, 2010), then students at BU were well-equipped for this task.

**Visual learning.** McPherson (1995a), Priest (1989), and others have noted that visual means of practicing and performing music predominate in music education today. It is no surprise, then, that many students in this study were most reliant on learning repertoire through
reading music. Some of them even suggested that they had a visual learning style. The students who had little experience of playing without music prior to college seemed to be the ones most challenged to memorize music. Lindemann was more likely to identify with these students in the way he spoke about recalling the music on the page. Everson, on the other hand, never talked about the visual image of the music on the page, always prioritizing the aural recollection of the music.

**Multiple coding and automaticity.** In general, student participants seemed less likely to develop a knowledge of a piece of music through means of listening or analysis (aural and analytical memory) compared to reading the music and physical repetition (visual and kinesthetic memory). It is notable that Everson emphasized the former two, something that strikes me as pedagogically wise. McPherson (1997) demonstrated a necessary balance between aural and visual means of learning music even though he categorized playing from memory as a visual skill since it was music learned from notation. It was clear that Everson was making an effort to rebalance students towards aural means of learning, helping to break down what Priest (1989) lamented was “a near total reliance on notation” (p. 173). Furthermore, his inclusion of some analysis further aligned with the literature on memorization pedagogy that suggests that a combination of all strategies, or “multiple coding,” more successfully develops memory (Aiello & Williamson, 2002; Hallam, 1997; Woody & Lehmann, 2010).

Several students for whom memorization came easily or automatically had experiences memorizing before college. These students did not describe the process in kinesthetic terms such as one might expect of a pianist who engaged in mere repetition. Importantly, they reported having excellent aural skills that often took some form of absolute pitch. The natural arrival at memorization and the automatic nature of its retrieval seems less dependent on simple
kinesthetic memory and more integrated with aural skills, at least for the trumpet players in this study. On the other hand, students challenged by memorization seemed unable to replace the conscious memory of certain details with the “unconscious, implicit memory” that arrives through automaticity (Mishra, 2010, p. 11). It is possible that the limited movements of the trumpet, especially as compared to those of the piano, present unique limitations for encoding memories. Chaffin’s (2011) statement that “mindlessly relying on the automaticity of well-practiced motor sequences, is both risky and unlikely to produce an aesthetically satisfying performance” might be especially applicable to the trumpet (p. 689). Such an approach was simply ineffective for the participants in this study. Those for whom memorization is unfamiliar would do well to explore research such as Chaffin, Lemieux, and Chen (2006) that describes multiple coding as a way of integrating various forms of memory for both spontaneous and successful memory. Further investigation may help shed light on the differences between instruments when it comes to memorization.

**Development of memorization skills.** Lindemann’s personal experience suggests that memorization skills can be developed. And even though memorization often came easily for Everson, he too described the effort needed to make difficult pieces memorable. Most notable was the experience of several students at BU who described in detail how their skills at memorizing had improved. Such experiences support the suggestion that memorization skills can be developed by anyone based on the functions of memory that are common to all human beings (Ginsborg, 2004; Lisboa et al., 2015). All students who found some success in performing from memory eventually exercised deliberate practices that involved performance cues (Chaffin, 2011; Chaffin, Demos, et al., 2009; Chaffin & Logan, 2006; Vuoskoski et al., 2016). The strategies and goals that Everson provided helped advance their practice from less mindful
repetition that relied only on a sequential knowledge of a piece of music to more advanced music making. The sequencing of memorization tasks beginning with shorter, simpler lyrical etudes and continuing through to music that was increasingly complex due to issues of tonality, meter, or form was an important contributor to this development. Students were also much more successful when the difficulty of a piece from a memorization standpoint was taken into consideration.

**Research Question 3: Alignment of Learning**

Some answers to both of these questions—In what ways do the teachers’ and students’ perspectives on memorization align, and what gaps may be present in the teaching or learning of memorization?—have been considered throughout the discussion of the first two questions. In general, at BU Everson and his students were in agreement about the values and means of developing memorization. At UCLA, the perspectives on memorization were out of alignment between the teacher and many of his students due to the fact that several of them had never experienced practicing towards or performing solo works from memory. Students there were ill-equipped with strategies to develop memory. This section will address further issues that impact the alignment of the participants’ teaching and learning. A consideration of the teachers’ pedagogy and educational philosophy comes to bear in many ways on these questions.

**Partial memorization.** The thoughts and experiences of students who either performed or considered performing “from memory” but with the printed music on the stand presented an interesting facet to the topic that I had not previously explored. A few conclusions may be drawn: These students exposed the limitation of a pedagogy that declined to push students beyond their point of comfort. They cannot be blamed for employing or considering this approach since they were given little incentive to explore the possibilities of purely memorized
performance. Their limited experience gave them little opportunity to evaluate the difference between performing with notated music to performing without it. Furthermore, it may be difficult to practice with the precision needed for memory (Chaffin et al., 2006) if one never intends to fully rely on it. The student at BU who compared her experience at another institution where memorization was not required also supports this theory.

Lindemann’s belief that memorized performance may actually be inhibited by the presence of notated music seems to be supported by the phenomenon of “choking” (Beilock & Carr, 2001). Turning one’s attention to the written music even while it has been practiced thoroughly without it could disrupt the execution of what should be a highly skilled, mostly automatic process. One UCLA student in this study described such an experience. However, without a larger exploration of this practice of partial memorization—memorizing but performing with the music on the stand—it is impossible to determine if it is completely unadvisable. It is worth a deeper exploration of the literature and further study.

**Rebalancing music education.** Everson’s use of memorization among other things such as sight-reading and collaborative playing were effective in creating a multi-faceted pedagogy for his students. Nuki (1984) gave support for a connection between sight-reading and memorization. In addition, McPherson’s (1993, 1995a, 1995b, 1997, 2005; McPherson et al., 1997) research looks to previous centuries in which musicianship involved a wider pedagogical approach that included both re-creative and creative acts. Everson’s teaching offered students a more balanced approach to music making that included performing with *and* without music, sight-reading *and* playing from memory, and individual *and* collaborative music-making. He often integrated written and aural theory and encouraged students to learn pieces holistically from a composer’s perspective. Although not directly observed, Lindemann values and practices
improvisation and drew a connection between it and playing without previously composed, notated music. He admitted it was a lost opportunity when improvisation and memorization are not part of students’ education. Taken all together, practicing towards and playing from memory along with a variety of musical activities demonstrated ways to move towards a better balance of musicianship in the private lesson studio.

**Challenge and reward.** Both Everson and Lindemann personally believed that the risks involved in performing from memory were outweighed by the rewards. However, the teachers’ expectation for memorization and the students’ inclination toward the practice were sometimes at odds. This was most apparent at BU where the expectations were set for all students irrespective of their career goals. At BU all students noted at least some reward for memorizing repertoire, but some of the students spoke to the challenges that, for them, detracted from or even outweighed the rewards. Still, the fact that Everson has implemented these expectations for so many years should give other teachers pause to consider such requirements.

At UCLA, we saw a teacher clearly wrestling with the balance between challenge and reward. Lindemann spoke convincingly and personally about the reward of memorizing, but preferred to allow students to choose their level of challenge. And while Everson seemed to blindly apply the requirements to all students, regardless of career intentions, Lindemann was sympathetic to students’ various and changing goals during such formative years. Everson provided differentiation in the instruction of memorization so that students could be equipped at whatever level they started from, whereas Lindemann provided differentiation in the overall expectation and goals.

Lindemann’s point of “demystifying” memorization is pertinent to this discussion. Because of his own awakening towards memorization and the effort he described that was part of
his background, he may have been more capable of identifying with students for whom memorization is a daunting task. He acknowledged the pride that students could take from memorizing something that had previously seemed impossible. Priest (1989), too, noted this “born-again” experience that “liberated” musicians who had previously only performed from notation (p. 178). Such an awakening was also experienced by several BU students. The pride was not as palpable there, likely because performing from memory was an ordinary and requisite practice in the studio. However, the experience that students had in competitions such as the NTC presented them with opportunities to better appreciate what they had accomplished.

The cost in terms of time is also worth considering when balancing challenge and reward. A majority of the student participants in this study were Trumpet Performance majors. Since trumpet practice may be considered the centerpiece of their studies, one may conclude that the additional time required of learning music from memory is reasonable. A larger question remains if such expectations are unreasonable for students of other majors, such as Music Education, or those exploring different genres of music. There was not enough data from the few Music Education majors to consider this question more fully. However, the generalized benefits discussed above suggest that memorization may be beneficial beyond the learning of particular repertoire. It would be worth additional research to consider whether this practice would put the curriculum of Music Education or other majors out of balance.

**Anxiety.** Music performance anxiety remains an important issue when considering this topic, something that both teachers acknowledged. As in Kenny (2011) and Hallam (1997), many students in this study cited anxiety as a major challenge when considering performing without music. Given Lindemann’s discovery of memorized performance early in his career it was no surprise that he was more aware of how memorized performance may impact students for whom
the practice is new. He advised performing often for others as a way to work out the holes in one’s memory of a piece. Everson admitted limited experience with anxiety as associated with memorized performance and attributed it primarily to level of preparation, something that was also associated with successful performances in Clark, Lisboa, and Williamon’s (2014) research. There were some first-hand accounts in this study of how performance for others and sufficient preparation can improve students’ emotional outlook. However, there were students at both BU and UCLA for whom memorization was a psychologically threatening endeavor that was often a result of past experiences. For this reason, Hallam’s (1997) advice to take into consideration anxiety when setting memorization goals is to be headed.

The students who reported being able to perform from memory with no added anxiety seemed to reflect conditions of “flow” as described by Csikszentmihalyi (2009). Other students’ experiences of performing from memory that ranged from positive to negative do not always reflect language associated with the state of flow, following the findings of de Manzano, Theorell, Harmat, and Ullén (2010) that memorized performance varies in rates of flow. I look forward to further research that might explain the relationship between memorization and flow, especially as students develop in their ability to perform from memory.

**Communities of practice.** As discussed earlier, performing for others was an important strategy for both teachers when developing memorization and at least one student realized such benefits when she performed in Studio Class. However, only one student performed from memory in the Studio Class I observed at BU. At UCLA, Studio Classes were less frequent. In both sites it appears that such communal experiences, although valued by the teachers, were underutilized for the development of memory.

Furthermore, at both schools it was clear that students did not often discuss memorization
amongst themselves, something that seemed to me to be another missed opportunity. It also may have contributed to perceptions, whether accurate or not, held by students who struggled with memorization that they were alone in what seemed to be a unique disability. Comparing oneself to others is something that is sure to happen among students. Even Lindemann mentioned several times the capacities that other trumpet players possessed that were different than his. Providing a culture of open discussion and collegial support in an area that touches on sensitive areas such as natural talent and fundamental musicianship may be worth promoting more aggressively within studios. However, I have investigated only one small slice of what are complex communities of practice. There are various possibilities for further research that consider the communal implications on learning memorization and other areas of musical development.

Conclusion

Although this study has explored memorization as employed in trumpet pedagogy, many considerations and resulting questions are applicable to teachers and students of all instruments, as well as those making curricular decisions and assessment. For example, should teachers prescribe memorization goals for all students, or should students be treated individually and given freedom to choose whether or not to memorize? Should this decision be left up to the teacher or mandated in the curriculum across all instruments? Further complicating the issue is consideration of students’ past experiences with memorization as well as the wide variety of academic demands that are already imposed on them. If memorization indeed contributes to integrated and holistic music education it seems essential to include it, regardless of the student or instrument differences. However, if required at the curricular level, it is possible that memorization may not be valued or implemented as a process as much as a perfunctory requirement of a course, possibly reducing the educational or musical benefits. Such pedagogical
nuances are difficult to control, especially considering the common fragmentation of methods and outcomes that is common to music schools employing a large number of applied teachers. Encouraging interaction of faculty across musical disciplines and providing training may be most effective at helping pedagogues integrate memorization effectively. Simple summative assessment of memorization (Did the student perform the piece from memory or not?) should be balanced with formative assessment that considers the efficacy of the memorization process.

In addition, there certainly may be unintended consequences that this study did not consider. Pieces that may lend themselves better to memorization for reasons such as form or familiarity may become more entrenched in a culture of musical training that is already often criticized for being resistant to change (Sarath & Myers, 2014). Thus, memorization may actually narrow the curriculum by limiting students’ repertoire to an implicitly approved list of standard and typically older repertoire. It is understandable that memorization could be conceived of as something that restrains creativity in the composition and performance of new music. Yet, Everson’s emphasis on sight-reading and interest in new music is an example of how the danger of spending too much time learning a limited amount of music can be counterbalanced. Furthermore, this study has pointed out the ways in which memorization can be employed as a means of broadening education as students explore skills associated with jazz, improvisation, or other vernacular styles and skills. It may also draw students in to music education who otherwise are left out when sight-reading and the Classical canon of literature are overemphasized.

Despite attempts to verify the actual benefits of performing from memory (J. W. Davidson, 1993; Williamon, 1999), such a case is difficult to prove. From their own experience the teachers and many of the student participants in this study accept the good benefits from
performing from memory that include but go beyond the act of performing itself. What is more important, however, from this case study is why and how memorization is undertaken as a pedagogical process. Because trumpet players are not beholden to a tradition of performing from memory, the participants exhibited a level of thoughtfulness and attention to the practice of memorization (encoding) rather than simply the performance (retrieval) of it. Furthermore, the comparison between curricular expectations of memorization and an educational philosophy of student-directed choice in this area provides much for teachers and students alike to consider.

As discussed in chapter three, case study method does not seek to prescribe conclusions that are necessarily applicable to any other case. Instead, it merely describes the uniqueness of the cases at hand and provides the reader an opportunity to combine their own experience and beliefs with additional ones. As a musician and teacher who has had limited experience learning, teaching, practicing, or performing from memory, I would like to share the following personal discoveries that have arisen from the first hand interaction with the participants and may be of shared interest of the reader.

1. Embrace the lack of tradition, but do not use it as an excuse. It is possible that musicians for whom memorization is not an automatic part of their tradition possess an advantage. It becomes a choice to memorize that can result in a deliberate and informative process. Just because memorization may not be a commonly accepted part of an instrument’s tradition it should not be dismissed as unnecessary. Inexperienced teachers will need to reconcile their own experiences with memorization as they consider asking it of their students.

2. Appreciate the intention. Memorization demands more intention and attention. For some students the attention may come naturally so that memorization is easily attained. For others, however, asking them to memorize may push them towards better engagement with their
practice and a larger awareness of musical details.

3. Leverage the connections with diverse musical styles. Other musics such as jazz and popular styles are much less dependent upon performing from notated music. As the demands on the Western classical musician becomes more and more diverse, memorization may also be a point of understanding and integration.

4. Realign teaching priorities. It is a natural desire for teachers to solve problems, which often involve addressing technique. When learning a piece by memory is the biggest problem, one tends to focus on other aspects beyond the technique. This does not mean, of course, that students’ technical and other issues should be overlooked. Instead, memorization can be used as an additional psychological tool for overcoming technical challenges and as a way of directing attention towards larger musical ideas.

5. Integrate other areas of musical education. Pursuing memorization through multiple coding (combining aural, kinesthetic, analytical, and visual memories) can help to de-compartmentalize students’ music education (Aiello & Williamon, 2002). It leverages aural and written theory. As seen in Everson’s teaching, the practice of learning music deeply over a sustained period of time provides a counterbalance to sight-reading and can slow students down to consider other musical aspects beyond the notes and rhythms that may otherwise be successfully read off the page.

6. Equip and empower students to succeed. Anxiety is often associated with memorization. It is imperative, therefore, that teachers do everything possible to allow for positive experiences as students develop their memorization abilities. Practicing exercises of increasing difficulty such as lyrical studies and graded solos may provide excellent opportunities for building students’ confidence. The difficulty of memorizing repertoire must be given
consideration as much as challenges in areas such as technique, range, and endurance.

Furthermore, it cannot be assumed that older students are necessarily more experienced in the practice of memorization. The resulting confidence that may be built through students’ discovery of their own ability to perform from memory is invaluable.

7. Utilize the community. Students naturally compare themselves to others and come to conclusions, whether accurate or not, about their ability or inability to memorize. Without a place to honestly express the challenges and rewards in memorization, students can feel inferior to others. A constructive, supportive atmosphere in a studio class setting can provide a place for students to test out their memorization, discuss challenges, and share strategies. In addition, trumpet ensemble can be a place to work together towards a unified goal and provide experiences with memorization that may be translated to solo performance.

Ultimately, it is my hope that this case study has provoked much thought surrounding the teaching, practice, and performance of memorization. If memorization is part of your process, I trust that the experience of these teachers and students reinforced, added, and even challenged your own beliefs and practices. If memorization is not part of your experience, I believe the details provided in this case study offer substantial reasons to consider exploring it and suggestions for pedagogy. Performing from memory and practicing towards it remain a complex endeavor that may enrich the lives of both audiences and musicians alike.
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APPENDIX A

IRB EXEMPT APPROVAL LETTER

RPI Name: Janet Barrett
Project Title: Memorization in Trumpet Practice and Performance: A Qualitative Study of its Integration in the College-Level Applied Studio
IRB #: 17381
Approval Date: January 3, 2017

Thank you for submitting the completed IRB application form and related materials. Your application was reviewed by the UIUC Office for the Protection of Research Subjects (OPRS). OPRS has determined that the research activities described in this application meet the criteria for exemption at 45CFR46.101(b)(1). This message serves to supply OPRS approval for your IRB application.

Please contact OPRS if you plan to modify your project (change procedures, populations, consent letters, etc.). Otherwise you may conduct the human subjects research as approved for a period of five years. Exempt protocols will be closed and archived at the time of expiration. Researchers will be required to contact our office if the study will continue beyond five years.

Copies of the attached, date-stamped consent form(s) are to be used when obtaining informed consent.

We appreciate your conscientious adherence to the requirements of human subjects research. If you have any questions about the IRB process, or if you need assistance at any time, please feel free to contact me at OPRS, or visit our website at http://oprs.research.illinois.edu.

Sincerely,

Michelle Lore
Human Subjects Research Specialist, Office for the Protection of Research Subjects

Attachment(s): Consent Documents, Waiver of Documentation of Consent

c: Brian Reichenbach
APPENDIX B

PARTICIPANT CONSENT FORMS

SOCIAL BEHAVIORAL RESEARCH CONSENT FORM (for Boston University student)

Research Information and Consent for Participation in Social Behavioral Research
Memorization in Trumpet Practice and Performance:
A Qualitative Study of Its Integration in the College-Level Applied Studio

You are being asked to participate in a research study. Researchers are required to provide a consent form such as this one to tell you about the research, to explain that taking part is voluntary, to describe the risks and benefits of participation, and to help you to make an informed decision. You should feel free to ask the researchers any questions you may have.

Principal Investigator Name and Title: Janet R. Barrett
Department and Institution: School of Music, University of Illinois at Urbana-Champaign
Address and Contact Information: 1114 W. Nevada Street, MC-056, Urbana, IL 61801

Why am I being asked?

You are being asked to be a subject in a research study about Memorization in the Collegiate Trumpet Studio.

You have been asked to participate in the research because you are a trumpet student in the studio at Boston University.

Your participation in this research is voluntary. Your decision whether or not to participate will not affect your current or future dealings with Boston University or the University of Illinois at Urbana-Champaign. If you decide to participate, you are free to withdraw at any time without affecting that relationship.

Nine participants (eight students and one teacher) will be involved in this research at Boston University.

What is the purpose of this research?

This case study is designed to explore memorization and the ways that it is taught and practiced in college-level trumpet studios. By observing, interviewing, and collecting other written the study explores the beliefs and experiences of trumpet teachers and their methods of teaching memorization. The study also looks at how students practice and develop memorization skills and use them in performance. A description of teacher and student engagement in the process will lead me to consider how students’ musicianship may be enhanced through the use of memorization, especially as it relates to other research in the field of memorization, music education, and performance studies.

What procedures are involved?
An observation and video recording of one regularly scheduled lesson will take place between April 10 and 14 at Boston University School of Music. An hour-long, audio-recorded interview will also take place at your convenience during these dates.

What are the potential risks and discomforts?

To the best of our knowledge, the things you will be doing have no more risk of harm than you would experience in everyday life. Every effort will be made to maintain your anonymity in the writing and print publication of this research through the use of an assigned pseudonym. However, if you give consent to the release of video recordings they may reveal your identity in visual publication and presentation.

Are there benefits to taking part in the research?

This study is not designed to benefit you directly, however it has been designed to learn more about memorization as it applies to trumpet players and teachers. The results may inform future practice and teaching of memory that may be beneficial to you and others.

What other options are there?

You have the option to not participate in this study.

Will my study-related information be kept confidential?

When this research is discussed or published your identity will not be disclosed and we will not tell anyone any information about you. However, images of you in the video recorded lesson will be retained and may be used in future presentations for educational purposes. In addition, laws and university rules might require us to disclose information about you. For example, if required by laws or University Policy, study information which identifies you and the consent form signed by you may be seen or copied by the following people or groups:

- The university committee and office that reviews and approves research studies, the Institutional Review Board (IRB) and Office for Protection of Research Subjects;
- University and state auditors, and Departments of the university responsible for oversight of research;
- Federal government regulatory agencies such as the Office of Human Research Protections in the Department of Health and Human Services;

When the results of the research are published or discussed in conferences, no information will be included that would reveal your identity.

What are the costs for participating in this research?

There are no costs to you for participating in this research.
Will I be reimbursed for any of my expenses or paid for my participation in this research?

You will not be offered payment for being in this study.

Can I withdraw or be removed from the study?

If you decide to participate, you are free to withdraw your consent and discontinue participation at any time.

The Researchers also have the right to stop your participation in this study without your consent if:

→ They believe it is in your best interests;

→ You were to object to any future changes that may be made in the study plan;

Who should I contact if I have questions?

Contact the researchers Janet Barrett at janetbar@illinois.edu or 217-244-6310:

• if you have any questions about this study or your part in it,
• if you have questions, concerns or complaints about the research.

What are my rights as a research subject?

If you feel you have not been treated according to the descriptions in this form, or if you have any questions about your rights as a research subject, including questions, concerns, complaints, or to offer input, you may call the Office for the Protection of Research Subjects (OPRS) at 217-333-2670 or e-mail OPRS at irb@illinois.edu

Remember:

Your participation in this research is voluntary. Your decision whether or not to participate will not affect your current or future relations with the University. If you decide to participate, you are free to withdraw at any time without affecting that relationship.

I have read (or someone has read to me) the above information. I have been given an opportunity to ask questions and my questions have been answered to my satisfaction. I agree to participate in this research. I will be given a copy of this signed and dated form.

☐ I give permission for video recordings of me to be used in scientific publications or presentations.

_____________________________  ______________________
Signature                        Date
Printed Name

Signature of Person Obtaining Consent

Date (must be same as subject's)

Printed Name of Person Obtaining Consent

University of Illinois at Urbana-Champaign
Institutional Review Board

Approved: 1-3-17
IRB #: 1-381
SOCIAL BEHAVIORAL RESEARCH CONSENT FORM (for Boston University teacher)
Research Information and Consent for Participation in Social Behavioral Research
Memorization in Trumpet Practice and Performance:
A Qualitative Study of its Integration in the College-Level Applied Studio

You are being asked to participate in a research study. Researchers are required to provide a consent form such as this one to tell you about the research, to explain that taking part is voluntary, to describe the risks and benefits of participation, and to help you to make an informed decision. You should feel free to ask the researchers any questions you may have.

Principal Investigator Name and Title: Janet R. Barrett
Department and Institution: School of Music, University of Illinois at Urbana-Champaign
Address and Contact Information: 1114 W. Nevada Street, MC-056, Urbana, IL 61801

Why am I being asked?
You are being asked to be a subject in a research study about Memorization in the Collegiate Trumpet Studio.

You have been asked to participate in the research because you are the Professor of Trumpet at Boston University.

Your participation in this research is voluntary. Your decision whether or not to participate will not affect your current or future dealings with Boston University or the University of Illinois at Urbana-Champaign. **If you decide to participate, you are free to withdraw at any time without affecting that relationship.**

Nine participants (eight students and one teacher) will be involved in this research at Boston University.

What is the purpose of this research?
This case study is designed to explore memorization and the ways that it is taught and practiced in college-level trumpet studios. By observing, interviewing, and collecting other written the study explores the beliefs and experiences of trumpet teachers and their methods of teaching memorization. The study also looks at how students practice and develop memorization skills and use them in performance. A description of teacher and student engagement in the process will lead me to consider how students' musicianship may be enhanced through the use of memorization, especially as it relates to other research in the field of memorization, music education, and performance studies.

What procedures are involved?
I will observe eight regularly scheduled lessons taking place between April 10 and 14 at Boston University. Two, ninety-minute interviews will also take place at your convenience during these dates. Digital audio recordings will be collected during both the observed lessons and interviews.

**What are the potential risks and discomforts?**

To the best of our knowledge, the things you will be doing have no more risk of harm than you would experience in everyday life. Since you are being asked to waive anonymity you have limited control to how the data may be interpreted to reflect upon your work (see below).

**Are there benefits to taking part in the research?**

This study is not designed to benefit you directly, however it has been designed to learn more about memorization as it applies to trumpet players and teachers. The results may inform future practice and teaching of memory that may be beneficial to you and others.

**What other options are there?**

You have the option to not participate in this study.

**Will my study-related information be kept confidential?**

No. Given the unique nature of this research and your public role we are asking that you waive confidentiality and anonymity. You will be given the opportunity to review and provide input on the transcription and the final write-up of the study. However, the inclusion and interpretation of the data will be ultimately subject to the researchers’ discretion. The video recorded lessons will be retained and may be used in future presentations for educational purposes. In addition, if required by laws or University Policy, study information which identifies you and the consent form signed by you may be seen or copied by the following people or groups:

- The university committee and office that reviews and approves research studies, the Institutional Review Board (IRB) and Office for Protection of Research Subjects;
- University and state auditors, and Departments of the university responsible for oversight of research;
- Federal government regulatory agencies such as the Office of Human Research Protections in the Department of Health and Human Services;

Upon waiving anonymity, your identity will be revealed when the results of the research are published or discussed in conferences.

**What are the costs for participating in this research?**

There are no costs to you for participating in this research.
Will I be reimbursed for any of my expenses or paid for my participation in this research?

You will not be offered payment for being in this study.

Can I withdraw or be removed from the study?

If you decide to participate, you are free to withdraw your consent and discontinue participation at any time.

The Researchers also have the right to stop your participation in this study without your consent if:
→ They believe it is in your best interests;
→ You were to object to any future changes that may be made in the study plan;

Who should I contact if I have questions?

Contact the researchers Janet Barrett at janetbar@illinois.edu or 217-244-6310:
• if you have any questions about this study or your part in it,
• if you have questions, concerns or complaints about the research.

What are my rights as a research subject?

If you feel you have not been treated according to the descriptions in this form, or if you have any questions about your rights as a research subject, including questions, concerns, complaints, or to offer input, you may call the Office for the Protection of Research Subjects (OPRS) at 217-333-2670 or e-mail OPRS at irb@illinois.edu

Remember:

Your participation in this research is voluntary. Your decision whether or not to participate will not affect your current or future relations with the University. If you decide to participate, you are free to withdraw at any time without affecting that relationship.

I have read (or someone has read to me) the above information. I have been given an opportunity to ask questions and my questions have been answered to my satisfaction. I agree to participate in this research. I will be given a copy of this signed and dated form.

☐ I give permission for video recordings of me to be used in scientific publications or presentations.
Signature

__________________________
Printed Name

__________________________
Signature of Person Obtaining Consent

__________________________
Printed Name of Person Obtaining Consent

Date

__________________________
Date (must be same as subject's)

University of Illinois at Urbana-Champaign
Institutional Review Board

Approved: 3-1-17

IRB #: 7-383
SOCIAL BEHAVIORAL RESEARCH CONSENT FORM (for UCLA teacher)
Research Information and Consent for Participation in Social Behavioral Research
Memorization in Trumpet Practice and Performance:
A Qualitative Study of its Integration in the College-Level Applied Studio

You are being asked to participate in a research study. Researchers are required to provide a consent form such as this one to tell you about the research, to explain that taking part is voluntary, to describe the risks and benefits of participation, and to help you to make an informed decision. You should feel free to ask the researchers any questions you may have.

Principal Investigator Name and Title: Janet R. Barrett
Department and Institution: School of Music, University of Illinois at Urbana-Champaign
Address and Contact Information: 1114 W. Nevada Street, MC-056, Urbana, IL 61801

Why am I being asked?

You are being asked to be a subject in a research study about Memorization in the Collegiate Trumpet Studio.

You have been asked to participate in the research because you are the Professor of Trumpet at UCLA.

Your participation in this research is voluntary. Your decision whether or not to participate will not affect your current or future dealings with UCLA or the University of Illinois at Urbana-Champaign. If you decide to participate, you are free to withdraw at any time without affecting that relationship.

Nine participants (eight students and one teacher) will be involved in this research at UCLA.

What is the purpose of this research?

This case study is designed to explore memorization and the ways that it is taught and practiced in college-level trumpet studios. By observing, interviewing, and collecting other written data, the study explores the beliefs and experiences of trumpet teachers and their methods of teaching memorization. The study also looks at how students practice and develop memorization skills and use them in performance. A description of teacher and student engagement in the process will lead me to consider how students’ musicianship may be enhanced through the use of memorization, especially as it relates to other research in the field of memorization, music education, and performance studies.

What procedures are involved?

195
I will observe eight regularly scheduled lessons taking place between May 21 and 25 at UCLA. Two, ninety-minute interviews will also take place at your convenience during these dates. Digital audio recordings will be collected during both the observed lessons and interviews.

**What are the potential risks and discomforts?**

To the best of our knowledge, the things you will be doing have no more risk of harm than you would experience in everyday life. Since you are being asked to waive anonymity you have limited control to how the data may be interpreted to reflect upon your work (see below).

**Are there benefits to taking part in the research?**

This study is not designed to benefit you directly, however it has been designed to learn more about memorization as it applies to trumpet players and teachers. The results may inform future practice and teaching of memory that may be beneficial to you and others.

**What other options are there?**

You have the option to not participate in this study.

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- Federal government regulatory agencies such as the Office of Human Research Protections in the Department of Health and Human Services;

Upon waiving anonymity, your identity will be revealed when the results of the research are published or discussed in conferences.

**What are the costs for participating in this research?**

There are no costs to you for participating in this research.
Will I be reimbursed for any of my expenses or paid for my participation in this research?

You will not be offered payment for being in this study.

Can I withdraw or be removed from the study?

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☐ I give permission for video recordings of me to be used in scientific publications or presentations.
You are being asked to participate in a research study. Researchers are required to provide a consent form such as this one to tell you about the research, to explain that taking part is voluntary, to describe the risks and benefits of participation, and to help you to make an informed decision. You should feel free to ask the researchers any questions you may have.

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Department and Institution: School of Music, University of Illinois at Urbana-Champaign
Address and Contact Information: 1114 W. Nevada Street, MC-056, Urbana, IL 61801

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You have the option to not participate in this study.

**Will my study-related information be kept confidential?**

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- University and state auditors, and Departments of the university responsible for oversight of research;
- Federal government regulatory agencies such as the Office of Human Research Protections in the Department of Health and Human Services;

When the results of the research are published or discussed in conferences, no information will be included that would reveal your identity.

**What are the costs for participating in this research?**

There are no costs to you for participating in this research.
Will I be reimbursed for any of my expenses or paid for my participation in this research?

You will not be offered payment for being in this study.

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☐ I give permission for video recordings of me to be used in scientific publications or presentations.

_________________________________________  ________________
Signature                                      Date
Printed Name

Signature of Person Obtaining Consent  Date (must be same as subject’s)

Printed Name of Person Obtaining Consent

University of Illinois at Urbana-Champaign
Institutional Review Board

Approved: 1-3-17
IRB #: 173887
APPENDIX C

ONLINE QUESTIONNAIRE

Dear Trumpet Student:

You are invited to participate in a research study investigating how memorization is used in college-level trumpet studios. The purpose of this study is to explore memorization as it is distinctively taught, practiced, and applied to trumpet performance.

Please know that you are not required to participate in order to fulfill the any requirements of your collegiate studies. Your participation is completely voluntary and will not affect any other aspect of your course participation.

If you choose to participate please continue to this brief questionnaire online about your experience with memorization. Doing so will indicate your consent to participate in this questionnaire. Your name and contact information will be kept confidential and is only requested so that I may select individuals for further study. If asked, you will have another opportunity to consent or refuse consent.

**Will my study-related information be kept confidential?**

Yes, but not always. In general, we will not tell anyone any information about you. When this research is discussed or published, no one will know that you were in the study. However, laws and university rules might require us to disclose information about you. For example, if required by laws or University Policy, study information may be seen or copied by the following people or groups:

- The university committee and office that reviews and approves research studies, the Institutional Review Board (IRB) and Office for the Protection of Research Subjects;
- University and state auditors, and Departments of the university responsible for oversight of research;
- Federal government regulatory agencies such as the Office of Human Research Protections in the Department of Health and Human Services.

The survey will take approximately ten minutes to complete. You may direct any questions to me or the Principal Investigator at the contact information below. In addition, if you have any questions about your rights as a participant in this study, please contact the University of Illinois Office for the Protection of Research Subjects at 217-333-2670 or via email at irb@illinois.edu.

Sincerely,

Brian W. Reichenbach
421 N. Craig Pl.
Lombard, IL 60148
breichen@tiu.edu
1) Please indicate below your willingness to participate in this study.

____ I consent to participate in this study and am at least 18 years of age.
____ I do not consent to participate in this study or am not at least 18 years of age.

2) Name: ___________________________

3) What is your age?

___ under 18
___ 18
___ 19
___ 20
___ 21
___ 22
___ 23
___ 24
___ 25
___ Over 25

4) In your own words, briefly define memorization (no more than one or two sentences).

5) Using the scale below, indicate how much you agree or disagree with each statement.

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
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<tbody>
<tr>
<td>a) I believe visual memorization (i.e., memorizing written notation) is an important component of my music education.</td>
<td></td>
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<td>b) I believe aural memorization (i.e.,</td>
<td></td>
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memorizing by ear) is an important component of my music education.

c) I believe that memorization is an effective practice strategy that I can use to increase my overall performance achievement.

d) I should never have to memorize music.

e) I believe that memorization may cause anxiety in my performance.

f) Memorization is a skill; the more you use it, the better it becomes.

g) I enjoy performing music on my instrument from memory.

h) I memorize music easily.

<table>
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<tr>
<th>6)</th>
<th>How often are memorization strategies addressed in your trumpet lessons?</th>
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<tbody>
<tr>
<td></td>
<td>_____ Frequently</td>
</tr>
<tr>
<td></td>
<td>_____ Sometimes</td>
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</table>

7) Briefly list some of the memorization strategies you have used.

8) What musical material do you believe you should memorize? Select all that apply.
   _____ Solos
   _____ Etudes
   _____ Scales
   _____ Technical Exercises from Method Books (e.g., Arban, Clarke, etc.)
   _____ Chamber Music (e.g., duo, trio, quartet)
   _____ Large Ensemble Concert Music
   _____ Orchestral Excerpts
   _____ Students should never have to memorize musical material
   _____ Other: ______________

9) Which of the following performance techniques improve most when using memorization? Select all that apply.
   _____ Tone
   _____ Finger Technique
   _____ Embouchure/Air Technique
   _____ Posture
   _____ Musicality
   _____ Communication with other ensemble members
   _____ Rhythmic Accuracy
I do not benefit from memorizing musical material
Other: ______________

10) What year are you in school?
   ___ Freshman
   ___ Sophomore
   ___ Junior
   ___ Senior
   ___ Graduate Student

11) What other instruments do you play?
   ___ Piano
   ___ Voice
   ___ Other(s): ______________

12) What is your primary instrument?
   ___ Trumpet
   ___ Other: ______________

13) What is your major?
   ___ Trumpet Performance
   ___ Music Education
   ___ Composition/Theory
   ___ Musicology/Ethnomusicology
   ___ Music minor (please specify major): ______________
   ___ Other: ______________

14) Email address: ______________
APPENDIX D

INTERVIEW PROTOCOLS

Title: Memorization in Trumpet Practice and Performance: A Qualitative Study of its Integration in the College-Level Applied Studio
Author: Brian W. Reichenbach
Affiliation: University of Illinois at Urbana-Champaign
Department: School of Music

Principal Investigator Contact Information:
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Editor, *Bulletin of the Council for Research in Music Education*  
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Urbana, IL 61801

janetbar@illinois.edu  
Phone: 217-244-6310  
Fax: 217-244-4585

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**Student Interview Protocol**

Time of Interview:
Date:
Place:
Interviewer: Brian W. Reichenbach
Interviewee/Participant:

[Turn on the tape recorder].

Thank you for agreeing to be interviewed for this project. During this interview, I am interested in your experience with memorization prior to and throughout your studies here at the university as well as future goals for memorization. In addition, I may refer to some things that I observed in the lesson. I may jot some key thoughts down as you speak, but please don’t feel like you must wait for me since I will be recording our conversation so that I can transcribe it later. As a reminder, the consent form you signed assures that 1) this information will be held confidential and you will not identified by name in the report; 2) your participation is voluntary and you may stop at any time if you feel uncomfortable; and 3) I do not intend to inflict any harm. Again, thank you for agreeing to participate.

The interview will take approximately sixty minutes. I have planned several areas that I would like to cover, so if time begins to run short, it may be necessary to interrupt you in order to move
to the next question.

**Musical Background and Questionnaire Follow-up**

1. I see that you are a [year in school] here. Is that correct?

2. Why did you decide to major in [major area]? Briefly, what are your career goals?

**Practicing and Performing from Memory**

3. Recall the first time you memorized a solo work on the trumpet. Was that here at the university or before that? Why did you decide to perform from memory?

   Select from the following additional questions as time permits:
   a. Tell me both about the preparation for that memorized performance. Did it come easily to you or do you remember working at it? Did you approach learning the piece any differently than you had in the preparation of other music?

   b. Describe that first performance from memory. Was it a successful performance? How did it compare to other performances you have given that were not memorized?

   c. Have you performed music from memory since then? If so, please describe what you have done. Why?

4. Let’s consider now your memorization here at the University. What instruction have you received from your professor here in preparing to perform from memory? What has been most or least helpful to you?

   Select from the following additional questions as time permits:
   a. Do you feel like your ability to practice towards memory and perform from memory has improved? In what ways?

   b. How do you think your experiences working with memorization here have influenced other areas of your music education?

   c. Memorization typically requires additional time for learning a piece of music. Do you find that this is the case? Do you believe it has been worth the extra time? How have you balanced the time required with other demands of your musical education?

5. Memorization may often heighten one’s anxiety about performing. What has been your experience with music performance anxiety, particularly when performing from memory?

**Expounding upon particular Questionnaire responses**

6. If student responded with some level of disagreement in section 3 of the questionnaire ask: On the preliminary questionnaire you indicated that [refer to the question(s)]. Can you tell me more about why you disagreed with that statement?

7. On the questionnaire you mentioned using the following strategies for memorization [list
strategies from question 5]. Can you tell me more about these?

8. When asked, “Which of the following performance techniques improve most when using memorization?” you listed [list techniques selected from question 7]. Can you tell me more about what you have observed in your playing? Feel free to speculate why this might be the case.

9. If student responded that they played another instrument ask: Have you employed memorization in your experience playing [response to question 9]? If so, please describe. How do you think it may have affected your use of memory in your trumpet studies and performance?

**Reflection on the observed lesson**

10. How long have you been working on [piece(s) rehearsed in lesson involving memory]? Where are you at in the process of preparation (e.g., ready to perform, still learning notes, etc.)

11. At one point in your lesson the professor [cite a particular comment, exercise, or other occurrence from the lesson]. Was this helpful? How did it make you feel? Is this typical of his method of instruction?

**Concluding the interview**

Thank you for your cooperation and participation in the interview. If you would like to add more to this discussion I would be happy to talk with you again either this week while I am on campus or later on by phone, email, or Skype. I will be transcribing this interview and coding it for key themes. I will be responsible for keeping the audio recordings and transcriptions in confidentiality and will delete the audio files once transcribed. After the interview has been transcribed I would like to share it with you in case you would like to elaborate upon or change any of the statements you made today. I will also share with you any portions in the final report that include portions of this interview or the observed lesson, once again for your feedback. Thank you again for your significant contribution to my research.

---

**Teacher First Interview Protocol**

Time of interview: 
Date: 
Place: 
Interviewer: Brian W. Reichenbach 
Interviewee/Participant: 

[Turn on the tape recorder].

Thank you for agreeing to be a part of this project. During this first interview, I am interested in your experience with memorization throughout your education, performance career, and in your teaching, including your current beliefs regarding its use in trumpet pedagogy, practice, and performance. I may jot some key thoughts down as you speak, but please don’t feel like you must wait for me since I will be recording our conversation so that I can transcribe it later. As a
reminder, you signed a consent form agreeing to waive anonymity and assuring that 1) your participation is voluntary and you may stop at any time if you feel uncomfortable; and 2) I do not intend to inflict any harm. Again, thank you for agreeing to participate.

The interview will take approximately ninety minutes. I have planned several areas that I would like to cover, so if time begins to run short, it may be necessary to interrupt you in order to move to the next question.

**Personal Background Practicing and Performing from Memory**
1. When did you first begin performing from memory? Why?

2. Did it come easily to you or do you remember working at it?

3. Please describe some of the ways you go about practicing for a memorized performance.

4. Do you feel like your ability in this area has improved? Why or why not?

5. How does performance from memory play a part in the music that you make as a professional musician?

**Practice of Memorization in Teaching**
6. When did you begin encouraging or requiring your students to perform from memory?

7. Why do you emphasize memorization in their preparation?

8. How have students responded to your emphasis on memorization, both in their attitude and their development as musicians?

9. Are there downsides, in your opinion, to memorizing music for performance? What about the extra time required or performance anxiety?

**Concluding the interview**

Thank you for your cooperation and participation in the interview. I look forward to our next interview [date and time near the end of visit] in which I will focus on observations from the week. Thank you so much for your time.

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<th>Teacher Second Interview Protocol</th>
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<td>Time of interview:</td>
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<td>Date:</td>
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<tr>
<td>Place:</td>
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<tr>
<td>Interviewer: Brian W. Reichenbach</td>
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<tr>
<td>Interviewee/Participant:</td>
</tr>
</tbody>
</table>
[Turn on the tape recorder].

Thank you for agreeing to be a part of this project. During this final interview, I am interested in following up on some of what I observed throughout this week. Once again, I will be just taking a few notes and recording this for later transcription. As a reminder, you signed a consent form agreeing to waive anonymity and assuring that 1) your participation is voluntary and you may stop at any time if you feel uncomfortable; and 2) I do not intend to inflict any harm. Again, thank you for agreeing to participate.

The interview will take approximately ninety minutes. I have planned several areas that I would like to cover, so if time begins to run short, it may be necessary to interrupt you in order to move to the next question.

**Questions pertaining to particular student participants**
Ex. Can you describe some of the progress that you have seen [name of student] make on the piece he/she is memorizing?

**Questions pertaining to particular teaching methods**
Ex. During one lesson you [describe what was said or done]. Can you tell me more about that (why you said it, what you meant, etc.)?

**Closing questions**
Now that we have had two focused conversations on memorization in the trumpet studio, I have some final questions.

1. What are the most important reasons that more trumpet pedagogues should emphasize memorization in their studios?

2. When students in your studios graduate and establish their own careers, do you notice if they continue to utilize memorization in their own performance and teaching? If so, can you describe an example or two?

3. Has participating in this study confirmed or changed your ideas about memorization in trumpet pedagogy and performance? If so, in what ways?

**Concluding the final interview**

Thank you so much for your cooperation and participation in these interviews and throughout my time here. I will be transcribing this interview and coding it for key themes. I will be responsible for keeping the audio recordings and transcriptions in confidentiality and will delete the audio files once transcribed. After these interviews have been transcribed I would like to share them with you in case you would like to elaborate upon or change any of the statements you made today. I will also share with you any portions in the final report that include parts of this interview or the observed lesson, once again, for your feedback. I am very grateful for your significant contribution to my research.