Embodiment Consciousness in Music Performance Pedagogy

ANDERSON CÉSAR ALVES [1]
School of Music, Federal University of Rio de Janeiro, Brazil

MARCOS NOGUEIRA[2]
School of Music, Federal University of Rio de Janeiro, Brazil

ABSTRACT: The acquisition of expertise in music performance and its pedagogy, depends on, beyond specific musical skills, employing resources from other fields of knowledge and considering sensory, motor, and affective capacities at each step of the music learning process. We studied the teaching practices of three expert clarinet teachers to investigate their didactic procedures, evaluating how those practices could be related to their students' high levels of performance. The method gathered data from a "protocol joint analysis" and semi-structured interviews with teachers and their students. Data analysis revealed a particular set of pedagogical skills observed in the didactic procedures of these expert teachers. These teaching strategies were common to all three case studies and revealed themselves as a last didactic resource to overcome complex problems at the highest level of proficiency in musical interpretation. We call that pedagogical expertise field *Embodiment Consciousness in Music Performance*. This field of competence describes the systematic didactic use of metaphor to access performers' sensorimotor and affective memories, whose semantic contents can thereby be accessed to support performance actions.

Submitted 2022 January 29; accepted 2022 November 10.
Published 2024 October 7; https://doi.org/10.18061/emr.v19i1.9571

KEYWORDS: *music performance pedagogy, expert teacher, embodied cognition*

INTRODUCTION

IN the early 1980s, research on expertise progressively influenced the search for knowledge about teaching processes. As a result of this new scientific interest, the close relationship between expert learning and teaching (Siedentop & Eldar, 1989) was soon made clear. Additionally, the similarities in acquiring expertise in different domains seemed relevant to educational researchers because, by analogy, various investigations appeared to describe the specific skills of an expert teacher, in any field of knowledge.

This situation drew the attention of Berliner (1988), who adapted the heuristic model of development proposed by Hubert Dreyfus and Stuart Dreyfus on pedagogical expertise. Thus, based on the skill development model by Dreyfus and Dreyfus (1980), Berliner presented a model with five stages of development: newbie, advanced beginner, competent, proficient, and expert. Insight into what an "expert teacher" means can be inferred from the National Board of Professional Teacher Standards (NBPTS) procedures—the NBPTS is an independent organization established in 1987 and recognized as the gold standard in teacher certification. National Board Certification is a voluntary process to evaluate and certify teachers against specific criteria. Its protocol checks if the teachers who are considered excellent apply everything one expects of them. Collected data analysis verifies how those professionals contribute to their students' development (NBPTS, 2002). That is, assessed teachers' expertise is related to what their students present, such as a better understanding of concepts in an integrated and coherent way or the development of a higher concentration level compared to other students (Berliner, 2001, 2004). Thereby, the results showed the need to establish a set of criteria to define the attributes of the expert teacher.

Our starting point is that it is necessary to investigate the relationship between teachers' pedagogical procedures and the highly professional performers trained by them. We start by addressing questions in the theoretical–methodological context of pedagogical expertise, aiming to uncover the competencies of the expert teacher in music performance. After all, how do we evaluate the music performance teachers' expertise? This central research question was the first we asked. From this, the

We carry out research in three stages. In the first stage of our study, we start investigating the expertise acquisition process in instrumental teaching practice. To support the elaboration of our analytical model and hypothesize a framework of fields of expertise in music performance pedagogy, we adapted the expertise fields addressed in the models of Dreyfus and Dreyfus (1980), Berliner (1988), and the National Board of Professional Teacher Standards (2002). The second research stage aimed to investigate the validity of applying the hypothesized competency framework to evaluate pedagogical expertise in music performance. For that, we developed an observation and data collection protocol for application in three case studies involving the didactic practices of teachers recognized as experts in teaching the clarinet. Data analysis from the three case studies showed that all competence domains gathered in that table were fully compatible with the different biases of the expertise in music performance pedagogy (Alves, 2021).

However, a particular set of didactic skills observed in the pedagogical actions of the studied expert teachers stood out notably in the data analysis. Such teaching strategies were common in all three case studies. They revealed themselves as a last didactic resource to overcome complex problems at the highest level of proficiency in musical interpretation. Thus, the third stage of the investigation focused on what we call *Embodiment Consciousness in Music Performance*. This new competence field implies the systematic didactic use of metaphor to access performers' sensorimotor and affective memories and whose semantic contents can be accessed to support performance actions.

EXPERTISE IN MUSIC PERFORMANCE PEDAGOGY

Expertise in music performance is the goal of its pedagogy, even if not all students will reach the highest level. Attaining an expert level is something that only a few students can do at the tail-end of their formation cycle. Music performance is a multidisciplinary activity by nature. It is built at the confluence of several fields of knowledge (Corrigall & Schellenberg, 2016; Hallam, 2016), as it deals with a human expression that joins the specificities of musical skills with other modalities of artistic expression, language, behavior, culture, and other individual differences. Moreover, these interactions are based on the performer's sensory, motor, and affective skills (Johnson, 2017). These skills and competencies come into play in the learning process and accompany the performer throughout his artistic development.

By analogy and approximation, the investigation of pedagogical expertise in scientific and educational literature allowed the construction of a table of competencies for expertise in music performance pedagogy. Terminology and concepts from the field of education—such as *didactics*, *method, technique*, *approach*, and *skills* (including critical thinking, problem-solving, decision-making, and communication)—have been central references in the pedagogy of any field, including performance with musical instruments (Ball et al., 2008; Cochran-Smith & Fries, 2005; Colwell, 2011; Griffin & Care, 2015; Ray, 2015). In that sense, contextualizing the terms that include musical practices and pedagogy will be fundamental to understanding, perfecting, and expanding the knowledge around evaluating and assessing musical practices and their teaching.

Duke and Simmons (2006) observed that the study of expertise in teaching had been widely discussed and analyzed in education. Assessing the applicability of expertise identification methods in education for other fields of knowledge has become a critical problem for educators and professionals involved in evaluating and assessing pedagogical expertise. The interactions between teachers and students in a radically practical and physical, but also profoundly intellectual and emotional, experience like music performance are very different from interactions in other pedagogical contexts. According to Duke and Simmons, the complex set of musical specificities might be the main reason for what they perceive to be the delay in the research about the expertise of the music performance teacher. We must emphasize that we are not dealing with research in music education, a field of investigation dedicated to the role of musical practice in human development. The present study specifically aims at the didactic procedures developed and applied by expert teachers in training high-performance professional clarinetists. Even 15 years after the publication of Duke and Simmons (2006), research into music performers and specialist teacher expertise remains at an early stage; however, we recognize that significant advances have been achieved by studies such as those by Brown et al. (2015) and Williamson et al. (2019).

To answer fundamental questions, Duke and Simmons (2006, p.8) started with the following questions: "How do experts turn poor musicians into good ones? How do they turn good musicians into great ones?" They then recorded and analyzed 25 class hours of three internationally renowned expert teachers in music performance to describe their processes of building performance expertise. The analysis of the data obtained via the recordings revealed similar themes in the didactic practices of the participants: "objectives and expectations," "effective changes," and "transmitted information." Regarding the first category, "objectives and expectations," data analysis shows that the student's technical level determined the level of the challenges of the repertoire. Another observed aspect was the teachers' ability to categorize the chosen repertoire into auditory images. The teachers developed the

teachers' ability to categorize the chosen repertoire into auditory images. The teachers developed the skill to make technical decisions appropriate for problem-solving in performances, comparing the stages of development of the students' performance.

Concerning the second category, "effective changes," Duke and Simmons concluded that accuracy and excellence were goals in every performance. The teacher explicitly defined strategic planning for performances. Where plans fell through, new objectives were defined. The researchers called attention to the fact that technical issues were often related to excessive physical movement and that short pauses for physical and mental relaxation helped overcome problems with technique.

Lastly, regarding the third category, "transmitted information," the idea of an "auditory image" was observed, and the strict relationship between physical movement and its effects on sound production. According to Duke and Simmons, expert teachers list various approaches in their teaching practices. These approaches include the establishment of progressive degrees of difficulty; categorization by mental images of the chosen repertoire; proper decision-making for solving problems; comparing the stages of performance development; employing motivational resources; precision and excellence valuation as the essence of performance; carrying out strategic planning for performance; apprehension of the relationship between excess physical movement and performance failures; underlining the importance of physical and mental rest; and exploration of imitation as an essential tool in teaching music performance.

Forrester (2015), in turn, analyzed the teaching practices of four experienced music performance teachers at three renowned music schools in the USA. The criteria for choosing these teachers were, on one side, their experience as a performer and, on the other, their experience as music performance teachers for more than 10 years. Forrester sought to understand how these teachers adapted their expertise to different contexts and teaching levels. Data collection involved three semi-structured interviews per participant, one participant focus group, one observation of each participant conducting and teaching school ensembles, and two stimulated recall events per with each participant using previously recorded footage of them conducting. She based her data analysis on research by Ball et al. (2008) on the conceptualization of teacher content knowledge. Forrester also employed four domains of knowledge—"common content," "expert content," "content and learners," and "content and teaching"—which she used to name and distinguish different aspects of the participants' instruction and knowledge. She highlighted a theme we intend to develop in the present article: the importance of auditory images and gestures in the pedagogical process and the connection between musical responses and the students' responses.

We propose that the theoretical–methodological literature on expertise in music performance has revealed consistent results, but also significant gaps in knowledge about the music performance teacher's expertise. Forrester's investigation highlights that teaching music performance requires developing music perception skills to create concepts, generate pedagogical strategies, modify didactic practices, and evaluate and react to the students' performances. Ultimately, our argument is that this is all based on experiencing auditory–musical stimuli that tie together aesthetic and kinesthetic experiences, using the body as a fundamental structure for musical understanding and the expression of musical intents.

METHOD

Models employed by Duke & Simmons (2006), Ball et al. (2008), and Forrester (2015), as well as comparative analysis and a speculative adaptation of indicators found in the expertise fields addressed in the referred seminal models—Dreyfus and Dreyfus (1980), Berliner (1988), and the National Board of Professional Teacher Standards (2002)—enabled us to create a table of competencies exhibited by expert music performance teachers. We organized this table with eight hypothetical, interdependent, and interactive fields (Table 1). Based on Table 1, we developed a protocol for observing and analyzing the teaching practices of three expert clarinet teachers, evaluating how those practices could be related to their students' high level of performance [3]. We hypothesized that this procedure would test the validity of applying the competencies fields, referred to as expertise attributes, in music performance pedagogy.

The methodological structure employed was based on triangulating the data through (1) the *joint protocol analysis* of observation and video records of classes taught by participating teachers, (2) semi-structured interviews with participating teachers, and (3) semi-structured interviews with three students from each participating teacher. The interviews with the students allowed us to test more specific inferences about the teaching practices observed and the *joint protocol analysis* with the teachers.

The criteria for selecting the three participating teachers were based on their students' history of excellence in performance and the teachers' experience as performers and performance instructors in their field. Teacher A has been a clarinet player for 50 years and a university clarinet teacher for 30, Teacher B has been a clarinet player for 31 years and a university clarinet teacher for 20, and Teacher C has been a clarinet player for 38 years and a university clarinet teacher for 28. The selection of

participating students was based on their degree of progress. Of those students who participated in the observed classes, each teacher's three most advanced students were invited to participate in the interviews. All those who were invited accepted the invitation to participate.

Table 1. Hypothetical mapping of competencies that characterize an expert teacher in music performance.

FIELD	EXPERT TEACHER IN MUSIC PERFORMANCE
Specific competencies	Develops strategic guidelines for training performers and preparing intuitive and automated performances using repetition or analysis (in the case of new situations), independent of established and standardized guidelines.
Mastery of knowledge	Demonstrates a deep understanding of the significant performance patterns and their pedagogy, resulting from extensive knowledge of the artistic production field and teaching performers.
Use of knowledge	Applies consolidated knowledge of the strategic guidelines for teaching in an objective and optimized manner.
Perception and context evaluation	Performs holistic assessments of the effects in the performance context by employing faster and more accurate patterns to evaluate students' capabilities and learning, and by continually testing hypotheses.
Decision-making	Able to make the best decisions, deploying intuitive and analytical strategies to solve performance problems.
Work pattern	Able to address problems of task demands and monitor learning, providing feedback to students and taking on more challenging goals.
Autonomy	Can overcome established pedagogical standards and create, with opportunism and flexibility, interpretations and solutions for situations so they do not depend on pre-established standards.
Acting in complex situations	Presents a holistic understanding of complex situations, transitions easily between analytical and intuitive approaches, and adapts to the diversity of students and their different objectives.

Joint protocol analysis

As Ericsson (2006, p. 224) warned, introspection "to uncover the structure of thinking and its mental images" is a technique established by philosophy. He then developed a basic schema of free verbalization of thoughts that pass through attentional focus as a person "thinks aloud" while performing a particular task. Therefore, the central assumption of his *protocol analysis* is that it would be possible to "instruct subjects to verbalize their thoughts in a way that does not alter the sequence and content of these thoughts" (p. 227). This procedure would mediate the performance of a task and thereby reflect information immediately available during the thought process.

However, the classroom situation we wanted to observe and record on video would not allow the application of protocol analysis as originally structured by Ericsson. In personal communication, he claimed that "retrospective statements can work better than concurrent statements in some cases. I could imagine you show parts of the videos and use them as a memory cue to have the teachers now trying to recall what they thought when making a didactic decision." [4] From the discussion with Ericsson, we developed a derived model called *joint protocol analysis*. The new model aimed to provide more consistent data on the observed teaching practices, even if the introspection exercise proposed to the teachers did not occur during their didactic performance. We verified that the adjustments and adaptations of Ericsson's protocol to the specific situations of our study should provide a model: (1) that would promote the confluence of memories and concepts involved in situations highlighted by the observer about the didactic procedures taken by the teachers in the classes they have just taught; (2) that would instruct the participants to verbalize thoughts retrospectively; and (3) that would also involve interactions with the researcher's interventions.

We based the structured observation of the classes on the descriptive model found in Table 1 to substantiate the joint protocol analysis. The analysis is a process that must immediately focus on the information available during the reflection. The verbalized thought model has been accepted as an essential tool to deal with introspection's distancing and diversions. This model offers an alternative to the methods of direct and reflective questioning. Nevertheless, the joint protocol analysis model could supply tools to allow researchers to identify pieces of information as soon as those pieces generate behaviors, as long as the time between the actions and the activation process of the action memories is short. We decided to believe in the validity of the new protocol because we agreed with Ericsson that

recalling memories immediately after the focused actions would already prevent thoughts from being densely dominated by controversial deductive and inductive reasoning (Ericsson, 2006).

Semi-structured interviews with teachers and students

The other data-collecting method was the semi-structured interview (Lankshear & Knobel, 2008) with the three expert teachers in clarinet pedagogy. Due to its qualitative approach, the semi-structured interview allowed an exploration of the participants' personal views. This interaction between participant and researcher enabled an investigation into how actions identified as essential in the didactic methods directly observed were understood—primarily because of the possibility of intervening to go more in-depth about specific details.

We conducted semi-structured interviews with each teacher after the joint protocol analysis cycle. As the interviews also consider the expertise references that make up Table 1, we believe that, if carried out before the protocol analysis cycle, they would quickly induce participants to frame their reflections in the fields covered in the interviews. In addition, we also intended to compare the idealized discourse of the teachers on each issue presented to them in the interview with their procedure patterns during classes. As well as the joint protocol analysis, we anchored the interviews on a pre-established script (Table 1) which aimed to obtain data about 1) how teachers developed their ability to solve music performance problems and whether the strategies involved are intuitive or analytical; 2) how the teachers use knowledge as a strategy to improve their students' performances; 3) how the teachers recognize and adapt themselves to each student's capacity for learning and goals; 4) how the teachers acquired significant patterns for both performance preparation and performance teaching, whether these were traditional methods or methods developed by the teachers themselves; 5) which mechanisms the teachers use to motivate the students; and 6) what pedagogical approach the teachers use in unusual and complex situations. Interviews lasted for about one hour each and were recorded in the teachers' classrooms.

The work of the musical instrument teacher is often carried out in isolation (Krueger, 2000; Sindberg & Lipscomb, 2005). To minimize the negative effects of this for data collection, we also carried out semi-structured interviews with the teachers' students. We conducted these interviews before each teacher's last observation session. We interviewed three students of each teacher; each session lasted for approximately one hour, and the interviews were conducted at the teachers' universities. We believe that the similarities and disagreements between the students' reports would give more consistency to these sources. We also wanted to explore the students' perceptions about some situations that remained inconsistent in our observation of the classes.

Procedure

With a digital camera connected to a portable computer—assembled before the start of the session—we recorded four weekly clarinet sessions of each teacher. The teacher assisted three students in each session, which could last from three to six hours. We recorded four sessions of each teacher, totaling about sixty hours of classes. During the video recording of the classes, the excerpts containing the most significant didactic actions were signaled by the timestamp on the video so they could be easily accessed in the joint protocol analysis session.

As soon as the class sessions ended, we took a short break and invited the teachers to a joint protocol analysis session. First, we asked the teacher to describe their goals in each lesson of the watched session and state which points they would list as most relevant in their teaching strategies for each student. We believe that this preliminary stage of the joint protocol analysis, which precedes video analysis, enhanced our understanding of the structure of teacher–student interactions. Subsequently, specific scenes captured on video were presented to the teachers, in order to encourage them to focus on their intended action and to activate memories of these actions and their motivations.

The content from the joint protocol analysis and the interviews with teachers and students was transcribed and segmented into sections related to the competency fields in Table 1. To help, we used content analysis and discourse analysis tools (Brandão, 2004; Gill, 2002; Orlandi, 1999). After analyzing the data divided by contrasts and similarities (Sarantakos, 1998), we discussed validating our preliminary hypotheses (Table 1) in music performance pedagogy.

RESULTS

The interviews generated exceptionally informative data, especially compared to the joint protocol analysis results. Some basic inferences were immediately confirmed or denied, and new data emerged. These emerged in different ways, for example, in explanations that demanded that teachers use expressive gestures and non-verbal actions. At first, we thought of treating such procedures as motivated by specific limitations of language (Willig, 2001) to describe a musical technique or artistic expression. However, as we will see later, most of these cases were related to the insufficiency of linguistic

expression to conceptualize the artistic actions whose apprehensions the teachers intended to make available to students.

Triangulating data from the different collection instruments consistently validated every hypothetical competency field in Table 1. However, this procedure made it possible to refine the descriptions of the competency fields, creating a new version of the mapping of music performance pedagogical expertise, as shown in Table 2. Next, we briefly discuss the results that supported the consolidation of six fields of expertise in music performance pedagogy. We emphasize that this should only clarify and justify the importance of looking into another field of competence highlighted in our investigation. We want to emphasize this, as the models we initially considered do not address it.

Table 2. Competency fields that characterize an expert teacher in music performance

FIELD	EXPERT TEACHER IN MUSIC PERFORMANCE
Mastery in the knowledge field	The expert teachers demonstrate a broad mastery of knowledge and practice of their specialty's most complex patterns of musical performance. This condition, notoriously resulting from acquiring high expertise as performers, allows them to envision pedagogical strategies beyond the generic orientations of the canonical literature. Therefore, their ability to foresee, identify, and solve specific performance problems arises.
Use of knowledge	The expert teachers' actions are instigated by the challenge of pedagogically testing their hypotheses about acquiring artistic excellence, and by the feedback that pedagogical practice offers them as a resource for confirming these convictions. The body supports this connection, from which the artist-teacher becomes aware of their knowledge and on which their pedagogical expertise is based.
Perception and valuation of context	The expert teachers maintain a permanent holistic evaluation of the context of performance and pedagogical actions in performance, employing agile and precise standards to recognize their students' learning processes, considering the different performance situations. This condition reveals their valuation of skills acquisition from the performer's multiple experiences with all co-participants and events in the music scene.
Decision-making	Expert teachers can make pedagogical decisions to solve performance problems, creating immediate and compatible strategies with the skills of each student to absorb the proposals. Their decisions are based on their ability to employ their practical knowledge as the experiential basis of the process without depending on pre-established pedagogical standards.
Originality and capacity for innovation	The expert teachers develop musical perception and cognition refinement to lead their students to acquire motor, mnemonic and expressive skills based on what their students present to them. The acquisition of performance expertise is a profoundly experimental, idiosyncratic process that cannot be restricted to generic guidelines enshrined in specialized literature. Experts' pedagogical autonomy values versatility, encouraging the students to a deliberately personalized and self-regulated practice.
Work pattern	The expert teachers develop pedagogical strategies that become regular and reference their *modus operandi*. A basic pattern underlies all their actions in the teaching and learning process, thus establishing pedagogical coherence and trusting relationships. It is about a functional pattern consolidated in the flexibility of adaptation to their students' particularities and cognitive demands.

It is necessary to clarify each competency field to explain below the pedagogical competencies not yet included in this table. In music performance pedagogy, *mastery of knowledge* comes from performative and didactic professional skills. The diversity of knowledge acquisition patterns experienced by teachers over the years is decisive in supporting their teaching practices. The analysis of the collected data provided a consistent foundation for the hypothesis that expert pedagogues are also expert performers. This hypothesis, we know, is a traditional intuitive statement among music performance professionals. However, it is plausible to admit that the training of high-level clarinetists is directly associated with the expert status of the teacher as a performer. It should be recognized that a significant part of the transcendent pedagogical strategies observed in this investigation does not stem from simple pedagogical competence nor is it based on traditional procedures enshrined in textbooks. The pedagogical innovations proposed by the expert teachers studied systematically surpass the conventional practice and highlight the relationship between expert performance and its pedagogy.

The *use of knowledge* to plan pedagogical actions is approached in light of the teachers' expanded view of different studying methods. Developing the refinement of students' perception of the quality of their deliberate practice optimizes the final performance result and the time spent on its preparation. An expanded pedagogical view of performance problems in the contemporary context provides the formation of instrumentalists connected with the reality of work, favoring the performer's insertion in different professional situations.

Valuing each element involved in performance is essential for successful learning and acquiring skills. A prevalent behavior, particularly among students of "melodic instruments," is focusing only on their individual parts, isolating those parts from the musical whole. Holistic thinking in music performance pedagogy is revealed in actions that enable students to *perceive and integrate* into the constitutive universe of collective performance *valuing each element*. Some studied data explain the identifying features of this field of expertise, such as understanding the tension between the music text (score) and its performance, and between individual and collective performances. Nevertheless, even more decisive for expert pedagogy is to explain the tension between learning from the univocal relationship between performer and instrument and learning from the performer's multiple affinities with all elements of the music scene. The expert teacher conceives the pedagogical action as a process not restricted to the domain of individual actions but connected to the activities of the performance co-participants.

Expert teachers have undoubtedly acquired the best conditions to *make effective decisions* to solve their students' performance problems. The speed of the teacher's decision in proposing the design and evaluating the student's ability to absorb the proposal and obtain results is the key to the success of the didactic actions thus generated. This process is directly related to the teacher's skills to identify issues and create immediate solutions, considering each student's particularities and pedagogical context.

The present study data analysis evidenced that the two subfields of expertise in music performance pedagogy shown in Table 1 would initially consider both the specific "professional competencies" and "autonomy" directly related to the quality of the teachers' pedagogical actions. However, the expertise hypotheses about what we refer to as the subfield of "specific competencies" deal with originality and capacity for pedagogical innovation, something we understand to be a domain directly associated with what we know as "autonomy" in pedagogy. Given that the hypotheses on expertise related to those two fields showed consistent intersections, we proposed a new field called *originality and capacity for pedagogical innovation*. Ultimately, we recognized the competencies related to these two subfields as biases of a single domain of expertise.

In music performance pedagogy, having a *work pattern* seems to be a fundamental condition for an expert teacher. Firstly, this work pattern is based on procedures for guiding students; it becomes regular, and is thus a reference for conducting mid- and long-term work. However, a work pattern must consider each student's particularities and cognitive abilities and adjust to the different goals they pursue. The pedagogical actions thus originated favor the students' self-assessment, which contributes decisively to the success of the expertise acquisition process.

The analysis and discussion of the results illuminated an essential piece of data that had yet to be mentioned while creating the hypothetical mapping of the expert music performance teacher competencies (Table 1). The thorough collating of the data revealed a systematic attribute of the observed pedagogical actions: the relevance of the body experience while building the understanding of the actions that generate, condition, and accompany the music performance. Analyzing that data allowed for proposing a new hypothetical competence field for the expert music performance teacher. That new field is strongly associated with the expert teacher's consciousness about the sensorimotor and affective conditions of body movements that underlie human understanding, something frequently neglected in the debate about teacher education in performing arts.

To approach this new domain of competence for music performance teachers, it is necessary first to discuss a new theoretical contribution.

EMBODIED COGNITION AND MUSIC

As we will explain below, our observation protocol revealed that human knowledge originated through sensorimotor and affective experiences is deliberately and methodically applied—although it is verifiable that expert teachers do not always systematize these resources. The role of the body in the pedagogic strategies used by expert teachers, so notably observable in our analysis of the data collected, was only subtly insinuated in the hypothetical expertise model that was initially proposed (Table 2). We verified that expert teachers induce their students to produce embodied simulations which facilitate constructing meanings that guide their performative decisions.

Theories of embodied music cognition over the last two decades (Brower, 2000; Cox, 2011, 2016; Gallese & Lakoff, 2005; Hatten, 2004, 2018; Johnson, 1998; Johnson & Larson, 2003; Larson, 1997–1998; Zbikowski, 1998, 2002) have consolidated knowledge about the "embodied" condition of human understanding. In this context, musical understanding is only possible due to the role of cognitive

structures, which we can consider meaning memories, consolidated in our day-to-day experiences of action and perception. This theoretical–methodological framework of embodied cognition of music identifies and describes the cognitive devices of a new competency field in our model, which we will call *Embodiment Consciousness in Music Performance*. This field encapsulates the premise that the body and embodied experience determines the performers' sensorimotor skills (which they use to play their musical instruments) and how they understand the music they are playing.

Traditional performance pedagogy notably neglects the embodied condition of the actions in performance. The "embodiment" in the performance must not be confused with the bodily nature of performers' gestures while they play the instrument, individually or collectively. Thus, we must briefly discuss the basic concepts of the embodied theory applied to music cognition to explain why we identified the embodiment consciousness of music performance in the didactic actions and in the discourse of the expert teachers who participated in this research.

Nogueira (2004) argued that musical understanding is, above all, inseparable from music "experience." By "experience," we refer to listening, i.e. the interaction between an embodied mind and the sounds of a piece of music. We can think about it in two ways: listening through *signaling* and listening for itself. The first is related to human and animal perception. However, the specificities of the human imagination make us capable of turning our attention to the sounds themselves and listening to them with interest in *how the sounds sound*. Since we do not need to search for any other information, and as soon as the sounds occur, we begin to search for patterns, order, and meaning in the music stream we are listening to; what we are doing is prolonging our interest in it. Moreover, that is the condition through which we listen to music. As soon as we listen to sounds like music, our experience stops being structured in terms of informational content and acquires a more imaginative and creative structure, more organized by metaphors.

Recognizing the conceptual metaphor as a device for building meaning in the perception, understanding, and conceptualization of music points directly to the contributions of the seminal works by George Lakoff and Mark Johnson (1980, 1999). From *Metaphors We Live By* (1980), the authors shed light on the cognitive processes through which the sensory-motor and affective experiences originating from the interaction between the body and its environment fertilize and condition the thought process and structures.

Lakoff and Johnson (1980) established four premises as a basis for their conceptual metaphor theory. The first concerns the primarily unconscious (or pre-conscious) condition of metaphorical understanding. The second one recognizes the connection between thinking and embodiment and understands metaphorical thinking as a biological process carried out by the cognitive apparatus to categorize stimuli with which it interacts. The third posits that metaphor involves conceptual and non-conceptual understanding of abstract experiences in terms of concrete experiences. Moreover, the fourth premise discusses the fundamental structure of the metaphor: A is B, where B "maps out" (forms) how we understand A.

However, a conceptual metaphor theory would not be complete without the notion of *image schema* (Johnson, 1987; Lakoff, 1987). The concept of an image schema accounts for why we use one specific metaphor instead of another which would be equally admissible. The path schema, for example, is an abstraction derived mainly from our understanding of movements through a path. We can imagine part of a specific path, or some generic type of path, as if it were a visible spatial object. Such movements involve an "effort employed" (force), a "direction" that establishes a trajectory, and the motivation to keep going, among other attributes of the experience of taking a path—and all of this is commonly combined with visual mental images. An image schema containing at least part of the attributes for the "path" experience is an abstraction derived from a network of embodied meanings linked to sensorimotor and affective experiences. Therefore, the term "image" in image schemas does not refer to any particular image of something but to an abstract mental structure composed of categorical elements of motor images and images that mimic actions. An embodied concept comprises a neuronal structure that uses our sensorimotor and affective system. This way, most conceptual inferences are in the sensorimotor and affective domains. The current experience demands a mental effort that leads the organism to glimpse one particular attribute of the experienced thing, rather than another. When the organism directs the attentional focus to an aspect of the environment or experienced thing, and not to a different one, it is accessing a particular image schema in long-term memory (Snyder, 2000). This image schema will guide the mapping of the current experience with the ontological structure of other experiences, generally "concrete," which contributed to crystallizing the activated image schema.

According to Nogueira (2016), when we perceive abstract experiences (like musical objects, gestures, or events), we make them more concrete and amenable to mental organization. Thus, we bring those experiences to the body, translating them into bodily and spatial experiences. In doing so, we create visual and spatial expressions for music, among several other projections. In music performance pedagogy, we can glimpse many metaphorical projections involving mapping space, movement, and force on to musical events to give meaning to the music being performed. Consequently, the meanings of "musical shape" and "sound gesture," besides the performative actions that mimetically reproduce

our understanding of the bodily events we perceive in music objects, are implied in performance. We suggest that systematic use of conceptual metaphors may structure complex pedagogical actions in music performance, exploring in didactic practice the use of meanings that the students have consolidated throughout their lives in the sensorimotor and affective experiences.

EMBODIMENT AND MUSIC PERFORMANCE

Given the above, we argue that the mental strategy of visualizing a piece of music to perceive, understand, and conceptualize it is a spontaneous action, although we are not always aware of this cognitive strategy. Regarding music performance and its pedagogy, the mental simulation of actions in the metaphorical dimension of music is a resource that may be widely developed and incorporated into the set of techniques of the teachers. Through the results of the present investigation, we believe that exploring this set of pedagogical–cognitive skills constitutes a specific field of competence in music performance pedagogy. In the 12 individual clarinet classes we documented and analyzed, the teachers frequently suggested musical imagery (Bailes & Bishop, 2012) to their students, ranging from concrete bodily experiences to virtualized scenes. We refer, for instance, to imagined simulations of the spatialization of the musical shape. Many performers have experience using conceptual metaphors to describe music meanings—although, of course, he/she does not experience it that way—whether suggested by their teachers or creatively developed in their deliberate practice. Among them, we cite musical colors, atmospheres, gestures, climates, specific environments, textures, and many other "synesthetic fusions." Nevertheless, we intend to discuss how ontological mappings (metaphoric projections) are employed by expert teachers in their didactic practices, aiming consciously and deliberately to solve the specific performance problems of their students.

The embodied semantics of music as a field has developed conceptual models which account for the bottom-up formation of narrative. In this context, we can consider that musical works are more or less "narrative," constantly referring to their more and more minor syntactic condition. However, the feeling that something is happening through our *embodied music simulations* and accompanying emerging mental image production—making them ours—always implies narrativity. All music is narrative if we are focusing on the dramatic musical experience. Moreover, its shape is precisely the "wordless" narrative produced by a consciousness that converts a dramatization of tensions into meanings (Nogueira, 2020).

Nevertheless, what do we understand as a dramatic musical experience? The mental image streams inherent to the music experience are densely determined by primary metaphors (Grady, 1997), such as "more is up," "similarity is closure," "important is big," "purposes are destinies," "changes are movements," "organization is a physical structure," and "causes are forces," among many others. Furthermore, as Nogueira (2020) explained, like a revealer of understanding, the phenomenon of musical tension can be differently defined by activating more and less complex mappings: "under the predominant effect of the 'more is up' mapping, an increase in tension can result from the perception of tonal, dynamic, or agogic gradients between a previous state of the flow and the current one—or an imaginatively anticipated future state" (2020, p. 215). In another example, involving greater complexity of mappings, Nogueira also observed that the feelings of "stasis" and "progressivity"—as an emerging effect of invariance or continuous variation in the parametric tonal, dynamic, and agogic fields in music—are expressive conditions highly determinative of meaning production in the interactive processes between the musical flow and the listener. Those two processes can emerge from different mappings or combinations of mappings. The meaning of harmonic direction (arising from the feeling of instabilizing or stabilizing the tonal medium), textural densification (stemming from the sense of thickening the textural medium), or a *rallentando* (arising from the feeling of continually reducing the rhythmic activation degree), to quote some "progression" musical experiences, it may be the result of mappings such as "purposes are destinations," "changes are movements," and "causes are forces," separated or combined. Ultimately, listeners dramatize their musical experiences, especially when they try to bring those experiences into conceptual conditions.

Both *mimetic motor imagination* discussed by Cox (2016) and *virtual music agency* proposed by Hatten (2018) involve varying levels of *embodied simulation* of the musical flow in the act of listening, implying different strategies of what we refer to as music dramatization. Inferring motor patterns or human gestures in the music experience implies inferring intentions, functions, and expressions that motivate interaction with the musically created environment. Here we will examine some data that makes explicit a specific pedagogical competency of the music performance teacher to dramatically induce embodied simulation of tension of the musical flow—that is, simulating the music with the body. We believe that the systematic use of these resources in music performance didactic practice is a specific attribute of its expert level.

We must recognize that we can only conceptualize and communicate music through metaphors arising from our embodied experiences. It is, therefore, not difficult to glimpse the inevitability of such cognitive operations in the didactic practice of music performance. Teacher A underscored that music

had appropriated language from other fields, and those actions are represented in his practice through metaphors to define the characteristics of the sound in music performance. According to him, this procedure allows students to evoke memories that may help them understand the necessary actions for their performance. As the teacher said:

> We talk about the colors, but what color does music have? Music has no color, but we talk about a dark sound, a bright sound, a grayer sound, a bluer sound, sadder and more melancholic. We have appropriated concepts from other arts or means of expression. How should a sound be described without those linguistic borrowings? I use many metaphors, which is how I make my students understand.

In another class, the same teacher used the gesture and the movement of the waves to help the student understand that sound production is linked to controlling wave vibration. In this sense, words like "expanding," "contracting," and "climax" are present in the musical metaphorical discourse. The teacher explains that he also uses gestures

> of movements of the waves because music is vibration. We must control that vibration by expanding, contracting, and slowly building it towards the climax… It is a game with antagonistic forces, and if I had to simplify music, I would say it is tension and release, light–dark, bright–opaque. It is a duality of forces, and you create tension and then relax, then comes the tension again.

Teacher B highlighted the importance of students anticipating the representative action of the piece and associated the musicians' work with the work of actors and dancers, who portray characters in their performances. According to him, it is essential to teach the students the role of "anticipating the representation" when they are playing, which is what we call *imaginative embodied simulation*:

> How are you playing a clown… without getting into character first? How does an actor get on stage and perform a drama? You have to incorporate what you want seconds before the thing happens. Moreover, I keep telling my students it is the same in music.

For him, body gestures are essential for building musical meaning because, without the body, it would be impossible to "tell the story" of the piece:

> Each [body] intervention is a phrase, and the student needs to use their body in [building] the performance. You need to use body and musical gestures, and then you can be dramatic. Then comes a long rest, a phrase in pianissimo followed by a *forte subito*. Body gestures help…, they transform the piece.

Teacher C asserts that using the body is fundamental in playing interval leaps in different instrument registers. Using performance cues is a strategy that evokes memories about the body's participation while playing passages in different clarinet registers. As he said:

> If students put too much tongue, they leave a hole. If they do not use their tongue, it is hard to go to the chalumeaux register. Going from the *clarino* to the *chalumeaux*, sometimes notes might fail to sound, but moving the body makes students pay attention to where they are going. It is like they make a "nose articulation." That strategy is enough to make the body understand.

The same teacher underscored the importance of the body as a decisive agent for the equality and balance of music performance. The body supports all the intrinsic elements of the performance and, in the broader sense, can be used as a source to go beyond the limits established by the composer's writing. According to him,

> Students mistake technique for fingering. Sometimes, the placement and how the student doses and controls airflow say a lot about what the student is doing regarding equality and balance. Moreover, the body has a fundamental role in sustaining that. Music is also in our bodies, which does not mean students must rock or close their eyes [for example]. Music goes beyond what is written because what is written is only the first step. Students must do what the composer proposed, but they must also create something from that material, and in that meaning, the body is of tremendous help.

In one of the recorded classes, this teacher used a visuospatial metaphor as a didactic resource to lead one of his students to produce a final finish on the sound articulations in a difficult music excerpt. He asked the student to "smoke the sound." According to his joint protocol analysis report, he uses metaphors involving amorphous, impalpable, and imponderable spatial experiences to deconstruct consolidated shaping patterns. In the case in question, he intended to make the student perform the music excerpt that was less strict and full of "right angles."

> I asked the student to play the least measured part, to be "cloudier." I asked her to "smoke" the sound. I suggested that she think about the image of smudging the sound flow that would be produced, and this experienced image made it possible for her to play the passage with less metrical accuracy. She was playing very evenly, cleanly, like it was all right, and to me, she sounded full of right angles. In a cloud, there are no figures with straight corners, so the choice of this visual image aimed to bring an "almost dirt," something more nebulous and indeterminate to this passage.

Ultimately, for this teacher, the metaphorical resource evokes images and perception memories that induce the performer to play more fluently, moving away from the mere realization of the instructional patterns represented in the musical text read and thus approaching the lived experience.

When observing many of those didactic actions and discussing them in the joint protocol analysis and the interviews, we have identified a dense and systematic use of metaphors that aim to instigate the meaning and musical expression production that help overcome specific technical-interpretative difficulties. Such pedagogical strategies are related to evoking memories and embodied feelings enhanced through linguistic expressions and bodily gestures. Words and body movements are cognitive resources that make musical meanings, and performative actions more concrete. Cognitive mappings activate memory structures of performers' everyday experiences, allowing for new ways of musical understanding and new interpretative solutions while preparing a performance. By evoking several memory patterns—kinesthetic, sensory, episodic, semantic, affective—cross-domain ontological mappings of concrete experiences and musical abstraction are responsible for a particular type of music appropriation. We believe this happens because the embodied understanding of the world is recovered as image schemas activated by the stimulus to the realization of musical objects. This way, different sensorimotor and affective memories return to the experience as performative actions.

Data analysis underscored that understanding the role of the body is essential for developing music performance. This is not surprising since music performance is, by default, physical. However, this discussion is geared towards performance and the pedagogy that intends to build performance from recovering meaning memories consolidated in the body's most essential and recurring experiences with the world around it. As a radical abstraction of the human mind, music depends on the body as an interactive agent that, in interactions with the environment, creates the meanings that map the musical understanding and the performative actions that will return music to its experiential condition. As a result of this analysis, we proposed a new competency domain of didactic practices that instigate the retrieval of the body to understand the gestures that constitute the musical flow. This discovery justified the description of this new competency domain in pedagogical expertise (Table 3).

Table 3. New competency domain of the expert teacher in music performance

Embodiment consciousness	The expert teachers use metaphorical appropriations from different fields of knowledge to access memories that evoke embodied meanings from other experiential bases that map the current performance experience. The expanded view of performance and its pedagogy allows them to develop memory schema activation strategies that favor the imagination of embodied simulations of the actions demanded by the performance.

CLOSING CONSIDERATIONS

Damasio (1999, 2010) argued in his neuroscientific theory of consciousness that the body participates in all levels of consciousness. The entire process of building consciousness is conditioned to the actions of the body in the environment. Thus, getting closer to that understanding might be vital for building pedagogical processes. The reports from the teachers and students who participated in the research are rich in their histories of acquiring pedagogical and technical–musical expertise. The understanding of music and the performative patterns that constitute it shows that apprehending musical meaning and developing performance skills are mediated permanently and spontaneously by cognitive mappings.

An awareness of those procedures, revealed by linguistic descriptions applied to the practice of performance teaching, might come from what Damasio (1999) understood as a consciousness supported by language—the sphere where musical concepts and the techniques which help performative actions

are built. However, most musical understanding and performative competence are built on the level of consciousness that Damasio called *core consciousness*, a dimension of consciousness that involves sensorimotor and affective meanings that have not been structured by language yet. A significant part of the pedagogical actions lacks linguistic support since they are structured at an agential level attached to feelings-related memories - that is, "wordless" experiences of meaning. Thus, those actions escape the strict conceptual scope, requiring a return to the bodily experience that originated the meaning to be expressed. The music performance pedagogy is significantly enriched by procedures based on being and doing, human experiences essentially linked to the "wordless" dimension of consciousness (Damasio, 1999).

The data generated through different protocols allowed us to glimpse a competency domain of music performance pedagogical expertise not thought about in other areas of expertise and seldom studied in musicological research. *Embodiment consciousness in music performance* is a field of expertise that focuses on the relationship between the performer's foundational motor skill to play their musical instrument and embodied strategies that underpin the performer's understanding of a piece of music. The teachers we investigated were able to relate the actions that shape the music performance with the actions that form the musical meaning. The use of metaphors involves mental images that activate cognitive processes. This illustrates the idea that almost all elements of music performance are related to experiences that come from the performers' bodies. Furthermore, the body supports us in inferring the resources involved in these understanding processes. In this sense, most recurring sensorimotor and affective experiences in our day-to-day lives—and thus memorized in primordial meaning patterns—determine what we may or may not understand from our more abstract experiences like music-making. We are talking about sources of understanding that we use to overcome the immateriality of music and build the set of physical actions that will make apparent the music we idealize.

We want to end by highlighting two limitations. First, we know that teachers who train professional performers must keep their students focused and motivated on deliberate and often arduous practice over a long period. It is necessarily difficult to assess these teachers' pedagogical strategies in only four weeks of activities, considering that the training cycle conducted by these teachers is at least four years for each student. In addition, our protocol aimed to identify the competencies of teachers who are experts in musical performance. We know that the results obtained can be better understood in comparison to studies dedicated to observing the practices of less experienced teachers—for example, with up to 3, 7, and 10 years of activities. We started this new study recently, and we believe we can broaden the discussion within the musicological community about how teachers are trained.

ACKNOWLEDGMENTS

The development of this research had the systematic and significant contribution of the members of the research group *Musical Cognition in Creative Processes* (CMPC), linked to the Graduate Program in Music at the School of Music, Federal University of Rio de Janeiro (Brazil), whose debates and joint participation in scientific events were decisive for the achievement of the presented results. We also highlight the collaboration of Dr Ricardo Freire (University of Brasília, Brazil) for the careful review of the methodological procedures. This article was copyedited by Bridget Coulter and layout edited by Jonathan Tang.

NOTES

[1] Correspondence can be addressed to Anderson C. Alves: andersoncesar@id.uff.br.

[2] Correspondence can be addressed to Marcos Nogueira: marcosnogueria@musica.ufrj.br.

[3] Anderson César Alves is a clarinetist of the National Symphony Orchestra/UFF and clarinet teacher, and is linked to the research group *Musical Cognition in Creative Processes*—CMPC/Graduate Program in Music at the School of Music, Federal University of Rio de Janeiro). Marcos Nogueira is a composer, amateur clarinetist, and leader of the research group *Musical Cognition in Creative Processes*—CMPC/Graduate Program in Music at the School of Music, Federal University of Rio de Janeiro).

[4] *Narrative citation:* K. A. Ericsson (personal communication, from April 10 to October 28, 2019).

REFERENCES

Alves, A. (2021). *O professor* expert*: Investigação das práticas pedagógicas em performance musical.* Unpublished doctoral dissertation, Graduate Program in Music, Federal University of Rio de Janeiro, Brazil.

Bailes, F., & Bishop, L. (2012). Musical imagery in the creative process. In D. Collins (Ed.), *The Act of Musical composition: Studies in the creative process* (pp. 53–77). Ashgate.

Ball, D. L., Thames, M. H., & Phelps, G. (2008). Content knowledge for teaching: What makes it special? *Journal of Teacher Education, 59*, 389–407. https://doi.org/10.1177/0022487108324554

Berliner, D. C. (1988). *The development of expertise in pedagogy*. Washington D.C.: American Association of Colleges for Teacher Education.

Berliner, D. C. (2001). Learning about and learning from expert teachers. *International Journal of Educational Research*, *35*(5), 463–482. https://doi.org/10.1016/S0883-0355(02)00004-6

Berliner, D. C. (2004). Expert teachers: Their characteristics, development and accomplishments. In R. B. Obiols, A. E. Martínez, et al. (Eds.), *De la teoria a l'aula: formación del professorat i ensenyament de las Ciências Socials* (pp. 13–28). Barcelona: Universidad Autonoma de Barcelona.

Brandão, H. H. N. (2004). *Introdução à análise do discurso* (2nd ed.). São Paulo: Unicamp.

Brower, C. (2000). A cognitive theory of musical meaning. *Journal of Music Theory, 44*(2), 323–379. https://doi.org/10.2307/3090681

Brown, R. M., Zatorre, R. J., & Penhune, V. B. (2015). Expert music performance: Cognitive, neural, and developmental bases. *Progress in Brain Research*, *217*, 57–86. https://doi.org/10.1016/bs.pbr.2014.11.021

Cochran-Smith, M., & Fries, K. (2005). Researching teacher education in changing times: Politics and paradigms. In M. Cochran-Smith, & K. Zeichner (Eds.), *Studying teacher education: The report of the AERA Panel on Research and Teacher Education* (pp. 69–110). Mahwah, NJ: Lawrence Erlbaum.

Colwell, R. J. (2011). Reflections on music teacher education. *Action, criticism, and theory for music education, 10*, 128–160.

Corrigall, K. A., & Schellenberg, G. E. (2016). Music cognition in childhood. In G. McPherson (Ed.), *The child as a musician: A handbook of musical development* (pp. 81–101). Oxford University Press. https://doi.org/10.1093/acprof:oso/9780198744443.003.0005

Cox, A. (2011). Embodying music: Principles of the mimetic hypothesis. *Music Theory Online, 17*(2), 1–24. https://doi.org/10.30535/mto.17.2.1

Cox, A. (2016). *Music and embodied cognition: Listening, moving, feeling, and thinking*. Bloomington: Indiana University Press. https://doi.org/10.2307/j.ctt200610s

Damasio, A. R. (1999). *The feeling of what happens: Body and emotion in the making of consciousness*. New York: Harcourt, Brace & Company.

Damasio, A. R. (2010). *Self comes to mind: Constructing the conscious brain*. New York: Pantheon.

Dreyfus, H. L., & Dreyfus S. E. (1980). *A five-stage model of the mental activities involved in directed skill acquisition.* Berkeley, CA: Operations Research Center, University of California. https://doi.org/10.21236/ADA084551

Duke, R. A., & Simmons, A. L. (2006). The nature of expertise: Narrative descriptions of 19 common elements observed in the lessons of three renowned artist-teachers. *Bulletin of the Council for Research in Music Education*, (170), 7–19.

Ericsson, K. A. (2006). Protocol analysis and expert thought: Concurrent verbalizations of thinking during experts' performance on representative tasks. In K. A. Ericsson, N. Charness, P. Feltovich, &

R. Hoffman (Eds.), *The Cambridge handbook of expertise and expert performance* (pp. 223–242). Cambridge University Press. https://doi.org/10.1017/CBO9780511816796.013

Forrester, S. H. (2015). *Music teacher knowledge: An examination of the intersections between instrumental music teaching and conducting*. Unpublished doctoral dissertation, University of Michigan, Ann Arbor.

Gallese, V., & Lakoff, G. (2005). The brain's concepts: The role of the sensory-motor system in conceptual knowledge. *Cognitive Neuropsychology, 22*, 455–479. https://doi.org/10.1080/02643290442000310

Gill, R. (2002). Análise do discurso. In M. W. Bauer, & G. Gaskell (Eds.), *Pesquisa qualitativa com texto, imagem e som: Um manual prático* (pp. 244–279). Petrópolis: Vozes.

Grady, J. (1997). *Foundations of meaning: Primary metaphors and primary scenes*. Unpublished doctoral dissertation, Department of Linguistics, University of California: Berkeley.

Griffin, P., & Care, E. (Eds.) (2015). *Assessment and teaching of 21st Century Skills: Methods and approach*. New York: Springer. https://doi.org/10.1007/978-94-017-9395-7

Hallam, S. (2016). Musicality. In G. McPherson (Ed.), *The child as a musician: A handbook of musical development* (pp. 67–80). New York: Oxford University Press. https://doi.org/10.1093/oxfordhb/9780198722946.001.0001

Hatten, R. S. (2004). *Interpreting musical gestures, topics, and tropes: Mozart, Beethoven, Schubert*. Bloomington and Indianapolis: Indiana University Press.

Hatten, R. S. (2018). *A theory of virtual agency for Western art music*. Bloomington: Indiana University Press. https://doi.org/10.2307/j.ctv512trj

Johnson, M. (1987). *The body in the mind: The bodily basis of meaning, imagination and reason*. Chicago: Chicago University Press. https://doi.org/10.7208/chicago/9780226177847.001.0001

Johnson, M. (1998). Embodied musical meaning. *Theory and Practice*, *22–23* (1997–1998), 95–102.

Johnson, M. (2017). *Embodied mind, meaning, and reason: How our bodies give rise to understanding*. Chicago: University of Chicago Press. https://doi.org/10.7208/chicago/9780226500393.001.0001

Johnson, M., & Larson, S. (2003). Something in the way she moves: Metaphors of musical motion. *Metaphor and Symbol, 18*(2), 63–84. https://doi.org/10.1207/S15327868MS1802_1

Krueger, P. J. (2000). Beginning music teachers: Will they leave the profession? *Applications of Research in Music Education, 19*(1), 22–26. https://doi.org/10.1177/875512330001900105

Lakoff, G. (1987). *Women, fire, and dangerous things: What categories reveal about the mind*. Chicago and London: University of Chicago Press. https://doi.org/10.7208/chicago/9780226471013.001.0001

Lakoff, G., & Johnson, M. (1980). *Metaphors We Live By.* Chicago: University of Chicago Press.

Lakoff, G., & Johnson, M. (1999). *Philosophy in the flesh: The embodied mind and its challenge to Western thought*. New York: Basic Books.

Lankshear, C., & Knobel, M. (2008). *Pesquisa pedagógica: Do projeto à implementação*. Porto Alegre: Artmed.

Larson, S. (1997–1998). Musical forces and melodic patterns. *Theory and Practice, 22*, 55–72.

NBPTS (National Board for Professional Teaching Standards) (2002). *What teachers should know and be able to do*. Arlington: NBPTS, 2002.

Nogueira, M. (2004). *Comunicação em música na cultura tecnológica: O ato da escuta e a semântica do entendimento musical*. Unpublished doctoral dissertation, Graduate Program in Communication and Culture, Federal University of Rio de Janeiro, Brazil.

Nogueira, M. (2016). Música e semântica incorporada: Em busca de um método. *Epistemus, 4*(2), 9–37. https://doi.org/10.21932/epistemus.4.3039.2

Nogueira, M. (2020). Consciousness, tension, and shaping: Musical meaning formation processes. In M. Nogueira & G. Bertissolo (Eds.), *Composition, Cognition, and Pedagogy* (pp. 193–226). Curitiba, Brazil: Brazilian Association of Cognition and Musical Arts.

Orlandi, E. P. (1999). *Análise de discurso: Princípios e procedimentos*. São Paulo: Pontes.

Ray, S. (2015). *Pedagogia da Performance Musical*. Unpublished post-doctoral dissertation, Escola de Música e Artes Cênicas, Universidade Federal de Goiás.

Sarantakos, S. (1998). *Working with Social Research* (3rd ed.). New York: Palgrave Macmillan.

Siedentop, D., & Eldar, E. (1989). Expertise, experience, and effectiveness. *Journal of Teaching in Physical Education, 8*(3), 254–260. https://doi.org/10.1123/jtpe.8.3.254

Sindberg, L. K., & Lipscomb, S. D. (2005). Professional isolation and the public-school music teacher. *Bulletin of the Council for Research in Music Education, 166*, 43–56.

Snyder, B. (2000). *Music and memory: An introduction*. Cambridge and London: The MIT Press.

Williamson, P., Ball, E., & Wilson, E. (2019). Developing one-to-one contemporary trumpet teaching strategies through peer observation and collaborative reflection. *International Journal of Music Education*, *37*(4), 622–635. https://doi.org/10.1177/0255761419863124

Willig, C. (2001). *Introducing qualitative research in psychology: Adventures in theory and method.* Buckingham: Open University Press.

Zbikowski, L. (1998). Metaphor and music theory: Reflections from cognitive science. *The Online Journal of the Society for Music Theory, 4*(1), 1–13. https://doi.org/10.30535/mto.4.1.1

Zbikowski, L. (2002). *Conceptualizing music: Cognitive structure, theory, and analysis* (*AMS Studies in Music)*. New York: Oxford University Press. https://doi.org/10.1093/acprof:oso/9780195140231.001.0001