

**The anxiety and music performance pedagogy:
the case of the violinist**

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This master's dissertation is dedicated to all my students and colleagues who have suffered from music performance anxiety.

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Abstract

This master's dissertation consists of the violin individualized pedagogy and musical performance anxiety (MPA) relationship discussion results. The evidence search related to MPA, violin pedagogy and the student-teacher relationship is literature review main objective. The state of art also allowed index's elaboration on the violin teaching pedagogues and the Questionnaire on the relationship of individualized violin pedagogy and musical performance anxiety (Q-RIV-MPA). The Q-RIV-MPA was answered by 88 individuals (36 Brazilian, 26 Portuguese, 8 French and 18 other nationalities), 44% of the total interviewees are professional musicians. It is also important to mention that almost half of the participants started their studies between 6 and 10 years. Nevertheless, more than half of the Brazilian participants - 22 individuals - began their studies between 11 and 15 years. Regarding pedagogical issues, 46 individuals believe that the first violin teacher did not adapt the violin teaching methodology according to their individual characteristics and 49 violinists reveal that their teachers did not lead them to reflect on the structure of individual daily practice (metacognition); 85% of the Brazilians interviewed described this problem, against 37,5% of the French and 72% of the Portuguese interviewed. These last data are in agreement with the numbers revealed about time organization during individual practice, whose 56% of the participants answered negatively to this question, they were not oriented in this aspect. As well as, 67% of the individuals answered that no adult or guardian supervised their individual daily practice and 43 musicians revealed their practices consisted in mere repetition. It is also possible to observe an increase in the individual evaluation of MPA. The numbers increased from 54 to 69 individuals. Concerning the control of musical performance anxiety, 46% of the participants had previously used β -blockers (21 Brazilian, 5 French and 19 Portuguese). Finally, 44% of the teachers who answered the Q-RIV-MPA do not use any external pedagogical material in their classes such as books or articles related to the psychology of music as an aid to overcome music performance anxiety (MPA).

Keywords: anxiety; performance; pedagogy; violin; student-teacher relationship.

Resumo

A presente dissertação de mestrado consiste na discussão dos resultados obtidos referentes à pesquisa sobre a pedagogia individualizada do violino e sua relação com a ansiedade da *performance* musical - APM. A busca por evidências relacionadas à ansiedade da *performance* musical, à pedagogia de violino e à relação estudante-professor foi o principal objetivo da revisão de literatura. O estado da arte também permitiu elaborar o *index* sobre os pedagogos do ensino do violino e o questionário - Questionário sobre a relação de pedagogia individualizada do violino e ansiedade da *performance* musical (Q-RIV-MPA). O Q-RIV-MPA foi respondido por um total de 88 indivíduos (36 brasileiros, 26 portugueses, 8 franceses e 18 indivíduos de outras nacionalidades), 44% do total dos entrevistados revelam ser músicos profissionais. Também é importante mencionar que quase a metade dos participantes iniciaram seus estudos entre 6 e 10 anos. Contudo, mais da metade dos brasileiros participantes - 22 indivíduos - iniciaram seus estudos entre 11 e 15 anos. Sobre as questões pedagógicas, 46 indivíduos acreditam que o primeiro professor de violino não adaptava a metodologia do ensino do violino em função de suas características individuais e 49 violinistas revelam que não foram orientados por seus respectivos professores a refletir sobre a estrutura da prática individual e cotidiana (metacognição); 85% dos brasileiros entrevistados retratam este problema, contra 37,5 % dos franceses e 72% dos portugueses entrevistados. Estes últimos números vão de encontro aos revelados sobre como organizar o tempo durante a prática individual, cujo 56% dos participantes responderam negativamente a esta questão, ou seja, não eram orientados sobre este aspecto. Assim como, 67% dos indivíduos responderam que nenhum adulto ou responsável legal supervisionava a prática diária individual e 43 músicos revelaram que suas práticas consistiam em apenas mera repetição. É possível igualmente observar que um aumento sobre a avaliação individual da APM. Os números aumentaram de 54 para 69 indivíduos. Sobre o controle da ansiedade da *performance* musical, 46% dos participantes revelaram já ter feito uso de β -bloqueadores (21 brasileiros, 5 franceses e 19 portugueses). Por último, 44% dos professores que responderam o Q-RIV-MPA não empregam nenhum material pedagógico externo em suas aulas como livros ou artigos relacionados à psicologia da música como auxílio para superar a ansiedade da *performance* musical (APM).

Palavras-chave: ansiedade; performance; pedagogia; violino, relação aluno-professor.

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List of abbreviations and acronyms

AMP: Active Musical Performance

APA: American Psychological Association

CNS: Central nervous system

DSM-IV-TR: Manuel Diagnostique et Statistique des Troubles Mentaux - Texte Révisé

DSM-V: Manual Diagnóstico e Estatístico de Transtornos Mentais

ICSOM: International Conference of Symphony & Opera Musicians

MPA: Music performance anxiety

MPAg: Musical practice agenda

PAI: Performance Anxiety Inventory

PC: Performance Cues

PRCP: Personal report of Confidence as a Performer

OSESP: Orquestra Sinfônica do Estado de São Paulo

PVT: Pedagogy of Violin Teaching

Q-RIV-MPA: Questionnaire on the relationship of individualized violin pedagogy and musical performance anxiety

SAD: Social anxiety disorder

STR: Student-teacher relationship

STAI: State Trait Anxiety Inventory

UFAL: Universidade Federal de Alagoas

UFMG: Universidade Federal de Minas Gerais

WADA: World Anti-Doping Agency

WHO: World Health Organization

“‘Bach?’ said Lord Edward in a whisper.

Pongileoni’s blowing and the scraping of the anonymous fiddlers had shaken the air in the great hall, had set the glass of the windows looking on to it vibrating; and this in turn had shaken the air in Lord Edward’s apartment on the further side. The shaking air rattled Lord Edward’s *membrana tympani*; the interlocked malleus, incus and stirrup bones were set in motion so as to agitate the membrane of the oval window and raise an infinitesimal storm in the fluid of the labyrinth. The hairy endings of the auditory nerve shuddered like weeds in a rough sea; a vast number of obscure miracles were performed in the brain, and Lord Edward ecstatically whispered ‘Bach!’ He smiled with pleasure, his eyes lit up.”

Huxley, Aldous. (Point Counter Point, p. 42)

Introduction

“The right kind of practice is not a matter of hours. Practice should represent the utmost concentration of brain. It is better to play with concentration for two hours than to practice eight without. I should say that four hours would be a good maximum practice time –I never ask more of my pupils–and that during each minute of the time the brain be as active as the fingers.”

(Auer, Leopold *in* The Importance of Deliberate Practice)

1. Introduction

The centuries of western erudite music tradition establish student-teacher relationship (STR) hierarchy. The violin teachers pour their experience out on their students all knowledge necessary for student technical-musical development. They are moral value parameters, influence musical tastes and they are also interpretative model to be followed by their students (Gembris et Davidson, 2002, p. 26). Nevertheless, violin teachers do not interfere of daily student practice except on the amount of time employ for the ultimate goal - *public performance* - to be achieved. In contrast, violin students absorb teacher's knowledge they try to reproduce it as effectively as possible. This structure remained intact for many years until different disciplines crossing (Altenmüller, 2009, pp. 106 et 107) began the development of a more specific musical pedagogy adapted to each student. Galamian (1985) describes and establishes this paradigm change:

(...) insistence upon compliance with rigid rules for everyone and everything that has to do with violin playing. The making of rigid rules is a dangerous procedure, since rules as such should be made for the good of the students rather than using the students to glorify the rules. In violin playing, as in any other art, that which can be formulated is not a set of unyielding rules but rather a group of general principles that are broad enough to cover all cases, yet flexible enough to be applied to any particular case. The teacher must realize that every student is an individual with his own personality, his own characteristic physical and mental make-up, his own approach to the instrument and to music. Once the teacher recognizes this, he must treat the student accordingly. Naturalness should be his first guiding principle. "Right" is only what is natural for the particular student, for only what is natural is comfortable and efficient. The efforts of the teacher, therefore, must be devoted to making every student as comfortable as possible with the instrument. In this connection it is distressing to think of the many unnatural theories of technique which have come and gone - and of the new ones which still - that have forced students into a constant keep on coming struggle against nature herself and consequently against a natural approach to the instrument. Such a battle has never yet been won by anybody. (pp. 1-2)

In this stretch, Galamian (1985) summarizes flexible violin teacher discussion concerning individual student needs. These questions would seem resolved and without the urgency of further

issues. Nonetheless, Brazilian violin teaching reveals a distinct reality. It can note a technical-musical poor development and music performance anxiety (MPA) increase. [personal experience, emphasized by the author]. This pedagogical deficiency is not based in just one problem, but with different factors such as the lack of buildings structure, absence of various equipments, problems related to basic and high level education, even, issues related to the local-political-cultural context (Gembris et Davidson, 2002, p. 18). However, it is not our aim discuss on this reality issues origins, but how to help violin teachers, consequently; their students to overcome these adversities within this context. As instance, this assistance it would be useful on the violinist individual daily practice with distinct objectives such as learning a new piece, correcting and strengthening technical skills, shape the best musical work interpretation, memorizing and preparing for a public performance (Barry et Hallam, 2002, p. 155).

All of these purposes can be clear during adults, or even, teenagers individual daily practice. Nevertheless, it would be difficult to believe that children due their technical-musical inexperience in these early violin learning stages, regardless of their individual characteristics, they are able of establishing such goals and organizing their daily individual practice. In most cases, they do not have cognitive and motor skills necessary to develop and elaborate such activities (Chantal, 2007, pp. 33-39). In this situation, teacher's role on the individual practice becomes relevant. This implies not only teaching at most basic levels and having high mastery over violin technique or on the repertoire appropriate to the individual student stage (Galpérine et Haas, 2012), but also to seek different sources and forms that could overcome individual practice obstacles, performance problems and anxiety issues.

After this brief presentation on the individualized violin pedagogy importance we continue introduction's development presenting the research's problem that led to the hypothesis which represent our beliefs, the research's goals and dissertation's methodological processes with the purpose of assisting the reader in understanding our objectives. Finally, before proceeding to the next chapter, we discuss on the limitations present in this dissertation.

1.1. Research problem

The musical work interpretation intended may be completely different on the performance anxiety perspective within a family and friendly environment than a 'recital diploma' under

specialized jury evaluation (Bourgeois, 1991, p. 15). Moreover, playing in orchestra or chamber ensembles also differs from a solo performance (Nicholson et al., 2015, pp. 438, 439 et 445). Work complexity can also influence music performance, as well as, score use when we play in public. Finally, daily practice structure also represents a large part of the results related to the performance both on the technical-musical execution, than on the control or increase of anxiety symptoms.

All these situations and their combinations require a physical, cognitive and emotional musician involvement (Eysenck et al., 2007). They have as possible negative consequences motor automatism coordination disrupt (procedural memory) and student self-confidence breakdown, even, MPA symptoms increase. However, they are not only related to psychological issues (anxiety trait), but they are also associated to the pedagogical learning processes (anxiety trait and anxiety state). Specifically about music performance anxiety, Fishbein and Middlestadt (1987), as cited in Bourgeois (1991, p. 15), report 24% of professional musicians suffer of some MPA symptoms and 16% of young musicians consider that anxiety reduces their performance effectiveness. Among the musicians who suffer most with MPA, Tamborrino (2001), as mentioned in Kenny et al. (2004, p. 761), shows that the highest incidence is between string players and Bissonnette (2013, p. 13) reveals 27% of musicians consume β -blockers against MPA symptoms. Thereby, it seems appropriate to discuss:

1. the consequences of violin pedagogy and MPA for interpreters and their performances;
2. the importance of new technologies such as recording techniques, virtual reality, video class and live stream social medias for violin pedagogy and individual practice and;
3. the relationship between violin pedagogy and the use of β -blockers.

What do we know of professional classical music and students proportion who believe suffer from the MPA effects due to inadequate pedagogy in Brazil, France and Portugal? Is there a relationship between violin pedagogy (first year of study and violin practice) and music performance anxiety?

1.2. Hypotheses

1. Improper musical piece or inadequate violin pedagogy applied may lead to increase performance obstacles. This inadequate teaching may indicate student specific individual pedagogy absence directed to the practice and musical performance.
2. Psychologically, aforementioned point can have negative influences on the student development such as their self-confidence decrease and turn them out unable to perform compatible musical works - or even below, his or her musical-technical level - with his or her technical-musical abilities.
3. Furthermore, self-confidence decreasing may increase MPA symptoms, consequently, lead to increase technical-musical performance difficulties, the search for legal drugs such as β -blockers that help them better manage music performance anxiety symptoms, even, the complete abandonment of violin study by students with relevant musical potential.
4. Finally, we believe violin performance teaching must be built and consolidated through a relationship based on trust among students, violin teachers and students' parents with individual analysis, especially, as regards technical-musical and anxiety problems resolution.

1.3. Research goals

This research aims to contribute about musical pedagogy deficiency awareness. Its main objectives are:

1. to compare - despite such distinctive realities - Brazilian, French and Portuguese violin teaching and technologies access as pedagogical tool strategy;
2. to understand how the first year of violin teaching influences individual daily practice, consequently, music performance anxiety symptoms increase;

3. to elaborate *musical practice agenda* (MPAg) to assist teachers, violin students' parents and violin students. MPAg intend to contribute MPA decrease incidence during practice, and performance;
4. to approach violin teaching (musical pedagogy) and the psychology of music (musical performance) through references, indications and contributions of the existing literature on the two areas.

1.4. Methodological procedure

This master's dissertation methodology consists of two distinct stages:

1. Gathering data:

1.1. Scientific literature review on musical pedagogy, in particular of violin teaching (practice and performance), MPA and β -blockers, musical psychology (motors and cognitive processes) and music education and technologies.

1.1.1. Index on the following pedagogical works:

- . Flesch - *The Art of Violin Playing, Book One* (2000);
- . Galamian - *Principles of Violin Playing and Teaching* (1985);
- . Suzuki - *Shinichi Suzuki: His Speeches and Essays* (1998), and;
- . Galpérine et Reverdito-Haas - *A Cursus of Dix Ans à la Class de Violon* (2012).

1.1.2. Index structure based on the following terms:

- . anxiety or musical performance anxiety;
- . memory;
- . motor automatism;

- . performance;
- . practice;
- . student-teacher relationship;
- . technologies, and;
- . violin pedagogy.

1.2. The Q-RMI-MPA (Questionnaire on the relationship of individualized violin pedagogy and musical performance anxiety) is established through 37 issues. It was available on *GoogleDocs* platform in two versions¹²: English and Portuguese version analyzed quantitatively and qualitatively. This survey was addressed to Music Conservatories, Music Faculties and Professional Orchestras with the aim of reporting and evaluating how the first violin lessons influenced their performances, especially regard to the MPA. It is important to emphasize professional musicians or pre-professional music students choice resides on collect their reports about their first violin class, as well as, to analyze the consequences, whether negative or positive, for their music development, music performance and if they consider there is any link between the first violin class and the MPA.

The results' discussion is based on the literature review, and the Q-RIV-MPA's data confrontation to reach the previously established objectives and confirm or deny our hypotheses. Analysis process is organized into four parts: MPA, consequences, STR, and individual practice structure. The result of this parallel culminates in the MPAG elaboration and different technological application, including social medias, in the practice and violin teaching against MPA.

1.5. Limitations of the study

Among study limitations factors it needs to mention calendar time available for the research development, book consultation access, questionnaires access and legal questionnaires authorization. Different adversities reside on calendar time available issues. For instance, due to this available time, this research is established on a reduced target population, pedagogy concepts (including violin-teacher relationship) could not be deepened, MPAG development more detailed and methodology data treatment more precise.

¹. See Appendix A .

². This research not employs the Q-RIV-MPA French version.

As regards bibliography access limitations, *The Art of Violin Playing: Artistic Realization and Instruction* (Flesch, 1930) was consulted for a relatively brief period at the Universidade Federal of Minas Gerais (UFMG) - Brazil, but due to book absence in the Lisbon libraries, it could not be carried a deeper analysis out. To overcome this adversity, master's dissertations and doctoral's theses were employed as an aid to better understanding Flesch's concepts. The access to *The psychology of music performance* (Kenny, 2011) was impossible. Kenny (2011)'s book would be critical for the discussions held and proposed in this dissertation due to the vast author academic knowledge and production.³ Another factor consists of table of contents⁴ analysis in which different chapters should be important for the relationship among pedagogy, performance, and anxiety understanding.

On methodological issues, State-Trait Anxiety Inventory (STAI), Personal Report of Confidence as a Performer (PRCP) and Performance Anxiety Inventory (PAI) did not apply in the survey due to the fact we did not obtain their legal authorizations for employment in this research. The impossibility of using them, in particular the use of the STAI questionnaire, compromised treatment and evaluation. It is also important to mention we were almost unable to access the Spielberg's questionnaire - STAI (1971) -, as well as, its French and Portuguese version. This unforeseen provoke an enormous Q-RIV-MPA delay conception.

³. Dianna Kenny (Professor of Psychology and Music, Faculty of Arts, University of Sydney, Australia) within the field of music psychology.

⁴. 1. Phenomenology of Music Performance Anxiety; 2. Conceptual framework; 3. The Anxiety Disorders; 4. Defining Music Performance Anxiety; 5. Epidemiology of Music Performance Anxiety; 6. Theoretical Contributions to Understanding Music Performance Anxiety; 7. Treatment; 8. Severe Music Performance Anxiety: Phenomenology and Theorizing; 9. Common Themes in the lives of performing musicians and 10. Prevention and Pedagogy.

Methodology

“ ‘If I cannot build it, I do not understand it.’ So said Nobel laureate Richard Feynman, and by his metric, we understand a bit about physics, less about chemistry, and almost nothing about biology. When we fully understand a phenomenon, we can specify its entire sequence of events, causes, and effects so completely that it is possible to fully simulate it, with all its internal mechanisms intact.

Achieving that level of understanding is rare. It is commensurate with constructing a full design for a machine that could serve as a stand-in for the thing being studied. To understand a phenomenon sufficiently to fully simulate it is to understand it computationally.”

(Granger, Richard. *in* How brains are built: Principles of computational neuroscience).

2. Methodology

The evidences search related to music performance anxiety (MPA), violin pedagogy and student-teacher relationship (STR) consist of literature review purpose. As a principal support to this objective, Flesch (2000) and Galamian (1985)'s treatises, Suzuki Methodology (1998) and Galpérine et Reverdito-Haas (2012)' book form the main axis to understand teacher role on individual daily practice and its possible consequences - regardless of their positive or negative nature - for public performance. Through literature review we developed an index about violin pedagogues' works and the Questionnaire on the relationship of individualized violin pedagogy and musical performance anxiety. The Q-RIV-MPA aims to evaluate violin first contact experience, as well as, student-teacher relationship established at this moment. The results obtained from the Q-RIV-MPA are added and compared to the data obtained through literature review. These two methodological processes are the basis for the anxiety, pedagogy, practice and performance relationship discussion and master's dissertation conclusions which include implications, applications and further study. Finally, to ease the reader's understanding, the master's dissertation is divided into: introduction, methodology, state of art, results, result's discussion and conclusion. It is necessary to add the abstracts with preliminary information, the appendix A (English, French and Portuguese questionnaire version), as well as, abbreviations and acronyms list.

2.1. Literature review

The complete literature review is established almost entirely chronological except for topic III. Most of the cited works brings mentioned authors bibliographic data, as well as, books or articles frame (sessions or chapters). Chronology structure's choice is due to the fact that it is easier to understand analyzed terms' definition's evolution in relation to violin pedagogy and music performance anxiety. The literature review is structured in four categories:

1. pedagogy of violin teaching;
2. music performance anxiety;
3. psychology of music and;

4. music education and technologies.

Within of the violin pedagogy field, we can observe authors influence on other pedagogues. Another observed aspect is the authors legacy on current violin teaching and performance. The second topic establishes concepts and definitions related to anxiety and MPA. As mentioned, topic III structure is not chronological. This choice is due to the fact that music psychology works frame presents several concepts development in a very similar way. The last topic returns to the chronological structure because technology issues seem to be more ‘tangible’ when analyzed through a continuous time-line. It allows perception of technological advances and its direct and indirect applications

2.2. Index

Specific words search is the index development main objective within the works or chapters consulted in the literature review. In addition, it is also characterized by a analyze for the specific expressions related to the words searched before. However, it is established by author interpretation of these terms, expressions and words that can make reference on the eight subjects selected (see *Table 2.2*). Index structure sets through works’ chronological order and words, terms or expressions in alphabetical sequence. Each author has a specific color: Flesch - yellow; Galamian - red; Suzuki - green, Galpérine et Reverdito-Hass - blue and Term or Expressions not mentioned - cyan. The software employed to create the index is the ‘Pages Index’ and the methodological inspiration is the Arney’s (2006) Master dissertation’s index. Its objective consists of being a useful tool to guide terms analysis addressed in this research, as well as, an extension of the literature review. The index employed is based on the time reduction in the search for terms, words or specific expressions referring to the work(s) of author(s) relevant to the development of analysis and discussion.

Chapters and works are selected specifically in agreement with their themes relevance for the master’s dissertation development. Each chosen work has a clear justification. They are for instance, Flesch (2000)’s conscious practice concept in transforming students from ‘not being able’ to ‘being able’ through sheet music orientation with the objective of diminishing the physical efforts, increase motor automatism and promoting a safe performance without music score. Galamian (1985) emphasizes the importance and necessity that the violin teacher teaches as a

psychologist, diagnosing their students and elaborating the structure of their individual daily practice with the intention of strengthening physical actions.

Suzuki (1998) summarizes the application of his methodology through the contextualization of the ‘Education of Talent’ and the ‘Law of Ability’ in parallel with mother tongue learning. This parallel represents actions’ naturalness, including violin practicing and performing time. It is important to emphasize that Suzuki extensively promotes the use of recordings reference as a tool for violin teaching and practicing. Galpérine and Reverdito-Haas (2012) describe how the application of violin pedagogy should be established, specifically, during the first year of instrument practice and student-teacher relationship development. It is necessary to stress that these same terms or expressions can be present in other works of these same authors. Index terms search (*see Table: 2.2*)⁵⁶ and their authors and works are (*see Table: 2.1*):

Table: 2.1.	
Violin Pedagogues	Keys
<p>Flesch - The Art of Violin Playing, Book One (2000).</p> <p>1. Practicing in General (pp. 81-83);</p> <p>2. Practicing as a Tool for Learning (The ‘Hygiene’ Practice) (pp. 147-159);</p> <p>3. Musical Memory (pp. 160-164).</p>	

⁵. It was considered as ‘motor automatism or procedural memory’, only terms related to gestures, posture and mainly activities that consist in the cognitive independence of these movements, excluding specific aspects of the violin technique.

⁶. We consider ‘extra worries’ the individual diagnoses exercised by the violin teacher on the physical and emotional characteristics of each student and about how each student should practice individually.

<p>Galamian - Principles of Violin Playing and Teaching (1985).</p> <ol style="list-style-type: none"> 1. Chapter four: ‘building time’, ‘interpreting time’, ‘performing time’; and ‘the critical ear’ (p. 93-104); 2. Conclusion - <i>A few words for the teacher</i> (pp. 105-108); 3. Postscript - II. <i>Other Facets of Mr. Galamian’s Teaching</i> (pp. 117-124). 	
<p>Suzuki - Shinichi Suzuki: His speeches and Essays (1998).</p> <ol style="list-style-type: none"> 1. Discovery of the Law of Ability and the Principle of Ability Development: Proof that Talent is not inborn. (circa 1980) (pp. 1-17); 2. The Law of Ability and the “Mother Tongue Method” of Education. (1973) (pp. 19-35). 	
<p>Galpérine and Reverdito-Haas - <i>Un Coursus de Dix Ans à la Classe de Violon</i> (2012).</p> <ol style="list-style-type: none"> 1. <i>Première année.</i> (pp. 13-31). 	
<p>Terms and Expressions not mentioned.</p>	

Table: 2.2.

Terms and Expressions

.anxiety or musical performance anxiety (all kinds of feelings, thoughts, worries or physical reactions such as arm tremors that can provoke performance damage);

.memory (performance without music score);

.procedural memory (independence and automatism of the movements during the performance);

.performance (performance of a musical work with the presence of one or more individuals, whether in class or in concert);

.practice (self-instruction daily process without violin teacher orientation);

.student-teacher relationship (all kinds of extra worries or influence exerted by the violin teacher on his or her students that can be extended to the parents or legal guardians of each student);

.technologies (all kinds of hardware or software that can enable the violin teaching and assist the violinist against MPA) and;

.violin pedagogy (technical-musical development of the violinist).

2.2.1. The Arney Index

Arney's (2006) master dissertation's index is structured in a clear and pragmatic way: authors and topics. Three authors are employed to establish Arney's index and each of these authors received a specific color⁷ for better identification. Along with this legend, Arney added 'No Information in this text' and 'Refer to text indexes'. The topics are established in ten parts: philosophy, history, performers, holding the instrument, practice, tone production, teaching, bowing, left hands (doubles stops, ornaments, never, style and psychological) and repertoire

⁷. Auer - bleu; Flesch, Book One - green; Flesch, Book two - yellow; Galamian - orange; 'no Information in this text' - grid; and 'refer to text indexes' - *Italics on white background*.

(composers of concerti and unaccompanied pieces). In addition to the index, Arney adds a table characterizing these three authors through their historical context and their inheritances or pedagogical influences regarding the establishment of schools, styles and students.

2.3. Q-RIV-MPA

A single questionnaire is employed in this master's dissertation. The Q-RIV-MPA⁸ objectives are to obtain data and answers on anxiety and individual experiences related to violin learning, practice, performance and anxiety. Its development process is established through three different sources:

1. analysis of three questionnaires - State-Trait Anxiety Inventory (STAI), Personal Report of Confidence as a Performer (PRCP) and Performance Anxiety Inventory (PAI)⁹ (French version);
2. video and *in loco* performance observations and;
3. personal experiences shared with different musicians, violin teachers and violinists colleagues on pedagogical development and its application during individual and group classes, performance and music performance anxiety.

The Q-RIV-MPA is filled out anonymously and is intended¹⁰ for professional violinists, violin teachers and violin students who are in a pre-professional stage or are enrolled in a regular course at conservatories or universities. Three countries are the main basis for the target population of the questionnaire - Brazil, France and Portugal -, but it does not exclude individuals who started their violin studies outside the countries context established. Although countless research shows that gender issues are highly relevant and women appear to be two to three times more likely to have MPA (Barbeau, 2011, p. 28), gender issues are not applied in this questionnaire due to the fact that we have tried to evaluate experiences during childhood regardless of gender. On the other hand, age

⁸. The Questionnaire on the relationship of individualized violin pedagogy and musical performance anxiety (Q-RIV-MPA) was elaborated by the author of this master's dissertation.

⁹. French version: *Questionnaire sur l'anxiété de Performance Musicale*. (Bissonnette, 2013).

¹⁰. Due to the similarity between the instruments, violists were also accepted to answer the Q-RIV-MPA.

factor has considerable importance for the development of the discussion of the results, even, if we exclude children and adolescents from responding this survey.

The questionnaire consists of 37 questions, a box for comments and is available in two languages, English and Portuguese. Despite its mixed nature, the Q-RIV-MPA is mostly composed of questions ‘yes or no’ answers. Thirty-three questions have this structure which aim to simplify the data analysis. The questions 7, 15, 16 and 31 are divided in part ‘a and b’. Finally, Questions 36 and 37 should be answered only if question 35 has affirmative answer. The Q-RIV-MPA has as main objective to try to better understand the importance of the individualized pedagogy of the violin as a way to combat musical performance anxiety. Thus, the main themes for achieving this goal are the relationship between pedagogical orientation, practice and performance; student-teacher relationship; musical performance anxiety during the first public performance and currently performance and treatments, including beta-blockers. It was sent to forty institutions in six different countries. It was also shared through social medias (Facebook and Twitter) and individually via email, inviting violinists and violists to answer the Q-RIV-MPA. Individuals invited to respond to the questionnaire were also orientated to share it to other musicians and colleagues. The questionnaire was available from 02-31 January 2018 on the online platform docs.google.com^{11 12}. The institutions invited to participate in the survey are:

Table: 2.3.	
Institutions	Countries
Universidade Estadual de Minas Gerais	Brazil
Universidade Federal de Alagoas	Brazil
Universidade Federal de Minas Gerais	Brazil
Universidade Federal do Rio de Janeiro	Brazil
Universidade Federal de Santa Maria	Brazil
Universidade Federal de São João del Rey	Brazil
Orquestra Filarmônica de Minas Gerais	Brazil
Orquestra Opus	Brazil
Orquestra Sinfônica do Estado de São Paulo	Brazil
Orquestra Sinfônica de Minas Gerais	Brazil

¹¹. English version: <https://goo.gl/forms/ZrwTXmaYvVbkxo511>

¹². Portuguese version: <https://goo.gl/forms/p8nF3uyjGQh0SLBi2>

Academia de Música de Alcobaça	Portugal
Academia de Música de Castelo de Paiva	Portugal
Conservatório Regional de Castelo Branco	Portugal
Escola Artística do Conservatório de Música Calouste Gulbenkian - Aveiro	Portugal
Escola Superior de Música e Artes do Espectáculo	Portugal
Escola Superior de Música de Lisboa	Portugal
Fundação Calouste Gulbenkian - Gulbenkian Música	Portugal
Orquestra Clássica do Sul	Portugal
Orquestra de Câmara de Cascais e Oeiras	Portugal
Orquestra do Norte	Portugal
Orquestra Metropolitana de Lisboa	Portugal
Orquestra Sinfónica do Porto	Portugal
Teatro Nacional de São Carlos	Portugal
Universidade de Aveiro	Portugal
Universidade de Évora	Portugal
Universidade Nova de Lisboa	Portugal
Association Françaises des Orchestres	France
Conservatoire à Rayonnement Régional de Lille	France
Conservatoire à Rayonnement Régional de Nice	France
Conservatoire à Rayonnement Régional de Paris	France
Conservatoire de Lyon	France
Conservatoire à Rayonnement Régional de Strasbourg	France
Conservatoire de Paris	France
Orchestre de Paris	France
Orchestre National de Lille	France
Orchestre Philharmonique de Strasbourg	France
Université de Laval	Canada
Conservatoire Royal de Bruxelles	Belgique
Hochschule für Musik Franz Liszt	Germany
Hochschule für Musik Freiburg im Breisgau	Germany

2.4. Data processing

Data processing is established quantitative and qualitatively. The quantitative analysis of the answers is made by the sum of the partial presents in the two questionnaires together with the results presented in the index. The qualitative analysis of the data is established through the association between the terms or expressions of the index and the Q-RIV-MPA results. In order to facilitate the analysis of the data, the Q-RIV-MPA issues are divided into eight groups that are

similar those established in the literature review analysis. However, it is necessary to observe three exceptions:

1. The ‘Quantitative’ group is added. It makes references to the absolute values and the population reached; in relation to the search engines established in index;
2. ‘Motor Automatism’ is excluded and;
3. some issues belong to more than one group.

Table: 2.4.	
Data processing Groups	
Quantitative	A
Anxiety or musical performance anxiety	B
Memory	C
Performance	D
Practice	E
Student-teacher Relationship	F
Technologies	G
Violin Pedagogy	H

Table: 2.5.								
Q-RIV-MPA question groups								

	A	B	C	D	E	F	G	H
1								
2								
3								
4								

5		Blue						
6						Purple		
7			Cyan					
8		Brown						
9								Yellow
10				Green				Yellow
11								Yellow
12						Purple		
13								Yellow
14							Red	
15				Green				
16		Brown						
17				Green				
18			Cyan		Magenta			
19			Cyan					
20					Magenta			
21					Magenta			
22					Magenta			
23					Magenta			
24					Magenta			
25							Red	
26						Purple		Yellow
27						Purple		
28					Magenta			
29					Magenta			
30					Magenta			
31		Brown						

32								
33								
34								
35								
36								
37								

State of Art

“Music ability is not an inborn talent but an ability which can be developed. Any child who is properly trained can develop music ability just as all children develop the ability to speak their mother tongue. The potential of every child is unlimited.”

(Suzuki, Nurtured by Love, Alfred Music; 2 edition (1993 June 1) *in* The Importance of Deliberate Practice)

3. State of art

Three main authors form the basis of literature review and discussion about violin teaching and music performance anxiety. Flesch (1873-1944), Galamian (1903-1981) and Suzuki (1898-1998). As assistance to pedagogues' thinking understanding, some works such as *Un cursus de dix ans à la classe de violon* (Galpérine et Reverdito-Haas, 2012), Chantal (2007)'s PhD thesis, Arney (2006)'s Master dissertation and Trindade (2010)'s Master dissertation are selected. A wide range of studies, articles, essays, surveys, and encyclopedias have been employed to understand the concepts involving anxiety, social anxiety disorder (SAD) and music performance anxiety (MPA). Different authors or researchers are recurrent during this process, among them: Spielberger et al. (1971); Bourgeois (1991); Kenny (1993); Antoniazzi, Dell'Aglia and Bandeira (1998); Duke (1999), Duke et al. (2009, 2011); Kenny and Osborne (2006); Smith, Smoll and Cumming (2007); Barbeau (2011); Kenny (2011); Bissonnette (2013); Baxter, Scott and Whiteford (2013); DSM-V (*Manual Diagnóstico e Estatístico de Transtornos Mentais*) (2014); Nicholson et al. (2015); American Psychological Association (APA) (2017); etc.

In the music psychology field, three books have considerable significance for the development of concepts related to both music pedagogy and music performance anxiety. The intention of approaching and reaching both musicians (interpreters and teachers) and music psychologists confirm their importance. Among them, we can highlight: *Psychology of Music: from sound to significance* (Tan, Pfordresher et Harré, 2010); *The psychology of Music* (Deutsch (ed.), 2013) and *The science and psychology of music performance* (Parncutt et McPherson (ed.), 2012). About (new) technologies, the data discovered during the literature review shows a limited amount of articles or books addressing the use of software, internet, recordings, video lessons, virtual platforms such as Youtube, Instagram etc., within musical education, teaching and violin practice context. Nevertheless, it is possible to understand this loophole because the relationship between these two areas is quite recent. In this section, this theme is approached through five authors - Garcia (2000), Beckstead (2001), Henrique (2002), Cunha (2006) and Ruismäki (2009) - and The Strad Magazine's article of ARCO Project. Howbeit, this subject is also approached by pedagogues and psychologists such as Suzuki, Seashore and Bissonnette.

3.1. The pedagogy of violin teaching

The pedagogy of violin teaching is a vast field with a strong tradition. It has been established over the years whether via oral or written treatises. We believe they represent a more solid tool for researching the pedagogy of these authors and for making analyze and comparisons. Furthermore, quoting Trindade (2010, p. 12), we would like to emphasize “É importante ressaltar que os violinistas e pedagogos mencionados são aqueles que pelo seu legado exerceram maior influência nas gerações seguintes. Porém, existe um largo espectro de obras, métodos e estudos técnicos omitidos com igual valor e exequibilidade no ensino do violino.”¹³¹⁴¹⁵

3.1.1. Flesch

Carl Flesch (1873-1944), from Hungary, built an extensive career as a violinist, but it is within the field of violin pedagogy that he excelled. His publications, always addressed to the technical and artistic violinists’ development which are still considered reference works and have a great importance in the teaching and violin practicing. Amongst his most important works are: ‘*Das Skalensystem für Violine*’ (1926) and ‘*Die Kunst des Violin Spiel*’ (1923-1928). The last one was later published in English with the title translated and presented as *The Art of Violin Playing* (1924-1930), new edition 2000).

The Art of Violin Playing is divided into two volumes. The first book - ‘violin playing as a craft and as science’ (p. 1) - is dedicated to violin technique and some aspects of pedagogy, violin practice and psychology of performance. The second book - ‘violin playing as an art’ (p. 1), subtitled as *The Art of Violin Playing: Artistic Realization and Instruction*, is addressed to the artistic development and performance deeper aspects such as physiological and psychological. Both books are devoted to teachers and violin students. The first book is defined by the author himself as the theory of acquisition and use of the technique of violin playing. This concept guides teachers to enable their students ‘to think logically for themselves and to analyze violin-technical problems in

¹³. Author's translation from the original.

¹⁴. “It is important to note that the violinists and pedagogues mentioned are those who by their legacy exerted greater influence in the following generations. However there is a wide range of works, methods and technical studies omitted with equal value and feasibility in violin teaching” (Trindade, 2010, p.12).

¹⁵. The authors chosen by Trindade (2010) as the primary basis for their research, differ in one name from this master’s dissertation. While, we have selected the authors mentioned above. Trindade selected: Auer, Flesch and Suzuki.

depth'. (Flesch, 2000, p. v). The author also states the book is not addressed to a specific audience of students and any student, independent of their level, can make use of this book and apply it in their study and in their individual daily practice.

The Art of Violin Playing Vol. 1 consists of two major parts: *General Technique* and *Applied Technique*. Within this section, three aspects deserve to be highlighted: Practicing in General, Practicing as a Tool for Learning (The 'Hygiene' Practice) and Musical Memory. These three parts consist of an exhaustive description of the musical practice¹⁶, described by the pedagogue as a 'road', and a 'tool' that leads violinists from 'not being able' to 'being able' to perform in public (2000, p. 81) and achieve the main objective 'the artistic presentation' (2000, p. 164). The second book presents itself of great importance on the issues related to the MPA and violin daily practice. It is divided into two large sections. The first section consists of six parts that also contains subdivisions. Within the first part, technical issues are explored in-depth and related to the performance itself. In the first section the fourth chapter discusses about performance, obstacles and hindrances and the sixth chapter addresses violin teaching, pointing out useful information on teacher-student relationship, practicing, anxiety and performance. The second section consists of eleven appendices which Flesch develops the same technical aspects previously addressed through musical examples.

3.1.2. Galamian

Ivan (Alexander) Galamian (1903-1981) was of Armenian descent, born in Tabriz, Persia (now Iran). He is regarded as the most influential theorist and pedagogue on the violin teaching and practicing field. His "approach was analytical and rational, with minute attention to every technical detail" (Grove, 2001, vol. 9, p. 429) aiming to develop students' individuality and for mental control over the movements to be performed. Among his main works, it is necessary to cite the *Principles of violin playing and teaching* (1962) which had a second edition in 1985 and it remains current and relevant.

The book is structured through four chapters, a conclusion that deserves to be highlighted and the postscript. Among them, Chapter Four contains aspects related to practice and performance

¹⁶. Chantal (2007, p. 46) mentions that Flesch was the pedagogue who most wrote about the instruction of violin practice.

(mental alertness in practice; objectives in practice: ‘building time’, ‘interpreting time’, ‘performing time’; and the critical ear). The conclusion - A few words for the teacher - and the postscript - II. Other Facets of Mr. Galamian’s Teaching - are addressed to teachers and how to act in the classroom, how to recognize the strengths and weaknesses, and identify or diagnose the physical and psychological student characteristics.

3.1.3. Suzuki

Shinichi Suzuki (1898-1998) was born in Nagoya, Japan. He is considered one of the greatest pedagogues of the last century within the violin teaching field. His methodology¹⁷ crossed the frontier of violin teaching and was extended to other instruments and even if we did not go into detail, it received great influence by the cognitive psychology and developmental psychology elaborated by the Swiss psychologist Jean Piaget (1896-1980) and by Charles Darwin (1804-1882)’s Theory of Evolution. Chantal (2007, p. 58) points Suzuki out was the most dedicated to teaching young children. Its principle is “excellence in auditory memory through listening and repetition” and its philosophy is “to develop as much as possible human skills, through the formation of good habits” (Chantal, 2007, p. 63). It is the principle and the philosophy of the ‘*education of the talent*’ (Suzuki, 1989, pp. 4-5). These two aspects become evident when, Suzuki, approaches naturalness during the learning process, by adapting violin methodology and pedagogy to the student cognitive maturity level, to the importance of musical learning through memory structure and its reflexes in the continuity of the child’s musical learning.

The book ‘*Shinichi Suzuki: His speeches and Essays*’ is structured in four parts. It resides on the music education relationship among students, teachers, and students’ parents through attention and the aid of music recordings. The musical education is constant compared to the process of learning of a mother tongue, *The law of ability* (p. 6), through the valorization and development of personal skills and the understanding of the talent concepts. These concepts are constantly addressed during the development of this book. Within this proposal, the first two chapters (1. Discovery of the law of ability and principle of ability development: Proof that talent is not inborn - about 1980 - and 2. The law of ability and the “Mother Tongue Method” of “Education - 1973) are considered important for the development of this master dissertation, both within the critical aspects

¹⁷. Suzuki did not like the ‘Suzuki Method’ expression, he preferred ‘the philosophy or method of the mother tongue’ in order to develop beyond the musical abilities, other inherent values for the construction of the human being.

and for the establishment of the issues related to the student-teacher relationship and, consequently; with their parents.

3.1.4. Galpérine and others

Some of the works mentioned previously have been a great contribution to the understanding of the cited authors but also contribute to the methodological and structural development of this master dissertation. Kelley Arney (2006)'s master dissertation - "*A comparison of the violin pedagogy of Auer, Flesch, and Galamian: Improving accessibility and use through characterization and indexing*" - compared the pedagogy of the violin between Auer, Flesch and Galamian. In addition to the pedagogical characteristics of each of the three authors mentioned, we consider it pertinent for this dissertation three aspects: 4.4 Too much practice, 4.6 Teaching: Incompetent Instruction and 4.12 Psychological: Stage Fright. Arney's index has also proved to be a useful tool for researchers and facilitates in the identification of specific terms within the text and pedagogical strategies proposed by Flesch and Galamian.

Kênia Adriane Pinto Chantal (2007)'s Ph.D. thesis - "*O ensino do violino dentro do estágio pré-operacional: um estudo piloto sobre o estudo técnico, com considerações da psicologia psicognitiva e do desenvolvimento*" - considers cognitive and developmental psychology in violin teaching. An interesting parallel is established between these two areas through the already mentioned pedagogues - among others - and psychologists, including the Swiss researcher Jean Piaget. Also, centered on violin pedagogy, especially on the Suzuki Methodology, Alexandra Sofia Monteiro da Silva Trindade (2010)'s Master dissertation - "*A Iniciação em Violino e a Introdução do Método Suzuki em Portugal*" - carries out important considerations about the structure of this methodology, origins, and influences and its reality in Portugal.

Alexis Galpérine, born in 1955, is a professor at CNSMD in Paris, where he teaches pedagogy. He also teaches at the American Conservatory of Fontainebleau. Ana Reverdito-Haas is a violin teacher at the Strasbourg CRR. "*Un cursus de dix ans à la classe de violon*" (2012) describes the course of violin learning over fourteen years - even though, book main title refers to ten years of learning - through specific activities, pedagogical advice, and repertoire indications according to students technical-musical level. Our interest is focused on the first part of the book - *Première année*. In this session, we can observe how the authors suggest the establishment of the teacher-

student relationship and the pedagogy to be applied. It is interesting to note that in this first chapter, the greatest concern of both authors resides on the presentation of the instrument to the student and how it will be added to his or her daily life, as well as, student's physical-motor adaptation to a foreign body (violin and bow).

3.2. Music performance anxiety

Anxiety affects a large part of the world's population. Although, different researches done do not show statistics consensus about affected people they indicate anxiety disorders are the most frequent mental health troubles. According to Kenny (1993) and Baxter, Scott and Whiteford (2013) almost 30% of the adult world population suffers with some type of anxiety disorders, 'a specific phobia (12,5%) or social phobia (also called social anxiety disorder) (12,1%) over their lifetime' (Kenny, 1993, p. 5). The American Psychological Association (APA) (2017), in its online version¹⁸, defines anxiety disorders as 'an emotion characterized by feelings of tension or worried thoughts. People with anxiety disorders usually have recurring intrusive thoughts or concerns. They may avoid certain situations out of worry.'

Some somatic issues also characterize anxiety disorders such as cold and wet hands, dry mouth, sweating, nausea or diarrhea and difficulty swallowing, and some symptoms of autonomic hyperactivity as increased heart rate, shortness of breath and dizziness (vertigo). The DSM-IV (*Manual Diagnóstico e Estatístico de Transtornos Mentais*) (2014) (2014, pp. 189-190) establishes anxiety disorders such as social phobia, depression, stress, post-traumatic stress, mood troubles, panic attack, addiction, or abuse of alcohol or other substances (*Manuel Diagnostique et Statistique des Troubles Mentaux - Texte Révisé* (DSM-IV-TR) (2003, p. 546) and performance anxiety. They can 'share characteristics of fear, excessive anxiety and behavioral disorders'. These disorders tend to be comorbid, but they can be differentiated through objects or situations which may induce fear and anxiety associated with cognitive construction.

Musical performance anxiety consequences can be countless from the creation of a cycle which can generate a fear of public performance or stage fright to the completely abandoning of music activities. Nicholson et al. (2015, p. 438), quoting Kenny (2011) say: "Music performance anxiety (MPA), commonly known as stage fright, can create effects ranging from slight impairment

¹⁸. APA In <http://www.apa.org/topics/anxiety/> Access: 2017 november 24.

to levels that can qualify a diagnosis of social anxiety disorder (SAD) (American Psychiatric Association, 2013). The anxiety may be highly circumscribed to musical performances, or it may occur as part of SAD, in which musical performance is only one of many anxiety-provoking social situations.” They complement with: “MPA appears to be independent of musical training and accomplishment (Kenny, 2011)”.

These latter definitions about anxiety disorders are relevant to understanding more about music performance anxiety, which is identified by Kenny and Osborne (2006, p. 103) as ‘a group of disorders that affect individuals in a range of endeavors, from test-tasking, maths performance, public speaking, sport and performing arts in dance, acting and music’. MPA evidences the most vulnerable instrumentalist somatic aspects. For instance, the violinist may experience tremors in his or her right arm, or the trumpeter may have a specific sensation of dry mouth or dry lips. The motor incapacity of some movements can influence the interpreter until the cognitive level such as remembering and retrieving stored information - melodic, harmonic and rhythmic structure - hindering or impairing music performance.

3.2.1. Spielberger

The article, Development of the Spanish edition of the State-Trait Anxiety Inventory, published in 1971 by the *Interamerican Journal of Psychology* is signed by Spielberger, Gonzalez-Reigosa and Marinez-Urrutia (Florida State University) and Natalicio and Natalicio (The University of Texas at El Paso). In particular about one of the authors, Charles Spielberger (1927-2013) was president of the American Psychological Association and researcher at the University of South Florida, among other American universities. Directly responsible for the creation of STAI, he signs for more than 460 publications, and he has influenced many researchers and students. The article is divided into: an abstract in English and Spanish, definitions of anxiety dating back to Freud (1936), definitions of trace and state anxiety, translate methodology from English to Spanish and bibliographic references.

Some questionnaires have been widely used to measure anxiety level in individuals daily lives and in specific activities such as musical or sports performance or individual public exposure. Among the most employed anxiety inventories we can mention the State-Trait Anxiety Inventory (STAI), the Personal Report of Confidence as a Performer (PRCP) and the Performance Anxiety

Inventory (PAI). In particular to the STAI questionnaire, it was created by Spielberger and his associates in 1971 and it aimed to measure and evaluate trait and state anxiety in each individual. The importance of this questionnaire can be shown by the fact it has already been translated into more than ten languages and it is considered as a main or adapted tool to understand anxiety phenomenon in several studies or theses.

Countless psychologists has been employed State-Trait Anxiety Inventory (STAI) to measure anxiety level. The questionnaire consists of two distinct parts. Each one consists of twenty questions with four answer options. Their purpose is to evaluate Trait anxiety (A-trait) and State anxiety (A-State). A-State evaluates momentary individual feelings about nervousness, discomfort, etc. A-trait describes individuals' daily life about feelings related to of stress, worry, discomfort, etc. The Brazilian/Portuguese version of STAI questionnaire is called the IDATE (*Inventário de Ansiedade Traço-Estado*). The translation was done by Biaggio (Biaggio & Natalício; 1979), and it had the same objectives of the original English version.

The State-Trait Anxiety Inventory (STAI) was developed by Spielberg and his associates (Spielberger et Gorsuch, 1966; Spielberger, et al., 1970) to provide reliable, relatively brief, self-report measures of both A-State and A-Trait. The STAI A-State scale consists of 20 statements which ask people to describe how they *feel at a particular moment in time*. The essential qualities evaluated by this scale involve the intensity of a person's feelings of tension, nervousness, worry and apprehension. The STAI A-Trait scale also consists of 20 statements to which Ss are required to respond by indicating, on a four-point rating scale, the frequency that they experience specific anxiety symptoms. This scale measures individual differences in anxiety-proneness, that is, the general tendency to worry, especially in social situations that pose some threat to self-esteem. (Spielberger et at., 1971, p. 147).

The questionnaire score is identical in each part. The higher score represents the higher anxiety level established. Each question has four answers and each response represents a different level of anxiety and is established by a value ranging from one to four scores. The final score achieved by each participant indicates individual anxiety level. The scores between twenty and thirty-nine points are considered low, and they indicate a mild form of anxiety. Moderate anxiety is

established between forty and fifty-nine. While, a serious anxiety is associated with high values between sixty and eighty points.

3.2.2. Fishbein and Middlestadt

One of the most extensive researches on the study of medical problems among professional orchestral musicians was conducted by Fishbein and Middlestadt both professors at the University of Illinois. The research was developed during 1986 and published in the following year, 1987. It was conducted among 48 orchestras (special, large, medium, and small size orchestras) registered at the International Conference of Symphony & Opera Musicians (ICSOM) and was answered by 2212 musicians from a total of 4025 musicians requested. The study was established on self-completion in relation to 1. fifty-nine musculo-skeletal problems, 2. nine musculo-skeletal symptoms, 3. eleven musculo-skeletal diagnoses and 4. thirty-two medical treatments.

Among survey results presented on the most recurrent professional musicians medical problems, the use of beta-blockers deserves special attention. The data gathered shows that 27% of the interviewees used this medicine, and the vast majority of this percentage used beta-blockers without a medical prescription, 19% are daily prescribed users, 11% prescribed users and 70% are occasional non-prescribed users. The highest use of beta-blockers was found before auditions (72%), followed by solo recitals (52%), difficult orchestral performances (50%) and concert performances (42%). Finally, 96% of users of beta-blockers considered this drug effective against MPA symptoms.

3.2.3. Bourgeois

Dr. Bourgeois is a Clinical Professor and Vice Chair of Clinical Affairs in the Department of Psychiatry/Langley Porter Psychiatric Institute at the University of California, San Francisco. For Bourgeois, MPA can provoke damages not only to the performance, but equally to the interpreter. However, their symptoms could best be administered by controlled and judicious use of beta-blockers. The use of beta-blockers prevents MPA somatic manifestation such as tremors, palpitations, dry mouth, shortness of breath, excessive urination, etc. and may reduce psychological effects such as scattered thoughts, excessive fear of scrutiny, loss of concentration and attention and memory lacks.

The author also reveals among string players, the use of propranolol has proven effective against A-state and music performance anxiety. Somatic symptoms related to right arm tremors that hamper sound production and bow control presents the best improvement results within this musician category. The article also depicts beta-blockers side effects, their varieties and pharmacological composition. Finally, the author reveals that in 1991 during the publication of this article, the list of substances banned from the Olympic Games not include beta-blockers. However, this medicine use are currently forbidden in some sports modalities in agreement with regulatory agency WADA (World Anti-Doping Agency). This last point allows questioning whether such substances will also be prohibited within musical performance context or if someday we will have some kind of anti-doping control in music contests.

3.2.4. Antoniazzi, Dell’Aglío and Bandeira

The article, *O conceito de coping: Uma revisão teórica*, written in 1998 by the Brazilian authors; Ph.D. in Developmental Psychology at the Universidade Federal do Rio Grande do Sul; Antoniazzi, Dell’Aglío and Bandeira; describes coping concept through Folkman and Lazarus’ and Rudolph, Denning and Weisz’s coping models. Article first part consists of presenting coping concept elaboration and its basic definition is also exposed. It is established such as a set of individuals strategies used to adapt with adverse circumstances. This process was established through three generations of researchers’ who first related coping as a stable defense mechanism. The second researchers’ generation associated coping process with external issues and personality traits. The last researchers generation concentrates coping understanding efforts through personality traits (optimism, rigidity, self-esteem, and locus of control).

Rudolph and his collaborators propose coping concept as episodic process. In this preposition, coping process is an intentional response to the stressor and the result would be stressor reduction or adaptation. Folkman and Lazarus (1980) describe two coping models focused on a problem and action. For them, coping is defined such as a set of cognitive and behavioral efforts and they exceed personal resources. It is the mediator between stressor and stressor resultant. The defense mechanisms are unconscious and unintentional. The strategy is emotional and it is established focused on the problem. Finally, within this model the results are somatization, competence and problem domination.

3.2.5. Duke

“Robert A. Duke is the Marlene and Morton Meyerson Centennial Professor in Music and Human Learning and director of the Center for Music Learning in the Sarah and Ernest Butler School of Music at The University of Texas at Austin. His research interests include motor learning, procedural memory consolidation, cognition in jazz improvisation, and the development of expertise.” (Duke, 2009, p. 12). Due topics’ similarity addressed and pedagogical objectives we put together these three articles. They describe students and teachers behavior during violin classes, the relationship between how everyday practice is structured versus the amount of time spent in daily practice and specific movement goals focus.

This paper, *Teacher and Student Behavior Suzuki String Lessons: Results from the International Research Symposium on Talent Education (1999)* seeks to better understand on the students and teachers behavior who are adherents of the Suzuki Methodology during musical instruments classes such as violin. The study also aims to understand relationship impact between teachers, students, and parents and individualized music instruction on the improvement of repertory practice and student performance. The research point interesting results out about instrument classes time structure and the most relevant results are:

The results illustrate that excellent Suzuki teachers’ instruction regarding music repertoire is characterized by a great deal of active student involvement (56% of instructional time devoted to student performance and performance approximations, 11% to student verbalizations), high proportions of teacher talking (65% of instructional time) and performance demonstrations (27% performance, 9% performance approximations), and prominent use of physical positioning (13%). The majority of teachers’ verbalizations comprised information statements (27%) and directives (24%), with relatively fewer questions (10%), and high ratios of positive (12%) to negative (2%) verbal feedback. (Duke, 1999, 305).

These results consist on the aspects related to the teachers’ positive or negative feedback. This point represents talent education’s Suzuki Methodology parallel. It emphasizes positive aspects of student’s technical-musical development through daily practice with attentive and close parents and teachers’ supervision.

It's Not How Much; It's How: Characteristics of Practice Behavior and Retention of Performance Skills (2009) was developed in collaboration with two other researchers, Simmons and Cash and it was accepted for publication the following year, this paper portrays the retention of motor skills through specific objectives established during daily practice with the possibility of being reached in a short space of time. For authors, motor skills' retention and motor automatism do not depend exclusively on the amount of time spent during practice, but as new skills are learned, refined and maintained over time.

Focus of Attention Affects Performance of Motor Skills in Music (2011) resides of the relationship between motor automatism, procedural memory, daily practice and it was written Duke, Cash, and Allen. This study may be considered with a continuation of the article written by Duke et al. in 2009. However, it evidences attentional focus during daily practice and how fine motor skills' development is related to the movements structure goals. For the three authors, musical skill development consists of the ability to observe and respond to the various external variables and to shift the focus from the daily practice goals to performance objectives. Practice structure together with cognitive learning to contribute to the effectiveness of everyday practice. This ability to structure daily practice on the movements goals seems to be more effective than focusing on the movements themselves. It means that procedural memory are corrected by auditory feedback. It is possible to say that new performance ability seems to be much more related to the individual practice deliberate structure than the use of a great number of hours over daily practice.

3.2.6. Kenny

Dr^a. Kenny is a psychology and music teacher at the Faculty of Arts and Social Science at the University of Sydney. She has an extensive and a solid research on the effects, symptoms, characteristics, and treatments on musical performance anxiety. Her research, often in conjunction with other researchers, are aimed at both professional and amateur musicians, as well as, youth and adults musicians. The selected article was written in 2006 with Margaret Osborne (Melbourne Conservatorium of Music, Melbourne School of Psychological Sciences Melbourne).

Music performance anxiety: New insights from young musicians (2006) starts from the premise that few studies have been done about MPA as a psychological phenomenon and about young musicians experiences obtained and related to music performance anxiety. In this context, the

authors reveal that the MPA occurs correspondingly for young and adult musicians and a strong preventive action against music performance anxiety should be established as early as possible within musical learning context. This observation is based on the questioning of when we go and change from “*Mummy, look at me, are not I clever?*” to “*Please do not ask me to perform, I know that I make a mess of it and embarrass myself.*” (p. 103). Kenny et Osborne relate this behavior through some factors:

- . innate temperament (trait anxiety);
- . increase cognitive capacity;
- . self-reflective function and capacity for perspective taking that develop though childhood and adolescence, and;
- . other interpersonal experiences that we have, our perception and interpretation of the world around us, technical skill and mastery, and specific performances experiences that may have positives or negatives outcomes (p. 103).

Another important aspect addressed is the definition of music performance anxiety on cognitive, autonomic arousal and overt behavior responses. Kenny and Osborne mention that in many cases, negative cognition and feelings represent a more serious problem on performance disruption, then, physiological or behavioral components of anxiety. An example, it would be the effects related on excessive pursuit of perfectionism about fine motor dexterity and co-ordination, attention and memory, and esthetic and interpretative skills. It requires years of practice, solitude and constant self-evaluation. This aspect proves to be one of the most formative of negative experiences and provokes increase of MPA.

3.2.7. Smith, Smoll and Cumming

The lack of a consistent literature which related teacher-student relationship and performance anxiety guide to the establishment of parallels between music performance psychology and sports performance psychology. In this context, Smith, Smoll and Cumming¹⁹'s (2007) survey demonstrates coaches positive approach in cognitive-behavioral level and motivational environment results in low levels of anxiety in athletes. They describe coaching programs effects on coaches and

¹⁹. Smith and Smoll are with the Department of Psychology, University of Washington, Seattle, Washington, and Cumming is now with the School for Health, University of Bath, Bath, England.

athletes, as well as, the effects of a cognitive-behavioral intervention by coaches on performance anxiety. The main objective of this article is to establish the importance of the construction of a sports practice based on motivational aspects and its effects on anxiety reduction during sports performance. The authors also suggest program training importance for technicians regarding their pedagogical and critical approach as an aid to help athletes overcome anxiety symptoms.

3.2.8. Barbeau

The master dissertation on Masters of Arts in Music Education written by the Canadian researcher Audrey-Kristel Barbeau (2011) proved a useful tool for master's dissertation development. The topics related to the definitions, theories, and literature review have caught our attention and were of great importance to understanding some concepts. The structure of the master dissertation is defined and established by the author herself in a clear and precise way.

This thesis is divided into six chapters. Chapter 1 presents definitions related to MPA, stress and anxiety (Section 1.1) and proposes theories from psychology, sport, and music (Section 1.2). Chapter 2 reviews the literature on the prevalence of MPA among musicians (Section 2.1) and on the four domains chosen to represent the components of MPA (Section 2.2). Pre-existing measures on MPA are also reported (Section 2.3) and the types of validation selected to conduct this project are described (Section 2.4). Chapter 3 explains the methods used for this research, Chapter 4 presents the results of the questionnaire development and validation, and Chapter 5 analyzes the results through a discussion. At the end, the limitations of the study and a conclusion including the expected contributions are provided (Chapter 6). (Barbeau, 2011, pp. 2 and 3).

In the chapter devoted to MPA definitions (pp. 4-12) and theories, Barbeau establishes the difference among stress, fear, anxiety, arousal, stage fright and MPA. In particular to the last two terms, the author states that stage fright consists of negative feelings or emotions, whereas the MPA can sometimes be positive and helpful to the musician during the performance. It should be mentioned that the differences between MPA, Social Phobia and Specific Social Phobia are also established with the DSM-V assistance. In relation to the theories presented by the author in her thesis, all seem to have great validity for the application in future studies related to MPA. However,

it is important to note that Barbeau also makes use of parallels with sports psychology theories to broaden MPA understanding.

Already within the literature review, two topics seem to be of great importance: a classical musician and domains. In these two sessions, we can observe a series of work done on the MPA and the quantitative data of her researches. Among them, Bohne (2010) reports that 96% of musicians suffer from MPA and Fischbein et al. (1987) - already mentioned - reveals through a study with 2212 participants that 16% of musicians suffer from MPA; they establish the limits of the Barbeau's framework proposed. These two numbers demonstrate how much the questions surrounding the MPA are vast, controversial and difficult to be conclude.

3.2.9. Bissonnette

Bissonnette's thesis belongs the PhD Program in Music Education at the University of Laval. Written by Josiane Bissonnette (2013), this doctoral thesis resembles in many aspects the Barbeau's Master dissertation (2011). Some aspects are inherent to the two works such as the quantitative data, definitions, and theories' presentation. However, this thesis expands MPA treatments aspects. It is through this expansion that the main purpose of the thesis is established. The thesis is structured on two articles. It works on the relationship about MPA, concentration, musical performance quality and musicians reaction after virtual reality training exhibition which simulates performance situations.

The first article is devoted to the MPA definitions and how musicians can best manage it. First, the author describes different treatments for anxiety during musical performance, including the use of beta-blockers which Bissonnette expose to be effective against MPA with some contraindications. However, the article focus is virtual reality use as a tool to combat or control music performance anxiety. Nine students were selected for this survey. The objective is to evaluate musicians immersion capacity and fear structure trigger. The results reveal that virtual reality treatment was efficient reducing anxiety and increasing musical-techniques quality performance aspects. The second article has the same first article objectives and the results were similar. Meanwhile, it has the greatest difference in its methodology which seventeen participants were selected and divided into two groups. The control group has eight individuals, and the experimental group has nine participants. The experimental group was conducted on a series of interviews and,

then, was exposed to six virtual training sessions with the same objectives set out in the first article. The virtual reality program employed consisted in creating an environment with the presence of a virtual audience that has variables between twelve, forty individuals (including juries), only juries and, finally, an empty auditorium. Each simulation has about thirty seconds manipulated in real time.

3.2.10. Nicholson, Cody and Beck

The article and survey elaborated by Nicholson, Cody and Beck (2015) excels by evaluating the differences and similarities between social anxiety disorders (SAD) and music performance anxiety (MPA). The authors describe MPA as a discrete focal anxiety which fear of negative evaluations appears as main triggers related to music performance anxiety. The study was conducted on the evaluation of 130 professional musicians about their MPA self-reported in three different performance settings: solo, group and practice. As previously mentioned, the study consists of the relationship between SAD and MPA.

On social anxiety disorders it is verified it happens in situations of exposure: formal performance, social interaction and being observed while performing routine activities. While, MPA can differentiate itself from the more generalized form of SAD and has its components linked to specific issues related to performance. The three most common types of music performance anxiety are: MPA as a focal problem related to a specific situation; “a generalized form of SAD in which musicians have significant and distressing social anxiety off stage, as well as, on the stage” (Nicholsson et al., 2015, 440); and disorder of the self in which this latter expression of MPA may be accompanied by other cognitive, psychological and somatic symptoms. The results demonstrate that anxiety is present from individual daily practice and increases according to the situation involved where the solo performance appears to have a higher level of anxiety than the practice in a group that has a higher level of anxiety than the individual practice. MAP is related to the fear of negative evaluations or others’ judgment experienced off stage to follow the performance on stage. Thus, this study represents an important tool for the development of cognitive models as MPA treatments.

3.3. The psychology of music

Master's dissertation's discussion focuses on the relationship among violin pedagogy, individual daily practice and MPA. Nevertheless, the need to expand and fill literature review conceptual gaps guide to the music psychology. Three works support our concepts development.

3.3.1. The science and psychology of music performance

The book is edited by Richard Parncutt (music psychologist and professor of Systematic Musicology at the University of Graz, Austria since 1998) and Gary. E. McPherson (trumpeter and conductor, he is teaching music education, research techniques, music psychology, performance science, and musicianship at the University of Melbourne) and is divided into three parts. The first part is composed of six chapters. The second part has nine chapters and the last part is structured in six chapters. Two authors, scientist and musician and/or music teacher, develop each chapter (Parncutt et McPherson, 2002, p. ix). For the dissertation development, it is important the whole first book's session. It consists in the attempt to bring the scientific literature of cognitive, social or developmental psychology closer to musicians and musical educators. The six chapters depict: 1. *Musical Potential* (Kemp et Mils), 2. *Environmental Influences* (Gembris et Davidson), 3. *Motivation* (O'Neill et McPherson), 4. *Performance Anxiety* (Wilson et Roland), 5. *Brain Mechanisms* (Altenmüller et Gruhn) and 6. *Music Medicine* (Brandfonbrener et Kjelland).

While, the first six chapters describe musical learning beginning and establish the importance that student-teacher relationship represents for the practice and music studies continuity. The Chapters 10. Practice (Barry et Hallam), 11. Memory²⁰ (Aiello et Williamon) and Chapter 19. *String Instruments* (Guettler et Hallan) bring the positive or negative consequences of this relationship and the pedagogy applied to the individual practice, and performance. It is also important to mention that they can be associated with the first part of this literature review due to the proposed analysis of the same situation but from the psychology perspective.

²⁰. As a complement to this chapter, it would be interesting to add the chapter of the same name written by Gleitman, Fridlund and Reisberg (2014). They classify the memory of procedures as part of implicit memory. It consists of a memory almost unconscious of the skills that are gained through repetition and continued practice.

3.3.2. The psychology of music

The book edited by Diana Deutsch (Psychology Professor at the University of California, San Diego) is structured in seventeen chapters. The book provides an in-depth knowledge of musical phenomena from a neurological, biological, and psychological perspective. In this aspect, some chapters carry important values for this dissertation. The Chapter 10. Music Performance: Movement and Coordination (Palmer) describes anatomical and physiological adaptations made during daily practice with the purpose of building and assisting musical performance. This chapter adds to Wiesendanger's concepts²¹ (2010) on the complete movements and technique instrument mastery and left and right hand synchronization. 11. *Musical Development* (Trainor and Hannon) resembles the themes addressed during the first part of the book edited by Parncutt and McPherson.

It also allows to draw a parallel between the Suzuki Methodology and Galpérine et Reverdito-Haas' violin pedagogy (2012, p. 13). 14. *Brain Plasticity Induced by Musical Training* (Wan et Schlaug); as well as, Altenmüller (2010)²²; works on the complex instrument playing activity and its implications such as the interactions between auditory feedback and motor brain regions. 17. *Psychologists and Musicians: Then and Now* (Gjerdingen) describes music psychology historical development. He brings accounts of early ideas relating two different fields (music and psychology) and the birth of a new science - psychology of music - and current research trends. *Psychology of Music* (Seashore, 1938) is a literature example proposed in Chapter 17. Despite, the privileges that surround us today in criticizing this literature, after years of advancement in the fields such as psychology, neurology, sociology, pedagogy, and even within the field of sound technology, it is at least interesting to contextualize the psychology of music in this period according to the knowledge that they had at the time and its contribution to our current understanding.

3.3.3. Psychology of Music: from sound to significance

The book is organized in four parts by Siu-Lan Tan, Professor of Psychology at Kalamazoo College; Peter Pfordresher, teacher at Buffalo University interested in the way in which the mind

²¹. Wiesendanger, M. (2010). *Temporal Co-ordination of the Two Hands in Playing the Violin* In F. C. Rose (Ed.), *Neurology of Music* (pp.115-125).

²². Altenmüller, E. (2010). *The Musician's Brain as a Model for Adaptive and Maladaptive Plasticity*. In F. C. Rose (Ed.), *Neurology of Music* (pp. 103-114).

organizes sequences of events in real time during production and perception; and Rom Harré, teacher and a psychologist at Georgetown University and Oxford University. The book leads the reader to a progressive and didactic explanation of the biological, technical-musical, pedagogical and social events that are inserted within the musical context. Part I - Foundations - brings to the principles of musical events, how psycho-somatic system receives and treats them. In particular, Chapter Four carries several and profound information about central nervous system (CNS) (brain and spinal cord) functioning during musical processes. About “CNS is responsible for integrating sensory information and responding, accordingly. It consists of two main components:

1. The spinal cord serves as a conduit for signals between the brain and the rest of the body. It also controls simple musculoskeletal reflexes without input from the brain.
2. The brain is responsible for integrating most sensory information and coordinating body function, both consciously and unconsciously. Complex functions such as thinking and feeling as well as regulation of homeostasis are attributable to different parts of the brain.”²³

The second part introduces to the questions concerning perception, but it is in the third part we find the most relevant contents. Chapters 9. Early musical development and education ‘works how the emerging abilities may best supported and refined’ (p. 4), 10. Practice and musical expertise and 11. The psychology of music performance are highlighted. They describe the functioning of the perception of musical elements during practice and performance.

3.4. Music education and technologies

Even though, music education and technology (software and hardware) study relationship is relatively recent, music psychology scholars have always associated these two fields. Seashore (1936) made use of different devices to measure tuning, rhythms, timbre, etc., with the purpose of comparing different violinists’ performance. He also makes a short allusion to the use of reference recordings to aid individual practice development. Suzuki develops and extends this concept in his methodology. Suzuki methodology consists of scores and songs recordings with piano accompaniment. It may be the first and most famous example of the association between

²³. Central nervous system (CNS) definition in <https://mcb.berkeley.edu/courses/mcb135e/central.html> Access: 2018 March 19.

technology and music education. The philosophy behind this relationship allows students to develop their individual practices critical sense and promote necessary corrections. Other examples between music education and technologies is present in more recent works. Bissonnette (2013)'s thesis proposes as a treatment - or mitigating - to musical performance anxiety the use of virtual reality.

3.4.1. Freire and Cunha

Maurício Freire is a flutist teacher at UFMG. Since 2003, he has invited as 1st solo flutist at OSESP. Leonardo Cunha is a violinist and maestro. Both Freire (2000)'s article and Cunha master (2006)'s dissertation consist of the knowledge gap in relation to the sound pickup of the musical instruments - flute and violin, respectively -, microphones, recording process, difference between environments and the relation between interpreters and sound technicians. The importance of these two works for this master dissertation lies on the questions regarding daily practice recording microphones use as Galamian mentions (1985, p. 102) and the influence of these devices and processes on musical performance.

3.4.2. Beckstead

David Beckstead is high school coordinator at the American School of Antananarivo in Antananarivo, Madagascar (p. 44). His article written in 2001 argues how 'new' technologies can help students and teachers not only reinforce the traditional aspects of teaching and musical composition based on the European written tradition of classical music but also take the next step. Assist creative processes, the exploration of sounds and different timbres. Increase the scope of musical knowledge and increase students' curiosity about musical phenomena. Another important aspect to be mentioned is how to associate technology and music education. The application of these tools resides in the innumerable new possibilities of teaching development and teacher and student adaptability in relation to this new scenario.

3.4.3. Henrique

The book consists of twenty-four chapters, ten appendices and a CD with sound examples. Two chapters stand out among the twenty-four chapters: *Cordofones Friccionados* and *Registo e Reprodução do som*. These two chapters are similar to the aspects already mentioned earlier by

Freire and Cunha. However, they work more deeply on technical issues related to microphones, recordings, sound radiation. Thus, we can establish more profound parallels among musical pedagogy, practice, and performance.

3.4.4. Ruismäki and Juvonen

Heikki Ruismäki in collaboration with Antti Juvonen. Ruismäki researches on the music teacher education, music technology, working conditions and well-being of music teachers and students. The new horizons for music technology addresses elements also commented and researched by Beckstead (2001): use of electronic instruments, computers, software, internet, etc. Article's main objective resides on internet phenomenon and different technologies applications within music education field and about the aid of these tools to music teachers and students. The authors also argue about teachers' needs to adapt quickly to the pedagogical concepts' evolution of new teaching skills and these direct technologies applications on instrumental learning, creative activities and different technologies' integration.

3.4.5. ARCO Project.

The viola teacher at the Birmingham Conservatory, Prof. Louise Lansdown, promotes string instruments learning, especially viola, through streaming video lessons linking England and South Africa. This is only one part of the whole. ARCO Project consists in an instrument teacher presence to make necessary technical corrections, especially, those related to posture and physical aspects, and another teacher via Skype. Communication between both teachers is paramount not only to develop students' technical and musical aspects, but also to motivate them and accelerate the learning process. Details on ARCO Project can be found on the Birmingham Conservatory website and The Strad magazine. The issues have monthly publications specialized and directed to the strings instrumentalists. The topics covered by the magazine vary between interviews with teachers and interpreters, discussions about musical pedagogy and acoustic and structural aspects of instruments.

Results

“Secure memorisation rests on a foundation of deep learning. Adept memorisers absorb the musical and technical ingredients of a piece from the outset of practice, and they remain aware of those elements throughout the mastering process. Conversely, when a musician’s practice isn’t thorough – say, when phrasing is unclear – the confusion undermines any attempt at memorisation.”

The Strad in The 4 stages of memorising music for performance (2018 March 2, This article was first published In the October 2009 issue of The Strad).

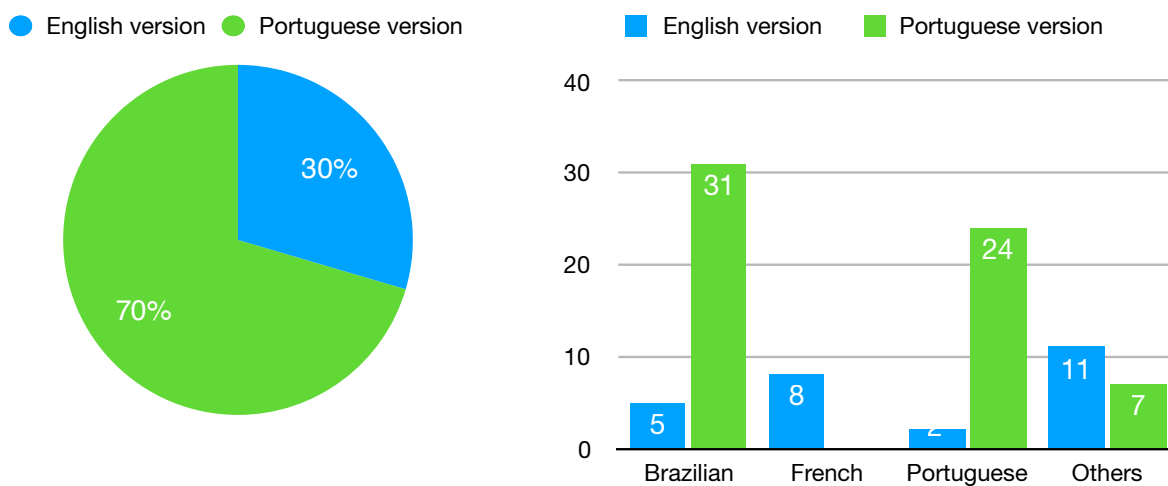
4. Results

As mentioned in the methodology, this session involves two distinct parts to optimize and increase discussion possibilities in the next chapter. The first part lies of presenting the Q-RIV-MPA results, while the second part consists on the index data analysis.

4.1. The Q-RIV-MPA results

On the Q-RIV-MPA's results, 88 responses gathered, 26 answers come from the English questionnaire version, while 62 come from the Portuguese questionnaire version (*see Figure 4.1*)²⁴²⁵²⁶. Finally, nine individuals expressed their opinions through a comments box.

Figure: 4.1.



4.1.1. Quantitative results

As mentioned, the Q-RIV-MPA has 88 answers (36 Brazilians, 26 Portuguese, 8 French and 18 from of other nationalities) of whom 56% of the interviewees are professional musicians (*see Figure 4.2*). Almost, all individuals answer their country of birth coincides with the place of their first violin lessons, but there is an exception. In the answer referring to the question ‘2. What is your

²⁴. English results: https://docs.google.com/forms/d/1pQBekbWck6nVi1CjyvP3-pjR-v6wT-6B8va7M9p_m8I/edit#responses

²⁵. Portuguese results: <https://docs.google.com/forms/d/1y7dsbcqXDKjQ6LE100iHdWi-TbAModH7UDkVSsq5Mbw/edit#responses>

²⁶. The response 27 of the English questionnaire version was disregarded due answer's delay.

country of birth?', one of the participants answer is 'others'; while his or her response to '3. In which country did you have your first violin classes?' is 'France'. It is also important to mention almost half of the participants started their studies between six and ten years old. However, more than half of the Brazilians participants - twenty-two individuals - began their studies between eleven and fifteen years old (see Figure 4.3 and 4.4). On the 88 individuals who answer the survey, 52 interviewees reveal they are violin teacher (35. Are you a violin teacher?) (see Figure 4.5).

Figure: 4.2.

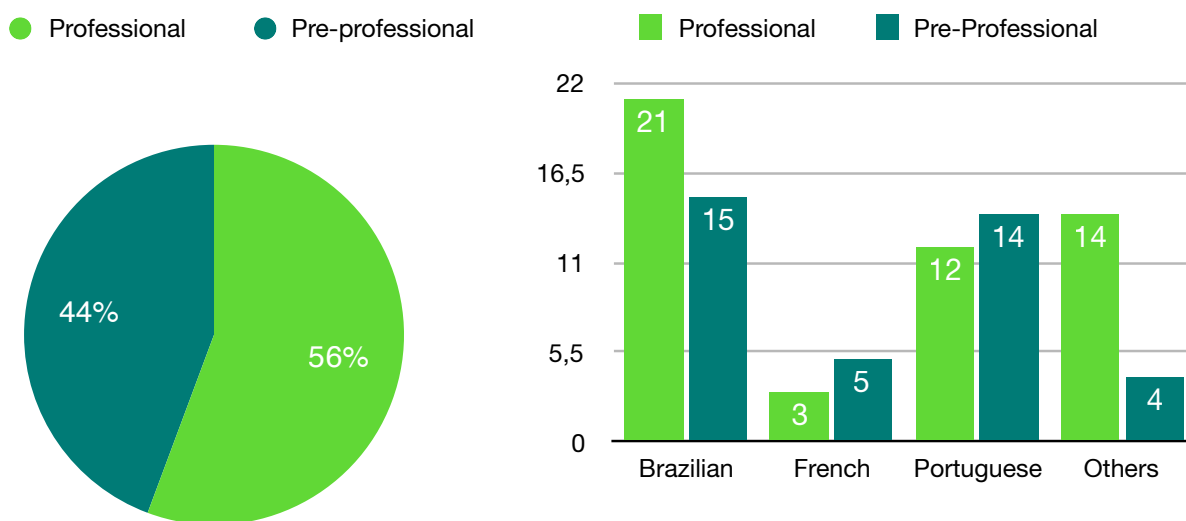


Figure: 4.3.

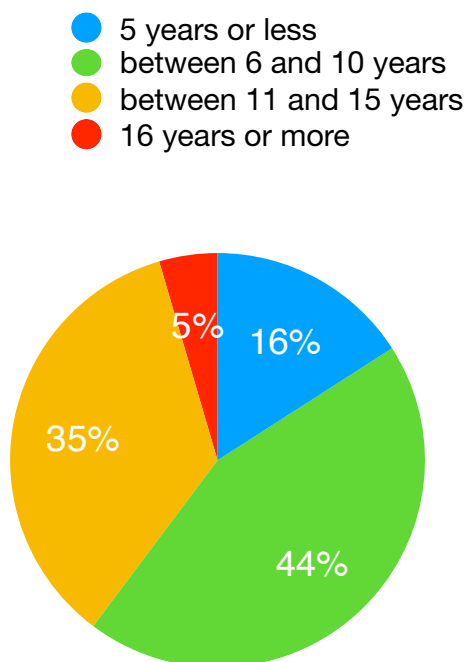


Figure: 4.4.

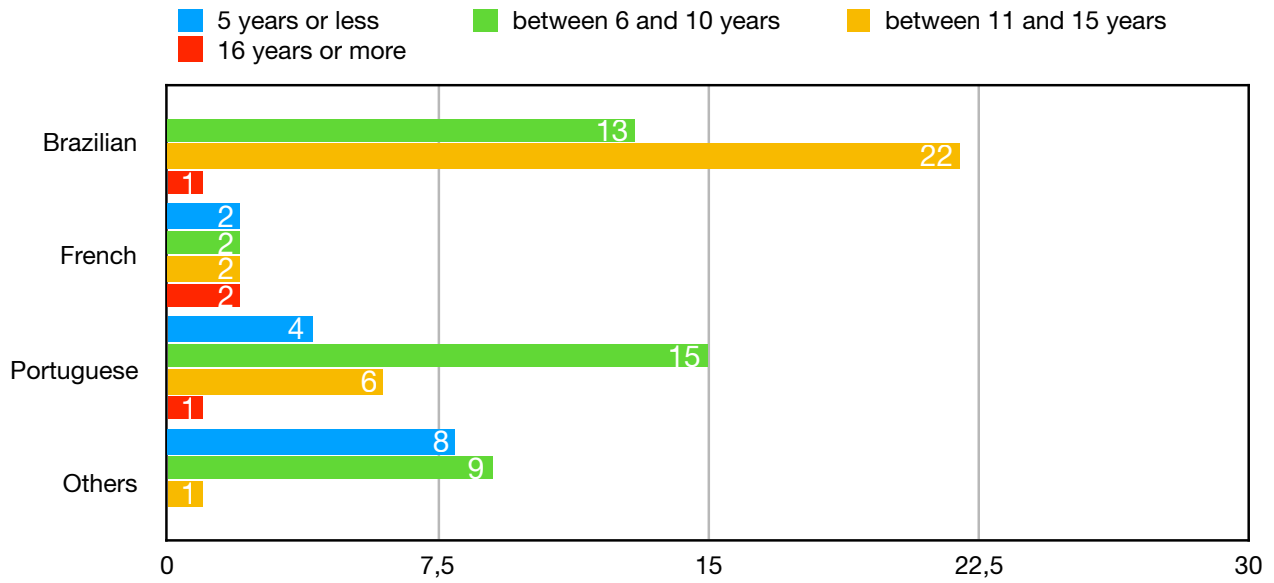
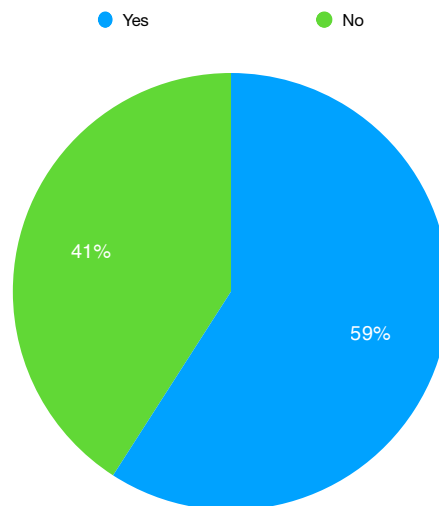


Figure: 4.5.



4.1.2. Anxiety and MPA

Regarding their emotional state during first public performance; (8. What was your emotional reaction in your first performance in public?)²⁷, almost, 60% of those interviewed say they have suffered some music performance anxiety symptom (*see Figure 4.6*). The highest number is among Brazilians, of whom twenty-nine individuals report MPA symptoms. Only one individual claims to have presented extreme symptoms related to music performance anxiety, reporting an impossibility of performing in public. Around, 75% of respondents emphasize they were not guided

²⁷. English version questionnaire: 25 answers.

about relaxing activities in individual daily practice, as well as, public performance (16. Were you instructed to practice relaxation techniques:.) (see Figure 4.7). It is also possible to note an increase over individual anxiety assessment (31. Regarding anxiety to play in public: a. I was anxious b. I am anxious). The numbers increased from 58 to 70 individuals (see Figure 4.8). Whereas, public performance possibility without musical scores increases anxiety level in 45% of participants (32. Does playing by memory makes you more anxious?) (see Figure 4.9). Concerning MPA, half of those interviewed answer they employ some technique to control musical performance anxiety (33. Do you use any technique to control anxiety?) (see Figure 4.10) and 32% of the participants had previously used β -blockers (34. Have you ever used β -blockers?) (see Figure 4.11), the Brazilian average is 45% (see Figure 4.12).

Figure: 4.6.

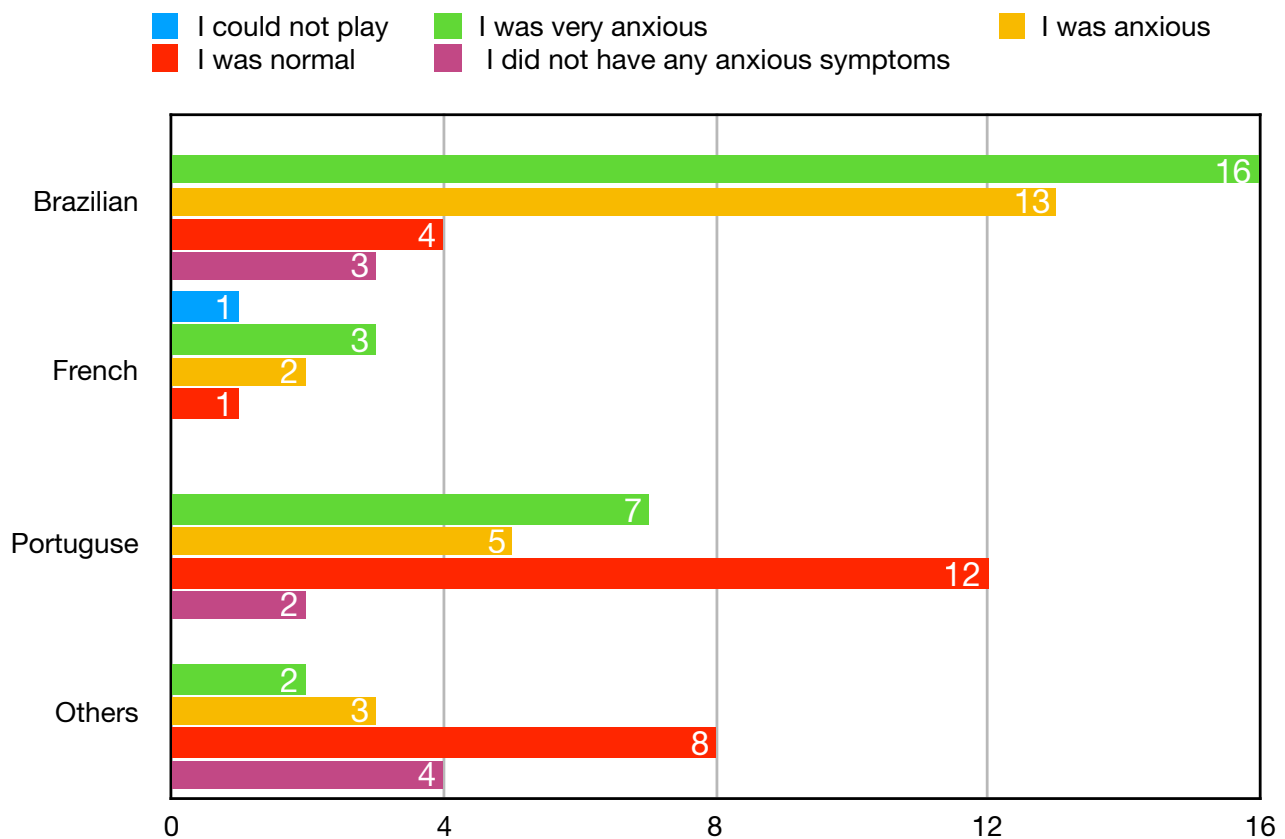


Figure: 4.7.

a. During individual practice? b. Before musical performance?²⁸

²⁸. Portuguese version questionnaire: 61 answers.

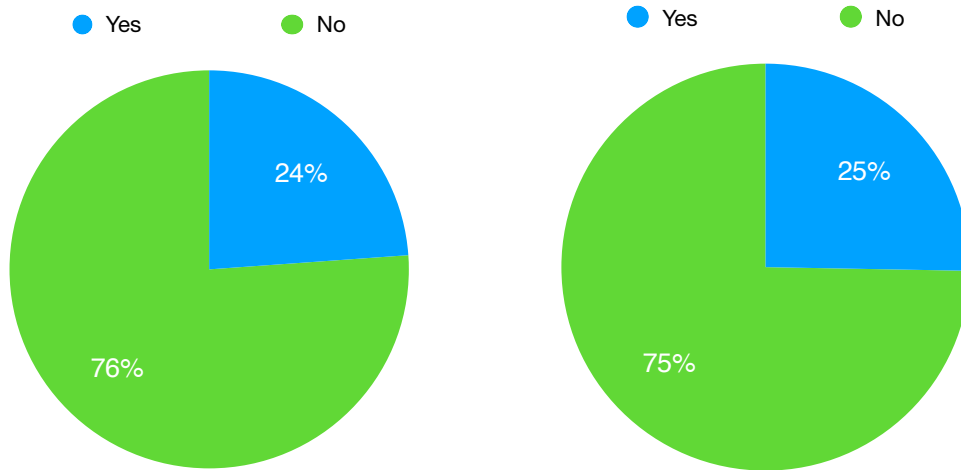


Figure: 4.8.

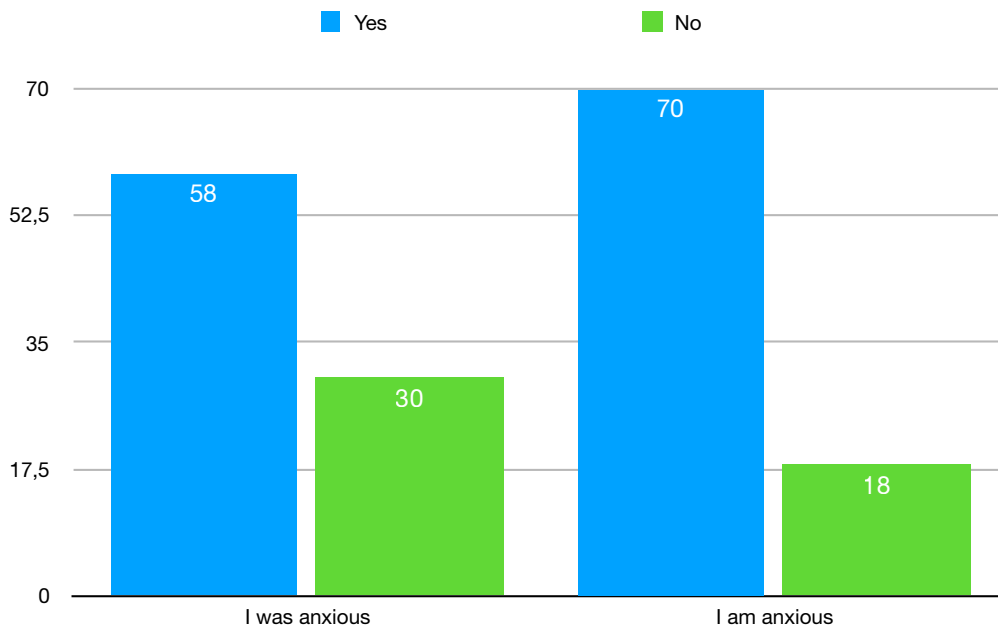


Figure: 4.9.

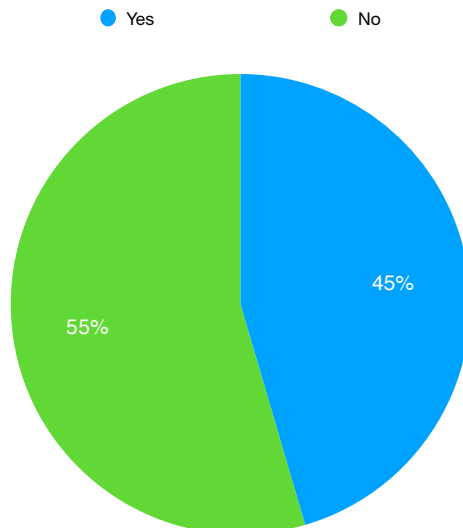


Figure: 4.10.

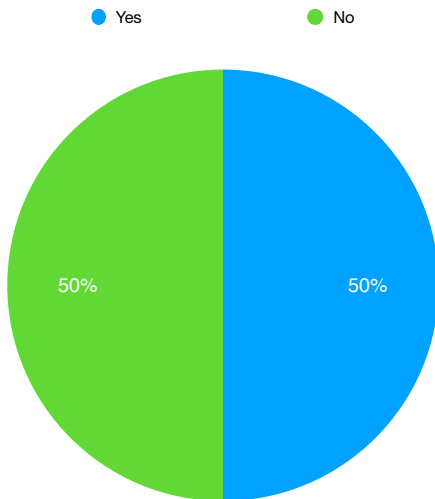


Figure: 4.11.

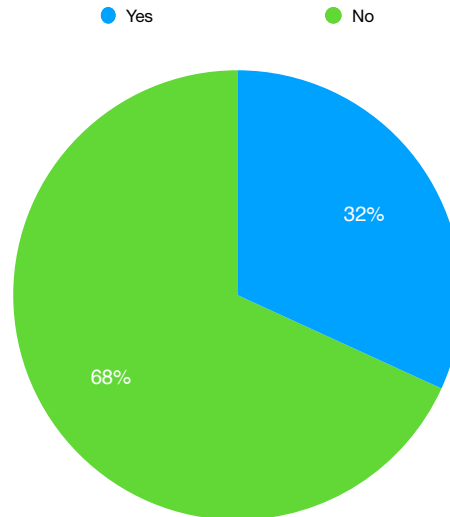
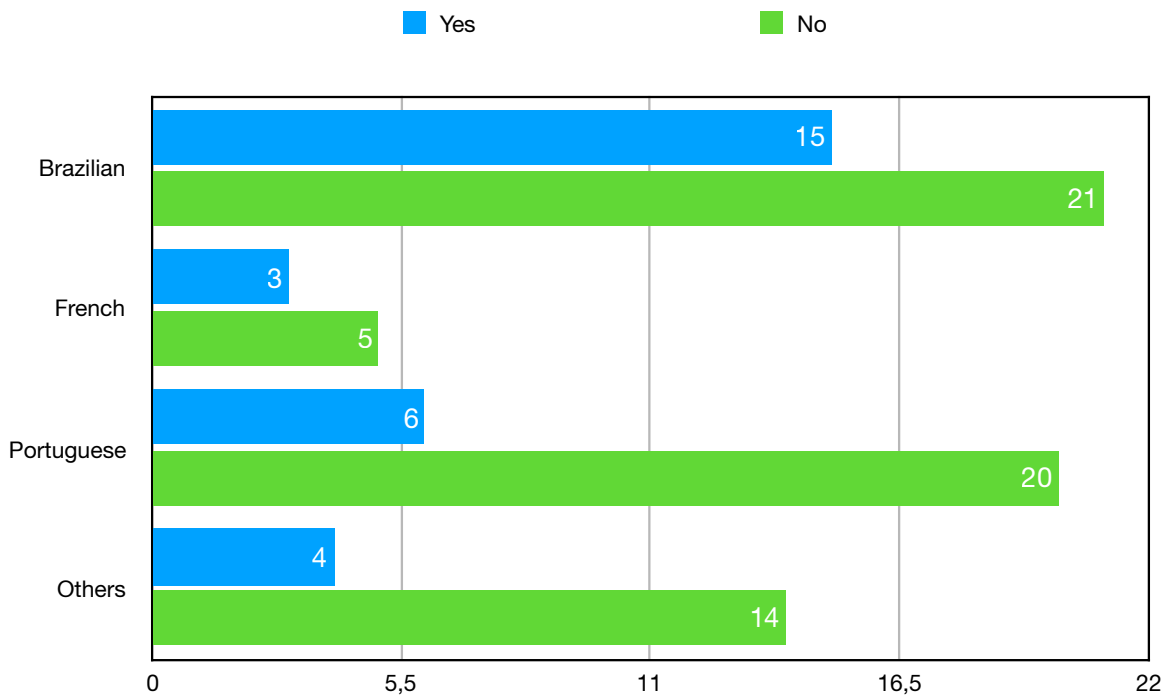


Figure: 4.12.



4.1.3. Memory

In this session, the results refer not only to the ability to play without sheet music, but also about MPA past events. Regarding the events related to the first public performance (7. Do you remember your first public performance?), 74% of individuals reveal they remember their first solo performance²⁹, while 28% say they do not have first group performance memories (see Figure

²⁹. Portuguese version questionnaire: 61 answers.

4.13). Almost, half of the participants answer they were not in the habit of memorizing their musical pieces during daily practice (18. Did you have the habit of memorizing your pieces?) (see Figure 4.14). The same result can be observed about habits of playing in public without music score (19. Did you have the habit of playing from memory?) (see Figure 4.15). As mentioned earlier, only 55% of participants report they do not have music performance anxiety symptoms increases when they need to play ‘by heart’ (32. Does playing by memory makes you more anxious?) (see Figure 4.9).

Figure: 4.13.

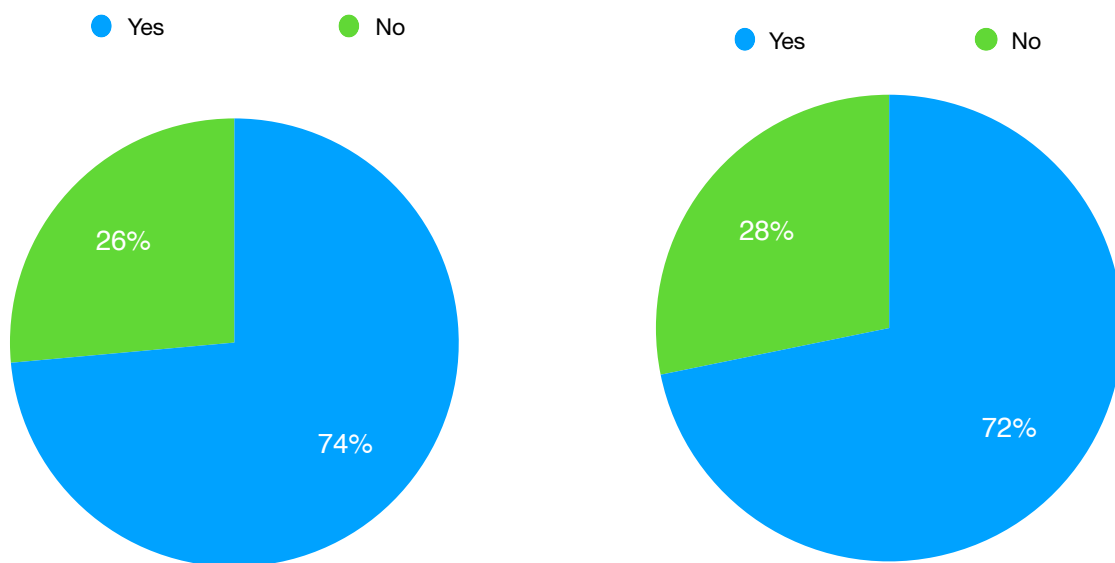


Figure: 4.14.

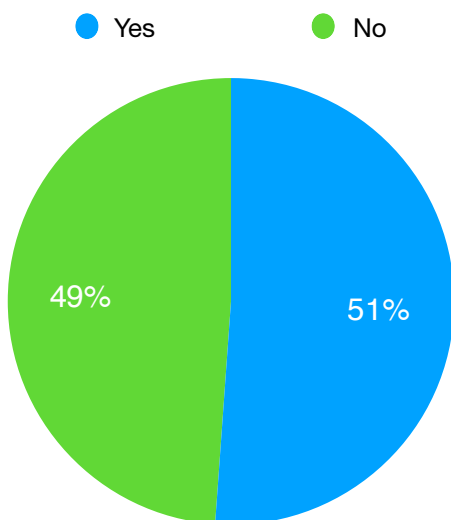
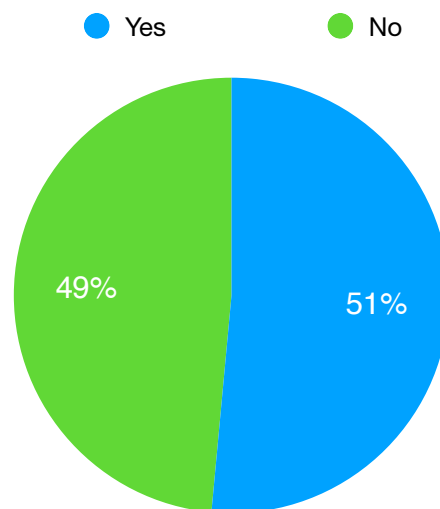


Figure: 4.15.



4.1.4. Performance

Most of the musicians who participated in this survey state that there is a cause-effect relationship between violin learning in the first year of applied pedagogy and performances (10. Did the pedagogy applied during your first year of violin class have an impact on your musical performance?): twenty-eight Brazilians, five French, fifteen Portuguese and eleven from other nationalities answer this question positively (see Figure 4.16). Almost 70% of respondents found they were encouraged to participate in performances both in groups and individually. (15. Were you encouraged by your first teacher to participate in performances?) (see Figure 4.17). In contrast, 84% of the musicians they did any routine prior to performance (17. Did you have a pre-performance routine?) such as muscle stretching, isolation for increased concentration, etc. (see Figure 4.18).

Figure: 4.16.

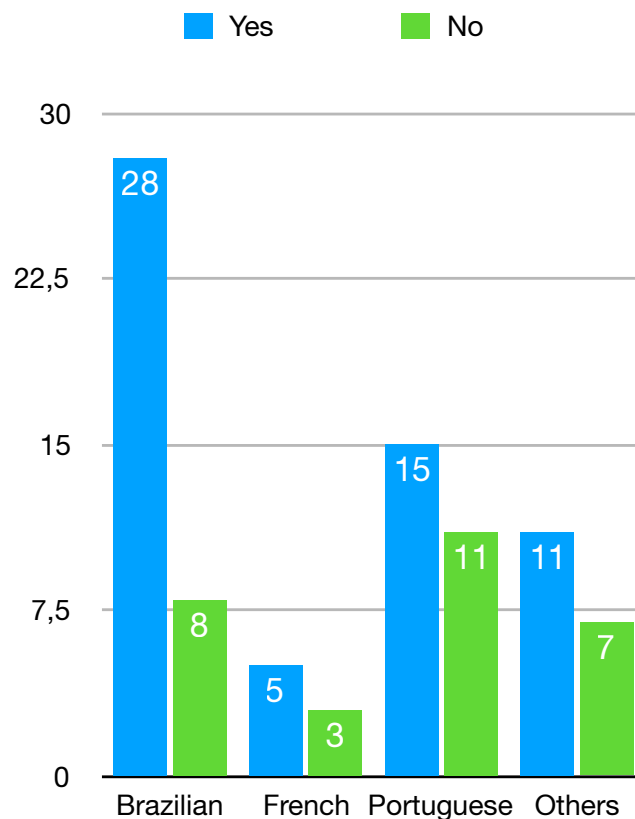


Figure: 4.17.

a. chamber ensembles?

b. individually?

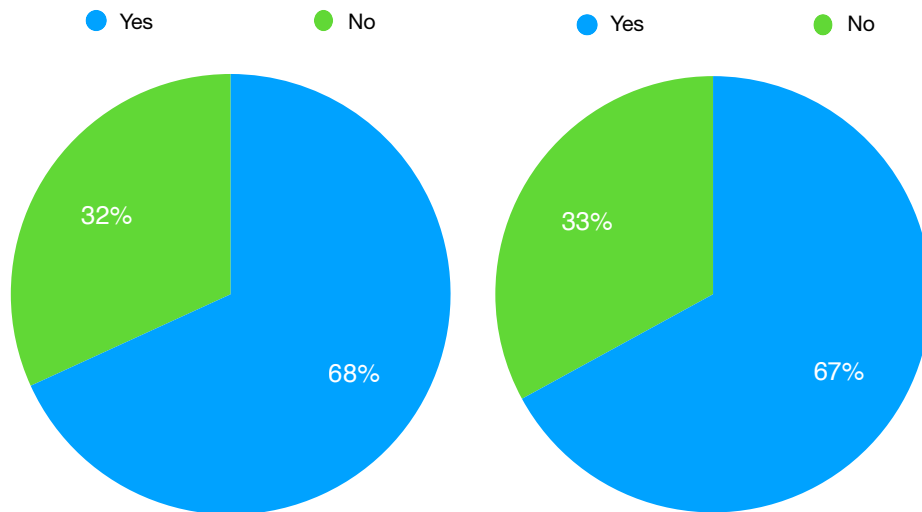
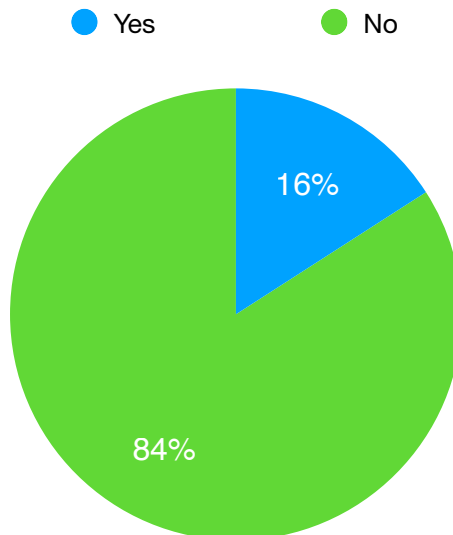


Figure: 4.18.



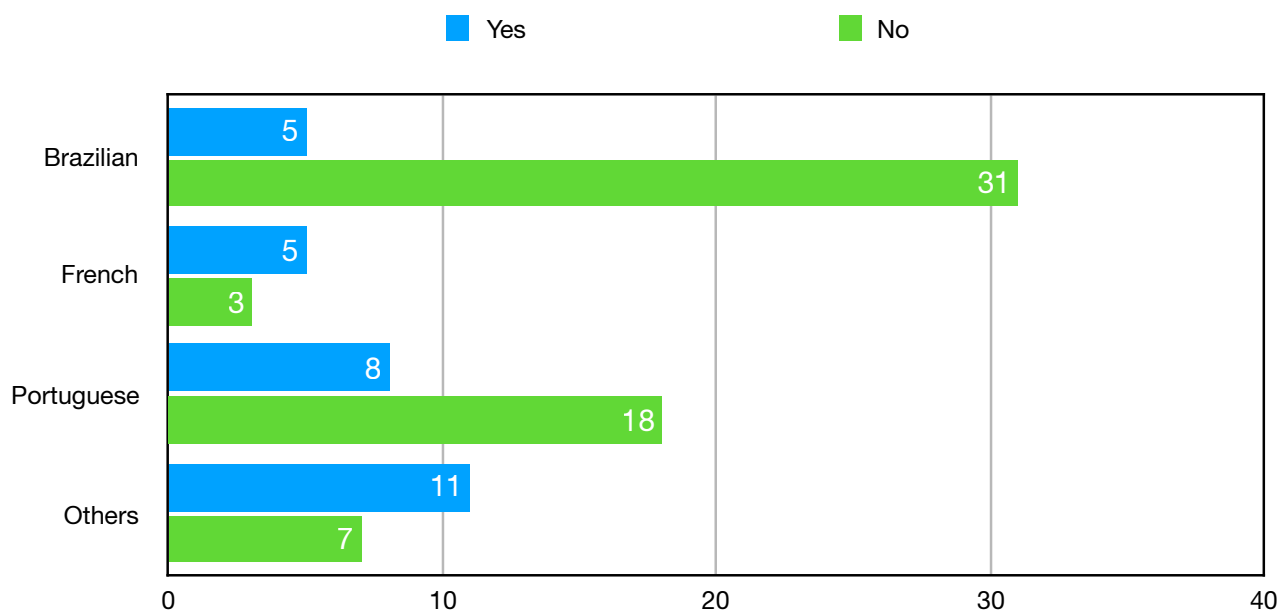
4.1.5. Practice

Concerning individual everyday practice structure, (20. Were you advised by your first violin teacher to reflect on the process of how to practice individually (metacognition?)); fifty-nine violinists reveal their respective teachers did not instruct them to think about it (85% of the Brazilians interviewed portray this same problem, against 37,5% of the French interviewed and 72% of the Portuguese interviewed) (*see Figure 4.19*). This last data confirms the numbers about individuals practice time organization (22. Were you guided in how to organize your time during your individual practice?), whose 56% of the participants answer negatively to this question (*see Figure 4.20 and 4.21*). While, 47% of respondents they were not in the habit of analyzing their

music scores before music performances (21. Did you have the habit of analyzing the music scores before they were performed?) (see Figure 4.22) and only 51% of violinists practiced in small blocks distributed over time (23. Did you practice in?) (see Figure 4.23). In return, 61% of respondents had a habit of practicing slowly (24. Did you have the habit of practicing slowly?) (see Figure 4.24).

On the structure of daily practice 66% admit they did not include creativity elements (28. Did you have the habit of composing your own pieces, improvising or playing by ear?) (see Figure 4.25). As well as, 67% of the individuals answer that any adult supervised their individual daily practice (29. Was your practice supervised by your parents or guardian?)³⁰ (see Figure 4.26 and 4.27). Still, about practice structure; thirty-nine musicians reveal that their daily practices consisted of a deliberate structure [improve performance, correct weaknesses and errors], while 44 answer consist of mere repetition [play from beginning to end], against just five musicians who found their practice was informal [improvising or play by ear melodies known] (30. Do you consider that your practice was?) (see Figure 4.28).

Figure: 4.19.



³⁰. English version questionnaire: 25 answers.

Figure: 4.20.

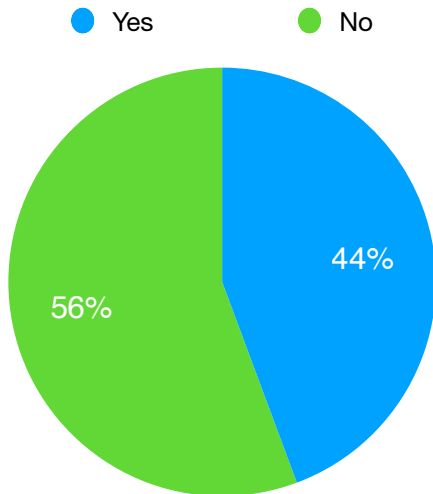


Figure: 4.21.

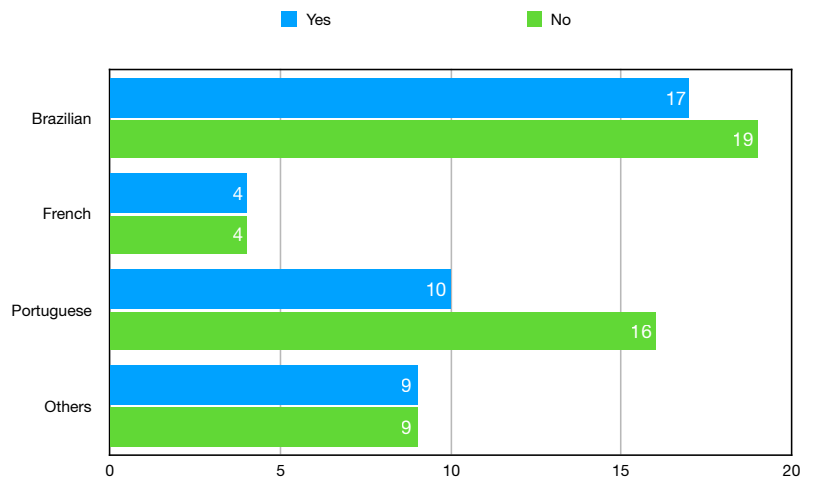


Figure: 4.22.

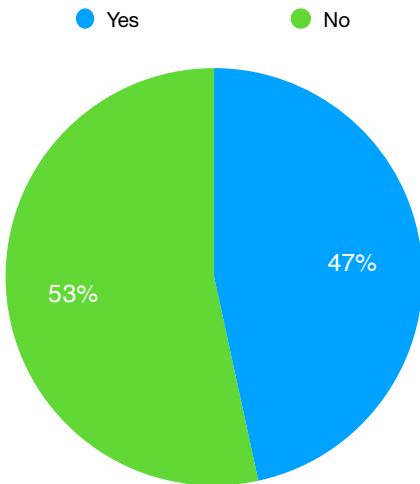


Figure: 4.23.

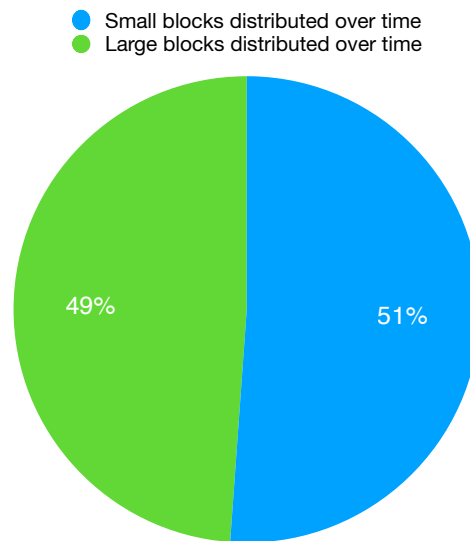


Figure: 4.24.

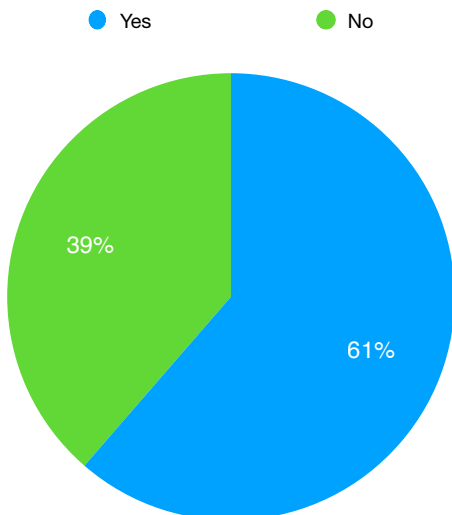


Figure: 4.25.

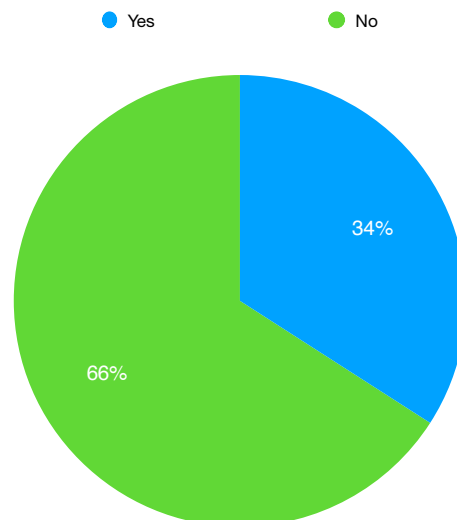


Figure: 4.26.

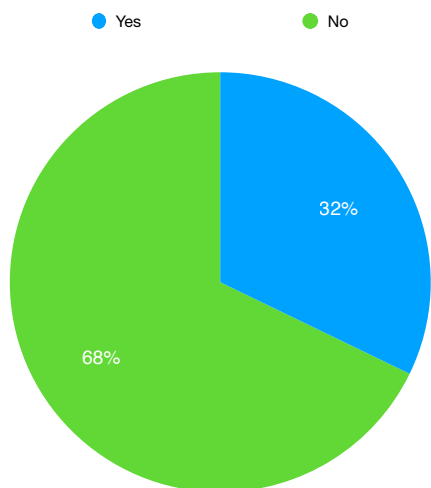


Figure: 4.27.

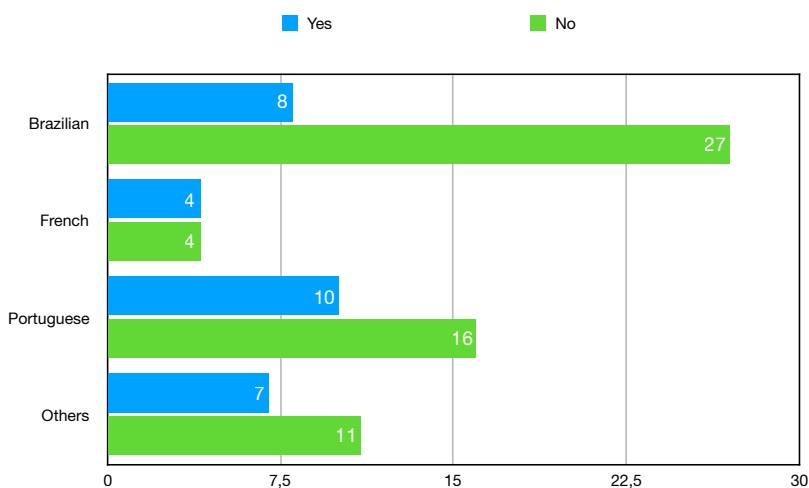
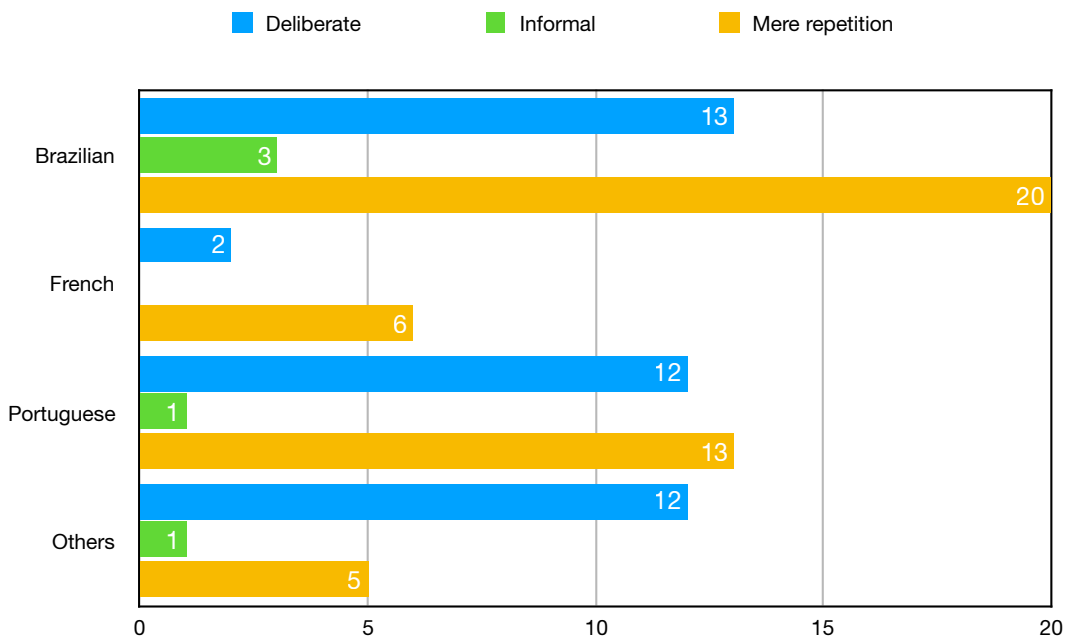


Figure: 4.28.



4.1.6. Student-teacher relationship

Concerning student-teacher relationship, none of the respondents answer they had a ‘very bad’ relationship with their first violin teacher (6. How was your relationship with your first violin teacher?). However, 7% assumed their relationship with his or her first violin teacher was ‘bad’, 28% regular and 65% reveal they had a ‘positive’ or ‘very positive’ relationship with their violin teacher during the first year of violin learning (*see Figure 4.29 and 4.30*). Students’ perceptions regarding their first violin teacher shows (12. Was their first violin teacher friendly?) that only 16%

of the respondents answer negatively to this question (see Figure 4.31). Regarding teacher role model exercised on the students (26. Did your first violin teacher have the habit of playing the pieces that you would perform? (see Figure 4.32) and 27. Was your first violin teacher your musical performance role model?) (see Figure 4.33) 75% of violinists stated their first violin teacher had this habit and 56% of the participants answered their first violin teacher represented a musical model to be followed.

Figure: 4.29

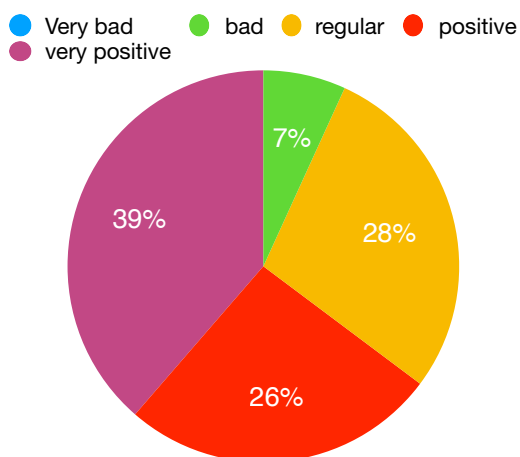


Figure: 4.30.

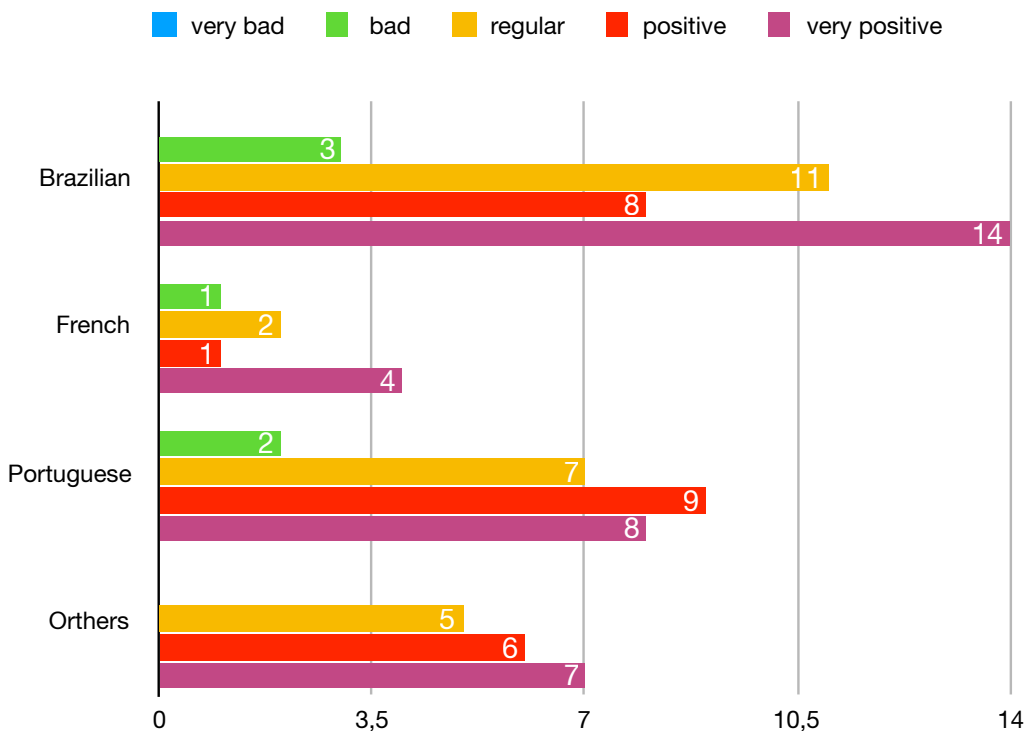


Figure: 4.31.

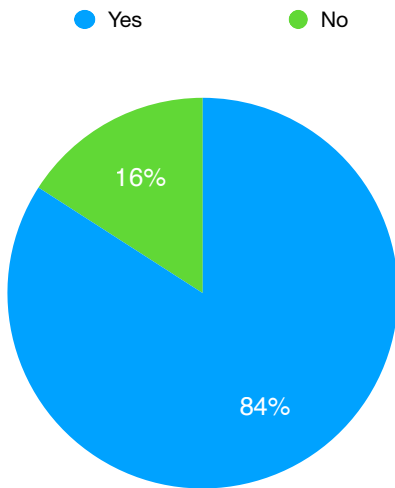


Figure: 4.32.

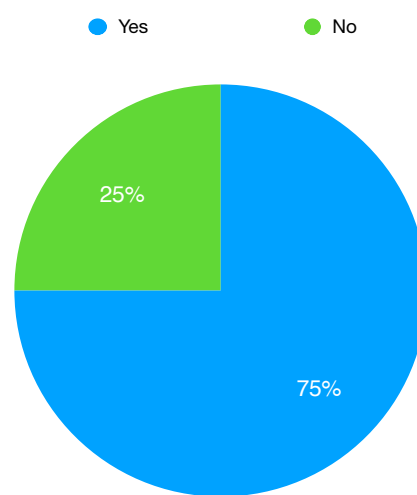
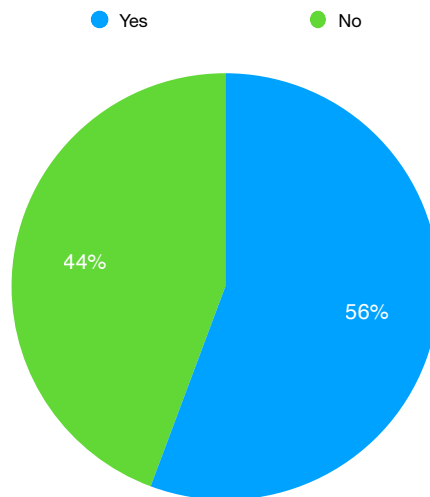


Figure: 4.33.



4.1.7. Technologies

About the use of different technologies for violin teaching and practicing (14. Were you encouraged by your first reference teacher to listen to works? (see Figure 4.34) and 25. Did you record yourself?) (see Figure 4.35), 58% of the violinist show that their teachers did not orient them to listen to reference works and 75% admit they did not have the habit of self recording as a way of critical comparison and as a tool to improve their own performance.

Figure: 4.34.

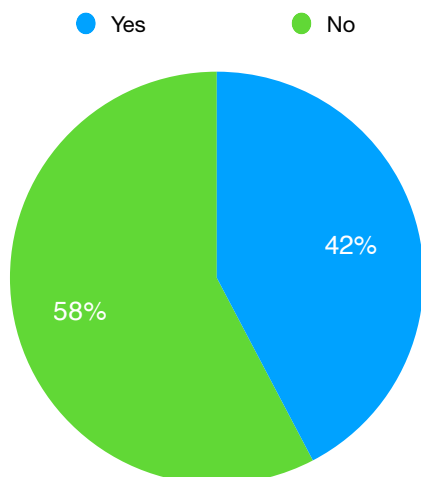
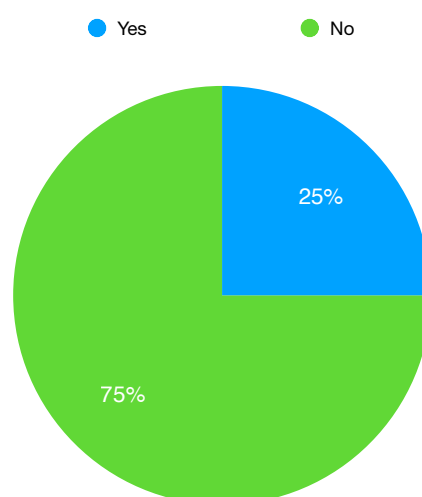


Figure: 4.35.



4.1.8. Violin pedagogy

Some of the issues related to violin pedagogy have been mentioned earlier in other groups. The pedagogy applied by the first violin teacher had negative or positive consequences for 66 individuals (9. Did the pedagogy applied during your first year of violin class have an impact on the continuity of your violin studies?). In absolute numbers, these results are similar to the answers to next question (10. Did the pedagogy applied during your first year of violin class have an impact on your musical performance?). However, the results differ considerably when we analyze them within the nationalities context (*see Figure 4.36*). Regarding pedagogical skills (11. Did your first violin teacher adapt their methodology according to your characteristics?) (*see Figure 4.37*) (13. Was your first violin teacher competent?) (*see Figure 4.38*), 76% of participants answer positively to this question. These numbers are close to those showed by the answers concerning question twelve.

Finally, 44% of teachers do not use external pedagogical material in their classes such as books or articles related to the psychology of music as an aid against musical performance anxiety (36. Do you make use of music psychology books as a performance aid?)^{31,32} (*see Figure 4.39*). However, only 12% of teachers do not believe that this scientific literature can have any positive effect on students' technical-musical development and on their own performance (37. Do you

³¹. English questionnaire version: only 14 responses were expected. However we had four additional responses that were discarded.

³². Portuguese questionnaire version: only 38 responses were expected. However we had five additional responses that were discarded.

believe that this bibliography type can help students to control of musical performance anxiety?)³³³⁴ (see Figure 4.40).

Figure: 4.36.

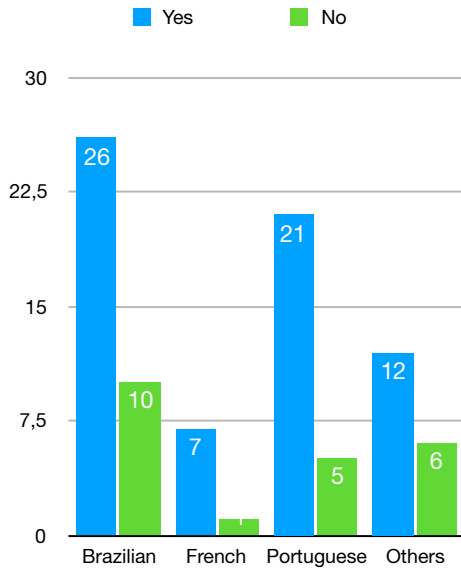


Figure: 4.37.

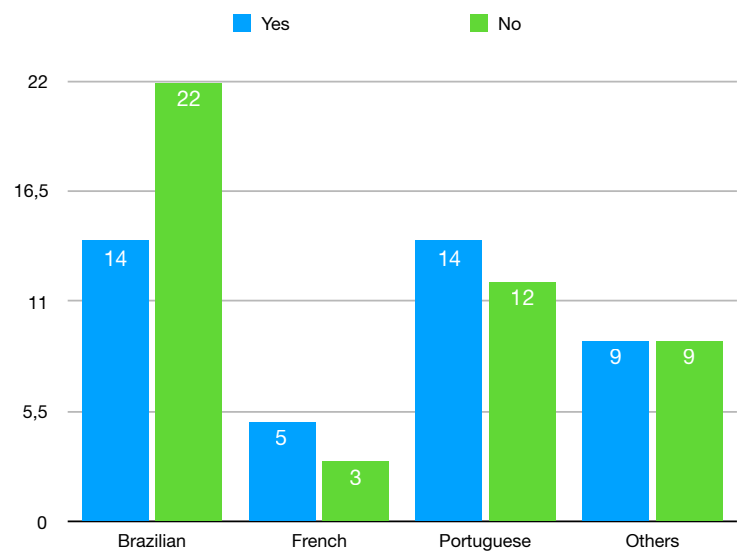


Figure: 3.38.

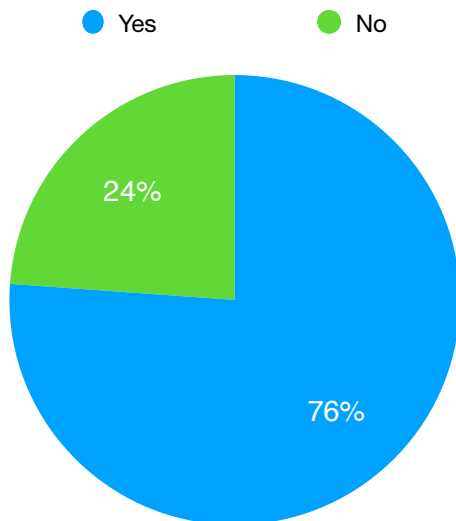
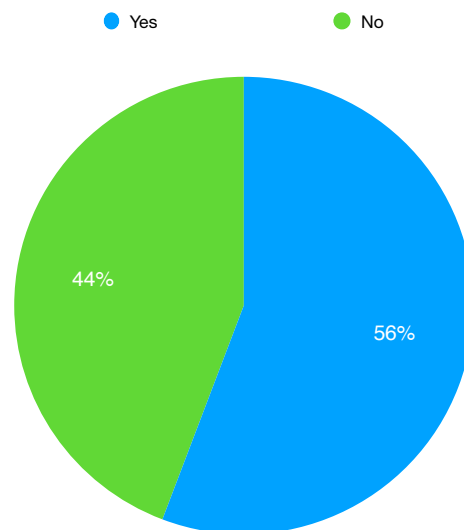


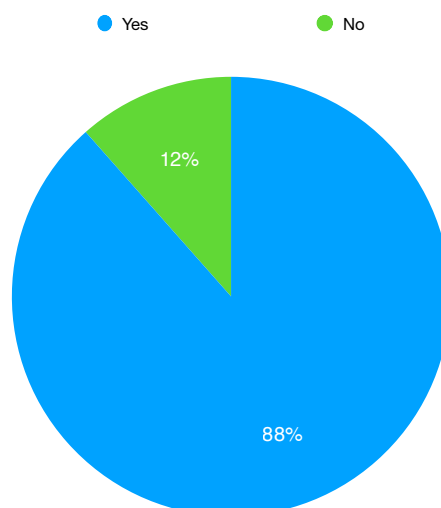
Figure: 3.39.



³³. English questionnaire version: only 14 responses were expected. However we had three additional responses that were discarded.

³⁴. Portuguese questionnaire version: only 38 responses were expected. However we four four additional responses that were discarded.

Figure: 4.40.



4.2. Bibliographic result

The bibliographic results reside on five authors mentioned in the methodology chapter about pedagogical strategies^{3536 37} on musical performance anxiety; memory; motor automatism; performance; student-teacher relationship; technologies and violin pedagogy. Although, the material analyzed consists of pedagogy as a whole; which violin technical aspects are approached more abundantly and the target audience - violin (or viola) students - is generalized, that is, different technical-musical levels and different ages; we focus on the applications of the instrumental pedagogy on the first year of violin learning. Despite, their differences in the ways to achieve the musical and technical objectives; we would not be surprised how all these pedagogues seem to converge on the importance that the violin teacher understands individual student's needs and the final obstacle is the public performance. Among them, some pedagogical similarities can also be ascertained. Mainly, in the violinist technical-musical development and teacher's role on a correct individual practice and performance.

³⁵. "Chiarottino (1980) explica que a formação de novos esquemas resulta da reestruturação ou do refinamento dos que já foram formados. Ele é definido por Rappaport (1981) como uma unidade estrutural básica de pensamento ou de acção, que corresponde à estrutura biológica que muda e se adapta." (Chantal, 2007, p. 20)

³⁶. Author's translation from the original.

³⁷. "Chiarottino (1980) explains that the formation of new schemes results from the restructuring or refinement of those that have already been formed. It is defined by Rappaport (1981) as a basic structural unit of thought or action, which corresponds to the biological structure that changes and adapts." (Chantal, 2007, p. 20)

However, some observations should be highlighted. Galpérine and Reerdito-Haas (2012) are the only authors who dedicated an entire section of their book to the teaching of the violin during the first year of learning and Galamian (1985, pp. 117 et 120) makes a brief reference to children violin teaching. Nevertheless, despite being a fairly recent work, *Un Coursus de Dix Ans à la Classe de Violon* (2012) - *Première année*. (pp. 13-31) - makes no mention of technologies during violin teaching or practicing and public performance. The aspect most mentioned lies in the authors concerns about guide their students to practice individually and to develop their technical and musical abilities independently. Finally, two aspects should be stressed. Galamian (1985) is the only pedagogue who makes direct reference to the student-teacher relationship (p. 106) and Flesch (2000) is the only author to indicate some kind of concern to the MPA. The following table presents the whole bibliographic results.

Table: 4.1.
Violin Pedagogues Common Index

Terms or Expressions	Flesch	Galamian	Suzuki	Galpérine et Reverdito-Hass
violin pedagogy	83, 147, 161,164	93,100,105-108, 117, 119-123	5,7,10-12,15-16,21,25,28	13, 17
anxiety or music performance anxiety	161, 164			
memory	81,147,159-164		9, 23, 27	13
motor automatism or procedural memory	81,149,159-161, 164	94-95,99,102, 105-106,118,121	3,9, 23, 30	13,16-20, 22
performance	81,82,147,149, 160-162,164	95,100-101,107, 119,123	8-13,16, 22	
practice	81, 82, 147-159, 162, 164	93-96,99-104, 118-122	7-15,20-21, 27	14
student-teacher relationship	147,164	105-107, 117	5,10,12,22	16-17
technologies		102	4-5,7-8,10-11,14,16,24, 30,32	

Discussion

“Nobody can study, nobody can teach from a book alone. What a book can do is to help. It can do so by mapping out the general principles as such, and by trying to clarify many of the problems involved.”

Galamina, Ivan. (1985, p. xii)

5. Discussion

The relationship among music performance anxiety, violin pedagogy and practice; their consequences and ‘pedagogic tools development’ that would enable teachers and students to be aware about MPA are Discussion chapter main objectives. This research development reveals that musical performance naturally generates a minimum of anxiety effect³⁸ and violin practice, as well as, violin pedagogy³⁹ can affect violin students in different ways, but they may also be an interesting coping pedagogical strategy to prevent MPA symptoms. Notwithstanding, this chapter addresses other aspects such as psychological issues and news technologies application on the daily musical practice and violin pedagogy. It also establishes procedural memory features; however, they are more present within performance and violin practice issues.

5.1. Music performance anxiety

The complete instrument movements and technique mastery (Flesch, 2000; Galamian, 1985); the synchrony between left and right hand (Wiesendanger, 2010, p. 120); coping strategies regarding stress and anxiety (Antoniazzi, Dell’aglio et Bandeira, 1998; Spielberger et al., 1971, p. 146), individual, teacher, and listeners psychological pressure on the musician often resulting from technological devices related to recording (audio and video) techniques which allow comparison possibility among the world’s most renowned soloists, students and other performers (*Grove*, Vol. 19, 2001, p. 379) are some music performance interpreters adversities. These mentioned factors may result in different social anxiety disorders (SAD⁴⁰) (Nicholson et al., 2015, Klaus et al., 1982).

³⁸. In quoting Broadsky (1996, p. 61), Kenny et al. (2004, p. 758) said “as with all performance anxieties, MPA occurs on a continuum of severity from ‘normal everyday healthy aspects of stress and anxiety that are intrinsic to the profession...’.”

³⁹. When, we discuss about violin first class we automatically think that the target audience consist of young children, but we cannot discard that the onset of musical activities can occur at more advanced ages. Therefore, we consider students enrolled in this first year of violin classes as beginners regardless of their respective ages.

⁴⁰. “A persistent fear of one or more social or performance situations in which the person is exposed to unfamiliar people or to possible scrutiny by others. The individual fears that he or she will act in a way (or show anxiety symptoms) that will be embarrassing and humiliating.” “People with social anxiety disorder usually experience significant emotional distress..” and “The physiological manifestations that accompany social anxiety may include intense fear, racing heart, turning red or blushing, excessive sweating, dry throat and mouth, trembling (fear of picking up a glass of water or using utensils to eat), swallowing with difficulty, and muscle twitches, particularly around the face and neck.” (DSM-V Definition in <https://socialanxietyinstitute.org/dsm-definition-social-anxiety-disorder> Access: 2018 February 20)

Kenny (1993) suggests that anxiety disorders are a set of future feelings related to emotions, built and fed through experiences with consequences on the presents actions ‘combine with environmental contingences, learning and individual characteristics to produce emotional experience’ (p. 3). This anxiety description seems to be in agreement with the American Psychological Association (APA) anxiety description⁴¹. Moreover, Bissonnette (2013, p. 2) explains that anxiety is often related to personal and behavioral factors (Trait anxiety) and to specific situations (State anxiety), even though, there are considerable differences between them, they are both related. In quoting Spielberg (1989), Bissonnette (2013) distinguishes State anxiety (A-State) and Trait anxiety (A-Trait) differences. A-State consists of a momentary emotional state due to an unconscious fear and the arousal of the autonomic nervous system⁴², while A-Trait is defined such as an individual personality trait who tends to perceive different situations as dangerous or threatening.

These latter definitions allow making interesting associations. Personality traits can be structured through different social influences (familiar relationships, scholar experiences, etc.) or physical-cognitive development environment, as well as, experiences accumulated such as violin lessons, whereas A-State links to public performances and it can be also influenced by A-Trait⁴³. Especially about *musical performance anxiety* (MPA) (Kenny, Davis et Oates, 2004), it can provoke fear, panic, technical control loss, muscle tremors, loss of concentration, memory lapses and negative consequences on the musical student’s development. Kenny (2009b), quoting by Barbeau (2011, p. 11), defines MPA such as:

The experience of marked and persistent anxious apprehension related to musical performance that has arisen through specific anxiety-conditioning experiences. It is manifested through combinations of affective, cognitive, somatic and behavioral

⁴¹. Anxiety disorders is established as “an emotion characterized by feelings of tension or worried thoughts. People with anxiety disorders usually have recurring intrusive thoughts or concerns. They may avoid certain situations out of concern.” (American Psychological Association (APA) in <http://www.apa.org/topics/anxiety/> Access: 2018 January 11)

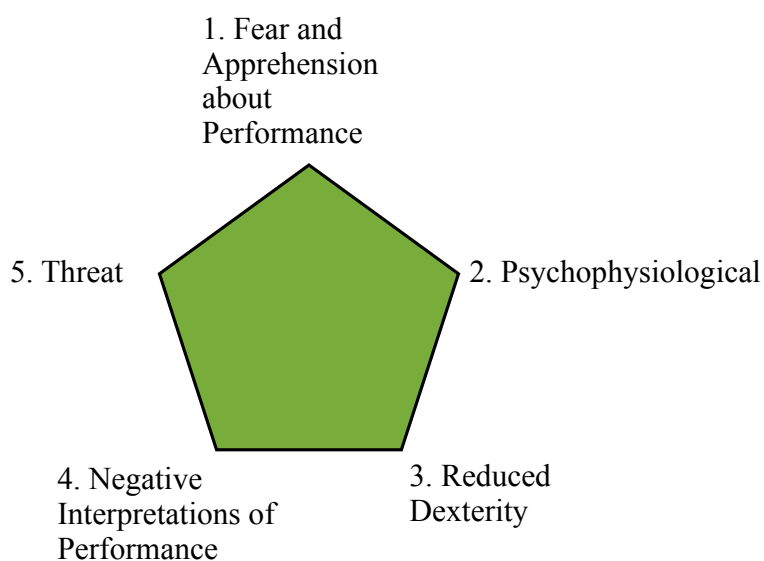
⁴². “Autonomic nervous system, in vertebrates, the part of the nervous system that controls and regulates the internal organs without any conscious recognition or effort by the organism. The autonomic nervous system comprises two antagonistic sets of nerves, the sympathetic and parasympathetic nervous systems. The sympathetic nervous system connects the internal organs to the brain by spinal nerves. When stimulated, these nerves prepare the organism for stress by increasing the heart rate, increasing blood flow to the muscles, and decreasing blood flow to the skin. The nerve fibres of the parasympathetic nervous system are the cranial nerves, primarily the vagus nerve, and the lumbar spinal nerves. When stimulated, these nerves increase digestive secretions and reduce the heartbeat.” (in <https://www.britannica.com/science/autonomic-nervous-system> Access: 2018 March 20.

⁴³. Spielberger et al. (1971, p. 146) finds that people who have a high A-Trait are more likely to manifest high A-State than those who have low A-Trait.

symptoms and may occur in a range of performance settings, but is usually more severe in settings involving high ego investment and evaluative threat. It may be focal (i.e. focused only on music performance), or occur co-morbidly with other anxiety disorders, in particular social phobia. It affects musicians across the lifespan and is at least partially independent of years of training, practice, and level of musical accomplishment. It may or may not impair the quality of the musical performance (p. 433). (Barbeau, 2011, p. 11).

The pianist Priyanka Potdar's 'Cycle of Performance Anxiety' proposed during her conference on 'Neuropsychology and Performance Anxiety' (TEDxNapaValley)⁴⁴ exemplifies how MPA can severely impair musical performance, increase individually anxiety level. The table below presents Potdar's Performance Anxiety Cycle structure.

Figure: 5.1.



The MPA symptoms or anxiety cycle identification is a teacher responsibility during violin lessons or of his or her students performance. They must be alert to these clues and find overcome solutions. Below, we discuss how the violin pedagogues analyzed approach this scenario.

⁴⁴. Potdar, Priyanka in <https://www.youtube.com/watch?v=TswQDR1byIQ&t=337s> Access: 2018 February 11.

5.2. Student-teacher relationship

Galamian (1985) and Suzuki (1998) do not directly address issues inherent to the MPA, but they reserve considerable attention to the student-teacher relationship. For instance, Galamian mentions that no printed work or book can replace the STR and attentive, individual and analytical pedagogical approach (1985, p. xi). Furthermore, about teacher's role, he says:

From an early age in the student's development the teacher should try to encourage a personal initiative while at the same time constantly strive to better the student's understanding and to improve his taste and sense of style. The violin teacher must always bear in mind that the highest goal should be for him to make the student self-sufficient. The parrot method is not conducive to such a result. As Kreisler⁴⁵ once said, 'Too much teaching can be worse than too little.'" (Galamian, 1985, p. 8).

Still, about the student-teacher relationship, during his book conclusion, 'A few words for the Teacher' (p. 105), Galamian stresses teacher responsibility importance on their students. For him, "The teacher must be a good psychologist" (p. 106). They must make a student diagnosis, identify student's strengths and weaknesses, choose the perfect time to correct them, understand student's individual skills and that each of them has a different time to accomplish their tasks and take the next step. Suzuki seems to agree with Galamian, addressing the need for naturalness amid learning process, adapting the current methodology to the student cognitive and motor maturity level, the importance of musical apprenticeship through memory processes and its reflexes in the continuity of student musical learning and its implications in the student professional life.

A child learns his first words one day, and he repeats it over and over again until it becomes a part of him as an ability. Then he learns another word. After he has mastered these two words, he adds a new word to the two he has learned perfectly. He practices these words many times every day, then he accepts the challenge of another new word to master and so forth. This is the way a child acquires his speaking ability. The way of developing abilities in general is quite the same as that learning one's mother tongue.

⁴⁵. Kreisler, Fritz. (1875-1962). He is an American violinist and composer but he was born in Vienna. Kreisler was a prodigious violinist whose performances deserved several awards. (Grove, Vol. 13, pp. 889-891).

(...) Suzuki students must learn to play music by heart, and it becomes a habit with them. The teachers, however, teach how to read music also when their students reach the appropriate level. Until then they make it a rule to play without music in class. This procedure produces wonderful memory ability. A student who is trained by this method from the first and is developed in his memory ability can learn a new piece very quickly. Moreover, when he is taught how to read music afterwards, he can learn music by heart in a very short time, and he can play it excellently without looking at printed music. (Suzuki, 1998, p. 8-9)

In the other hand, Flesch (2000) states how STR has consequences on the MPA. As his main work concern is the *musical making*, he makes an important warning about the frequent comparison between sports and music activities. Although, high-level sports training can offer a different viewpoint on musical practice and how to improve music performance, this comparison should be avoided to bring music to the field of results and reduce the possibilities of creation, interpretation and personal touches. It is to prevent the artist from having satisfaction and pleasure during music performance. All these points mentioned by the author converge in a search for the maintenance of the emotional, psychological and physical health of the student (violinist). It aims to avoid any kind of exaggeration and to benefit a ‘satisfactory performing’ (p. 82) creating a positive teaching environment for student development and avoiding music performance anxiety. Nevertheless, although all the harmful symptoms provoked by music performance anxiety, Flesch is the only pedagogue among analyzed authors to mention anxiety disorder. He finds MPA can seriously impair artistic and technical achievement ‘even with otherwise very talented player and in spite of well-organized practice’⁴⁶ (2000, p. 161). Flesch’s pedagogical diagnosis states violin teacher responsibility to find different solutions against this dangerous situation since violin practice begins⁴⁷⁴⁸. The MPA needs to be surpassed through a specific and individual pedagogy and first violin teacher plays a key role against MPA increase or development; thus, his concern seems to

⁴⁶. “MPA does not occur only if there is an inconsistency between a) apprehension and b) musical aptitude, training and level of preparation. In fact, age and levels of aptitude, training, experience and preparation were shown to not have an impact on levels of MPA (Brotons, 1994; Cox & Kenardy, 1993; Wesner et al., 1990; Wolfe, 1989).” (Barbeau, 2011, p. 9).

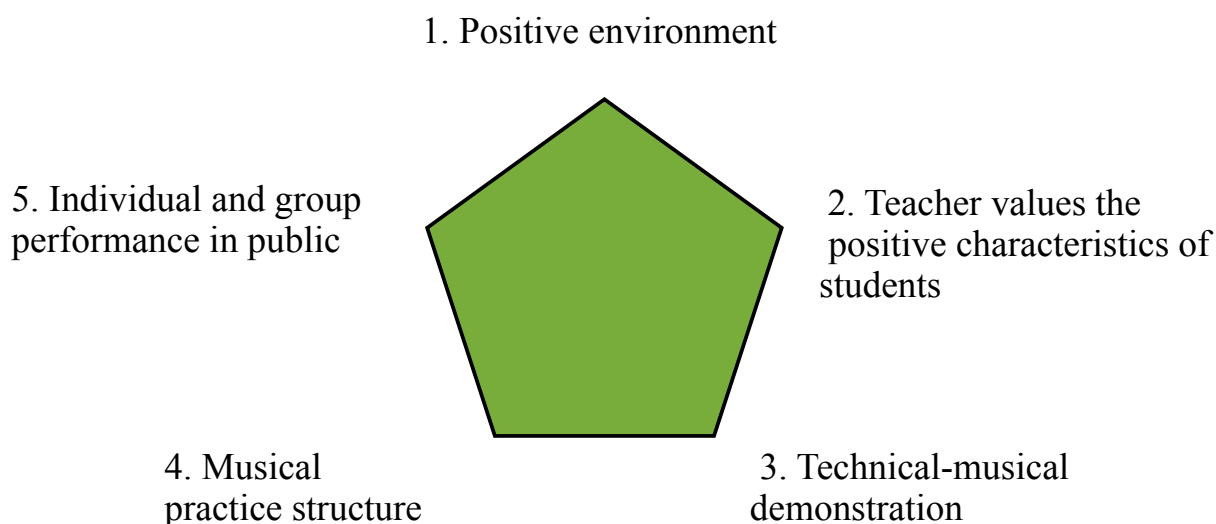
⁴⁷. “A sort of agoraphobia takes hold, and a type of psychological importance occurs, which from an early age, the player needs to combat vigorously.” (Flesch, 2003, p. 161)

⁴⁸. Agoraphobia is a DSM-5 (Diagnostic and Statistical Manual of Mental Disorders, 5th ed.) diagnosis assigned to individuals who have a disproportionate fear of public places, often perceiving such environments as too open, crowded or dangerous. An anxiety disorder, agoraphobia can manifest in symptoms of distress and panic, disrupting sufferers’ everyday lives. In [https://www.theravive.com/therapedia/agoraphobia-dsm--5-300.22-\(f40.00\)](https://www.theravive.com/therapedia/agoraphobia-dsm--5-300.22-(f40.00)) Access: 2018 March 20.

confirm our theory that STR goes beyond technical-musical development and represents a decisive factor in the emergence of the music performance anxiety symptoms.

The teacher must be attentive to this disorder since first student violin contact, especially, during their first public performances and to develop a combat strategy through daily practice and public performance simulation. The MPA symptoms appearance can be observed and confirmed through collective performance classes⁴⁹ in which students play for other students and are exposed to colleagues critical ear. This situation may reveal to the violin teacher which students demonstrate excessive anxiety symptoms and how this disturb impairs their performances. It is important to mention that the teacher should develop a positive environment for these activities. The emergence of a sense of competition will naturally arise, however, it must be employed in favor of technical-musical skills development control during public performance. The violin teacher is responsible for asserting students impetus, as mentioned by Flesch (2000), avoiding classroom stress and anxiety increase. The *Figure 5.2.* summarizes teacher's diagnostic processes and its contribution to control or avoid MPA symptoms.

Figure: 5.2.



Although Flesch's concerns date back to the 1920s, the Q-RIV-MPA results present a currently different scenario, since, the most part of the violinists interviewed reveal they were not instructed by their first violin teacher to reflect on the individual practice (metacognition)⁵⁰. This

⁴⁹. It is necessary to emphasize that this practice can be also applied in private violin lessons.

⁵⁰. See Figure: 4.19.

pedagogical failure indicates that violin individual practice structure was precarious without specific objectives such as issues related to the MPA. This psycho-pedagogical deficiency is even more evident in countries such as Brazil, where deliberate violin practice and regular violin class prior to university studies is practically inexistent, especially outside large urban centers (excluding places of excellence such as universities)⁵¹. We can also note that violin teachers working outside these urban centers do not have adequate pedagogical training on traditional and contemporary violin teaching practices and they are even less familiar with music psychology literature as a support for musical performance development [personal experience, emphasized by the author].

This find can be confirmed when we confront the results among the participating countries in which the most part of the Brazilian violinists who answered the Q-RIV-MPA reveal they were not oriented in how to structure daily practice⁵², as a consequence, Brazilian violinists individual practice consists of a mere repetition. They play their music works from the beginning to the end without specific objectives such as those already mentioned and without daily practice supervision. This last fact also reveals violin pedagogy expansion absence and of the relation student-teacher to the parents or legal student guardian⁵³. They presence must accompany a student technical-musical development. They do not necessarily need to follow present at all violin lessons, but it is advisable they accompany STR development and its unfolding as closely as possible. The role of this new character consists, in addition to the issues already mentioned, accompany student's individual practice through classroom concepts application. Chantal (2007, p. 63), citing Suzuki's work, mentions parental involvement during violin learning and practice consists of increasing instrument emotional connection. It also consists of good habits' creation, a kind of individual practice hygiene, moreover, represents violin lessons extension and an external violin teacher 'assistant'.

5.3. Individual practice structure

On individual practice, memory processes plays a central role. For musicians, the main structures are auditory memory, procedural memory, visual memory (Flesch, 2000, p. 160) and conceptual memory (Dubé, 2003, p. 29). Auditory and procedural memory have a fundamental importance of violin pedagogy, individual practice and performance. Auditory memory allows to

⁵¹. See Figure: 4.28.

⁵². In this specific data, the Portuguese violinists present, proportionally, be less oriented on this aspect.

⁵³. See Figure: 4.26. and Figure: 4.27.

make the necessary corrections during daily practice (tuning accuracy, timbre and musical intentions) which they are intimately related to the motor processes (body posture, angle of the right and left arm, left fingers strengthening, bow speed) and to the cognitive processes (thinking and concentration) during practice, rehearsal, recital, or, concert. Both systems must work together, in order to provide the necessary subsidies for motor automatism during music performance and create a sense of self-confidence. The organization and success of these two systems, as well as, the issues related to self-confidence are related to the learning process since the first violin classes⁵⁴ and student-teacher relationship and with all of the individuals who are part of social and musical environment (Chantal, 2007, Gembris et Davidson, 2002, pp. 23-26, Hahn, 2017, p. 23, Tan, Pfordresher et Harre, 2010, p. 192).

Although, Galamian almost makes no mention of musical performance. Nevertheless, '*Performing Time*' brings an interesting element to the musical practice. Galamian proposes student violin practice should simulate music performance in which technical elements be placed under interpretation conditions outside of the 'cold technical study' environment he advises "it must be practiced again as a piece of music" (p. 101). In '*Building Time*' an interesting analogy can be established. When Galamian makes use of '*mental practice*' and '*correlation*', we can establish a parallel with procedural memory formation. The mind need to anticipate movements⁵⁵, '*mental practice*', before realizing them. It establishes memory processes principles. The mind acquired new information when decode a new music score, it stores new information through repetitions and analysis⁵⁶. After these two processes we can retrieve this information explicitly (semantic or episodic memory) or implicitly (procedural or sensorial memory) (Gleitman, Fridlund et Reisberg, 2014, pp. 343-397).

The principle established by Galamian as '*correlation*' refers to the ability to develop and improve technical control, be aware and prepared for public performance. However, before the student is ready to perform and still within musical practice issues, Galamian suggests that the two processes cited - *mental practice* and *correlation* - be played over the final judge or critical ear (1985, p. 101). The critical ear is charged with listening objectively, ignoring subjective aspects

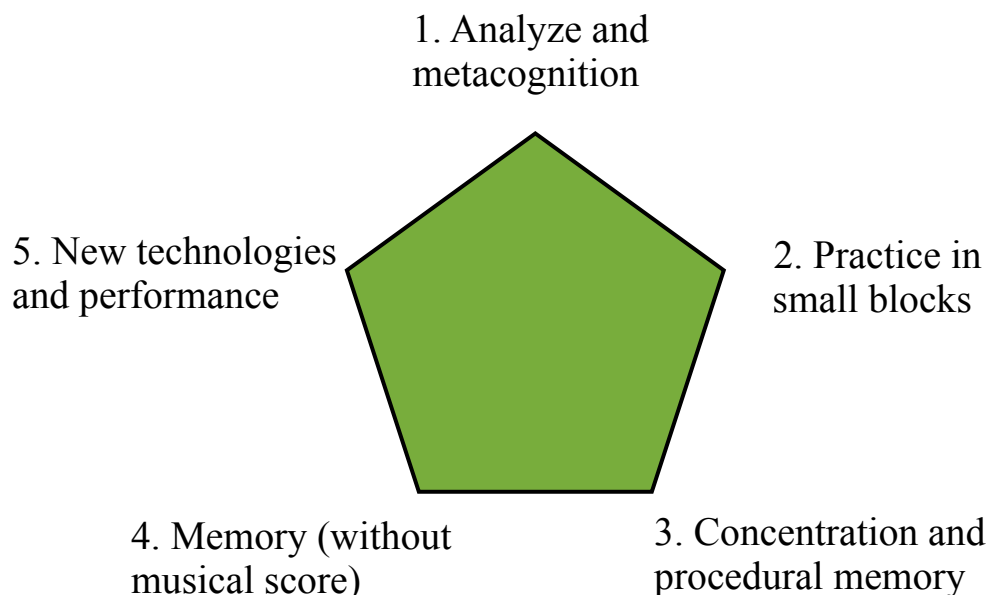
⁵⁴. We consider the first violin classes correspond to the period of the first three months until the end of the first school year. (Galpérine et Reverdito-Haas, 2012).

⁵⁵. "The mind always has to anticipate the physical action that is taken and then to send the command for its execution" (Galamian, 1985, p. 95).

⁵⁶. See Figure: 4.19. 4.20. and 4.21.

present during individual practice. The critical ear or auditory memory can recognize patterns, correct the tuning, tone production and correct technical movements required to the music performance. That is, auditory memory is closely linked to procedural memory. Both can be of a great aid to individual practice. Procedural memory may be a powerful weapon against MPA preventing tremors, coordination loss between left and right hand and constituting a motoric safeguard for the interpreter. Moreover, auditory memory can avoid bad recording⁵⁷ surprises and enables the musician ‘to hear the sound as the audience would hear it and to free oneself from the flattering fallacies of the subjective ear. The ability for honest and objective hearing is the most essential prerequisite for efficient practice’ (p. 102). Then, after the critical ear verdict, the student could perform in public.

Figure: 5.3.



Still, on the violin practice, Flesch stresses musical learning through logical, mechanical and clear approach. This deliberate practice reflects procedural memory importance in musical performance. Making music for practice consists overcome obstacles and master necessary movements executed during the performance. While making music for performing consists in ‘re-creation of a work of art’ (p. 147). The ‘road’ practice by Flesch (2000, p. 81) consists of visual accumulation process (visual memory), auditory (acoustic memory) and physical (motor or procedural memory) information that would bring about a common point: musical performance

⁵⁷. See Figure: 4.34.

motor automatism. To achieve this goal, Flesch established three stages to be followed (Flesch, 2000, p. 81):

1. 'Conscious'. Movements aware related to the use of the score, but without motor automatism;
2. 'Collecting'. Motor automatism, but "yet being able to play them from memory";
3. "Being able to play from memory".

Movements automation process described by Flesch consists in establishing a conscious and organized practice with clear objectives, and a final goal already mentioned: to move from individual practice to the public performance. His concern becomes clear when he says: "*If we nevertheless think consciously of the individual motions involved, or if, for instance, we reflect on the make-up of such passage, while performing it, then in most instances a "motoric" breakdown will result immediately.*" (2000, p. 81) and he continues, Flesch concentrates his efforts on the importance of playing without music score and its psychological consequences for the interpreter such as artistic realizations' impediment, anxiety, and forgetfulness. However, despite being one of the earliest violin pedagogues to work beyond technical-mechanical violin aspects and dealing with students psychological issues, much of the activities related to musical practice are intended for an 'adult' audience. Only a mention to the children's audience is found, but without specifically pedagogical concerns. It can be interpreted as a reflex on how the student-teacher relationship was conceived at his time and to the fact that although several of his students were renowned soloists, Flesch had ready - technically and musically - violin students. In spite of these small observations about his work; the importance, and influence to the development of numerous violinists and for the beginning of the understanding of the psychological aspects related to practice and performance is invaluable.

Nevertheless, the use of different technologies such as recordings or video class still have little diffusion and employment within violin teaching and practicing field. This can be verified through the Q-RIV-MPA results⁵⁸ and bibliography analysis⁵⁹, of which only two of the authors mentioned in the previous chapter presents some concern about technologies in their students

⁵⁸. See Figure: 4.34. and 4.35.

⁵⁹. See Figure: 4.40.

technical-musical development. The Q-RIV-MPA results reveal teachers do not guide their students, both to listening reference works and self-recording. Reference musical works can be useful for beginners violinists development as proposed by Suzuki in its methodology. They shape students' musical development, form musical conceptions reference, tone production, tuning, and their role can be compared to the mother tongue learning. The self-recording habit also can be a useful tool to identify possible faults and improve them. Video lessons are a second teaching technological application possibility. Lansdown (2017, pp. 26-27) claims Skype viola classes importance, not only for students' technical-musical development, and pedagogical diversity; but for students' self-confidence growth. However, it is necessary adequate recordings devices use to avoid sound distortions that can lead to an individual daily practice incorrect interpretation, preventing technical-musical advance, and performance emulation. Cunha (2006, p. 53) points microphones correct use knowledge relevance out in practice, rehearsals, performances and their disastrous consequences of their misuse. Among them, we verified tone reference loss, sound distortion production, interpreter musical intentions conceived during individual daily practice, public understanding difficulty about the musical phrasing, and; consequently, musical performance anxiety increase.

5.4. Consequences

Although, many pedagogues and researchers state MPA level is not associated with technical level and instrument practice⁶⁰ we can note a possible relationship between daily practice and MPA since 56% of the Q-RIV-MPA respondents say they were not instructed to organize violin daily practice and 60% of interviewed had suffered with some MPA symptom during their first public performance. It can show that well structured daily practice⁶¹ cannot completely avoid MPA symptoms, but it can enable musicians not only to have a better technical-musical control⁶², but it decreases concerned thoughts related to a possible negatives scrutiny. This is because emulating public performances is part of ideal daily practice context and emulating performance success during violin practice represents student's self-confidence increase.

⁶⁰. "...as MPA does not occur only if there is an inconsistency between a) apprehension and b) musical aptitude, training and level of preparation. In fact, age and levels of aptitude, training, experience and preparation were shown to not have an impact on levels of MPA (Brotons, 1994; Cox & Kenardy, 1993; Wesner et al., 1990; Wolfe, 1989)." (Barbeau, 2011, p. 9).

⁶¹. We discuss of daily practice structure and importance later in this chapter.

⁶². "Witness the violinist or archer with excessive tremor" (Bourgeois, 1991, p. 13).

About negative scrutiny it is a MPA trigger, and some stage fright symptoms reason. Although this factor may be related to the innate temperament (A-Trait), it may also be related to other interpersonal experiences, our general surroundings perception and interpretation, technical mastery and specific performances experiences with positives or negatives outcomes (A-State) (Kenny et Osbourne, 2006, p. 103). In the others words, student-teacher relationship (STR), consequently, violin pedagogy could be main MPA symptoms source related through results pressure, excessive negative criticism without positive individual aspects eulogies. This statement seems to be in agreement with the Q-RIV-MPA results in which almost 75% of the interviewees affirm that the pedagogy applied during first violin lessons has had consequences for both their individual violin studies continuity and performance.

Within, music psychology field these same aspects can equally be verified. Gembris and Davidson (2002, p. 25) emphasize teacher influence on the student violin learning works as a model to be followed regarding technical aspects, musical tastes, performance attitude and social behavior. This relationship is amplified during student's individual daily practice through pedagogical strategies chosen by the teacher. They must aim to enable student's technical-musical development, to promote a motivational impact which allows students to remain interested in the violin learning activities and to perceive how to overcome the most diverse obstacles. Student-teacher relationship success, established during first violin lessons, can be verified through students performances achievement. This success consists not only in overcoming technical-musical obstacles, but also in controlling musical performance anxiety symptoms. Gembris and Davidson summarize these earlier mentioned issues:

The students with highest achievements found their teachers to be entertaining, friendly, and proficient musicians, whereas the lowest-achieving students remembered their teachers as unfriendly and incompetent. With increasing age this combination of teacher characteristics did not change for the lowest group, but the higher-achieving students started to distinguish between their teacher's personality and professional qualities. As the good and best students becomes older and more self-motivated, it is the professional quality that becomes more relevant. (2002, p. 23).

The survey results seem to confirm Gembris and Davidson (2002), since, we can consider all respondents have some musical achievement (56% of the violinists assumed to carry out some

musical activity professionally) be playing in an orchestra, teaching violin and conservatory or university studies continuity and 65% of them say they had a 'positive' or 'very positive' relationship with their first violin teacher. Furthermore, 84% of interviewees say that their first violin teacher was friendly and 56% had violin teacher as musical model to be followed. Still, on the data obtained through the Q-RIV-MPA we note that around 61% of Brazilian violinists began their violin studies between 11 and 15 years. While, 73% of Portuguese and 80% of students from other countries began their violin class before 10 years old. Even if we consider a direct statement is unlikely through data obtained, we can observe that the largest proportion of interviewees say they had some MPA symptoms is reserved to the Brazilians, of whom, 29 of 36 Brazilian interviewees answer they have some music performance anxiety symptoms. Galpérine and Reverdito-Haas (p. 13, 2012) state that childhood is related to curiosity and motor development and Kenny and Osbourne (2006, p. 103) reveal this period is characterized by the lack of a self-reflective capacity and the child has not yet been completely shaped by familiar or social environment (school, music class, sport activities, etc.) surrounding it and the fear of negative evaluations would be less.

Different interpretations or analogies may be applied to these last two statements for a better understanding. Although different studies reveal MPA is unrelated to age, musical learning's beginning at ages below ten years old may be a reduction factor on A-State, as well as, the application of a specialized and individual pedagogy can offer, also, a positive result on the MPA. Thus, an interesting analogy can be employed: learning to ride a bicycle. This activity, normally learned during childhood first years, represents two important aspects: fearless of falling or hurting yourself and performing this task (this point represents the absence of scrutiny negative as mentioned by Kenny (2006) earlier) and confidence in who teaches this activity (this aspect symbolizes STR). However, difference exists between these two activities. Learning to ride a bicycle - even if the body can remember and retrieve stored movements, after years without practicing - does not consist of a fine motor activity. While, violin learning is the opposite. This represents in addition to the skeletal-muscular strengthening to perform such activity, a daily practice with specific goals.

Student performance preparation means increase self-confidence, beyond technical-musical skills, and, consequently, reduce MPA symptoms which they tend to manifest at a violinist through right arm tremors, dexterity reduction, synchrony loss between violinist left and right side, sound

production, left hand (*vibrato* and tuning), memory and concentration loss. The sum of these symptoms leads to the fright stage growth in which left (fingers) hand tends to move faster than usual, while too much pressure is exerted on the right arm in order to control bow shakes. The two factors' consequence is sound production reference loss that implies to accelerate or retard *tempo* and increase auditory focus in him or herself. This scenario results are poor performance quality, or a total performance collapse.

To prevent right arm tremors; hence, MPA symptoms; two contemporary pedagogues describe the importance of physical and technical strengthening of the right arm. Galpérine and Reverdito-Haas (2012, p. 14) suggest that violin bow be disproportionate to the violin size. That means, a quarter-size bow on a half-size violin, for example. This preposition allows the student to use the whole bow, perceive the different possibilities of speed and obtain physical control over it, avoiding any tremor. Boris Kuschnir in *The Strad's* April 2017 issue (p. 84-87) reveals the same concern about bow management. His major concern resides in the conscious bow weight distribution, sound production and how a defective technique or right arm tremors can impair the sound and music making, as well as, student development. The difference between the two pedagogues consists in the fact that Galpérine and Reverdito-Haas (2012) addresses their advices to teachers who have beginner students, while Kuschnir proposes to improve the technique and performance of students who have a solid technique previously established. When, we return to the analogy between performance violin and cycling we can better perceive how a positive student-teacher relationship appears to be related to the individual success of the students. However, only a positive relationship between a student and teacher does not prevent the establishment or increase of MPA. Nevertheless, in agreement with the results mentioned above, a bad STR may be responsible for the students MPA symptoms. Therefore, it is necessary that violin teacher finds solutions during violin classes and together to the student, establish a well-structured practice which allows violin student to overcome this obstacle.

Finally, we can realize although MPA symptoms appear to be independent of age, practice, or student's technical-musical level, they may be related to the violin pedagogy applied during the first year of violin study and pupils experiences. Consequently, many musicians try to overcome MPA through various treatments such as relaxation, meditation, hypnosis, music therapy and virtual reality (Bissonnette, 2013). While, other musicians try to fight it by the use of β -blockers⁶³

⁶³. See Figure: 4.11. and 4.12.

(Fishbein et Middlestadt, 1987). Observing the Q-RIV-MPA results, especially, Brazilian violinists' data⁶⁴, we can note there is a relation between misapplied violin pedagogy and β -blockers use. These substances reduce anxiety somatic components such as tachycardia, tremors, sweating, and palpitations (Bourgeois, 1991, pp. 16-17). They can promote a momentary feeling of solving problems related to MPA (Bourgeois, 1991), but they hide the real pedagogical issues already mentioned connected to this disorder and can also create a psychosomatic dependence. Since not all musicians can access MPA treatment in virtual reality as proposed by Bissonnette (2012), one way of avoiding β -blockers consumption would be scientific and pedagogical literature use on violin teaching with the aim of developing an individualized pedagogy focused on the weaknesses of each student, consequently, developing musical practice agenda (MPAg), as well as, incorporating new technologies such as social medias in order to simulate public performance, allowing MPA student control.

5.5. Musical practice agenda (MPAg)

One of the music practice agenda (MPAg) main objectives is the public performance and fluid execution. It functions as an intentional coping strategies development in order to prevent stressor effects. As previously discussed, memory capacities are of great importance for the conscious individual practice and performance; consequently, they become also important for the development of specific practice planning without direct violin teacher supervision. The instrument practice involves a great amount of time. It is estimated that an adolescent practices about 25 hours/week with an increase to seven hours daily up during his or her adult life (Barry et Hallam, 2002, p. 152). When we convert a time proportion of this activity for the child life over individual violin practice established in one hour daily, we still find that physical commitment and a great capacity for concentration are required. Therefore, we can state many children cannot produce such results during these early learning stages (Barry et Hallam, 2002, p. 154, Chantal, 2007, pp. 71-85). Thus, it would be prudent for the teacher to guide students establish specific objectives during daily practice.

The first step to the MPAg development occurs within violin class through teacher technical-musical demonstrations and student repetitions that could be follow such as Chaffin (2011)'s pragmatic study proposed. In this study, Chaffin elaborates a technique called, *Performance Cues*

⁶⁴. The Brazilian average of β -blockers users was 45%, against an overall average of 32%.

(PC). They represent different memory structure connected by meanings and associations. They are the result of collaboration between distinct memory processes. The PC work as landmarks or reference points they form a safety net for the musician during performance. This net consists of scales, arpeggios, rhythm patterns, gestures, score visual references, or even, episodic memories. All these correspondences are useful in the performance and assist on the practice process and technical-musical work development. This technique increase self-confidence and interpreter's concentration it reduces memory lapses possibility and assists violin student about musical work structure.

The second step structures and divides daily individual study - *fragmented practice* - into three small sections (Galamian, 1985, p. 83), where each section would be established through technical-musical structure set in the classroom (performance cues) such as musical phrases and technical difficulties. In the early stages of the development of this habit, the sections could be even smaller, for example, half bar for students under five years old or whole bar for older students (Chantal, 2007). This kind of practice would have individual goals depending on the each child needs. A student might be more focused on issues such as posture, timbre, and tuning, while another student would be oriented to issues related to the split and speed bow and musical phrasing. Fragmented practice in small blocks seems to support interval importance between first new task learning, and a second new task for the procedural memory consolidation and for motor independence (Allen, 2012, pp. 795-796). All these technical-musical adversities become more conscious over the years. The increase in the amount of time spent on musical practice would also evolve and allow segmented practice advancement to additive practice to put together, carefully and continuously, all music structures throughout piece length until holistic practice development, where the final objective is to be comfortable with piece performance of the beginning to the end, without stoppages with total technical-musical mastery over the musical work (Tan, Pfordresher et Harré, 2010, pp. 186-187).

Music practice agenda (MPAg)			
<i>Table: 5.1.</i>			

Time/Objectives	Listen reference works	Practice	Performance
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1. 15 minutes	It is suggested that this activity be divided into two parts: 1. Listening to works chosen by the teacher to develop sound production and begin the conception of musical phrasing; 2. Listen to the same work that the student is practicing as suggested by Suzuki.		
2. 20 minutes		Clear and specific objectives. A critical ear and awareness about the movement. Supervised by parents or guardians.	
3. 25 minutes			The performance simulation can be structured in three stages: 1. 10 min: performance with the score; 2. 10min: performance without the score; 3. 10 min: audio-visual performance record. In the future, public performance can be emulated through live broadcasts on partner networks.

Table: 5.2.

Observations:

1. Sound recording accompanies many methods such as the Suzuki Method, as well as, many editions of beginner concerts bring a sound record of the accompaniment. However, it is suggested that violin teacher register himself, in good quality, works that do not have reference recordings.

2. As soon as possible, the teacher should accompany the student on the piano, or, on the violin. Developing the ability to associate different sound sources and unforeseen reflex inherent to the camera or group music.
3. Reference works should be employed as model of tone production, style, posture, and attitude on the stage.
4. Public performance simulation through social media (Facebook, Twitter, Instagram, etc.) in their 'stories' should always be accompanied by the presence of both violin teacher and student legal guardian. Always, respecting the student's willingness and his or her technical-musical development. This step should never be anticipated because it can lead to severe sequelae to the student or develop some MPA symptoms.
5. We suggest the book written by Galpérine et Reverdito-Haas "*Un cursus de dix ans à la classe de violon*" (2012, p. 21) and Galamian (1985, pp. 118 et 120), for being a pedagogically rich source. In addition to bringing, countless methods and repertoire reference.

Daily practice maturation habit leads to the student ability to develop specific strategies. This awareness of musical practice, known as metacognition, provides to the violin student the possibility of learning for himself, evaluating strengths and weaknesses of his or her learning and performance, designing fingerings and developing musical ideas, practicing mentally without an instrument physical presence (Barry et Hallam, 2002, pp. 153-155) and to develop pre-performance routines (Wilson et Roland, 2002). This last process of the musical practice conception provides the development of the student musical identity and the increase of the individualities. The violinist Hilary Hahn (2017) summarizes this process of the student-teacher relationship through violin pedagogy, to students musical independence saying:

Learn from your teachers, do what they ask of you, and embrace their knowledge while simultaneously identifying your own instincts and finding ways to bring those ideas across effectively. I always encourage students to be able to play pieces convincingly a few different ways, for example, to give them more choice and to make the transition to independence easier." (Hahn, may/2017, p. 23)

All these activities suggestions of the musical agenda have as objective to expose in public the technical-musical capacities learned and worked during the previous period - individual practice - and to enable the student to the performance. However, numerous problems related to the violin technique remain related to the psycho-pedagogical processes. The result is a lack of confidence which implies a negative reflex on the motor-automatism and an increase of the MPA during the musical performance. This finding reinforces teachers responsibility, the need for in-depth study of cross-disciplines, especially, when we are dealing with children who still need a musical model to be follow. In particular, music teachers need to be even more attentive, a misguided pedagogy at this learning stage can lead to learning impairments, disorders such as MPA, or even, completely learning process' disruption.

The active musical performance (AMP) proves this pedagogical process success. AMP resides on the stage filling both physically and (mainly) sound filling; through a performance or movements; intentionally, conceived during individual daily practice guided by the teacher and supervised by the parents. It represents the definitive result and goal. The victory over technical-musical adversities, stage comfort feeling, the anxiety use as a concentration trigger, violin teacher instruction reliance (violin pedagogy and student-teacher relationship) and movements (procedural memory)' and musical ideas' confidence conceived during instrument practice.

Conclusion

“First the body. No. First the place. No. First both. Now either. Now the other. Sick of the either try the other. Sick of it back sick of the either. So on. Somehow on. Till sick of both. Throw up and go. Where neither. Till sick of there. Throw up and back. The body again. Where none. The place again. Where none. Try again. Fail again. Better again. Or better worse. Fail worse again. Still worse again. Till sick for good. Throw up for good. Go for good. Where neither for good. Good and all.”

(Beckett, Samuel *in* *Worstward Ho!*, 1982).

6. Conclusion

The choice of Brazil, France, and Portugal to conduct these surveys is based on the high incidence rate of people affected by anxiety disorders in these countries. In Portugal, “*Sociedade Portuguesa de Psiquiatria e Saúde Mental*” (2016) reveals there is prevalence of more than 16,5% among the Portuguese affected by the effects of anxiety. Among the French population, the numbers exceed 25% according to a survey conducted by “*Département Santé et Travail - Institut de Veille Sanitaire*” (2007) and in another alarming statistic, Brazil is among the highest incidence of people affected in the world by anxiety disorders. In a survey released in 2017, World Health Organization (WHO) notes more than 30% of Brazilians suffer or have already suffered from anxiety symptoms, taking as a major example the city of São Paulo amongst the highest incidence of mental disorders in the world.

More specifically on MPA, the Q-RIV-MPA results describe a reality similar to the data cited above and seem to confirm our hypotheses. We know it is difficult to say with precision; because the extent of our research on the amount of violinists in these three countries suffering from music anxiety performance symptoms; but we can observe a relationship between pedagogy applied by the first violin teacher and MPA. The great majority of the interviewees assume that the applied pedagogy during their first year of violin practice had a considerable impact on the continuity of their violin studies.⁶⁵ In addition, the question about the application of an individualized pedagogy reveals more than 50% of the interviewees consider their first violin teacher was unaware of their individual characteristics and needed.⁶⁶ This fact becomes even more alarming, when we observe that 22 of the 36 Brazilian violinists participating in this research responded negatively to this same question. As a result of this process, 70 individuals or about 80% of the interviewees claim they currently suffer from some MPA symptom, while only 58 individuals⁶⁷ considered to be anxious during their first year of violin study, an increase of 14%.

We know this increase may be related to other factors, but we cannot rule out the possibility that violin pedagogy and student-teacher relationship may play a key role in how violin students deal with anxiety during performance. Thus, STR is related to the academic and professional

⁶⁵. See Figure: 4.36.

⁶⁶. See Figure: 4.37.

⁶⁷. See Figure: 4.8.

success of the violinists, whereas an oriented, conscious and supervised practice through the critical ear represents a powerful coping strategy against MPA. However, this solution is not definitive, since countless musicians such as Chopin⁶⁸ or Horowitz⁶⁹, despite incredible technical and musical ability, have abdicated solo career due stage fright pressure.

6.1. Implications

All the issues, results, and discussions present in this master's dissertation are intended for a broad spectrum of violinists who include both professional and students. They are also addressed to teachers and students of different age ranges. However, as stated earlier, the purpose of this research is to find and demilitarize how individualized violin pedagogy has consequences on the music performance and anxiety relationship. Detailing the experience of each of these violinists, it allows to bettering elaborate violin pedagogy to be applied during students first year class, to diagnose of student as being taught and to guide them with the issues involved on practice, performance, and anxiety.

For all these reasons, the target audience for this master's dissertation are the teachers or pedagogues of violin teaching at universities, conservatories, public and private music schools or who provide private lessons to young students, children or adolescents, with or without experience related to performance. It is also important to mention the results found have no medical value, they do not intend to replace any kind of clinical or psychological treatment, or to establish whether an individual suffers from anxiety or MPA. Their main objective is to guide the construction of the student-teacher relationship during violin lessons and to establish a healthy, awareness and motivational environment against musical performance anxiety.

6.2. Applications

The applications of this research can be employed in practice, as well as, in the pedagogy of violin teaching and in the elaboration of individual musical agenda. All of these applications consist of the search for the control over anxiety not only during performance, but also over individual daily practice. Personal applications reside in two distinct fields although related: individual

⁶⁸. Chopin, Fryderyk Franciszek (1810-1849).

⁶⁹. Horowitz, Vladimir (1903-1989) .

practice (playing) and teaching. By approaching students and violin teachers from both the literature on violin pedagogy and the literature of music psychology and psychology of musical performance, we are increasing awareness of the individual practice of the instrument. The systematic and pragmatic practice (metacognition) represents control and understanding of the movements, physical strengthening of the left-hand and right-arm muscles, and, increase the student's ability to concentrate. It allows procedural memory to relate to musical intentions and increase the interpreter's self-confidence. The sum of these factors results in better performance for both the musician and the public and can be useful against the use of beta-blockers.

The student who is induced to have such habits, during his or her individual and daily practice, tends to become a better teacher and to form better students. This is due to the fact when we understand a process in its entirety, we can recreate it in smaller parts, redo the sequence of events and transmit this knowledge in a clear and pedagogical way, adapting them in the most diverse situations. Later, when this student integrates a teaching institution such as music schools, conservatories or universities, he or she can help directors on the elaboration of a pedagogical plan based on daily violin practice as a tool to fight against MPA.

6.3. Further Study

As final considerations, this research describes a scenario that needs to be better understood. Little is known about the relation between individualized violin pedagogy and its effects on musical performance anxiety. Even, if certain data can already be seen more clearly, others are still turbid such as to the somatic and cognitive consequences and the use of beta-blockers. We are aware that a broader and deeper study needs to be carried out. It is necessary that a closer observation be made, probably, a longitudinal survey is also necessary. Moreover, this research aims to assist Brazilian violin teachers and students; therefore, future studies need to be more specific and comparative. We hope these last points may be developed during the Ph.D. program or in future articles which we intend to increase the Q-RIV-MPA participants and at the same time narrow the topic of research on the relationship between beta-blockers and violin pedagogy. We also intend to develop music practice agenda (MPAg), together with others colleague, and observe its results of increasing or decreasing violinists beta-blockers use. Finally, we hope, therefore, that our research may contribute to MPA awareness, as well as, demonstrate that violin pedagogy (STR) and a conscious practice can be an important anxiety control elements.

Appendix A

English questionnaire version

1. You are a musician:

pre-professional professional

2. What is your country of birth?

Brazil France Portugal Other

3. In which country did you have your first violin classes?

Brazil France Portugal other

4. When did you start your violin studies:

5 years or less between 6 and 10 years between 11 and 15 years 16 years or more

5. Are your parents or any other close family members musicians (professional or amateur)?

Yes No

6. How was your relationship with your first violin teacher?

Very bad Bad Regular Positive Very positive

7. Do you remember your first public performance:

a. solo? Yes No

b. chamber ensembles? Yes No

8. What was your emotional reaction in your first performance in public?

I could not play I was very anxious I was anxious I was normal I didn't have any anxiety symptoms

9. Did the pedagogy applied during your first year of violin class have an impact on the continuity of your violin studies?

Yes No

10. Did the pedagogy applied during your first year of violin class have an impact on your musical performance?

Yes No

11. Did your first violin teacher adapt their methodology according to your characteristics?

Yes No

12. Was your first violin teacher friendly?

Yes No

13. Was your first violin teacher competent?

Yes No

14. Were you encouraged by your first teacher to listen to reference works?

Yes No

15. Were you encouraged by your first teacher to participate in performances:

a. chamber ensembles? Yes No

b. individually? Yes No

16. Were you instructed to practice relaxation techniques:

a. during individual practice? Yes No

b. before musical performance? Yes No

17. Did you have a pre-performance routine?

Yes No

18. Did you have the habit of memorizing your pieces?

Yes No

19. Did you have the habit of playing from memory?

Yes No

20. Were you advised by your first violin teacher to reflect on the process of how to practice individually (metacognition)?

Yes No

21. Did you have the habit of analyzing the music scores before they were performed?

Yes No

22. Were you guided in how to organize your time during your individual practice?

Yes No

23. Did you practice in?

small blocks distributed over time large blocks distributed over time

24. Did you have the habit of practicing slowly?

Yes No

25. Did you record yourself?

Yes No

26. Did your first violin teacher have the habit of playing for you the pieces that you would perform?

Yes No

27. Was your first violin teacher your musical performance role model?

Yes No

28. Did you have the habit of composing your own pieces, improvising or playing by ear?

Yes No

29. Was your practice supervised by your parents or guardian?

Yes No

30. Do you consider that your practice was:

deliberate [improve performance, correct weaknesses and errors]

informal [improvising or play by ear melodies known]

mere repetition [play from beginning to end]

31. Regarding anxiety to play in public:

a. I was anxious Yes No

b. I am anxious Yes No

32. Does playing by memory makes you more anxious?

Yes No

33. Do you use any technique to control anxiety?

Yes No

34. Have you ever used β -blockers?

Yes No

35. Are you a violin teacher?

Yes No

Answer the following questions only if the answer to question 35 is positive.

36. Do you make use of music psychology books as a performance aid?

Yes No

37. Do you believe that this bibliography type can help students to control of musical performance anxiety?

Yes No

If you want comments can be added in the box below:

French questionnaire version

1. Vous êtes un musicien:
 pré-professionnel professionnel
2. Quel est votre pays de naissance?
 Brésil France Portugal autre
3. Dans quel pays avez-vous eu vos premiers cours de violon?
 Brésil France Portugal autre
4. Quand avez-vous commencé vos études de violon:
 avant 5 ans entre 6 et 10 ans entre 11 et 15 ans après 16 ans
5. Vos parents ou d'autres membres de votre famille proche sont-ils des musiciens (professionnels ou amateurs)?
 oui non
6. Considérez-vous que votre relation élève-professeur était:
 très mauvaise mauvaise normal positive très positive
7. Vous souvenez-vous de votre première performance solo en public?
 - a. solo oui non
 - b. musique de chambre oui non
8. Quelle a été votre réaction émotionnelle lors de votre première performance publique??
 je ne pouvais pas jouer j'étais très anxieux j'étais anxieux j'étais normal je n'avais aucun symptôme d'anxiété
9. La pédagogie appliquée lors de votre première année de cours de violon a eu un impact sur la continuité de vos études de violon?
 oui non
10. La pédagogie appliquée lors de votre première année de cours de violon a eu un impact sur votre performance musicale?
 oui non
11. Considérez-vous que votre premier professeur de violon a adapté la méthodologie en fonction de vos caractéristiques?
 oui non
12. Considérez-vous que votre premier professeur de violon était amical?
 oui non

13. Votre premier professeur de violon était compétent?
() oui () non
14. Avez-vous été encouragé par votre professeur à écouter des ouvrages de référence?
() oui () non
15. Avez-vous été encouragé par votre premier professeur à participer à des performances?
a. en groupe () oui () non
b. individuellement () oui () non
16. Avez-vous reçu l'instruction de pratiquer des techniques de relaxation?
a. pendant la pratique individuelle () oui () non
b. avant la performance () oui () non
17. Aviez-vous une routine de pré-performance?
() oui () non
18. Aviez-vous l'habitude de mémoriser vos pièces?
() oui () non
19. Aviez-vous l'habitude de jouer par coeur?
() oui () non
20. Votre premier professeur de violon vous a-t-il conseillé de réfléchir au processus de pratique individuelle (métacognition)?
() oui () non
21. Aviez-vous ou avez-vous l'habitude d'analyser les pièces avant qu'elles soient exécutées?
() oui () non
22. Avez-vous été orienté sur la façon d'organiser votre temps pendant la pratique individuelle?
() oui () non
23. Avez-vous pratiqué dans?
() petits blocs de temps () grands blocs de temps
24. Avez-vous l'habitude de pratiquer lentement?
() oui () non
25. Avez-vous eu l'habitude de vous enregistrer?
() oui () non
26. Votre premier professeur de violon avait-il l'habitude de jouer pour vous les pièces que vous alliez interpréter?
() oui () non
27. Avez-vous eu votre premier professeur de violon comme modèle de performance musicale?

oui non

28. Avez-vous eu l'habitude de composer vos propres pièces, d'improviser ou de jouer à l'oreille?

oui non

29. Votre pratique a-t-elle été supervisée par vos parents ou quelqu'un de responsable?

oui non

30. Vous considérez que votre pratique était:

délibérée [améliorer les performances, corriger les faiblesses et les erreurs]

informelle [improviser ou jouer à l'oreille des mélodies connues]

simple répétition [jouer du début à la fin]

31. Concernant l'anxiété en jouant en public:

a. vous étiez anxieux oui non

b. vous êtes actuellement anxieux oui non

32. Est-ce que jouer par coeur vous rend plus anxieux?

oui non

33. Utilisez-vous une technique pour contrôler l'anxiété?

oui non

34. Avez-vous déjà utilisé des β -bloquants?

oui non

35. Êtes-vous professeur de violon?

oui non

Répondez aux questions suivantes seulement si la réponse à la question 35 est positive.

36. Utilisez-vous des livres sur la psychologie musicale comme assistance à la performance?

oui non

37. Croyez-vous que ce type de bibliographie peut aider les élèves à contrôler l'anxiété de la performance musicale?

oui non

Commentaires:

Portuguese questionnaire version

1. Você é um músico:

pré-profissional profissional

2. Qual é a sua nacionalidade?

brasileira francesa portuguesa outra

3. Em qual país você teve as suas primeiras classes de violino?

Brasil França Portugal outro

4. Quando você iniciou seus estudos do violino:

antes dos 5 anos entre 6 e 10 anos entre 11 e 15 anos após os 16 anos

5. Seus pais ou algum outro membro próximo da família são músicos (profissionais ou amadores)?

sim não

6. A sua relação com o seu primeiro professor de violino era?

muito ruim ruim normal ou regular positiva muito positiva

7. Você se lembra da sua primeira performance em público?

a. solo sim não

b. em conjunto sim não

8. Qual foi a sua reação emocional em sua primeira performance em público?

não consegui tocar muito ansioso(a) ansioso(a) normal sem nenhum tipo de ansiedade

9. A pedagogia aplicada durante seu primeiro ano de aula teve algum impacto sobre a continuidade dos seus estudos de violino?

sim não

10. A pedagogia aplicada durante seu primeiro ano de aula teve algum impacto sobre a sua performance musical?

sim não

11. O seu primeiro professor de violino adaptava a metodologia em função das suas características?

sim não

12. O seu primeiro professor de violino era amigável?

sim não

13. O seu primeiro professor de violino era competente?

sim não

14. Você era incentivado pelo seu professor a ouvir obras de referência?
() sim () não
15. Você era incentivado pelo seu primeiro professor de violino a participar de performances?
a. em grupo () sim () não
b. individualmente () sim () não
16. Você era instruído a praticar técnicas de relaxamento:
a. durante o estudo individual do violino? () sim () não
b. antes da performance? () sim () não
17. Você possuía alguma rotina pré-performance?
() sim () não
18. Você possuía o hábito de memorizar suas peças?
() sim () não
19. Você possuía o hábito de tocar de memória?
() sim () não
20. Você era aconselhado pelo seu primeiro professor de violino a refletir sobre o processo de estudo individual do violino (metacognição)?
() sim () não
21. Você possuía ou possui o hábito de analisar as obras a serem executadas?
() sim () não
22. Você era orientado em como organizar o tempo durante o estudo individual do violino?
() sim () não
23. Você praticava em?
() pequenos blocos distribuídos ao longo do tempo () grandes blocos distribuídos ao longo do tempo
24. Você possuía o hábito de praticar lentamente?
() sim () não
25. Você possuía o hábito de se gravar?
() sim () não
26. Seu primeiro professor de violino possuía o hábito de tocar para você as peças que vocês iria executar?
() sim () não
27. Você tinha como modelo de performance musical o seu primeiro professor de violino?
() sim () não

28. Você possuía o hábito de compor suas próprias peças, improvisar ou tocar de ouvido?

sim não

29. Sua prática era supervisionada pelos seus pais ou algum responsável?

sim não

30. Você considera que a sua prática era:

deliberada [melhorar a *performance*, corrigir pontos fracos e erros, decifragem ou leitura à primeira-vista]

informal [improvisos ou de tocar de ouvido melodias conhecidas]

mera repetição [tocar do início ao fim]

31. Em relação à ansiedade ao tocar em público:

a. ficava ansioso? sim não

b. atualmente fica ansioso? sim não

32. Tocar de memória o torna mais ansioso?

sim não

33. Você faz uso de alguma técnica que permita controlar a ansiedade?

sim não

34. Você já fez uso de β -bloqueadores?

sim não

35. Você é professor de violino?

sim não

Responder as questões a seguir, apenas se a resposta a questão 35 for positiva.

36. Você faz uso de livros sobre a psicologia musical como auxílio à performance?

sim não

37. Você acredita que este tipo de bibliografia pode auxiliar os alunos a controlar a *ansiedade da performance musical*?

sim não

Caso queira, comentários podem ser adicionados abaixo:

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