



UNIVERSIDADE CATÓLICA PORTUGUESA

**ADMISSION TO MUSIC CONSERVATOIRES: ASSESSING THE INFLUENCE
OF MOTIVATION AND PARENTAL SUPPORT ON MUSICAL LEARNING**

Thesis submitted to the Universidade Católica Portuguesa
for the Doctoral Degree in Educational Sciences

by

António Manuel Fontes de Oliveira

FACULTY OF EDUCATION AND PSYCHOLOGY

November 2021



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RESUMO

A admissão ao I ciclo das Escolas Artísticas do Ensino Especializado da Música para a Iniciação Musical nos Conservatórios Públicos Portugueses consiste na prestação de provas de capacidades perante um júri de professores de instrumento e de formação musical para aferição de vocações. Este modelo assenta na convicção de que as crianças apresentam talentos salientes desde uma idade precoce. No entanto, esta perspetiva parece ser subsidiária de uma visão popular da sociedade de que os talentos são capacidades inatas com as quais se nasce e encontra pouco suporte científico para a advogar. Por conseguinte, os resultados destas provas tendem a ser pouco fiáveis e robustos na capacidade para predizer o sucesso da aprendizagem musical.

À luz do Modelo Diferenciado de Dons e Talentos de François Gagné, pretendemos com esta tese analisar o potencial da prova de capacidades em predizer o sucesso da aprendizagem musical dos alunos admitidos a um Conservatório de Música Português, bem como testar a mesma capacidade de predição de outras duas variáveis consideradas pelo autor supracitado: a motivação e o suporte parental.

Foi celebrado um acordo de cooperação com um Conservatório de Música na região norte de Portugal para termos acesso ao grupo de candidatas ao Curso de Iniciação para o ano letivo de 2019/2020.

O primeiro artigo do conjunto de quatro que compõem esta tese é uma revisão sistemática da literatura acerca da motivação para aprender a tocar um instrumento musical em amostras de crianças e adolescentes. Sendo a primeira revisão sistemática sobre este tema de que temos conhecimento, nela apresentamos uma análise dos métodos, enquadramentos teóricos e principais resultados dos estudos realizados nesta área. Dos resultados destacamos a importância do suporte parental como indutor e elemento de manutenção de elevados níveis de motivação por parte do estudante. Considerando que os alunos são jovens crianças dependentes de regulação externa, os pais assumem um papel central na organização das rotinas de estudo, do desenvolvimento de interesse e curiosidades, e no providenciar de meios materiais necessários para a aprendizagem. Vários estudos demonstram que as crianças tendem a assimilar as atitudes éticas dos pais perante o trabalho e que se interessam por atividades nas quais os pais se envolvem. Este artigo foi publicado na revista *Music Education Research* em Janeiro de 2021.

O segundo artigo desta tese analisou a relação entre os resultados das provas de admissão e a informação sociodemográfica para tentar perceber se há algum fator económico/social que explique os resultados obtidos pelos candidatos no processo de seleção de alunos e, desta forma, criar um enviesamento que mascare a pretendida avaliação de talentos. Encontramos apenas relação significativa entre o sexo dos candidatos e os resultados por eles obtidos na prova de capacidades e esta variável, o sexo, explica consideráveis diferenças entre candidatos do sexo masculino e feminino: o grupo de todos os candidatos ao Curso de Iniciação estava equitativamente dividido pelos dois sexos, mas observou-se uma clara vantagem do sexo feminino quando considerado o grupo dos alunos admitidos, porquanto 65% eram raparigas e 35% rapazes. Estes resultados sugerem que, por razões de carácter desenvolvimental, o modelo das provas tende a favorecer os candidatos do sexo feminino em detrimento dos do sexo masculino, ou seja, considerando que rapazes e raparigas apresentam níveis de desenvolvimento distintos em alguns domínios, as raparigas apresentam maior desenvoltura nos conteúdos que são avaliados nas provas de admissão. Estas observações levam-nos a sugerir a revisão do modelo das provas de admissão para resolver este enviesamento, apontando algumas vias possíveis, entre elas soluções encontradas e adotadas noutras escolas, noutros territórios e noutros países. Este artigo foi submetido à revista *Music & Science* estando a aguardar decisão.

O terceiro artigo aproveitou o contexto de pandemia que surgiu inesperadamente no período em que esta investigação teve lugar. Com o confinamento decretado pelo Governo da República e a transição para ambientes de aprendizagem não-presencial, a equipa de investigação hipotizou que o papel dos pais seria reforçado neste período porquanto as necessidades de regulação exterior dos estudantes seriam reforçadas e, na ausência de interações pessoais tão importantes na aprendizagem de um instrumento musical, os pais teriam de se constituir como professores domésticos. Assim, quisemos perceber qual a natureza e intensidade do suporte parental ao longo de um período de seis semanas no primeiro confinamento de 2020, qual o desempenho dos estudantes na disciplina de instrumento através da avaliação do seu próprio professor, e, por último, qual a relação entre estas duas variáveis. Como antecipávamos, os alunos que receberam mais e melhor apoio familiar foram os que obtiveram melhores resultados. Esta investigação vem confirmar a importância central do papel dos pais na aprendizagem de um instrumento musical encontrada na literatura, desta feita num contexto muito particular como foi o da pandemia.

Este artigo foi publicado na revista *Research Studies in Music Education* em Setembro de 2021.

Por último, o artigo que encerra esta tese investiga o potencial preditor da aprendizagem musical por parte da prova de capacidades bem como da motivação e do suporte parental. Para tal, criamos dois questionários cujos itens foram selecionados em investigações já realizadas ou criados de raiz para avaliar os domínios da motivação e do suporte parental para serem administrados aos candidatos e aos respetivos pais aquando da realização da prova de capacidades no processo de admissão para o ano letivo 2019/2020. Posteriormente, acompanhamos durante dois anos letivos o desempenho dos alunos admitidos pelo Conservatório nas disciplinas da componente vocacional (instrumento, formação musical e classe de conjunto) através da recolha das classificações obtidas. Por último, analisamos inferencialmente as classificações dos alunos nos dois anos letivos comparativamente com as três variáveis independentes consideradas: provas de capacidades, motivação e suporte parental. Não encontramos nenhuma relação significativa entre nenhuma variáveis nem nenhum potencial preditor ao fim de dois anos letivos. Pelo facto de termos observado pouca diferenciação no desempenho dos alunos – a maioria obteve classificação de Bom ou Muito Bom – e, conseqüentemente, a não observância de uma distribuição normal da variável, propusemos que se revisitassem os resultados após o ingresso dos alunos no Curso Básico de Música, pois dadas as maiores exigências do repertório e, conseqüentemente, de estudo e dedicação, se estimarem maior heterogeneidade no desempenho dos alunos. No momento presente, sugerimos a ponderação de outros modelos de admissão de alunos. Este artigo foi submetido à revista *International Journal of Music Education* estando a aguardar decisão.

Este estudo é inovador por se debruçar sobre uma problemática que não tem recebido a atenção de investigadores e que pela adoção persistente por parte de muitas Escolas de Ensino Artístico da Música merece uma melhor compreensão pela extensão dos impactos que o modelo tem nas vidas das crianças, representando ou não o acesso a uma via educativa vocacional desde muito novo, e na gestão de recursos públicos, pois sendo estes escassos, importa que sejam investidos nos estudantes que melhor aproveitem a oportunidade que lhes é oferecida: não existe talento sem estudo, pelo que é obrigação das escolas identificar e seleccionar os candidatos com maior motivação.

Por outro lado, o design longitudinal desta investigação é pioneiro na área, não se conhecendo outro estudo em Portugal sobre provas de admissão.

Por fim, são discutidas as implicações para as escolas no que concerne a modelos de provas de seleção bem como são apontadas vias de investigação futura.

Palavras-chave: Educação musical, admissão a escola, prova de capacidades, motivação, suporte parental, predição

ABSTRACT

Admission to the elementary level of Portuguese Public Conservatories consists of tests to assess music skills. This model is based on the conviction that children show outstanding talents from an early age. However, the results of these tests tend to be unreliable and unrobust in their ability to predict musical achievement.

Considering Gagné's Differentiated Model of Gifts and Talents, we intend with this thesis to analyze the potential of the aural skills test to predict musical achievement of students admitted to a Portuguese Conservatory of Music, as well as to assess the same predictive power of two other variables: motivation and parental support.

The first article of the set of four that make up this thesis is a systematic review of the literature on the motivation to learn to play a musical instrument in samples of children and adolescents.

The second article analyzed the relationship between the results of admission tests and sociodemographic information to try to understand if there is any economic/social factor that explains the results obtained by candidates in the student selection process.

The third article took advantage of the pandemic context that unexpectedly emerged in the period in which this investigation took place and assessed the relationship between parental support and musical achievement.

The last article investigates the potential predictor of musical learning by aural skills assessment as well as motivation and parental support.

This study is innovative as it addresses a problem that has not received the attention of researchers and deserves a better understanding due to the extent of the impacts that the model has on children's lives and in the management of public resources.

On the other hand, the longitudinal design of this research is pioneering in the area, and there is no known study in Portugal on admission tests.

Keywords: Music education, school admission, aural skills assessment, motivation, parental support, prediction

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INTRODUCTION & THESIS OUTLINE

Although the entrance examination is an unavoidable phase for a conservatory or any school of music to select promising candidates who are about to enter a musical instrument program, few researchers have ventured to study the predictive validity of the different selection methods. When examined from a worldwide perspective, the great variety of entrance examination models in different countries may either frighten or discourage those trying to understand the fundamental principles that drive each model, which domains each model tries to measure and why, at their reliability in terms of predicting future musical achievement.

Every academic year, the number of candidates to these artistic schools far exceeds the number of available spots offered in Portugal. For this reason, the schools run a procedure to select candidates for each of the musical instruments' classes. Even within a country, admission procedures vary from school to school, but albeit with some differences, they are all based on the assessment of aural aptitude (Conservatório de Música de Coimbra, 2021; Conservatório de Música de Loulé, 2021; Conservatório de Música do Porto, 2021; Escola Artística do Conservatório de Música Calouste Gulbenkian de Aveiro, 2021; Escola de Música do Conservatório Nacional; Instituto Gregoriano de Lisboa, 2021).

Fundamentally, the entrance examination is intended to select students with the most musical potential to start the individual instrument training and, consequently, to prepare those best suited for a career as a professional musician in the future (Agência Nacional para a Qualificação e o Ensino Profissional, 2021; Diário da República Eletrónico, 2021). In other words, an entrance examination in the musical field aims to predict music study achievement, best known as high grades in the school environment. But, unfortunately, procedures that are validated empirically are scarce or even completely absent. In fact, the correlation between the results in those examinations and music achievement throughout the years is very low, ranging from .010 to .484 (Sandberg-Jurström, Lindgren & Zandén, 2021; Whellams, 1970). Because of that, there have been many attempts to discuss what to evaluate to select prospective candidates for these endeavors (Aliferis & Stecklein, 1953; Engur, Celiktas & Demirbatir, 2015; Hanson, 2019). Some of the targets are the melodic, rhythmic, and harmonic discrimination; or aural skills; or auditory-visual sensory abilities, or everyday musical experiences, or even more than one of those options (Conservatório de Música de

Coimbra, 2021; Conservatório de Música de Loulé, 2021; Conservatório de Música do Porto, 2021; Escola Artística do Conservatório de Música Calouste Gulbenkian de Aveiro, 2021; Escola de Música do Conservatório Nacional; Instituto Gregoriano de Lisboa, 2021). As can be seen, there is still a lot of uncertainty, and to date, the qualities needed before commencing learning to be successful as a musician remains unclear.

Thus, this thesis focuses on the admission procedures to the elementary level at public music Conservatories in Portugal. First, it aims to determine how efficient the admission procedures presently run by schools are at predicting the students' musical achievement. Second, it seeks to probe whether any other domains, such as motivation and parental support, could be assessed and used to complement the aural aptitude assessment strengthening the overall admission procedure.

The first step was to survey literature to determine what researchers in the field have been observing. The first theoretical framework we chose was the Differentiated Model of Giftedness and Talent proposed by Gagné (2000). This author advocates that gifts are the potential a person possesses before starting a learning process and that talent is the resulting mastery by systematically developing those skills. However, as important as skills are, Gagné affirms that the element that most influences the development process is the catalysts that could be divided into intrapersonal and environmental. As for the intrapersonal catalysts, motivation stood out as an essential element that musicians need to possess (Bannister-Tyrrell, 2017; Guenther, 2004). Among the various environmental catalysts, the one that seemed to be the most interesting to assess in the scope of the admission procedure was parental support, considering that candidates to elementary school are 5- and 6-years old children and still need external support for most of the tasks in their lives. Specifically in music learning, children need their parents' support to gain access to a musical program, to provide logistics (such as commuting to school or providing a musical instrument to practice as well as other materials), to structure practicing times, and to provide emotional and psychological support in face of difficulty and stress.

Understanding motivation as the energy one individual puts on a given task, musicians must be motivated to endure the many hours of practicing required to master a given musical piece. Without motivation, no task can be achieved successfully. Motivation is what drives the individual to thrive towards the desired goals.

Having decided upon the hypothesis that orient this thesis (i.e., motivation and parental support as fundamental elements for the admission procedure to public music Conservatoires in order to predict the students' musical achievement), the next step was to turn to the literature again to find how researchers have been studying these domains, what type of instruments to collect data have been designed and what conclusions have they found. This search resulted in the first article of this thesis, which is a systematic review of the literature on motivation to learn a musical instrument on samples comprising children and adolescents (6 – 18 years old). This article entitled “*Disentangling motivation within instrumental music learning: A systematic review*”, serves as a guide to the other three articles, and was published in *Music Education Research* on January 7th, 2021 (Oliveira, Ribeiro, Mota Ribeiro, McPherson & Oliveira-Silva, 2021).

Furnished with the knowledge acquired with the systematic review, we developed two questionnaires (the questionnaires concerning motivation and parental support used in the fourth article of this thesis and constructed by the researchers have been added as annexes, see Annex 1 and 2) to collect information on motivation and parental support, administered to children and parents, respectively. The data collection was conducted during the admission procedure to the 2019-2020 academic year in a public music Conservatoire, with which we established a protocol. This protocol gave us access to the cohort of children that applied to the mentioned academic year (allowing us to collect data from 84 dyads candidate/parents) and the academic grades gained by the selected candidates during the 2019-2020 and 2020-2021 academic years (a sample comprised by the 60 candidates invited to enroll). These grades, collected in 6 different moments (terms ending on Christmas, Easter, and Summer of each of the academic years) and from 3 different subjects (musical instrument, ear training and choir), were used as indicators of musical achievement. The data collection occurred on July 1st, 2019.

The second article of this thesis comprises an analysis of the admission procedure presently run by the partner music Conservatoire to examine whether the results of the aural aptitude assessment have any relation with the sociodemographic data collected through the questionnaires we developed. Our results show that the only significant correlation was between the variable sex and the results of the aural aptitude assessment tests, meaning that, in our data, girls performed better than boys on the aural aptitude assessment. This finding suggests that an admission procedure based solely on aural aptitude assessment is fragile

considering that there is no evidence that women are better musicians than men; the aural aptitude assessment is in fact not measuring a dimension that allows a prediction of the candidate's future learning. The explanation we propose is that considering that girls and boys mature at different rates (Driessen & Van Langen, 2013), at the age the admission procedure concerns, girls present more developed aural perceptual skills than boys. This advantage tends to disappear as children mature (Buscatto, 2000). Therefore, admission procedures based solely on the assessment of aural skills are biased by a developmental factor and thus, are ineffective in predicting musical achievement. This article was submitted to the Music & Science and is currently under revision.

The third article of this thesis took advantage of the unexpected COVID-19 pandemic. With the lockdown decreed worldwide to prevent the spread of the virus, families were confined at home, and the education system had to switch to a remote basis. Lacking the fundamental element of the in-person music instrument lesson, founded on the interpersonal relationship between teacher and student, a large amount of the responsibility of the learning process was transferred to the families (Mota Ribeiro et al., 2021). This environment offered us the chance to understand how families were organizing themselves during the lockdown, specifically how they supported their children's musical efforts and how this support influenced the students' musical achievement in the music instrument subject (Ilari, 2018). We collected data on the frequencies of different types and behaviors of parental support and the students' musical achievement during the lockdown compared with the previous in-person music lessons assessed by the music instrument teachers. Our results show that the students who were receiving higher levels of parental support were the ones who were achieving higher outputs. The article was entitled "*Musical achievement during a lockdown: The parental support miracle*", published by the Research Studies in Music Education journal on September 23rd, 2021 (Oliveira, McPherson, Mota Ribeiro & Oliveira-Silva, 2021).

Last, the fourth article examined the hypothesis that guided this thesis and analyses whether information on motivation and parental support can predict students' musical achievement. We also assessed the predictive power of the aural aptitude assessment results. For that matter, we considered the grades awarded to the students at the end of the 6 terms (terms ending on Christmas, Easter and Summer of both 2019-2020 and 2020-2021 academic years) in the three music subjects (music instrument, choir, and ear training) as well as the average of these 3 grades as an indicator of musical achievement. We ran a linear regression

analysis between grades awarded to students and the predicting variables (motivation, parental support, and aural aptitude assessment). The article entitled “*Can Motivation and intentions of Parental Support predict musical achievement before the commencement of musical studies at the elementary school level?*” was submitted to the journal International Journal of Music Education and is currently under revision.

Also, it is worth noting that this is an article-based doctoral thesis, empirical in nature. Two of the four articles have been published in international peer-reviewed journals, as shown above. The other two are currently undergoing peer-review at the time of delivery of this thesis. Because we tried to produce integrated articles instead of stand-alone frameworks, it was impossible to avoid a certain level of overlap between them. The work developed for this doctoral thesis attempts to inform the scientific community. We expect these results to reach out to educators, parents, musicians, and policymakers who struggle to understand the puzzling nature of the entrance examination process, as well as the predictability of the selections and the consequence to early childhood music development.

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Article 1.

**DISENTANGLING MOTIVATION WITHIN INSTRUMENTAL MUSIC
LEARNING: A SYSTEMATIC REVIEW**

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**DISENTANGLING MOTIVATION WITHIN INSTRUMENTAL MUSIC
LEARNING: A SYSTEMATIC REVIEW**

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ABSTRACT

Motivation is a crucial aspect of learning, particularly in the field of music. For decades, motivation for learning music has been a much-discussed subject, and yet its influence still remains a convoluted issue. This study systematically analyses peer-reviewed English language studies, according to PRISMA guidelines, in order to understand how children's and adolescents' motivation to learn a musical instrument has been studied, the theories that have been adopted to frame this research, the types of quantitative instruments that have been designed or adopted within the research designs, and the types of findings that have documented. A search on Web of Science, Education Resources Information Center, and Scopus was conducted, using the following terms: music, instrument, learn, education, study, and motivation. The initial search identified 447 studies. Twenty of these met the inclusion criteria for investigating any music-related aspect of motivation that was based on the analysis of quantitative data. Results show a limited number of studies that have explored children's motivation in the context of learning a musical instrument and report a special focus on the central role of parents and social background. Implications of these results for music education and the adequacy of questionnaires to children are discussed.

Keywords: Motivation; musical instrument; music education; systematic review; PRISMA

INTRODUCTION

Motivation is a crucial aspect of learning, with decades of research examining the reasons for people's actions, their willingness to engage, and their goals. One of the most accepted frameworks for studying this topic defines motivation in terms of the energy that drives an individual to initiate a given task, with the level of motivation being seen as impacting on the intensity of this involvement, the level of commitment required to persist with it, and the resilience needed to cope with failure and setbacks (Wentzel and Wigfield 2009). Accordingly, research in the field of music has demonstrated that motivated students tend to learn more and produce better academic, social, and emotional outcomes (Hodgins, Brown, and Carver 2007). Furthermore, high levels of motivation have also been associated with higher levels of self-beliefs (e.g. self-efficacy, self-esteem), autonomy, and a sense of belonging to a particular group or community (Hodgins, Brown, and Carver 2007).

Different perspectives have been used to understand an individual's motivation to study music, ranging from more general approaches that are based on music as an area of learning in elementary and high schools, to more specific approaches focused on the learning of musical instruments. Perhaps the most comprehensive of the first type involved a series of studies led by McPherson that surveyed over 30,000 school students across nine different countries that examined students' motivation to study music as compared to their other school subjects (Gonzalez-Moreno 2010; Hentschke 2010; Juvonen 2011; Leung and McPherson 2010; McPherson and Hendricks 2010; McPherson and O'Neill 2010; McPherson et al. 2015; Portowitz, González-Moreno, and Hendricks 2010; Seog, Hendricks, and González-Moreno 2011; Xie and Leung 2011). McPherson and his colleagues report a decline in interest in studying music as a school subject as students approach the 9th grade, which they interpret to a lower valuing of music and its usefulness by the students as they begin to focus on their future careers after leaving school.

Less comprehensive is the literature that investigates motivation in the context of musical instrument lessons. Instrumental music learning requires students to practice consistently and regularly in between lessons in order to achieve the goals set by teachers during the one-to-one interaction (Pitts and Davidson 2000). Thus, if students are to succeed in learning their musical instruments, they must be able to develop and maintain an intense daily practice routine even in the absence of direct assistance from their teachers.

According to Gagné (2009), several intrapersonal catalysts related to an individual's personality, sense of volition and motivation, shape talent development. These intrapersonal catalysts filter other environmental catalysts since the contexts are interpreted and given significance by the individual. Importantly, within this framework, motivation is seen as exerting a significant impact on the level of success within any learning process. Furthermore, motivation also seems to be enhanced by the support of significant others in the student's life, namely, their parents and peers (Comeau, Huta, and Liu 2015).

With the above in mind, a number of authors (Creech 2010; Howe and Sloboda 1991; McPherson 2009; Sosniak 1985) have addressed the nature and the impact of parental support in formal instrumental music education, suggesting that students become more involved and motivated when their parents are actively engaged in the process. When parents attend to their child's early music lessons and individual practising, the child's valuing of music increases. This is due to an internalisation of the importance of music in the child's own life as conveyed by the parents' attitude. This internalisation occurs due to the transfer of responsibility from an external regulator – the parents – to the student. As a result, the student seems to be better positioned to experience autonomy, and to develop a sense of self-regulation, and a determination to learn (Küpers et al. 2014). This pattern of influence is also consistent with other aspects of the child's academic learning and development (Carlton and Winsler 1998).

The transference from external to internal regulation is a crucial feature of Self-Determination Theory which outlines three basic human psychological needs: autonomy (the need to feel in control; a sense of self-regulation and determination over the path to follow), relatedness (the need to feel connected with others; a sense of belonging to something more significant than oneself), and competence (the need for mastery experiences and the required skills to pursue a chosen goal and achieve it with success) (Deci and Ryan 1985). Self-Determination Theory states that individuals will become more motivated and engaged with activities that fulfil these basic psychological needs. It also proposes a continuum of different motivation levels, ranging from amotivation (a total absence of motivation), passing through various levels of extrinsic motivation (motivated by external factors, such as rewards or the satisfaction of parents' expectations), to intrinsic motivation (experiencing pleasure from doing a given task for the sake of it alone rather than for some extrinsic reinforcement).

Another important dimension has been included in this process through the lens of Self-Determination Theory to understand motivation in the context of learning music. Research has sought to understand how the dynamic and contingent interactions between students and teachers during lessons foster or promote autonomy (Comeau, Huta, and Liu 2015; Küpers et al. 2015). These studies have provided various explanations of the teachers' role as an autonomy-supporter in their interactions with students during lessons (micro-level) and as a facilitator of their overall musical development (macro-level).

Overall, previous research has shown that a psychological need that keeps individuals involved with music is relatedness. Through music, individuals establish social bonds with others with whom they share common musical interests (McPherson, Davidson, and Faulkner 2012). In a similar fashion, competence and its related concept of self-efficacy have also been investigated in terms of their impact on motivation and engagement with the learning process. For instance, McCormick and McPherson (2003), McPherson and McCormick (2006) and Ritchie and Williamon (2012) report that self-efficacy is a more reliable predictor of musical achievement, even when compared to practising. Such results can be explained because students with stronger self-efficacy perceptions tend to utilise adaptive strategies when practising.

Self-efficacy is a fundamental component of Expectancy-Value Motivation Theory (Wigfield and Eccles 2000), which states that individuals show higher interest in activities they value the most. This theory helps to explain why individuals tend to engage in activities in which they anticipate having the required skills to perform successfully (Wigfield and Eccles 2000). Indeed, the feeling of competence is influenced by the perception of the difficulty of the task, implying that teachers should design goals that are within the reach of their students.

Reasons invoked to explain success and failure play an important role in explaining students' motivation. According to Attribution Theory (Asmus 1986; Weiner 1985), these reasons can be understood according to two dimensions: locus of control and stability. Furthermore, these two dimensions can be divided into two other elements: in terms of locus of control, attributions can be internal (effort, skills) or external (task difficulty, chance); according to stability, attributions can be stable (skills, task difficulty) or unstable (effort, chance). Students who show fixed convictions about learning an instrument, namely that progress is dependent on individual talent and set ability, tend to show low motivation and

little resilience to setbacks because they explain failure as a result of not having the required talent to achieve the performing standards. Conversely, students with malleable views regarding their development tend to attain better outcomes because they explain their success in terms of aspects that are under their control, such as putting in more effort next time to achieve better results.

The review reported here is part of a more extensive study that addresses the admission procedures to Music Conservatories. Our review, therefore, aims at understanding how motivation to learn a musical instrument has been studied in previous literature, namely which theories were most adopted, which quantitative instruments have been designed or devised to collect data, and which outcomes have been reached. In line with the scope of the investigation, we restricted our samples to children and adolescents, within the age range of Music Conservatories' students. It is known that this is a particular sensitive range of ages, considering that students within this age group require more external support during the early years of their music education to trigger motivation in addition to the transitions from elementary to high school in order to sustain their motivation.

METHOD

Search strategy

All phases of our research were performed following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Moher et al. 2009).

A systematic search was applied to identify relevant articles to establish a minimum set of publications that can be reported in this systematic review. First, an initial search in the selected electronic databases (Web of Science, Education Resources Information Center – ERIC, and Scopus) was undertaken to identify the most appropriate keywords. Then, with the chosen keywords, a search was carried out in the same databases. This search commenced on 08 September 2019 with no date restriction. We limited our search to English-language articles and used the following main search terms (music* AND instrument* AND motivation AND learn*) OR (music* AND instrument* AND motivation AND study) OR (music* AND instrument* AND motivation AND education), presented in the title, abstract and/or keyword fields. Furthermore, the references for the remaining records were scanned to identify any further articles not yet identified.

Article selection

To be included, studies had to: (1) investigate any aspect of motivation to study or continue to learn a musical instrument; (2) include participants who were studying in the primary/elementary or secondary/middle-high school levels; and (3) comprise quantitative data measured systematically (semi-structured interviews or questionnaires, providing quantitative analyses supported by the choice and application of an adequate statistical test recommended to the nature of the study).

Reasons for exclusion included: (1) reviews, theoretical articles, books, chapters, and meta-analyses; (2) no-human studies; (3) uncontrolled trials; (4) qualitative, case studies, or articles focused on questionnaire validation; (5) reports and conference papers; (6) studies investigating the motivation of parents or teachers; (7) articles not related to the learning of a musical instrument; (8) articles not written in English; and (9) articles where the full-text was not available in the databases used for this review.

The first and second authors performed eligibility and assessed all full-text articles selected for this systematic review independently. In the case of disagreement, the solution was discussed during a consensus meeting (if necessary, including senior researchers). Within the articles selected for review, significant information was summarized and compared. Namely, from each study, instruments, sample description, underlying theory, design, and outcomes were extracted for comparison and interpretation.

RESULTS

The identification and extraction processes are displayed in the flow diagram in Figure 1. Although we extracted design specifications as well as statistical results, which enabled us to calculate effect sizes, according to the Cochrane systematic review guidelines (Higgins and Green 2011), a meta-analysis was deemed inappropriate due to heterogeneity of the examined studies' design, features of the samples and measures.

After removal of duplicates, we screened 442 articles. As a result of the supplementary search, we added an additional 5 articles. From these, 180 were excluded because they were either review, theoretical articles, books, chapters, meta-analyses or non-English articles. Out of the resulting 267 articles, 199 were excluded because they were not related to the field; thus, the resulting 68 articles were checked for eligibility according to the

aforementioned inclusion criteria with a further 48 being excluded according to these criteria. A total of 20 articles were subsequently included in our systematic review.

The motivation theories adopted by the authors of the selected articles are systematized in the Table 1, with Figure 2 providing an explanation of the theories.

Participants and setting characteristics

Of the twenty articles that met the inclusion criteria of this systematic review, three explore motivational aspects for musical instrument learning in samples of children, 10 comprising adolescent participants, and seven are restricted to children and adolescents. With the aim of discussing motivation differences according to age, we organized our results into three sections: (i) articles investigating samples of children; (ii) articles investigating samples of both children and adolescents, and (iii) articles examining samples of adolescents.

We detected articles comprising samples sizes ranging from 38 to 3325 participants with data collection across 6 countries: the USA (n = 8), Australia (n = 5), the UK (n = 4), Canada (n = 1), Canada, China, and the USA (n = 1), and the USA and Singapore (n = 1). References for all included studies are listed in Table 1.

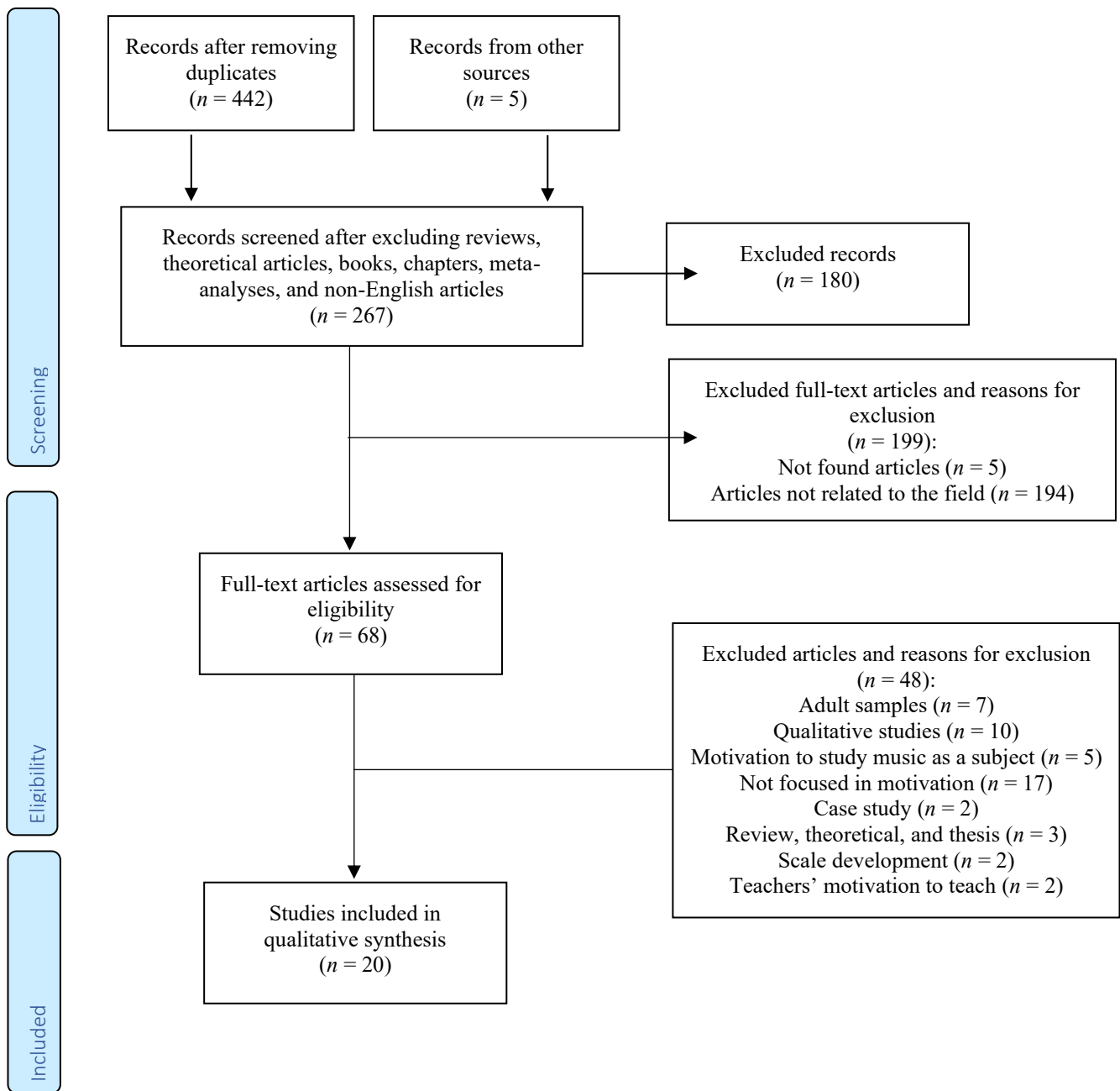


Figure 1

Flow Diagram with the results of our database search.

Articles investigating samples of children

Three of the selected articles include samples of children (Evans and McPherson 2015; Evans, McPherson, and Davidson 2013; McPherson 2000) and were developed as part of the same longitudinal research. Two of these investigate the impact of musical identity in musical achievement in two different time spans: after nine months of formal instrument

instruction (McPherson 2000), and after three years of formal instrument instruction (Evans and McPherson 2015). Two articles adopt the Expectancy-Value Theory as a theoretical lens (Evans and McPherson 2015; McPherson 2000), whereas the other article applies Self-Determination Theory as the chosen model (Evans, McPherson, and Davidson 2013). All of these use self-report questionnaires as data collection instruments, with some administered to the students, while others collect information from parents such as time spent practising whenever this source seemed more reliable than students.

Figure 2

Main Motivation Theories

Theory	Concept
Self-Determination Theory	Advocates individuals need to satisfy three basic psychological needs – autonomy, competence, and relatedness – and will develop motivation for activities that fulfil these needs the most. Also proposes a continuum motivation scale ranging from amotivation, through extrinsic motivation, to intrinsic motivation (4, 9, 10, 13 and 17) (Deci & Ryan, 1985).
Expectancy-Value Theory	States that individuals will become involved with activities that they value most and in which they anticipate they are efficient and competent (8, 14) (Wigfield & Eccles, 2000).
Attribution Theory	Analyses the reasons individuals attribute to their personal success and failure in terms of locus of control, and stability. There are four most investigated causes: effort, luck, ability, and task difficulty. In terms of locus of control, two are internal (effort and ability), and two are external (luck and task difficulty). In terms of stability, two are stable (ability and task difficulty), and two are unstable (effort and luck) (1, 3, 18 and 20) (Asmus, 1986; Weiner, 1995).
Achievement-Goal Theory	Proposes that socialization influences the setting and development of goals. It advances a dichotomous approach to competence: task (mastery-goals) and ego (performance-goals) (15 and 16) (Elliot, 1999).
Self-Regulation Theory	It is a model in which learners are active in their learning, setting goals for themselves, monitoring and regulating their behaviour (2) (Zimmerman & Schunk, 2001).
Self-Efficacy, Group Efficacy, and Entity-Incremental Theory	It is related to subjects or groups views about their competence perceptions and confidence in their performance, in regard to nature skills (19).

Note: The numbers refer to the articles according to the numbering on Table 1.

McPherson (2000) divided the prospective commitment declared by the participants into three categories: (1) short-term commitment (intention to play the instrument until the end of primary school), (2) medium-term commitment (intention to play the instrument throughout high school), and (3) long-term commitment (intention to play the instrument after leaving

high school and during later life). McPherson also collects the duration time of the practising sessions from the students' mothers to estimate an average of practising time accumulated across a period of 9 months. Those children who reported long-term commitment scored significantly higher on performance mastery measures than medium-term committed children. The lowest scores on performance mastery scales were from students who expressed a short-term commitment to learning their instrument. Finally, McPherson (2000) observed that students who expressed an extrinsic motivation before commencing their instrument tended to score lower on the performance mastery scales; conversely, those scoring higher on performance mastery scales tended to express a more intrinsic motivation.

In a similar fashion, Evans and McPherson (2015) explored both musical identity and practice on performance mastery after three years of learning by collecting data on four periods: before the commencement of instrumental learning, and at the end of the first, second and third year of learning an instrument. Again, after a longer period of learning (3 years), it was found that the long-term commitment evidenced by the best students impacted on their practising strategies by making them more effective, thus resulting in higher scores on performance mastery scales. Furthermore, those with long-term commitment and the highest amount of practice also played their instruments for a longer period of time.

Finally, Evans, McPherson, and Davidson (2013) explored the impact of the fulfilment of the three basic psychological needs as proposed by the Self-Determination Theory on decisions to cease music learning. This analysis revealed that participants reported higher satisfaction and lower inhibition of the three psychological needs during the high engagement context, and, conversely, lower satisfaction and higher inhibition prior to the cessation of their musical learning.

Other reasons to cease studies not related to the basic psychological needs were mentioned, such as physical conditions, context, and economical factors: orthodontic braces, stolen instrument, and too expensive an activity, respectively.

Articles investigating samples of both children and adolescents

We uncovered seven articles focusing on both children and adolescents (Comeau, Huta, and Liu 2015; Creech and Hallam 2011; Hallam et al. 2016, 2018; Schatt 2018; Schmidt 2005, 2007).

These articles focus on different musical instruments: one studied exclusively pianists (Comeau, Huta, and Liu 2015), another investigated violin players solely (Creech and Hallam 2011), three examined wind band instrument players (woodwind, brass, and percussion) (Schatt 2018; Schmidt 2005, 2007), and two considered the full range of classical and popular instruments (Hallam et al. 2016, 2018). All the above-quoted articles collected data through self-report questionnaires, with some being validated previously (e.g. the Piano Autonomous Motivation Scale used by Comeau, Huta, and Liu 2015), and others developed for the research (e.g. Hallam et al. 2016) (see Table 1 for further details). A broad array of theories was used in these seven articles: Self-Determination Theory (Comeau, Huta, and Liu 2015; Schatt 2018); Attribution Theory (Schmidt 2005); Self-Efficacy, Group-Efficacy and Entity-Incremental Theories (Schmidt 2007). Three articles did not specify any theoretical framework.

The articles authored by Hallam et al. (2018), and Hallam et al. (2016) included the same sample of students. However, one considered the complete sample, and the other only investigated the subgroup of those who had taken performance examinations. Specifically, Hallam et al. (2018) investigated the relationship between motivation and examination outcomes, with only those who had taken performance examinations being considered in this study. Data was collected on practising strategies and quality of practice, practising time, and scores obtained in the students' last performance examination (fail, pass, commended, and highly commended). Overall, the authors report that students who practiced the least were those who had obtained a pass, practising around 177 min per week on average.

Table 1*Summary of selected Papers on the measures set in the objectives*

Author	Age in years / Grade	Country	No. of participants	Gender (% females)	Design	Instruments	Theory
1. Austin (1988)	NA / 5 th -6 th	USA	38	NA	Cross-sectional	A questionnaire developed to measure students' achievement motivation	Attribution Theory
2. Austin and Berg (2006)	11-12 / 6 th	USA	224	NA	Cross-sectional	Music Practice Inventory (1-5 Likert scale)	Self-Regulation Theory
3. Chandler, Chiarella, and Auria (1987)	NA / 9 th to 12 th	USA	234	63.20%	Cross-sectional	7-point Likert scale for effort, natural musical ability, the difficulty level of the instrument, help from the director and others, and luck	Attribution Theory
4. Comeau, Huta, and Liu (2015)	6-17 / NA	Canada/China/USA	150	60-70%	Cross-sectional	Piano Autonomous Motivation Scale	Self-Determination Theory
5. Creech and Hallam (2011)	8 – 18 / NA	UK	337	74%	Cross-sectional	SPA (Survey of Pupil Attitudes) and MLSS (Music Lesson Satisfaction Scale)	NA
6. Driscoll (2009)	13-14 / NA	UK	271	NA	Cross-sectional	5-point Likert scale about Experience of music lessons, best things about learning to play an instrument or to sing	NA
7. Egilmez and Engur (2017)	14 – 17 / 9 th to 12 th	Turkey	89	24.71%	Longitudinal	Motivation Scale in Piano Education	NA

8.	Evans and McPherson (2015)	7-9 / primary school	Australia	157	55.41%	Longitudinal	The long-term motivation for playing an instrument was calculated based on the time that participants ceased musical classes	Expectancy-Value Theory
9.	Evans, McPherson, and Davidson (2013)	8-10 / 3 and 4 in primary school	Australia	157	55.41%	Longitudinal	7-point scale of Basic Psychological Needs Scale	Self-Determination Theory
10.	Evans and Liu (2018)	NA / High school	USA	704	61%	Cross-sectional	Psychological Needs Scale	Self-Determination Theory
11.	Hallam, Papageorgi, Varvarigou, and Creech (2018)	6-19 / Grade 1 – 8	UK	2131	NA	Cross-sectional	7-point scale on organization of individual practice, and motivation	NA
12.	Hallam et al. (2016)	6-19 / NA	UK	3325	NA	Cross-sectional	7-point scale on motivation; 3 statements in terms of musical aspirations	NA
13.	MacIntyre, Potter, and Burns (2012)	14-18 / 9 th to 12 th	Canada	107	57%	Cross-sectional	7-point scale of Motivational intensity and desire to learn.	Self-Determination Theory
14.	McPherson (2000)	7-9 / NA	Australia	157	59%	Longitudinal	Motivation	Expectancy-Value Theory
15.	Miksza, Tan, and Dye (2016)	13-22 / high school	USA/ Singapore	359	57.53%	Cross-sectional	2-item Revised Achievement Goal Questionnaire (R-AGQ)	Achievement Goal Theory

16. Ng (2017)	11-13 / 7 th	Australia	210	58.10%	Cross-sectional	5-point Likert scale of Achievement goals, Self-concept of ability, enjoyment, and devaluing of music, Parental support, Time spent on practice, and Future learning intention.	Achievement Goal Theory
17. Schatt (2018)	10-14 / 5 th -8 th	USA	796	66%	Cross-sectional	7-point Likert-type scale of (a) Intrinsic Motivation—To Know, (b) Intrinsic Motivation—To Accomplish, (c) Intrinsic Motivation—To Experience Stimulation, (d) Extrinsic Motivation—Introjected, (e) Extrinsic Motivation—Identified, (f) Extrinsic Motivation—External Regulation, and (g) Amotivation	Self-Determination Theory
18. Schatt (2011)	NA / 9 th -12 th	USA	218	52%	Cross-sectional	5-point Likert-type scale of motivational orientations (intrinsic and extrinsic beliefs) and attribution beliefs of success and failure (ability, effort, and luck)	Attribution Theory
19. Schmidt (2007)	NA / 6 th -12 th	USA	456	53%	Cross-sectional	5-point Likert items of mastery, intrinsic, and cooperative motivation orientation	Self-efficacy, group efficacy, and entity-incremental theory
20. Schmidt (2005)	NA / 7 th -12 th	USA	300	56%	Cross-sectional	5-point Likert of motivation variables (mastery, intrinsic, individual, cooperative, competitive, ego, approach success, avoid failure).	Attribution Theory

Note: NA: not available. These articles are signalled with * in the “References” section

Interestingly, those who failed had amassed longer weekly practising average times of approximately 233 min. Students who obtained a pass provided lower responses on practising variables meaning that they adopted less effective strategies. Those who received a pass (but not those who received a fail) provided lower responses to motivation variables. Those who had failed expressed less enjoyment of performing and less enjoyment of playing, lessons, and practice. From these results, the authors concluded that success feeds motivation and that this leads to the adoption of more effective strategies in challenges to come, in a type of ‘virtuous cycle’.

A different approach was taken by Hallam et al. (2016), who explored the relationship between motivation variables and musical aspirations. Information on grade level and accordance with three different statements of musical aspirations was collected – (1) always wanted to be involved with music, (2) want to be a musician, and (3) I think playing an instrument will be useful for my future career. The global score of motivation declined between grades 1 and 4, probably indicating a reaction to the more difficult and challenging repertoire. These researchers found that students who always wanted to be involved with music activities scored high on social life and the value of playing an instrument, enjoyment of performing, and enjoyment of instrumental music activities. This research also highlighted the importance of social and parental support, for all aspiration levels considered, social life and the value of playing an instrument was a robust predictor.

Two studies (Comeau, Huta, and Liu 2015; Creech and Hallam 2011) investigated how interactions between children and significant adults impact motivation. Comeau, Huta, and Liu (2015) compared how two cultures – Chinese and American – and their traditional parental styles influence students’ motivation. The authors reported that Chinese students believe they must practice harder than other students to achieve a successful outcome. Applying variables identified in Self-Determination Theory, the Chinese sample reported twice as much practising time than the American sample and scored higher than their American counterparts in all of the motivation variables, with the exception of introjection.

Creech and Hallam (2011) examined how student-teacher and student-parent dynamics might affect self-esteem, self-efficacy, motivation, enjoyment of music, musical attainment, and satisfaction with lessons. Their results showed that pupil-teacher reticence had a negative impact on several motivation variables: enjoyment of music, satisfaction with

violin lessons, motivation, and self-esteem. Receptiveness to parental support had a positive association with all the motivation variables (enjoyment of music, satisfaction with violin lessons, motivation, self-efficacy, and self-esteem) except for musical attainment, thus suggesting that parental support thwarts musical achievement. This controversial finding deserves further research attention.

The last three articles investigated samples comprising band programmes. Schatt (2018) sought to assess self-determination to practice (i.e. the relationship between self-determination to practice, years of experience, and weekly practising time), in order to determine whether there are differences in self-determination to practice according to grade level, sex, instrument, and the experience of private lessons. The relationship between self-determination to practice and years of experience showed that amotivation correlated positively with years of experience, whereas all three intrinsic motivation variables, and both extrinsic motivation-identified and -introjected correlated negatively. Results also suggested that the longer the students play the instrument, the less they are motivated to practice.

A study undertaken by Schmidt (2005) investigated the relations between motivation, performance achievement, and music experience on a sample of band students. Schmidt found that intrinsic motivation was related to practising time and effort. Students attributed their success to mastery and cooperative orientations and also reported learning more consistently in the group. Moreover, there was a tendency for more advanced students to demonstrate intrinsic and mastery orientations, whereas younger students tended to express competitive and ego orientations as well as avoid failure.

Another study by Schmidt (2007) aimed at evaluating intrinsic-mastery motivation in instrumental music as a higher-order construct. For that purpose, Schmidt investigated band students from grades 6 to 12, subdivided into two groups: middle school (grade 6–8) and high school (grade 9–12). Schmidt reported that students develop positive perspectives in terms of intrinsic motivation, cooperative attitudes and commitment to band, and incremental views of musical skills. Schmidt also found that intrinsic-mastery and commitment to the band are strong predictors of practising time.

Articles investigating samples of adolescents

Three of the selected articles applied Attribution Theory (Austin 1988; Chandler, Chiarella, and Auria 1987; Schatt 2011); two others analysed the sample through the lenses

of Self-Determination Theory (Evans and Liu 2018; MacIntyre, Potter, and Burns 2012); two utilised Achievement-Goal Theory (Miksza, Tan, and Dye 2016; Ng 2017); one used Self-Regulation Theory (Austin and Berg 2006); and two did not specify any underlying theory (Driscoll 2009; Egilmez and Engur 2017). All administered questionnaires to collect information, some of which had been previously validated (e.g. Evans and Liu 2018), whilst others developed instruments for the research (e.g. Austin 1988).

Three of the selected articles investigated high school students' motivation to study a musical instrument. For instance, Evans and Liu (2018) explored motivation using the psychological needs of high school students to continue in an orchestra. Their findings reveal consistent results related to psychological needs satisfaction, which predicted time spent practising, intentions to continue, and self-esteem. Frustration predicted only self-esteem.

Another study (MacIntyre, Potter, and Burns 2012), explored instrumental learning motivation and attitudes not only related to students but also according to external factors such as the impact of social environments involving parents, peers, and others. Their results demonstrated that motivation to learn a musical instrument was endorsed by positive attitudes – such as the effort for learning in relation to the musical environment; in other words, to the course and teachers – and by social environments, such as parents, peers, and others.

In contrast to the above studies, Schatt (2011) focused on the students' perspectives on their instrumental learning by adopting the Attribution Theory paradigm to clarify behaviour regarding practising. Schatt found that students understood the importance of practising for providing a better performance, and for this reason, higher values on the scale were obtained for the internal attribute – effort. Regarding motivation, students recognised that practising can be driven by extrinsic motivation, on an approach success trend. However, instrument practising was not related to extrinsic motivation, but instead to intrinsic motivation factors, thus suggesting that private lessons encourage learners to practice for themselves and not for external reasons.

Another two articles, with different aims, explored motivation in participants aged from 10 to 12 years. This article (Austin 1988) sought to test two contest conditions, namely a rated evaluation and a second form of evaluation that included only comments on music achievement. In general, the rated music contest promoted higher musical achievement. Moreover, the author found that motivation for success in the music competition was based exclusively on perceptions of effort.

Nevertheless, the author noted the need to include other motivational determinants to explain a broader range of intrinsic and extrinsic factors.

Austin and Berg (2006) investigated the relationship between regulation and motivation to practice in students who were learning instruments in orchestras and bands. These authors observed that regulation and motivation were different aspects of musical practice since a motivated student cannot show practising regulation. Another finding was related to a higher practising motivation for orchestra students, which was linked with the environmental quality in which students usually practice.

Two articles (Chandler, Chiarella, and Auria 1987; Egilmez and Engur 2017) explored the same age range (14–17 years). However, the first involved a cross-sectional study, while the second applied a longitudinal design. Specifically, Chandler, Chiarella, and Auria (1987) demonstrated that students who sense success attribute it to internal factors. On the other hand, failure was associated with external attributions and fewer challenges. Their data suggest that help from the band director does not positively impact on motivation since the director was perceived as an external and uncontrollable factor.

A one-year longitudinal study (Egilmez and Engur 2017) explored the motivation of high school participants to study piano. Results suggest that after 10th grade, motivation (musical engagement) and self-efficacy (performance) decrease. Moreover, 85% of the participants highlighted that teachers do not effectively prepare piano lessons, and 70% of the students associated their failure in piano lessons due to the high expectation that family or friends posit on them.

The remaining three articles focused on different age ranges to explore motivation in instrumental and choral music students (Ng 2017), investigated the associations between Achievement Goal motivation and engagement, rehearsal, and others (Miksza, Tan, and Dye 2016), or examine motivation in adolescents who were currently studying instruments or involved in singing classes, with those who had ceased learning (Driscoll 2009). The study carried out by Ng (2017), classifies his sample as being mastery focused (e.g. participants who express mastery aims, but are weak in performance aims), having multiple-goals (e.g. participants who have both strong mastery and performance aims), and unmotivated participants (e.g. those who are weak in both mastery and performance). Results show that mastery-focused and multiple-goal participants exhibited a higher self-concept of their ability and a higher enjoyment of their learning than their unmotivated peers. An interesting finding

was related to parental support. Multiple-goal participants scored higher for parental support, followed by mastery-focused students, and then unmotivated students. These findings suggest that social factors are intimately related to the maintenance and motivation of instrumental learning.

Another study undertaken by Miksza, Tan, and Dye (2016) explored two high school samples, one from the USA and the other from Singapore, using a 2 × 2 Achievement Goal orientation framework (mastery approach, mastery avoid, performance approach, and performance avoid). The authors explored the associations between quoted achievement goal motivation and flow (i.e. strong engagement and intrinsic satisfaction) in band rehearsal, grit in practising (i.e. perseverance and enthusiasm for long-term goals), and commitment to the band. Although no differences were detected between groups on the achievement goal scale, it was observed that the mastery approach orientations to the band were higher for the American students. Moreover, American participants also demonstrated associations between flow, grit, and a mastery approach. According to the authors, these results suggest that self-referential progress is associated with the American students' motivation results.

Finally, Driscoll (2009) collected evidence revealing that peers' support is a predictor of discontinuation of studies; furthermore, family support is reported to be twice as large than peers' support. Moreover, Driscoll found that the most typical reason to cease instrumental learning was that the participants found the classes annoying (reporting lack of interest and progress). Finally, similar to other studies, the author reports that dropout rates of instrumental learning rose from age 11, after the difficult transition into secondary school.

DISCUSSION

The present study sought to systematically review and summarise the existing literature that apply quantitative research instruments to study children's and adolescents' motivation to learn a musical instrument. Our focus was to clarify which theories have been adopted to support the published work on this topic, identify the quantitative instruments adopted, and understand the systematized primary outcomes.

Of the 20 selected articles, we noticed that the most adopted instruments for collecting information on factors associated with motivation were questionnaires or surveys. Some authors (Creech and Hallam 2011; Schatt 2018) administered existing and validated questionnaires such as the SPA (Survey of Pupil Attitudes) and MLSS (Music Lesson

Satisfaction Scale), or the MPMS (Musical Practice Motivation Scale), while others developed new questionnaires with variables aimed at assessing factors related to their research questions (Hallam et al. 2016, 2018).

It is well known that self-report measures have advantages, because they can quickly and easily be used to collect and then analyse and interpret extensive data from large samples. However, as with any type of measure, questionnaires also have limitations. Some of these limitations are the tendency for young respondents to provide meaningless responses due to being inattentive, lacking sufficient self-knowledge and metacognition, or even strategy use. Another essential concern commonly addressed for young respondents is that they can also choose the most straightforward answer, which researchers refer to as the 'primacy effect' (Scott 2000). To solve this shortcoming, some researchers have triangulated their results with information obtained by others (e.g. parents) in order to validate data obtained from an analysis of the children's responses.

A delicate point we signal is the adequacy of the questionnaires to assess very young students. According to Bell (2007), the number of points on the Likert scale should be adapted considering specific ages. In our systematic review, we observe that several studies administered the same 7- point Likert scale questionnaire to all participants regardless of age, ranging from 6 to 19 years old. Bell (2007) points out that young respondents do not understand the subtleties of the small differences between the 7 possible answers of a 7-point scale. Thus, she advises that for a sample ranging from 7 until 11 years old, a scale of 3 or 4 points should be adopted; for samples from 11 until 18 years old, 4 or 5 possible answers should be offered. An advantage of using a 7-point Likert scale such as the one mentioned above, is that it allows for more discrimination in the data. In order to overcome the mentioned limitation of self-report assessment, future research could investigate other measurement options to those currently being used with young respondents, such as verbal self-reports and graphic self-reports (Fryer and Dinsmore 2020).

In addition, a wide range of questionnaires were used in the studies reported here, thus making comparisons more difficult across samples. Consequently, the use of more standardised and validated questionnaires administered across studies would increase the validity of current findings.

Regarding the age of respondents, we noticed that the number of studies on motivation to play an instrument is minimal with samples of children. We found only three

articles with this population (Evans, McPherson, and Davidson 2013; Evans and McPherson 2015; McPherson 2000). A possible explanation may be that some schools advocate that the learning of some instruments (e.g. brass) must start later on when children have more developed and mature bodies and muscles. Another possible reason is that not every music school offers programmes at the elementary school level.

Most of the studies included in this review utilised a cross-sectional design. These studies all show that motivation tends to decline at the onset of adolescence. However, this observation is a result of the comparison of different subjects. One of the strengths of longitudinal research – observation of the evolution of motivation of a given subject across time – would allow for a deeper understanding of this dynamic because it would pinpoint the major turning points when motivation is strengthened or diminished.

A number of investigations report that students who bring a personal interest to their instrumental learning tend to be more intrinsically motivated, which, in turn, fosters self-regulation and results in better musical and emotional outcomes (Creech and Hallam 2011; Evans and McPherson 2015; Hallam et al. 2016; McPherson 2000; Ng 2017; Schatt 2011; Schmidt 2005, 2007). These intrinsically motivated students tend to form musical identities at much younger ages, and this view of themselves drives their subsequent engagement in learning music (Evans and McPherson 2015).

As observed in nine articles, the social context is an important factor that influences motivation. Whenever students feel comfortable in the learning setting (e.g. good relationships with teachers and peers) and feel integrated into the group, this relatedness impacts on the value they attribute to music, with the result that music becomes a central part of their lives (Creech and Hallam 2011; Driscoll 2009; Egilmez and Engur 2017; Evans and McPherson 2015; Evans and Liu 2018; Evans, McPherson, and Davidson 2013; Hallam et al. 2016; Ng 2017; Schmidt 2005).

Findings also suggest that the level of parental support also impacts on the learning process. The cross-cultural study comparing motivation between Chinese and American students showed that a work ethic robustly impacts on students' commitment to learn their instrument. Chinese students seem to internalise the values of their parents' culture and apply this to their learning realities. They tend to view their musical achievement as a result of hard work and consequently engage themselves more intensively in their musical learning (Comeau, Huta, and Liu 2015).

A factor studied by many authors is practising. The number of hours amassed practising is an indicator of engagement and motivation. Findings show that the more one is motivated, the more one will practice (Austin and Berg 2006; Comeau, Huta, and Liu 2015; Evans and Liu 2018; Hallam et al. 2018; Schatt 2011, 2018; Schmidt 2005). Importantly, the quality of practising plays a major role, but it is undeniable that the number of hours of practiced is a strong predictor of musical achievement. Hallam et al. (2018) even suggest that a ‘virtuous cycle’ in which motivation leads to more practising thus achieving better outcomes, which, in turn, results in higher levels of motivation.

As for the motivation theories, those studies that adopted the Expectancy-Value framework to assess motivation to learn an instrument before commencing learning, focused on understand the expectations, visions and perceptions students bring to the learning process and how this impact on their subsequent engagement with music. By attributing success to high achievers’ internal and unstable reasons, Attribution Theory reminds us about the need for teachers to reinforce in their students that their talent is not fixed but something that can be developed.

Achievement-Goal Theory has allowed researchers to understand what drives a student. This framework has been used to assess whether students are focused on a desire to learn an instrument for the pleasure of playing it or if they are driven by external motivators, such as public success or approval from others. Teachers may be aware that these external goals may motivate some students, but they often come with a detrimental impact in terms of psychological stress.

Self-Regulation Theory was adopted when researchers sought to understand how practising strategies impact on the improvement of students’ overall performance and, consequently, their engagement with the repertoire they are attempting to master. Self-Efficacy, Group Efficacy, and Entity-Incremental Theory have been applied to understand how self-beliefs impact one’s engagement with a shared project and on an ensemble’s performance.

Self-Determination Theory has allowed the assessment of fine-grained fluctuations of motivation as a result of many different factors. This permits researchers to understand how dyadic relations such as the dynamics of the student-parent-teacher relationship or interactions with peers, impact perceptions of competence, need for autonomy, and relatedness, which affects one’s commitment and willingness to continue engaging in the

learning process. For these reasons, Self-Determination Theory helps with efforts to provide a more comprehensive understanding of the instrumental learning process. The three basic psychological needs permit a broad framing of several variables and provide significance to internal factors (self-beliefs such as competence and self-needs such as autonomy) as well as external factors (attribution of social meaning to the task). Furthermore, the 7 points on the motivational scale ranging from amotivation to intrinsic motivation provide a comprehensive framework for distinguishing between the different levels of commitment and engagement observed in-between students (inter-subject) and even within the same person as motivation unfolds over time (intra-subject).

CONCLUSION

Based on the results of this study, it can be recommended that researchers devise more studies that incorporate a longitudinal design into their work, in order to understand at a much deeper level, the moment to moment and longer-term fluctuations in students' motivation across time. For us, Self-Determination Theory provides a unique theoretical lens for providing a more comprehensive understanding of motivational factors that impact on learning and long-term participation in music.

The existing literature is limited by few studies that have explored motivation in the context of music education during the beginning stages of learning an instrument, with far less work undertaken that studies the predispositions and beliefs that children possess before commencing learning and which they bring to their initial experiences of learning music.

We see a particular need for researchers to develop and validate new measurement techniques to assess learners' motivation to play an instrument before and immediately after learning commences. These instruments need to be designed and constructed in accordance with the age ranges of the children, such that the concepts and elements studied are clearly understood by the learners so that they can provide reliable responses. At post-secondary school ages, more robust measures that can be used by Music Conservatories would allow panels to move beyond performance-based measures of attainment, to a broader sampling of a range of personal motivational attributes that help determine success in studying music at the advanced stages of musical development.

One positive indication of how the research literature in this topic is maturing is a shift from studies that lack an overarching theoretical position, to those that are now drawing

on established theoretical frameworks such as Self-Regulated Learning and Self-Determination Theory, both of which have an extensive literature in other areas of learning.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Article 2.

**SELECTION OF STUDENTS TO MUSIC CONSERVATOIRES: IS AURAL
APTITUDE EXPLAINED BY SOCIODEMOGRAPHIC DATA?**

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**SELECTION OF STUDENTS TO MUSIC CONSERVATOIRES: IS AURAL
APTITUDE EXPLAINED BY SOCIODEMOGRAPHIC DATA?**

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ABSTRACT

Admission procedures to elementary school in Music Conservatoires in Portugal consist in the assessment of aural aptitude of 5- and 6-year-old candidates. This investigation aims at finding whether is there any sociodemographic information that may influence the results of the aural aptitude assessment. Our sample comprises 84 dyads candidate-parents who applied to the 2019-2020 academic year to a Public Music Conservatoire. Questionnaires were used to collect information from both children and parents. Our results suggest that the candidate' sex is related to the results of the aural aptitude assessment, a developmental advantage that girls benefit over boys. These results point to the necessity of considering data in other domains to complement aural aptitude assessment, considering that becoming a competent musician requires an array of different competencies, such as a great deal of effort, persistence, commitment, and time during the process of refining and developing skill.

Keywords: admission to Conservatoires, aural aptitude assessment, sociodemographic data, musical instrument, music education

INTRODUCTION

Becoming a competent musician is demanding in that it requires a great deal of effort, persistence, commitment, and time during the process of refining and developing skill. In addition to the physical requirements of learning to play an instrument, the musician also needs to develop knowledge and understandings of music; its traditions, customs and styles of performing (Hargreaves, 1996; McPherson, Davidson & Faulkner, 2012). In other words, the road to musical excellence requires a complex of skills, knowledge and understandings associated with the physical and mental demands of learning to perform. It is self-evident, therefore, that successful musicians are typically those who have developed their passion for performing by learning how to practice purposefully, and self-regulate their actions, cognitions and feelings.

There is general agreement in the research literature that starting a musical instrument early has benefits for a child's overall development as well as their musical development, and that these benefits last well into adulthood, even if the child ceases instruction after a few years (Bailey & Penhune, 2012; Blackwell & McPherson, in press).

Music schools worldwide offer programs starting in elementary school for some instruments (e.g., brass instrument players may start their learning after the body has matured enough to cope with blowing requirements) (Kertz-Welzel, 2005; López-León et al., 2015; The Association Européenne des Conservatoires, Académies de Musique et Musikhochschulen, 2021). In Portugal, the network of the 7 Public Music Conservatoires offers music programs starting on elementary level. In fact, every academic year, the demand far exceeds the available positions offered by schools and, for that reason, an admission procedure is used to select the best applicants (Conservatório de Música de Coimbra, 2021; Conservatório de Música de Loulé, 2021; Conservatório de Música do Porto, 2021; Escola Artística do Conservatório de Música Calouste Gulbenkian de Aveiro, 2021; Escola de Música do Conservatório Nacional; Instituto Gregoriano de Lisboa, 2021).

The admission procedure relies on the assessment of aural aptitude. Applicants are asked to repeat rhythmic and melodic exercises, sing tunes, and identify similarities and differences between two given tunes or rhythmic excerpts. The results of the aural aptitude assessment are used to invite applicants to enrol, starting the call with the candidates who achieved the highest scores.

In the admission procedure, no further information is usually considered or collected to characterize the selected students or even combine them with objective indicators of success such as the grades awarded to students. Those applicants' sociodemographic data such as sex, family household or the musical background are rarely gathered, even though they could be analysed to assess if the results of the aural aptitude assessment are robust predictors of future musical achievement or if, in turn, they are biased by some of the sociodemographic measures.

Potentially, a sociodemographic characterization may help the music schools to refine their admission procedures or even anticipate whether certain groups of children will need a different type of support. It is widely accepted that sociodemographic characteristics influence an individual's ability to obtain knowledge or communicate effectively with the teacher and other supporters. For instance, many authors observed that sociodemographic variables can explain academic achievement and exam grades (Abd-El-Fattah, 2006; Almeida, Guisande, Soares & Saavedra, 2006; De Graaf, De Graaf & Kraaykamp, 2000). Another instance, research in neuroscience has been evidencing that the female brain myelinates at a faster rate than the male brain (Lebel & Deoni, 2018). The myelin sheath is the protein that surrounds the axon of the neuron and confers its white colouring, thus the term white matter. This myelin sheath, among other features, electrically isolates the neuron and allows the faster progression of the neuron's action potential. Therefore, a myelinated brain evidences faster communication between different areas. For these reasons, myelination has been considered a marker of brain maturation. However, the female advantage in brain maturation is yet to be seen in cognitive development (Baron-Cohen, 2003). Although cognitive differences between boys and girls have been observed (Driessen & Van Langen, 2013; Freeman, 2004; OECD, 2009; Smith, 2003), other factors rather than brain differences have been proposed to explain inequality. Nevertheless, there are differences between boys and girls in terms of achievement in different subjects: for instance, Driessen & Van Langen (2013) observed that girls outperform boys in reading and language and that boys outperform girls in mathematics and sciences. Furthermore, boys are seen to be weaker than girls when it comes to work attitude and social behaviour.

Another important characteristic is the family dynamics. Custodero & Johnson-Green (2008) found that families involved in music work as sound groups and the presence of siblings enhances the musical engagement because they serve as social partners.

Furthermore, the order of children birth also impacts the familiar dynamics as observed by Custodero et al. (2003), in which parents tended to sing and play with their firstborns more often than with latter-borns.

When dealing with samples of young children, the date of birth also impacts the selection of candidates for some activities, and the criteria of the process may favour one group in detriment of another. For instance, Gladwell (2008) in his book *Outliers* (Axelrod, 2009) found that developmental maturity represents an advantage when applying to an activity whose selection criteria is based on age or date of birth. He found that a majority of baseball players in teams competing in the American major-league were born in the first three months of the year, thereby being some months older than their colleagues, and that this represented a developmental advantage to the older players.

Candidates to the elementary level of the Music Conservatoires where this investigation took place are 5- and 6-year-old children. The assessment of aural aptitude does not require any previous formal training. However, the development of such capacities is affected by the upbringing of children from their birth until the day of the assessment. Literature highlights the influence of enculturation (Morrison, Demorest & Stambaugh, 2008) and how stimulating households (Creech, 2009) favour the development of cognitive skills. Burchinal et al. (2000) found that the quality of childcare was important in the development of cognitive, social, and academic skills, focusing, for instance, in the frequency of musical hearings, singing and the quality of the musical stimuli. Furthermore, being exposed to art enhances the development of sensitivity and creativity from young age (Koester et al., 1989; Papoušek, 1996). For instance, Custodero and Johnson-Green (2008) observed that parents with formal music education tend to sing and play for their children frequently at home. Similarly, being raised in a family of music lovers, where singing and making music is part of the routines, develops aural aptitude, especially the sensitivity to intonation and sound discrimination (Papoušek et al., 1987). As such, sociodemographic data has been referred to as a predictor of academic achievement.

The purpose of this research was to map the cohort of applicants to the elementary level of a Public Music Conservatoire in the northern region of Portugal and to find whether there are any sociodemographic data that might be related with the results of the aural aptitude assessment that comprises the admission procedure.

METHOD

Sample

The sample includes the candidates to the elementary level of a Music Conservatoire who accepted to participate in the study. At this specific admission procedure to the academic year 2019/2020, the Conservatoire received 105 applications, but only 100 candidates showed up for the assessment. Out of these 100 candidates, 84 accepted to participate in this study, being 84 children-parent dyads (168 participants), 84 children (42 males; 42 females), and respective parents/accompanying relatives (24 males; 59 females; one did not declare sex). The children's mean age is 5.58 years ($SD = .496$); 35 children were five years old, and 49 were six years old.

Instruments and Measures

For this study, two questionnaires were developed: one to be administered by a researcher to the children and another to be answered by the parents/accompanying adults.

We considered sociodemographic data gathered about the children's age, sex, former musical experience, and existence of siblings; and the parents' age, sex, marital status, profession, education level, former musical experience, and the existence of other sons or daughters playing or learning a musical instrument for the purposes of this research.

The administration of the questionnaires took place in July 2019, right after candidates had performed their assessment before the panel.

The results of the aural aptitude assessment were collected when the Conservatoire made them public. These tests seek to assess aural aptitude (for more information, see Conservatório de Música do Porto, 2021). Upon arrival to the school, children are welcomed by music teachers and gathered to perform relaxation exercises and to learn a tune that they would be asked to sing to the jury members. Afterwards, candidates were guided one by one to a room where they were assessed by a 4-member jury comprising three instrumental teachers and one ear training teacher. First, the candidates' rhythmic skills were assessed: two 4-measure simple-meter and two 4-measure compound-meter rhythmic exercises were clapped twice and, after the second presentation, candidates were asked to reproduce (jury members rate the accuracy of the performance on a scale ranging from 0 to 50 points); to assess melodic skills, children were present with two short tunes, one in a major mode, the other in minor mode, and after the second presentation, the children were asked to sing the

tunes back (jury members rate the accuracy of the performance considering rhythm, intonation, and security). The remaining items included singing the beforehand learnt tune and another tune chosen by the children. Jury members rate the assessment on a scale from 0 to 200 (i.e., four items each graded from 0 to 50 points). Candidates were ordered according to their grades and invited to enroll starting on the higher grades.

Procedure

Upon children's willingness to participate, parents/carers were invited to sign the informed consent for themselves and on behalf of their children. The research was presented to all families, candidates, and respective parents or accompanying adults. The research team assured anonymity and confidentiality of all data collected and informed that the investigation meets the requirements of the Ethical Letter of the Portuguese Society of Educational Sciences (2014) and the Ethical requirement of the institutions involved. The participants were informed that they could cease their involvement with the research at any time without the need to provide a reason. It was also stressed to them that the information collected was to be used exclusively for the purposes of this investigation and would not be considered in the admission procedure to the Conservatoire.

The agreement with the Music Conservatoire stated that candidates would begin by completing the aural aptitude assessment and afterwards, those wishing to participate in this research, would be taken along with their parents or accompanying adults to a different sector.

RESULTS

Considering the total children's sample, 71% ($n = 60$) declared having previous musical experience, and out of these, 54 participants reported playing already a musical instrument. Regarding household, 57 participants (68%) reported having siblings, of which 35 are music players. Among siblings, piano ($n = 6$) and violin ($n = 5$) were the most played instruments, followed by the report of playing more than one instrument ($n = 5$) (see Table 2).

Considering sex differences, the male sample was composed of 15 five-year-old and 27 six-year-old boys, while the female sample was composed of 20 five-year-old and 22 six-year-old girls. From the entire sample, 25 boys and 35 girls said having musical experience.

Thirty-one boys had siblings, and out of these, 18 played a musical instrument; 26 girls had siblings from which 17 played an instrument.

Table 2

Candidates' socio-demographic information

	Male		Female	
	5-year-old	6-year-old	5-year-old	6-year-old
Age	15	27	20	22
	= 5.60 years (<i>SD</i> = 0.49)		= 5.58 years (<i>SD</i> = 0.50)	
	= 5.58 years (<i>SD</i> = 0.496)			
Brothers or sisters	11 no; 31 yes		15 no; 26 yes	
	26 no; 57 yes			
Previous musical experience	17 no; 25 yes		7 no; 35 yes	
	24 no; 60 yes			
Brothers/sisters with musical experience	10 no; 18 yes		8 no; 17 yes	
	18 no; 35 yes			

For this research, we also collected data from parents or other adults accompanying children to the admission tests. The adult sample was comprised of 84 participants (24 males; 59 females; 1 adult did not declare sex) with a mean age of 40.82 years (*SD* = 4.303).

Table 3

Parents' socio-demographic information

Sex	29% male; 70% female
Mean age	40.82 years
Marital status	64% married; 20% <i>de facto</i> union; 10% single; 5 % divorced
Profession	29% teachers; 12% physical sciences specialists; 59% others
Education	87% tertiary level; 12% high school; 1% middle school

As for the marital status, 54 were married, 17 were in *de facto* relationships, eight were single, four divorced, with one participant not declaring marital status.

Concerning the professions of the adult sample, being a teacher was the most popular profession ($n = 24$), followed by specialists in physical sciences, mathematics, and engineering ($n = 10$), and health (physician and nurse) ($n = 9$).

Table 4

Parents' musical background and household

Musical experience	<ul style="list-style-type: none"> • 75% own a musical instrument • 58% have studied music (13% piano, 12% guitar) for 71.96 months on average
Sons or daughters	<ul style="list-style-type: none"> • 32% have other sons or daughters playing instruments (8% piano, 7% violin, 4% French horn)

Regarding education level, 87% of the sample declared having tertiary level qualifications: 41 adult respondents held an academic degree, 21 a master's degree, and 11 possessed a Ph.D. Eleven held high school education qualifications only.

Regarding the 63 adults possessing musical instruments, the most popular single instruments were guitar ($n = 10$) and piano ($n = 6$), with 40 adults owning different types of musical instruments.

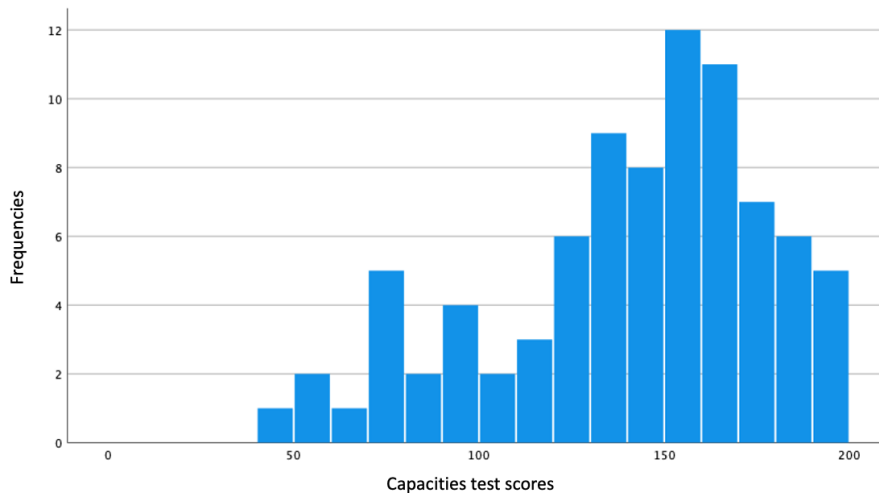
Upon enrolment in the conservatory, 73 adults expressed a willingness to acquire an instrument for their children. Concerning musical experience, 49 adults have studied music for 71.96 months on average, being piano ($n = 11$) and guitar ($n = 10$) the most played instruments.

Our data also showed that 32 parents had other sons or daughters studying music, 19 at the Oporto Music Conservatory, and 12 at other music schools. One parent did not answer this question. The most played instruments by other sons or daughters were piano ($n = 7$), violin ($n = 6$), and French horn ($n = 3$).

The results of the aural aptitude assessment presented a mean of 139.99 points ($SD = 36.9$) being the minimum score 42 and the maximum 199. Half of the sample ($n = 42$) had scores higher than 146 and the best 25% of the sample ($n = 21$) got more than 167 points out of 200.

Table 5

Capacities test distribution scores



The only significant correlation founded between the sociodemographic variables and the aural aptitude assessment was between the scores of the aural aptitude assessment and the sex of the candidate ($r_{pb} = .350$; $p = .001$). Further investigation on this means that girls achieved higher scores (152.83 ; $SD = 29.89$), compared to boys (127.14 ; $SD = 39.06$). A t-test shows a significant difference depending on the sex ($t(82) = -3.385$; $p = .001$). There were not differences on the aural aptitude assessment results depending on the age, meaning that five-year-old children performed at the same level as their six-year-old counterparts.

All the other sociodemographic variables did not show significant correlations with the aural aptitude assessment, namely children's musical experience ($r_{pb} = .161$; $p = .144$), parents' job ($r_{pb} = -.046$; $p = .686$), parents' education ($r_s = .001$; $p = .993$), parents' owning of a musical instrument ($r_{pb} = .163$; $p = .143$) and parents' musical studies ($r_{pb} = -.204$; $p = .063$).

DISCUSSION

These results suggest that female candidates have an advantage over male candidates: the 84 candidates' sample was evenly distributed (42 males and 42 females) but the cohort of the students selected to the music program ($n = 60$) showed a predominance of girls (35 females and 25 males). This means that the distribution of girls grows from 50% in the candidates' sample to 58% in the cohort of the selected students; conversely, boys

distribution decreased from 50% in the candidates' sample to 42% in the cohort of selected students. Although these findings need to be confirmed with other samples of candidates in other music schools and also students who are applying to different academic years, it seems that the greater developmental maturity presented by five and six-year-old girls over boys may provide them with a starting vantage point. It may happen, likewise Driessen & Van Langen (2013), girls are stronger than boys in aural capacities as they are in reading and language. The evident close connection between music and language demonstrates the need for further research to clarify this point.

Unlike the findings by Gladwell (2008), age did not affect the development of aural capacities since five- and six-year-old children performed similarly.

We also did not observe significant correlation between the results of the aural assessment and social-economic status. Analysing the academic qualifications, we find that our sample was from medium to high SES, considering that 87% of the respondents stated that they held a college degree. We attribute the lack of a relationship between SES and the aural aptitude assessment to the fact that there was not enough heterogeneity in the sample.

Not finding a relation between the applicants' results in the admission procedure and the previous musical studies of their parents does not come as a surprise because research has shown that the parents role relies on structural and psychological support whereas teachers are responsible for teaching technical and artistic domains (Sosniak, 1995).

Our results suggest that the admission procedures to Music Conservatoires must include the assessment of other skills to complement aural aptitude, considering that the results in this domain are very much influenced by the sex of the applicant.

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Article 3.

**MUSICAL ACHIEVEMENT DURING A LOCKDOWN: THE PARENTAL
SUPPORT MIRACLE**

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MUSICAL ACHIEVEMENT DURING A LOCKDOWN: THE PARENTAL SUPPORT MIRACLE

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ABSTRACT

The quality of parental support is recognized as a crucial factor in the early stages of a student's development, and particularly in instrumental music education. At the start of 2020, the outbreak of a global pandemic crisis posed new and unprecedented challenges to education, forcing families to stay at home to prevent contagion. This investigation was conducted during the period of a COVID pandemic lockdown in Portugal. We explored whether parental support, provided during the lockdown period, was associated with their child's achievement as reported by their instrumental music teacher. For this study, 39 parent-teacher dyads of first-grade students of an instrument music course were recruited from two public music conservatories. Parents supplied information on the frequency in which they provided student-support-related attitudes and actions in the home context. Simultaneously, teachers provided information about the student's achievement during the lockdown compared with the previous in-person performance period. Results indicate a strong relationship between parental support and musical achievement, with students who received higher levels of supportive parental involvement performing better than before the pandemic crisis. The findings are discussed in relation to the importance of parental involvement in a child's instrumental music education.

Keywords: COVID-19, lockdown, music education, musical achievement, musical instrument, parental support

INTRODUCTION

Various research has shown that parental support is of the highest importance in the early stages of a learner's musical development (Asmus & Hodges, 2006; McPherson, 2009; McPherson & Davidson, 2002; Pomerantz et al., 2005; Zdzinski, 1996). In fact, the link between parental involvement and children's musical achievement is so strong that some authors assert that a lack of parental support will seriously impede the learning of a musical instrument (McPherson et al., 2012; Reis, 2009).

At the start of 2020, the outbreak of a global pandemic crisis posed new and unprecedented challenges across all areas of education, including music education. Due to the SARS-CoV-2 pandemic (stemming from a new coronavirus first identified in China in late 2019), various countries took measures to stop the spread of the virus. Worldwide, the emergency measures to prevent contagion included social isolation and the suspension of any non-essential economic activities, including the closure of educational facilities that affected all levels and modalities of the education system (Mackenzie & Balmer, 2020).

Unable to maintain in-person classes and lessons, students and teachers were forced to stay at home and to create and explore new tools and strategies to maintain pedagogical continuity. In Portugal, the Government decreed the lockdown of schools effective on March 16, thus affecting the last 2 weeks of the second term (March 16–27) and the entire third term (starting on April 14). At music conservatoires, music teachers were encouraged to adopt whatever means and tools they found most effective given the availability of computers and internet connections. Instrumental music teachers were allowed to teach synchronous lessons through video-conference calls or, if the internet connection proved insufficient, asynchronous lessons through receiving videos from students and sending them feedback through the same means (Portuguese Ministry of Education, 2020).

During the period of lockdown, the family environment also changed considerably. The lockdown of businesses and services forced many adults to work from home. Many others were laid off or unable to find full- or part-time work (Portuguese Government, 2020). House confinement heavily affected family routines and the way parents helped their children with their schoolwork. The social and psychological consequences of this dramatic change cannot be underestimated.

Staying at home all day challenged many parents to work and to assist their children with schoolwork at the same time. Some parents reported difficulties coping with the

demands and expressed anxiety about their children's progress because they were unable to focus on subjects taught through online classes, became bored and unable to sustain their concentration, or preferred gaming rather than online learning (Apriyanti, 2020). Other parents, however, reported that their children were happy with the online learning setting, but acknowledged their concern that they had little interaction with their teacher during this period (Zhao et al., 2020). When parents worked in sectors that could not be locked down, children often stayed with grandparents or other relatives, often away from their instruments (e.g., piano, harp) and therefore unable to practice (Oliveira & Oliveira-Silva, 2020).

Although the repercussion of long-term school closures is yet to become evident, the transference of all learning activities from school to home over a number of months offered a unique opportunity to study the role of parental support in children's musical achievement, given that the positive association between children's academic growth and parental support in the learning process is widely supported by the research literature (Chohan & Khan, 2010; Desforges & Abouchar, 2003).

In the context of school education, parental support involves a diverse range of actions and activities by parents to assist their children with their learning. This may include communicating with the child's teacher, seeking to understand the school's policies, participating in parent meetings, communicating with teachers, or even arranging logistics associated with home-school commuting (Desforges & Abouchar, 2003). Parents' attitudes and expectations about their child's academic path have a significant impact on a student's academic achievement. Gonzalez-Pienda et al. (2002) observed that parents tend to be more involved and offer higher levels of support in the early stages of their child's learning process but decrease their engagement as the student grows older. This early support contributes to developing values such as the sense of responsibility by the child (Fan, 2001).

Likewise, parental support is especially important in the early stages of music learning, a period when young students often do not possess a high degree of autonomy so need considerable positive reinforcement and support with their learning (McPherson, 2000, 2009; McPherson & Davidson, 2002; Sloboda et al., 1996). During the beginning stages of learning a musical instrument, students create beliefs, perceptions, and expectations about their music learning that are influenced not only by their teachers, but also by the kinds of interactions they have with their families and especially with their parents (McPherson, 2009). In fact, the mindset parents hold concerning their child's musical achievement affects

their child's attitudes and behaviors and the perceptions they hold regarding a host of beliefs and attitudes, such as their own competence, potential, effort, resilience, and identity (McPherson, 2009). As a result, high levels of parental support foster self-esteem, motivation, and positive outcomes. In contrast, low levels of parental support can lead to a vicious and negative emotional spiral, demotivation, and even distrust and stress (Creech, 2010). Research on the relationship between first-graders and their mothers has shown that mothers who perceived their child to lack potential, motivation, or the temperament required to thrive in music (according to their own expectations) withdrew support and assistance, thus seeding in the mind of the young learner a sense of incompetence that led to negative outcomes (McPherson & Davidson, 2002).

Young learners are not expected to take the initiative, grab their instruments, and regulate their practice sessions on their own. Instead, they usually rely on their parents' support in the form of reminders and other forms of reinforcement to manage their own practice schedules (McPherson & Davidson, 2002). By structuring practice time, parents promote the development of self-regulation through autonomy-supportive attitudes (McPherson, 2009). Self-regulated students are independent learners who are able to organize their practice according to their own set goals, in addition to effectively monitoring their practicing sessions by devising the best strategies to overcome difficulties and challenges, and by solving problems they have explored on their own. This approach enhances feelings of competence and enables students to develop their capacity to thrive (McPherson, 2009; McPherson & Zimmerman, 2002; Zimmerman & Cleary, 2006).

Although there is evidence that other factors are also crucial for musical achievements, such as the quality of the student-teacher experience (Gaunt, 2011) and the number of hours of practice (Sloboda et al., 1996), it seems that a more reliable predictor of success is the time parents spend with their child supervising home practice (Brokaw, 1982; Davidson et al., 1996; McPherson, 2009). As instrumentalists spend most time engaged with their instruments when practicing, parents play an important role in structuring practice sessions to ensure their child can develop their own unique capacities (Davidson et al., 1996). Davidson and colleagues (1996) suggest that more positive outcomes are reached by students whose parents attend their lessons and listen to their practice. By doing this, parents are able to transfer information received during lessons to practice sessions and thus assist their child by scaffolding their practice.

The literature on parental support tends to distinguish between parenting styles (i.e., the attitudes that convey an appropriate emotional climate) and parenting practices (i.e., the behaviors that give shape to parents' expectations about their child's learning process; Kuppens & Ceulemans, 2019). Investigating the role that parental support plays in instrumental music learning, Creech (2010) proposed three types of parenting style: behavioral, cognitive/intellectual, and personal support. Behavioral and cognitive/intellectual support has proved to be effective and the most appropriate for beginners who, lacking individual autonomy, often require external regulation from significant adults and emotional support to cope with the anxiety and stress that may arise from unsuccessful practice and failure. Therefore, an authoritative kind of parenting leads to positive outcomes based on high involvement, high structuring, and autonomy-support (McPherson, 2009). Conversely, an authoritarian kind of parenting—in which parents are highly demanding and exert high levels of control but are not involved with their child's learning—tends to thwart the development of self-beliefs such as self-confidence and self-efficacy, and consequently decreases the learner's motivation and engagement.

In the literature on talent development, parental support has been found to play an important mediating role between the four requirements to thrive (early start, access to good coaches, practice, and effort) and resultant success. For instance, as stated by Witte et al. (2015), highly involved parents provide an early start to their sons or daughters (as often parents are artists or professionals in that activity), seek the best teachers and coaches available, structure practice sessions and competitions, take care of all managerial actions, adapt family routines to the needs of their children, and provide emotional support to cope with stressful moments and instances of failure.

According to Creech (2010), the parents' role “lies at the heart of a system that advances the child's development while professionals take primary responsibility for the advancement of knowledge and skills” (p. 28). This is evident in research such as Sosniak's (1985) study, in which interviews with 24 talented American concert pianists revealed that none of them had parents who were professional musicians. This demonstrates that parents do not have to provide artistic or technical support, as often the most harmonious relationships occur when each agent cooperatively acknowledges their own role: parents provide affective and behavioral support whereas teachers provide artistic and technical knowledge (Creech, 2010). Yet when parents are intimately involved, their child

internalizes more deeply the values and rules of music education and develops autonomy and a will to learn (Küpers et al., 2015). This transfer process from external to internal regulation is a landmark of Deci and Ryan's (1985) Self-Determination Theory—a theory suggesting that the quality of motivation (ranging from amotivation, passing through extrinsic motivation to intrinsic motivation) depends on the fulfillment of three basic psychological needs: competence, autonomy, and relatedness.

Many studies over the past decades have provided important information on the impact of parental involvement in music education. For instance, Creech and Hallam (2003) found that students achieve higher results when their parents attend musical instrument classes, supervise home practicing, and attend public performances by the child. Comeau et al. (2015), investigating the relationship between children and their significant adults in a sample of Chinese and American piano students, found that learners tend to assimilate adults' working ethics and attitudes, practice for longer, and achieve higher results when parents attend lessons and provide support at home. The common feature of these reports is that the most accomplished students benefit from supportive backgrounds, with music always present and highly valued in their lives (Sosniak, 1985). The house confinement and the lack of in-person accompaniment from musical instrument teachers during the pandemic provided a unique opportunity to study the role of parents in children's music education. During the lockdown, most parents assumed an unprecedented amount of responsibility for their child's learning process, through their use of external regulation cues, schedule and practicing monitoring, provision of physical conditions suitable for practicing, encouragement, and assessment of the match between goals set by the teacher and what was achieved by the student. Within this context, the present research therefore focused on 6- and 7-year-old students' musical achievement, and used questionnaires to gauge the level of parental support during the lockdown period.

METHOD

This study is part of more extensive longitudinal research aimed at predicting musical achievement through motivation and parental support data collected before the commencement of musical studies (Oliveira et al., 2021). With the outbreak of the SARS-CoV-2 pandemic and the resulting lockdown, we hypothesized that the quality and quantity of parental support children received would significantly affect their engagement with the

musical instrument learning process, and consequently, their development and acquisition of musical skills. In this study, the scope of parental support encompasses parental behaviors supporting student's autonomous practice at home or monitoring and participating in the music instrument practice (Creech, 2010).

The protocol for this study, including the questionnaires, was approved by the Católica Ethics Board at the Universidade Católica Portuguesa, where the work was conducted.

Objectives

The objectives of the investigation were as follows:

- To identify the type of parental support provided by parents during the pandemic lockdown;
- To clarify students' achievement in instrumental music classes before and during lockdown, as assessed by their musical instrument teachers; and
- To analyze the relationship of the aforementioned variables to determine whether parental support was associated with musical achievement during the pandemic lockdown period.

Participants

Participants were recruited from the community of teachers and parents of first-grade students (between 6 and 7 years old; 19 boys and 20 girls) participating in the instrumental music courses at two Portuguese public music conservatories in the northern region of the country. We sought to also obtain an appropriate distribution of parents according to the children's instruments to ensure a representative sample of the full array of instruments taught at the institutions. The instruments played by the final sample were violin ($n = 8$), piano ($n = 5$), viola and clarinet ($n = 4$ each), double bass, guitar, flute, and trumpet ($n = 3$ each), cello ($n = 2$), and organ, bassoon, French horn, and percussion ($n = 1$ each).

After contacting parents, we explained the study and the importance of ensuring confidentiality and anonymity of the data. Parents were informed that responding to the survey meant accepting to participate in the study. Upon the parents' acceptance to participate in the study, we approached their child's instrumental music teacher, and the same ethical procedure was applied. The set of teachers included in our sample comprised teachers with at least 3 years of teaching experience who were tenured at their school. In total, 39 parents (14 males; 25 females), one per student (19 males; 20 females) and the respective

teachers (23 males; 16 females) answered the questionnaire, resulting in a sample of 39 parent-teacher dyads. Neither the teachers,' parents,' or students' genders showed any significant effect upon the total score for parental support—teachers: $t(37) = -.37, p = .150$; parents: $t(37) = -.94, p = .178$; students: $t(37) = .96, p = .181$.

Parents' sociodemographic characteristics.

Table 6 provides a summary of sociodemographic data regarding the 39 parents who participated in this study.

Measures

To carry out this investigation, we constructed two instruments, one for parents based on existing work (Tai et al., 2018; Zdzinski, 2013) and another for teachers. For the parents' questionnaire, we extracted items that dealt explicitly with attitudes from the PIMTQ (Parental Involvement in Music Training Questionnaire) by Tai et al. (2018), that in turn was adapted from the PIHEM (Parental Involvement-Home Environment in Music) by Zdzinski (2013). The resulting seven-item questionnaire was translated into Portuguese and then piloted with four parents to assess the clarity of wording. The questionnaire was considered adequate as doubts or misunderstandings did not arise from the trial. Cronbach's alpha for the seven-item set was .907, evidencing the reliability of the instrument. We ran an exploratory factorial validity test having reached a 1-factor design, with item loadings ranging from .692 to .885. As a result, we developed a short questionnaire comprising seven items to measure the frequency of attitudes and actions in the home context using a 5-point Likert-type answering scale (see Figure 3). Qualtrics® survey software (<https://www.qualtrics.com/>) was used to code and analyze these data.

The musical instrument teachers' assessment of students' achievement comprised a single item asking respondents to compare the musical instrument performance of each student during the lockdown with the previous in-person performance period using a 9-point Likert-type scale, in which 1 = *worsened a lot*, 5 = *remained the same*, and 9 = *improved a lot* (see Figure 4).

Table 6*Parents' sociodemographic characteristics*

Gender	14 males 25 females
Age	$M = 40.49$ years $SD = 3.501$
Marital status	67% married 15% divorced 13% <i>de facto</i> union 5% single
Education	10% high school 44% bachelors 31% masters 15% PhD
Working situation	62% working from home 15% working at their regular workplace 13% suspended work to assist children 10% unemployed
Profession *	15% teacher 15% specialist in law, social, artistic and cultural affairs 13% health specialists 57% others
Owning of musical instruments	56% own musical instruments of which: 14% piano 14% violin 32% combination of different instruments 44% do not have musical instrument
Previous musical experience	41% have studied music of which: 24% piano 24% violin 59% did not study music
Other children studying music	28% have other children studying music of which: 27% violin 18% clarinet 72% have not other children studying music

*According to the INE classification (Portuguese National Institute of Statistics)

Figure 3

Parents questionnaire with 7 items and a 5-point Likert scale

The image shows a questionnaire titled "During lockdown, how often..." with seven items and a 5-point Likert scale. The scale options are: Never, Once a week, 2-3 days a week, 4-5 days a week, and 6-7 days a week. Each item has a radio button next to each scale option.

	Never	Once a week	2-3 days a week	4-5 days a week	6-7 days a week
... did I listen to my children practicing their instrument?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... did I make sure that my children have practiced as necessary?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... did I provide my children with the required materials?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... did I observe my children practicing?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... did I provide a space (both physical and temporal) for my children to practice?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... did I encourage my children during practicing?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... did I attend concerts with my children on TV or on the internet?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 4

Teachers questionnaire with 1 item and a 9-point Likert scale (from worsened a lot to improved a lot)

Student's code: _____

Student's musical achievement (please signal your answer by circling the corresponding number)

1	2	3	4	5	6	7	8	9
Worsened a lot				Remained				Improved a lot

Procedure

When parents and teachers accepted the invitation to participate in the study, they were sent the informed consent form and the questionnaires by email. Teachers' data were sent back directly to the research team, while the parents' data, which took them approximately 6 min to complete, was registered on the Qualtrics platform using a personal computer/laptop, tablet, or smartphone. The data for this study were collected between April 30 and May 15, 2020.

RESULTS

Initially, we calculated a sum score for each parent-participant (possible range: 7–35), with higher scores indicating more parental support received by students. The average score for our sample was 23.18 ($SD = 5.862$; $Min. = 11$, $Max. = 35$), meaning that, as a whole, the group of 39 participating students was receiving regular support and care as reported by their parents.

The most frequent type of parental support was providing a space (both physical and temporal) to practice (41% answered to have done so for 6 to 7 days a week); the second most frequent type of parental support was providing the required materials (38.5% reported doing so for 6 to 7 days a week); the third most frequent answered item was “making sure that my son or daughter has practiced as necessary” (20.5%). The least frequent type of

parental support was “attending concerts with children on TV or on the internet” (35.9% said they had never done it) while the second least frequent item was “observing children practicing” (15.4% reported never having done this). The items with higher answering percentages were numbers 5% and 1 (41%), meaning that for 6 to 7 days a week parents provided a space to practice, and that for 4 to 5 days a week parents listened to their child practicing, respectively (Table 7).

Considering the total scores, there were no differences in parental support provided between parents who had and those who had not studied music $t(37) = 1.064, p = .294$. Furthermore, there were no differences in parental support received between children who have or do not have brothers or sisters studying music $t(37) = 1.481, p = .147$.

As for the students’ musical achievement, teachers reported ratings (possible range: 1–9) ranging from 3 (*worsened*) to 9 (*improved a lot*). The average rating was 5.82 ($SD = 1.745$), meaning that, as a whole, the cohort of 39 students presented a better musical performance during lockdown compared with the previous in-person lesson routine. Following teachers’ ratings, around 50% of the students improved their performance level, compared with 31% who retained the same level of performance, and 19% who were evaluated as having lower levels of performance (see Figures 5 and 6); 20 students improved their performance, 11 remained the same, while eight students worsened their performance during the lockdown period. There were no differences in the children’s musical achievement according to their gender, $U = 170, p = .567$, nor the level of support provided by their parents according to their child’s gender, $t(37) = .960, p = .343$.

Table 7

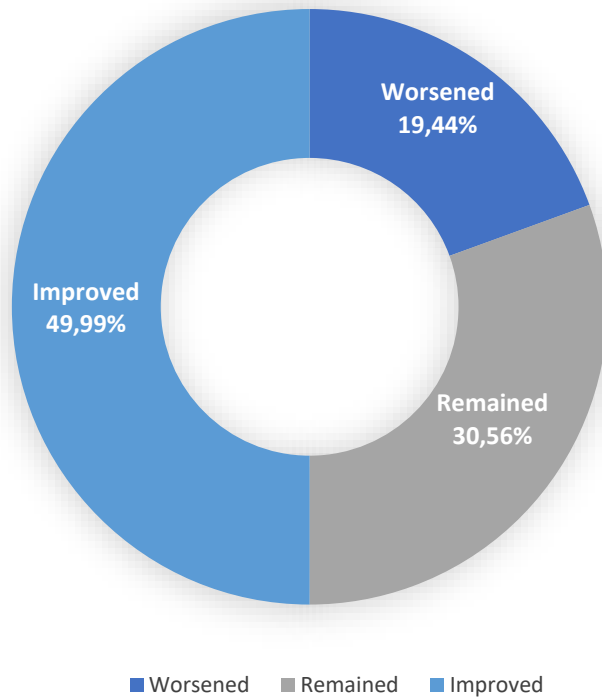
Parents' responses about different types of support provided to children during the musical instrument study.

Questions	Never	Once a week	2/3 days a week	4/5 days a week	6/7 days a week	M (SD)
1. During lockdown, how often did I listen to my children practicing their musical instrument?	5.1%	5.6%	23.1%	41%	5.1%	3.15 (1.04)
2. During lockdown, how often did I make sure that my children have practiced the necessary?	0%	17.9%	30.8%	30.8%	20.5%	3.54 (1.022)
3. During lockdown, how often did I provide my children the required materials?	0%	7.7%	25.6%	28.2%	38.5%	3.97 (.986)
4. During lockdown, how often did I observe my children practicing?	15.4%	17.9%	20.5%	38.5%	7.7%	3.05 (1.234)
5. During lockdown, how often did I provide a space (both physical and temporal) for my children to practice?	2.6%	2.6%	23.1%	30.8%	41%	4.05 (.999)
6. During lockdown, how often did I encourage my children during practicing?	5.1%	12.8%	30.8%	38.5%	12.8%	3.41 (1.044)
7. During lockdown, how often did I attend concerts with my children on TV or on the internet?	35.9%	33.3%	23.1%	5.1%	2.6%	2.05 (1.025)

Note: Higher values for each item on bold.

Figure 5

Pie chart showing teachers' ratings of the students' musical achievement during lockdown



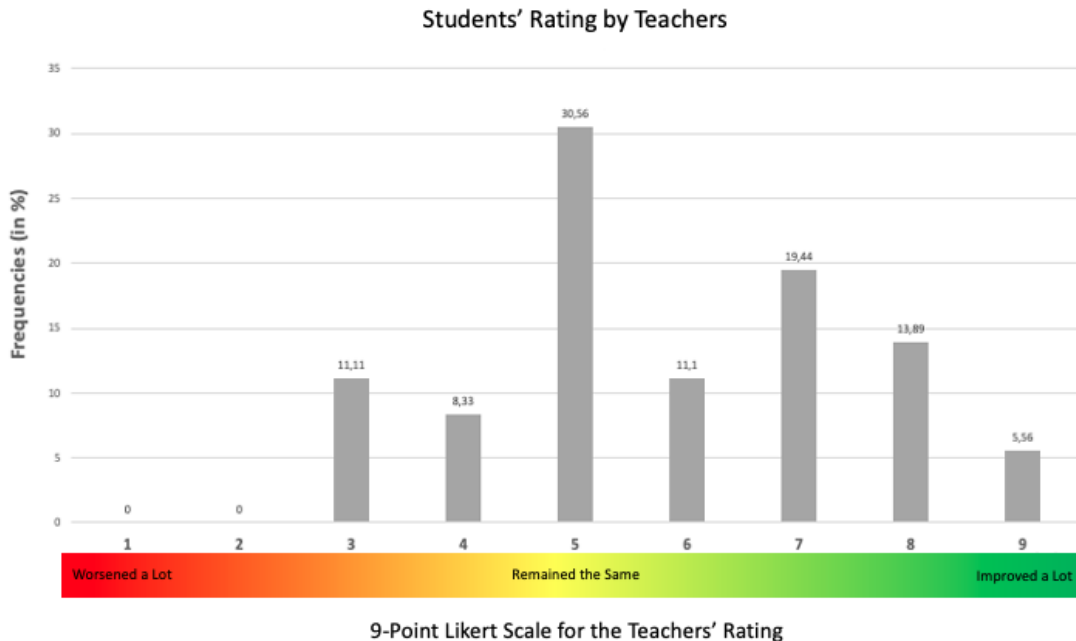
Note. Data clustered according to three categories (i.e., ‘Worsened,’ ‘Remained,’ and ‘Improved’ compared to the last in-person performance).

Considering that the students’ musical achievement during lockdown was an ordinal variable, we performed a Spearman correlation analysis that examined the relationship between the teachers’ scores (as an index for the students’ performance) and the parents’ questionnaire total score (as an index for the type of parental support). Results showed that parental support was highly and positively correlated with students’ musical achievement during the lockdown, $r_s = .619, p < .001$. Isolated items also correlated positively with the students’ performance. Table 8 shows the correlations and significance values for each test.

The strongest single item correlation was between Item 7—*During lockdown, how often did I attend concerts with children on TV or on the internet?*—and students’ musical achievement as reported by teachers, $r_s = .668, p < .001$. The least positive correlation was between Item 6—*During lockdown, how often did I encourage my children during practicing?*—and student’s musical achievement, $r_s = .316, p = .05$.

Figure 6

Graph Showing the Teachers' Ratings of the Students' Musical Achievement During The Lockdown



Note. Graph presenting the rating distribution (in percentage) for each level of the 9-point Likert scale from '1 = worsened a lot' (the lowest score) to '9 = improved a lot' (the highest score) with a median score equal to '5 = remained the same.'

Table 8

Correlation between items on the parents' questionnaire and students' musical achievement as reported by their teachers

		Students' musical achievement	
Parents' questionnaire item	1		$r_s = .507, p < .001$
	2		$r_s = .601, p < .001$
	3		$r_s = .470, p = .003$
	4		$r_s = .469, p = .003$
	5		$r_s = .467, p = .003$
	6		$r_s = .316, p = .05$
	7		$r_s = .668, p < .001$

There was a significant difference between parents who were at home and those who remained working at their regular workplaces, $t(37) = -3.111, p = .004$. Those who remained working at their regular workplace provided less parental support compared with those who stayed at home to work online, who suspended work to assist their child, or who were unemployed. We found that those who remained working in their regular workplaces were typically healthcare professionals or distribution sector (grocery) workers; the majority of all others were sent home to prevent the spread of the virus.

DISCUSSION

This study sought to understand the nature and type of support provided by parents during the pandemic lockdown, through comparing a measure of parental support with a measure of students' musical achievement as rated by their instrumental music teachers. As we hypothesized, our results suggest a strong positive relationship between parental support and musical achievement, with students who received higher levels of parental support achieving better results.

Our findings are in line with extant research literature, demonstrating that highly-engaged parents tend to be more capable of motivating their child by providing external regulation and structure for young learners in terms of their development of autonomy (Deci & Ryan, 1985; McPherson, 2009). They achieve this by helping their child persist when facing challenges and adversity, observing their practice, attending instrumental music lessons, and checking to make sure they have worked on the material assigned by their teacher. Previous research has shown that the quality of parents' engagement affects children's time spent practicing and their views and perceptions about music education rules and requirements (Comeau et al., 2015). Thus, when parents show enthusiasm and value music, students internalize the importance that music may have in their lives and gain satisfaction by performing an activity from which all family members derive pleasure.

The data presented above were collected during an atypical and challenging period for families and teachers. Although we acknowledge that some variables could not be controlled—such as the anxiety that may have arisen from the danger of the pandemic or the psychological burnout that many families experienced when unable to cope with all the challenges posed by the lockdown (e.g., balancing work and giving assistance to children)—

we still believe this moment represented a unique period to study the relationship between parental support and musical instrument achievement.

Another uncontrolled variable was the pedagogical modality adopted by the teachers. All teachers involved in this investigation used a combination of both synchronous lessons and the provision of feedback by sending written notes or giving in-person comments during the following synchronous lesson. This practice did not allow us to probe the different pedagogical modalities that affect students' learning. The two different models (synchronous and video feedback) have their own merits and disadvantages. Synchronous lessons allow for online interaction and quicker corrections as the student plays; however, the quality of the sound is often compromised. On the contrary, video feedback enhances the student's attentional processes and develops performance practice because student needs to play through the piece without stops or mistakes; sound quality is generally better, although the teacher cannot intervene regularly to provide feedback on progress.

One potential limitation of this study is that our sample's age range was restricted to 6- and 7-year-old students. This choice had to do with the fact that first-graders usually need greater external regulation from their parents or guardians because they lack the autonomy and experience to cope with a new or demanding activity. Our sample was also limited to the northern region of Portugal. It would be interesting to study students of other ages and in other regions of the country and internationally. Finally, we asked the instrumental music teachers to rate their students' achievement after 6 weeks of online learning. It would be interesting to expand the period of musical achievement assessment in future studies.

Instead of asking students directly about the parental support they received or their development during the lockdown, we preferred to use a hetero-report approach (using teachers' and parents' responses). The reason for this choice was to collect more robust data, given our belief that parents would be best placed to supply information about what they were doing in terms of their own parental support.

The teachers' one-item questionnaire was developed specifically for this investigation to take advantage of the lockdown context. Therefore, it is not possible to comment on its validity or reliability. Future research may extend this technique by administering the questionnaires to larger samples and comparing results with other data to assess reliability and validity.

Our findings have several implications for music education. First, we advise schools to devise programs that actively involve parents in the institution's dynamics, such as through family concerts or workshops, as previous studies have shown that parental involvement signals to the child the importance that music may have in their lives (Küpers et al., 2015; Reeves, 2015). Other effective measures might be parent-oriented talks to raise awareness of their role in the student-teacher-parent pedagogical triangle. This relationship might be collaborative and might be sustained by a mutual commitment where each agent acknowledges its own role—parents provide affective and logistic support whereas teachers convey technical and artistic information.

Usually, parents are advised by music teachers to create an artistic atmosphere at home through listening to music and attending concerts on television, or through other means accessible to the family. Many sources encourage parents to create art-friendly home environments and expose their infants to music (Fassbender, 1996; Howe et al., 1995; Ilari, 2002; Papousek, 1996). This recommendation is based on widely accepted perspectives. One such perspective stems from the work of Sloboda and Davidson (1996), who found that musical talent is not the exclusive reserve of a few elected human beings, but instead the result of several different factors, including “enculturation” through exposure to the artistic products of a given community. Contrary to the formal music education provided in music teachers' classrooms, enculturation depends on an informal music education provided or facilitated most of the time by parents. This enculturation involves unexpected music learning experiences in daily life that are distinct from the types of experiences provided by teachers (Chohan & Khan, 2010). Furthermore, by investigating the biographies of 42 talented young musicians, Sloboda and Davidson found that the only factor directly associated with talent development was listening to their parents singing from an early age and eventually joining in whenever they felt comfortable. More recently, Williams and colleagues (2015) found that shared music activities at home develop a wide array of social and emotional competences like attentional and emotional regulation and prosocial skills. In the pursuit of this art-friendly home environment, parents are also advised to offer their children music or sound toys with which they can experiment and create original (age appropriate) music, and to encourage their children to express themselves by singing structured songs and improvising (Dean, 2020). As children grow older, parents can replace such toys by taking them to concert halls to attend live performances (Creech, 2010).

Other strategies to encourage students with their instrumental learning may include staging home performances to family and visiting relatives and friends. These live performances can promote the development of a child's musical identity, build confidence, and prevent the development of performance anxiety by making performance a regular and ordinary facet of the learning process.

In sum, it is crucial that parents are active agents in their child's learning process and not merely passive observers of the process. A positive and trusting three-way relationship between students, teachers, and parents is paramount. As Dorothy Rich (1987) states, "Families and teachers might wish that the school could do the job alone. But today's school needs families, and today's families need the school. In many ways, this mutual need may be the greatest hope for change" (p. 62).

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The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Ethical approval

This paper was written in compliance with my institution's ethical standards.

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Article 4.

**CAN MOTIVATION AND INTENTIONS OF PARENTAL SUPPORT PREDICT
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**CAN MOTIVATION AND INTENTIONS OF PARENTAL SUPPORT PREDICT
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ABSTRACT

Admission procedures to elementary school in Music Conservatoires in Portugal consist in the assessment of aural aptitude. This investigation aims at assessing the power of aural aptitude at predicting future musical achievement as well as the assessment of two other variables for the same purpose: motivation and intentions of parental support. For that matter, our sample includes the cohort of the admitted candidates and their parents to the 2019-2020 academic year. We used a longitudinal approach that followed the musical achievement of the sample during the 2019-2020 and 2020-2021 academic years. Questionnaires were administered to both children and parents to collect information on motivation to learn a musical instrument and anticipation of parental support provision. Our results point that, after 2 years of music education, neither of the tested variables were able to predict the students' musical achievement. These results suggest that the model of admission procedures to Music Conservatoires based on aural aptitude must be rethought and that this line of investigation could be revisited later when our sample enters middle school to assess again the predicting power of motivation and parental support.

Keywords: Music Conservatoire admission procedure; aural aptitude, motivation, parental support, musical achievement

INTRODUCTION

Learning how to play a musical instrument is a long and demanding journey (Hargreaves, 1996; McPherson, Davidson & Faulkner, 2012). The many challenges posed by mastering the instrument and by the music itself – both technical and artistic – require persistence and resilience (Bruser, 1999; Maynard, 2006; Neuhaus, 2008): it takes time to decipher a musical score, to understand the style and the language, to match the right action to the desired sound (for example, breath control on woodwind or brass instruments, bow stroke on string instruments, or finger articulation on keyboards). The learning of the succession of movements leans on the formation of procedural memories, a process the human brain acquires by repetition, improving step by step (Duke & Davis, 2006; Simmons, 2012). Therefore, it is advised to start musical studies at an early age, depending on the instrument and the physical and cognitive maturation processes of the child, and profiting from the improved learning capacities human beings display at the commencement of school at the age of 6 years (McPherson, Davidson & Evans, 2006).

Unlike general schooling, which provides broad knowledge in different subjects until the adolescence and only then students are required to take a vocational path, music schools and conservatoires offer vocational studies right from the start of musical studies.

In Portugal, the network of public music conservatoires includes 7 schools based in Braga, Porto, Aveiro, Coimbra, Lisbon and Loulé. Every academic year, the number of candidates far exceeds the offer of places on each school, leading to a selection process that takes place locally. Admission to elementary school is largely determined through a aural aptitude assessment that is based on the candidate's aural skills. There are differences from one school to another, but exercises include repetition of given rhythmical short exercises (both on simple and compound meters) as well as short tunes (both in major and minor modes), singing a tune of their own choice, singing the tune taught in the welcome session, and submission of a video in which the candidate sings 2 tunes and claps the rhythm of one of them (exceptional procedure to avoid presential interactions due to the covid-19 pandemic). Candidates are invited to enroll according to their results (Conservatório de Música de Coimbra, 2021; Conservatório de Música de Loulé, 2021; Conservatório de Música do Porto, 2021; Escola Artística do Conservatório de Música Calouste Gulbenkian de Aveiro, 2021; Escola de Música do Conservatório Nacional; Instituto Gregoriano de Lisboa, 2021).

This admission procedure assesses one single dimension that plays in the learning process – capacities – and it is not clear whether these are innate or acquired capacities (Hallam, 2016). Some researchers advocate that natural capacities evident from birth are only possible to be assessed right after birth, before the environment starts influencing the individuals. One can conclude that the informal learning which starts happening immediately right after birth (i.e., the household stimulation, the earlier music experiences, just to cite a few) will influence a child’s capacities that can be observed later at any given moment. That is the main reason explaining why it is largely accepted that at the ages of elementary school students, human beings already possess an array of knowledge acquired through informal (or sometimes already formal) learning (Corrigan & Schellenberg, 2016). Therefore, 5- and 6-year-old candidates to a music conservatoire will display the knowledge previously acquired through exposition to their own environments. This reality represents an unequal access to music programs because the admission procedure based on aural aptitude is sensitive to the quality of the candidate’s social and economic environment with candidates from a favored social class possessing a richer cultural background and, therefore, are best placed to score high on the admission procedure (Miksza, 2007). This situation raises concerns on the fairness and equity of the admission procedure. Moreover, wealthier families have the chance to provide private lessons to prepare their children for the aural assessment, which can give them a distinct advantage.

On the other hand, it is arguable if aural aptitude on its own makes a good musician (Hallam, 2006; McPherson, 1995/6). As mentioned, to master a musical instrument requires regular and intensive practicing, and a student lacking the persistence to endure the time to practice and learn the music score, although talented as the student may be, will fail to achieve the desired goals (Hallam, Papageorgi, Varvarigou & Creech, 2021).

The literature in the field highlights the importance of several factors that influence the learning process. Gagné (2009), in his Differentiated Model of Giftedness and Talent, asserts that catalysts have a stronger influence than natural abilities (skills or capacities) on the learning process. The author proposes 2 types of catalysts – environmental and intrapersonal – which exert a modeling influence on the learning path: environmental catalysts include items such as parental support, provision of programs or social atmosphere; intrapersonal catalysts consider motivation, physical condition, or personality, to name a few.

Learning how to play a musical instrument requires individual organization and practice to meet the goals set by the teacher (Hallam, Papageorgi, Varvarigou & Creech, 2021; McPherson, 2000; Sloboda, Davidson, Howe & Moore, 1996). Most of the learning is achieved by the student at home preparing the next music instrument lesson following the teacher's guidelines and advise. Considering the young ages of the beginners and the fact that they do not have the planning, structuring and self-regulation capabilities of an adult, they rely on external support to scaffold their practicing milieu and schedule (Creech 2010; McPherson, 2009). As proposed by the Self-Determination Theory, throughout the learning process occurs a transference of control from external regulation in the early stages, in which considerable planning and assistance is offered by parents or significant adults, to internal regulation in the most advanced stages, in which the student is able to autonomously organize his learning path (Deci & Ryan, 1985). The external support creates the ground where the interests and motivations of the child grow and flourish: parents set the optimal atmosphere and environment to children to excel, fulfilling the three basic psychologic needs of autonomy, competence, and relatedness. Deci and Ryan affirm that the level to which these needs are satisfied explain the type of the student's motivation: from amotivated, when the psychological needs are not fully satisfied, to intrinsically motivated, when the needs are highly satisfied.

Parents' involvement with the learning process signals to the child the importance music can have in their lives and how parents are committed with the child' success (Küpers et al., 2014). It was observed that the expectations parents bring to the learning process impacts the quality of the student's development (McPherson, 2009). For instance, the study of different prodigies revealed a common feature in mothers that was present from the very first stage of the instrument tuition, who sat in individual lessons, listened to the child's home practice, took the child to public presentations or even took care of managerial decisions or adjusted the family routines around the needs of the young learner (McPherson & Lehmann, 2018). Comeau et al. (2015), in a study comparing American and Chinese students' attitudes towards learning and practice, found that the Chinese students practiced their instrument more than their American counterparts, because of the assimilation of their family's working ethics.

With the above as our context, this investigation assessed whether the information collected in the moment of the admission procedure about the intentions of parental support

expressed by parents or other relatives predicts future musical achievement, considering that, nowadays, support regarding academic achievement and other dimensions of the children's life is often offered by other members of the household other than parents.

Furthermore, the resilience and persistence to endure the long practicing sessions required to master the musical instrument have their roots on the instrumentalist's motivation; a lack of this will, impedes regular practicing and thus thwarts improvement. Motivation, as the energy that the child puts into the learning of his musical instrument, affects the output achieved. There is a strong relation between the amount of practice and the students' performance quality: although other factors exert a role in the process, it was observed that the more one practices, the better his playing (Hallam et al., 2021).

It was our aim to also assess motivation expressed by candidates in the moment of the admission procedure to determine how it can predict future musical achievement (Driscoll, 2009; Evans, 2015; Evans & McPherson, 2015).

This study investigates the relationship between the data on the student's motivation and parental support collected on the admission procedure and the student's musical achievement after two years of tuition. We collected grades achieved by students on each of the musical subjects (instrument, ear training and chorus) at the end of each term (before Christmas, before Easter and by the end of the academic year) during their first 2 years of tuition (2019/2020 and 2020/2021) and analyzed the relationship with the student's motivation and parental support.

Based on the Self-Determination Theory, as discussed earlier, the aims of this research are (1) to investigate how much the aural aptitude results of this admission procedure impact on the student's learning process (i.e., how much these results predict the student's forthcoming musical achievement), and (2) to include two other variables – motivation and parental support – in order to explore if they exert a significant impact on the learning process. We hypothesized that data collected on motivation and parental support before the commencement of musical studies would predict students' future musical achievement, whereas aural aptitude-based admission test would have a residual impact.

METHOD

Sample

A Music Conservatory in the Northern region of Portugal was contacted and accepted to establish a partnership to allow us access to the sample of candidates and respective caretakers to the 2019/2020 academic year. Consequently, all the data collection moments were implemented within one single music institution. The opportunity to participate in this study was offered to all parents or other adults accompanying the candidates whenever they were members of the household with a significant role in the candidate's life. All participants were informed that the present research observes the Ethical Letter of the Portuguese Society of Educational Sciences (2014) and the Ethics and Conduct Code of the Portuguese Catholic University. Written consents were signed by parents or accompanying adults. The Music School representatives reinforced that, as for the admission procedure to the institution, only the results in the aural aptitude assessment would be considered and the data collected in the present research could not be considered by any means or at any time for the admission procedure.

From the total candidates' sample, 84 children (84%, in which 42 males; 42 females) and parents/accompanying relatives (24 males; 59 females; 1 did not declare sex) accepted to participate. The children's mean age is 5.58 years ($SD = .496$); 42% of the sample was five years old, and 58% was six years old; the parents/accompanying relatives mean age is 40.82 years ($SD = 4.303$).

In the beginning of the following academic year, 55 students started musical studies and in the transition to the next academic year one student dropped out. Therefore, our sample comprises 54 students with complete information on grades awarded on the six terms (Christmas, Easter, and Summer evaluation moments over a period of two academic years).

The cohort of 54 students was composed by 63% of girls and 37% of boys (20 males; 34 females) and the mean age was 5.59 years ($SD = 0.49$); 40.7% of the sample was 5 years old, and 59.3% was 6 years old. Taking the total sample, 74.1% of the sample ($n = 40$) declared having previous musical experience and out of these, 34 participants (63% of the sample) reported already playing a musical instrument.

Regarding household, 34 participants (63%) reported having brothers or sisters, of which 20 are music players. Among siblings, piano ($n = 3$) was the most played instruments, followed by violin, trombone, French horn, and percussion ($n = 2$).

Considering sex differences, the male sample was composed by five five-year old and 15 six-year-old boys, while the female sample was composed by 17 five-year old and 17 six-year-old girls.

From the entire sample, 13 boys and 27 girls said having musical experience. 13 boys have brothers or sisters and out of these, six play a musical instrument; 21 girls have brothers or sisters from which 14 play an instrument.

As for the cohort of parents, it was comprised of 54 participants (16 males; 37 females; 1 adult did not declare sex) with a mean age of 40.92 years ($SD = 4.25$). As for the marital status, 33 were married, 11 were in *de facto* union, five were single, four were divorced, and one participant did not declare marital status. Concerning the professions of the adult sample, being a teacher was the most popular profession ($n = 17$), followed by specialists in law, social, artistic and cultural affairs and health professionals ($n = 6$). As of education level, 87% of the sample declared to have tertiary level education: 27 adult respondents held an academic degree, 11 had master's degree, and nine had PhD; only six declared having high school education level. Concerning musical experience, 26 adults had studied music for 78.67 months on average. Regarding the 44 adults possessing musical instruments, the most popular single instruments were piano ($n = 7$) and guitar ($n = 4$). Upon enrolment in the conservatory, 49 adults expressed willingness to acquire an instrument for their children. Our data showed that 19 parents had other sons or daughters studying music, 12 at the Oporto Music Conservatory, and 7 at other music school. The most played instruments by other sons or daughters were piano ($n = 4$), and French horn ($n = 3$).

Table 9

Parents' musical background and household

Musical experience	<ul style="list-style-type: none"> • 80% own a musical instrument • 53% have studied music (13% piano, 12% guitar)
for 72.53 months on average	
Sons or daughters	<ul style="list-style-type: none"> • 37% have other sons or daughters playing instruments (7% piano, 5% violin and 4% French horn)

Instruments

For this study, two questionnaires were developed and named EXPERT, standing for Expectations, PERceptions and parental support: one to be administered by a researcher to the children, and another to be answered by the parents/accompanying adults.

The development of these questionnaires involved a three-step process, namely: (1) definition of the construct intended to be evaluated (through the discussion and literature review by the psychology and music experts within the research team); (2) selection and formulation of items; (3) design of the scoring system in batteries in the case of the parents' questionnaire according to the measurement (frequency, agreement, quantities) with varying number of Likert points depending on the dimension (four or five points), and in the case of the students' questionnaire, three batteries to measure motivation, expectations and perceptions, and household environment with three Likert points for the children's questionnaire to prevent ambiguity in the part of the respondents (Bell, 2007).

Eight articles were screened and selected for further analysis after a search in the literature that was undertaken on May 21st, 2019 with the words "questionnaires on motivation to study music". Considering that we adopted the Self-Determination Theory of Motivation, these articles were chosen for the potential adequacy of their questionnaires to our research questions and theoretical framework. The articles were by Freer and Evans (2018), Hallam, Creech, Papageorgi, Gomes, Rinta, Varvarigou and Lanipekum (2016), Hallam, Papageorgi, Varvarigou and Creech (2018), Hallam, Creech, Varvarigou and Papageorgi (2018), Hallam, Creech, Varvarigou and Papagerougi (2019), Martin (2008), McCormick and McPherson (2007), and Tai, Phillipson, and Phillipson (2018). Another article was added to this search for its relevance by McPherson (2000). From a first analysis of these articles' questionnaires, three possible factors emerged for both the children's and parents' questionnaires: motivation, expectations/perceptions, and home environment for the children's questionnaire; parental support, expectations/perceptions, and home environment for the parents' questionnaire.

After a deeper inspection of the items of each questionnaire, four questionnaires were retained as references for the design of our children's questionnaire: Hallam et al. (2016), Hallam et al. (2018), Tai et al. (2018), and McPherson (2000). For the parents' questionnaire, one article was kept as reference: Tai et al. (2018).

From these questionnaires, we selected the items which allowed us to assess the fulfilment of the 3 psychological basic needs (competence, autonomy, and relatedness), as proposed by the Self-Determination Theory of Motivation. Some items on the questionnaires by Hallam et al. (2016) and Hallam et al. (2018) related to the experience students were having with performing their instruments and with instrumental lessons. These items did not serve our purposes because our sample was of candidates to a music school, thus children without formal musical experience. From these two articles we adapted items relating to motivation to study music in abstract terms (not about performance experience) (e.g., “I enjoy listen to music”, “I enjoy going to concerts to listen) and to expectations/perceptions (e.g., “Playing an instrument is an important part of my social life”, I think it is valuable to play a musical instrument”, “I have musical ability”).

From McPherson (2000) we selected the item “For how long do you want to play your instrument?” to assess the commitment the candidate brings to the instrument learning. Some items were taken from Tai et al. (2018) aiming to assess the musical digital resources available in the children’s household, e.g., “Own classical music AV products (e.g., records, CDs, DVDs, Blue ray discs, etc.)”, “Own home Hi Fi”. Two items were added to cover aspects not considered in these questionnaires (items 1 and 2).

For the parents’ questionnaire, items of the three factors were translated and adapted from the PIMTQ (Parental Involvement in Music Training Questionnaire by Tai et al. (2018), which in turn was taken and adapted from the PIHEM (Parental Involvement-Home Environment in Music) by Zdinsky (2013). For instance, for the factor parental support were borrowed the items “Listen to your child practice” or “Attend school concerts”; for the factor expectations/perceptions were adopted items like “I believe that music education should be in all schools” and “I expect my child to do his/her best in music”; and for the factor home environment, adding to the items used for the children’s questionnaire, were adapted items like “Do other members of your family play a musical instrument of sing?” and “Take music lessons yourself”. Like in the children’s questionnaires, original items were also written for the parents’ questionnaire (items 1, 8, 24, 25 and 26).

Taking into consideration concerns expressed by Bell (2007), it was decided that the items in the children’s questionnaire would have a 3-point Likert scale because young children do not have cognitive development allowing the understanding of the subtleties between 4 or more possible answers. Considering that the individuals of our sample are 5-

and 6-years old, their questionnaire cannot be self-administered because the children cannot read. For that matter, it was decided that a researcher would read aloud the questions to the children, and they would give their answers on a little book by painting one of three different sized circles. For each question, the researcher would point to each of the answering circles and label the answer (for example, to the question “Would you like to learn how to play a musical instrument?” the research would point to the small circle and say “no”, to the medium circle and say “maybe”, and to the big circle and say “yes”).

The parents’ version was a 33-item questionnaire organized in three batteries according to the answering dimension: 1) level of agreement (12 items on a 5-point Likert scale in which 1 stands for *totally disagree* and 5 for *totally agree*), 2) frequency (16 items on a 5-point Likert scale in which 1 stands for *never* and 5 for *always*), and 3) musical digital resources (5 items on a 4-point Likert scale in which 1 stands for *none* and 4 stands for *many*).

Sociodemographic information was also collected and included age, sex, profession, education level, marital status, former musical experience, and the existence of other sons or daughters playing or learning a musical instrument.

After translation of the selected items, a first draft of each of both questionnaires was analyzed by a team of specialists including two educational and clinical psychologists, and by two musicians. Some potential problems were identified with the items, namely phrasing and wording, especially in the children’s questionnaire. Thus, it was decided that all items in the children’s questionnaire were to be questions because items written as first person statements would be confusing to them as we predict children will have difficulties transposing a statement heard as a first person by the researcher to their own perspective.

In terms of wording, it was anticipated that children would have trouble understanding concepts such as *potential* and *talent*. For that matter, it was favored the term *ability*. On items addressing technology like “Do you watch music programs on TV with your parents?” or “Do you own Hi Fi?” it was favored a broader perspective of electronic devises since nowadays the interactions with them are very varied and diverse. So, the items were merged and rephrased as “Do you listen to music with your parents on TV, in the car, on smartphones, on tablets or on the computer?”. The answering labels for each question were debated and it was tried to use wording as simple and clear as possible. It was also observed that items sharing the same answering labeling possibilities should be put together to facilitate the understanding of the dimensions assessed: changing the answering labeling

very often would add confusion and noise to a process that must be clean. Two items were added to this first draft: “Would you like to learn how to play a musical instrument?” and “Would you like to study at the Conservatory?”. Overall, the children’s questionnaire included 26 items after the analysis by the specialists.

Regarding the parents’ questionnaire, it was observed that many items have dichotomous answers of either *yes* or *no*. Thus, it was decided that some items should be moved to the sociodemographic questionnaire, and some others must be rephrased so to capture quantity. As a result, the parents’ questionnaire included 33 items divided into 3 batteries assessing frequency, agreement, and quantity after the analysis by the specialists.

The second version of the questionnaires was then pilot tested with a group of children aging from 5 until 7 and with a group of adults, all of them with children of about these ages. The first observation from the administration to the children was that coloring the circles was a very long process. So, it was decided that children would stamp their answers instead of coloring them: we anticipated that this would be even more appealing to youngsters. To the question “Do your parents want you to play a musical instrument?” some gave double answers like “my dad yes, my mom no”, so it was decided to open a sub-answer for this situation. Some children revealed difficulties with the concept of *importance* such as in “To study music is important to you?” and so we decided that in the face of such difficulty, the researcher could help by giving a meaning to the concept like “something special to you”. To the questions “Do your parents own music DVDs and CDs” and “Do your parents own music books and magazine?” the possible answers were “none, some, many”; however, some children answered “I don’t know”, so it was decided that children wouldn’t stamp an answer in this situation.

As for the parents’ questionnaire, there were no changes required.

On July 1st, 2019, the questionnaires were administered to the candidates to the elementary level of a Music School in the Northern region of Portugal.

Data collection and analysis

Following the agreement with the Music School, candidates first did the aural aptitude assessment and afterwards, those wishing to participate in this research, were taken along with their parents or accompanying adults to a sector where a researcher administered the

questionnaire to the candidates in a room whereas the parents/accompanying adults answered their questionnaire in a separate room to avoid persuasion from the latter over the former.

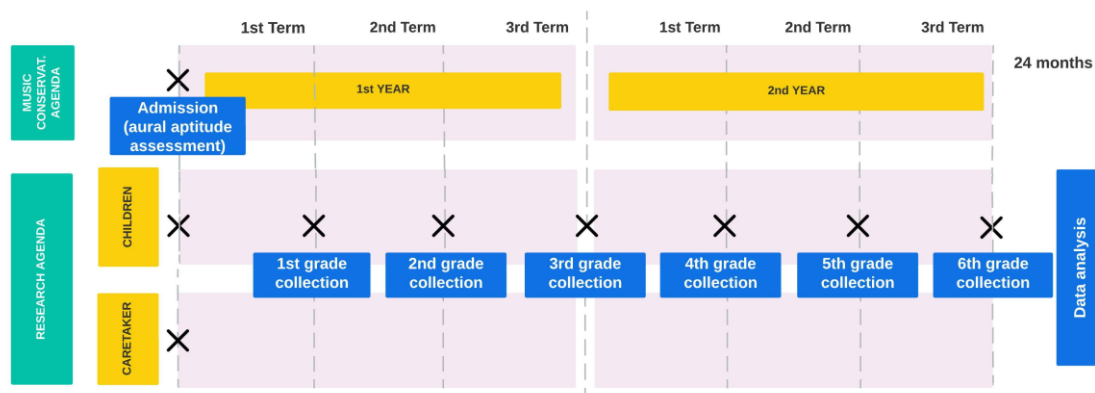
The results of the aural aptitude tests were collected when they were made public by the school. These tests rely on aural exercises. Before the test, children are welcomed by music teachers and gathered to perform relaxation exercises and to learn a tune that they will be asked to sing to the jury members. Then they are guided to a room where they will be assessed by a 4-member jury comprised of 3 instrumental teachers and 1 ear training teacher. The test begins with the assessment of rhythmic skills: children are presented twice with two 4-measure simple-meter and two 4-measure compound-meter rhythmic exercises and, after the second presentation, they are asked to reproduce (jury members rate the accuracy of the performance); melodic skills follow and, likewise, children are presented with two short tunes, one in major mode, the other in minor mode, and after the second presentation, children are asked to sing the tunes back (jury members rate the accuracy of the performance considering rhythm, intonation and security). The remaining items included singing the beforehand learnt tune and another tune chosen by the children. Jury members rate the assessment on a 0 until 200 points, candidates are ordered according to their grades and invited to enroll starting on the higher grades.

For the data analysis protocol, initially we analyzed the sociodemographic data and then the questionnaires' scores were summarized for each explored dimension (children: motivation, perceptions and expectations, household; parent: parental support, perceptions and expectations, household).

To assess musical achievement, we follow the learning paths of the students during 2 academic years (2019/2020 and 2020/2021) and collected the grades awarded to students in the 3 music subjects (instrument, ear training and chorus) by the end of each academic term (1st term before Christmas, 2nd term before Easter, and 3rd term by the end of the academic year). According to the Portuguese education system, grades awarded at the end of each term translate to the student's achievement from the beginning of the academic year until the end of each term. Therefore, the 3rd term grade expresses the achievement of the student on a given subject during an academic year. The scale of the grades awarded to students ranged from 0 until 100 points. We calculated the average of the 3 grades awarded every term to produce the mean grade of the music course.

For the purpose of our analyses, we considered the grades of the musical instrument class and the calculated mean grade in music (we did not run analysis with the ear training and chorus grades because they are complementary to the music instrument subject). To probe our predictions, we ran linear regressions between every single dependent variable considered in our analysis (instrument and music mean awarded in each term) and the different independent variables isolated (*aural aptitude assessment, children’s questionnaire score, parents questionnaire score*), as well as subscales (*children’s questionnaire motivation subscale and parents’ questionnaire parental support subscale*) and combinations of these independent variables (*aural aptitude assessment plus children’s questionnaire score plus parents’ questionnaire score; aural aptitude assessment plus children’s questionnaire score; aural aptitude assessment plus parents’ questionnaire score; children’s questionnaire score plus parents’ questionnaire score; parental support subscale plus perceptions and expectations subscale both from the parents’ questionnaire*). Please see Figure 7 to have an overview of the different data collection points.

Figure 7
Overview of the different data collection points



Results

The results of the children’s and parents’ questionnaires as well as the aural aptitude assessment are as follow:

Table 10

Results of the children's and parents' questionnaires and the aural aptitude assessment

	<i>N</i>	<i>Min</i>	<i>Max</i>	<i>Mean</i>	<i>SD</i>
Children's questionnaire total score*	54	43	74	58.89	6.76
Parents' questionnaires total score**	54	107	160	135.61	11.381
Aural aptitude assessment grades***	54	131	199	160.31	18.48

Note. * Considering a range between 26 and 78; ** Considering a range between 33 and 160; *** Considering a range between 0 and 200.

For the children's questionnaire data, the mean results showed closer proximity to the maximum score when they reported their motivation level, perceptions/expectations, and familiar environment. Considering only the parents' questionnaire results, the mean for this sample is significantly closer to the maximum score (i.e., mean = 135.61 compared to the maximum score = 160), showing high levels of parental support based on the self-report instrument. By a similar argument to the maximum score comparison, the same pattern can be observed from the aural aptitude assessment, where the mean result is also significantly closer to the highest result possible.

The scores of each subscale of the children's questionnaire are shown in the following table.

Table 11*Results of the children's questionnaire*

	Male	Female
Subscale motivation (<i>min</i> = 11; <i>max</i> = 33)	$\bar{x} = 24.68$ <i>SD</i> = 3.955	$\bar{x} = 24.60$ <i>SD</i> = 2.933
	$\bar{x} = 24.63$ <i>SD</i> = 3.365	
Subscale expectations/perceptions (<i>min</i> = 8; <i>max</i> = 24)	$\bar{x} = 20.76$ <i>SD</i> = 2.948	$\bar{x} = 21.31$ <i>SD</i> = 2.621
	$\bar{x} = 21.08$ <i>SD</i> = 2.751	
Subscale family environment (<i>min</i> = 7; <i>max</i> = 21)	$\bar{x} = 13.12$ <i>SD</i> = 2.682	$\bar{x} = 13.46$ <i>SD</i> = 2.737
	$\bar{x} = 13.32$ <i>SD</i> = 2.696	
Total Score (<i>min</i> = 26; <i>max</i> = 78)	$\bar{x} = 58.56$ <i>SD</i> = 8.063	$\bar{x} = 59.37$ <i>SD</i> = 6.078
	$\bar{x} = 59.03$ <i>SD</i> = 6.921	

Observing the subscales' scores from the children's questionnaire, the highest results are shown in the expectations/perceptions subscale, which assessed children's beliefs, vision, and perspectives.

As for the parents' questionnaire, the calculated scores are as follows:

Table 12*Results of the parents' questionnaire*

Subscale parental support (<i>min</i> = 13; <i>max</i> = 65)	$\bar{x} = 57.15$ <i>SD</i> = 4.744
Subscale expectations/perceptions (<i>min</i> = 10; <i>max</i> = 50)	$\bar{x} = 45.62$ <i>SD</i> = 3.765
Subscale family environment (<i>min</i> = 10; <i>max</i> = 45)	$\bar{x} = 32.78$ <i>SD</i> = 6.928
Total Score (<i>min</i> = 33; <i>max</i> = 160)	$\bar{x} = 135.55$ <i>SD</i> = 11.725

Paralleling children's results, parents also scored the highest results in the expectations/perceptions subscale.

Regarding the internal consistency, the children's questionnaire had a good Cronbach's Alpha of .680, whereas the parent's questionnaire had a high level of internal consistency with an overall Cronbach's Alpha of .849.

The descriptives of the grades are as follow:

Table 13

Descriptive statistics of the students' grades in music subjects

	<i>N</i>	<i>Min.</i>	<i>Max.</i>	<i>Mean</i>	<i>SD</i>
Music instrument 1st term 2019/2020	55	24	100	80.28	16.93
Music course mean 1st term 2019/2020	55	57.33	94.2	82.29	8.07
Music instrument 2nd term 2019/2020	60	34.4	100	83.89	14.57
Music course mean 2nd term 2019/2020	60	64.2	96.93	83.65	8.50
Music instrument 3rd term 2019/2020	60	29.6	100	85.42	14.58
Music course mean 3rd term 2019/2020	60	54.67	99.33	88.20	8.45
Music instrument 1st term 2020/2021	59	40	100	82.35	13.63
Music course mean 1st term 2020/2021	59	60.8	95.7	82.74	8.42
Music instrument 2nd term 2020/2021	59	50	100	84.58	13.17
Music course mean 2 nd term 2020/2021	59	66.27	95.87	86.59	7.86
Music instrument 3rd term 2020/2021	59	40	100	85.58	13.81
Music course mean 3 rd term 2020/2021	59	69.47	97.47	88.28	11.73

All regressions retrieved non-significant results but two: *second term of 2019/2020 instrument grade exponentially transformed variable with children's questionnaire score* ($p = .049$), and *second term of 2019/2020 instrument grade exponentially transformed variable with children's questionnaire motivation subscale* ($p = .016$). We deemed these results inconclusive because they were isolated and did not represent turning points from which results became significant onwards.

DISCUSSION

The present study aimed to assess how much the aural aptitude results impacted the musical studies of the candidates admitted to a Music Conservatoire as well as probing two other dimensions – motivation and parental support – as predictors of future musical achievement by collecting data from parents and children before the commencement of musical studies.

Regarding the parents' questionnaire, on average, most parents reported high levels of motivation and commitment to their children's musical instrument learning. Social desirability may have contributed to this result, although it was clarified that the data collected for this investigation would not be considered for the admission procedure. Also, previous studies showed that parents tend to present a positive view of themselves and declared intentions of provision of parental support that decrease once their child's musical studies have commenced (Margiotta, 2011).

The first research question was addressed through correlating the grades achieved by the students and the aural aptitude assessment scores, and the analysis did not reveal any significant results. The aural aptitude assessment has remained almost unchanged at music schools since the 2000s (Reitan et al., 2013), although it has also been subject to much discussion, especially because many findings have shown that high achiever music students perform low on the aural assessment (McNeil, 2000). These results highlight the need to consider other variants in the admission process to Music Conservatoires that may provide more reliable data to decision-maker panels.

Our second research question focused on the relation between the musical achievement and the variable motivation and parental support. The results found by this research team do not confirm the initial hypothesis formulated, namely, that information on motivation and parental support collected prior to the commencement of musical studies

could predict subsequent musical achievement. One of the reasons that could explain these results is the fact that the answers given by the 5- and 6-year-old candidates to the elementary level of music conservatoires are inaccurate. As Bell (2007) noted, special care must be put into the design of instruments to collect information from young respondents. She also emphasized concerns about the quality of the data obtained from children through self-reports. For instance, the fact that the information gathered from both the children's questionnaire and the parents' questionnaire' sections on household conditions with items about the familiar musical resources of cultural objects such as books, discs or hi-fi devices did not match, raised our attention to a situation in which answers were expected to be concordant ($r = -.178, p = .174$).

Another significant aspect of this investigation is that it was conducted during an atypical moment in modern history: the covid-19 pandemic and the subsequent lockdowns decreed to prevent contagion changed the dynamics of the families. Being forced to stay at home, perhaps parents were able to provide more support than initially anticipated, as they stated in the responses to the questionnaire we administered. Previous findings seem to suggest that the more available the parents are to follow their children's academic activities, the more they feel able to make a difference in their children's achievements (Oliveira et al., 2021); what happened for most of the families during lockdown when parents were at home with their children. Also, other authors have argued that parental support may influence academic motivation, directly and indirectly, namely having a substantial effect on their children's mental health (Klootwijk et al., 2021).

Future research could also administer the children's questionnaire to other samples and probe the adequacy of the chosen solution: it may happen that our attempts to make the answering procedure more appealing to the children by stamping the chosen circle diverted their attention from the question itself and drove their focus to the playful side of the procedure.

Another possible reason that may explain our results is the reduced time span in analysis: it may happen that a 2-year time span is not sufficient to capture relationships between motivation and parental support, and musical achievement. It would be interesting to keep following the learning paths of these students and revisit the data after a longer period, for instance, in 6 years' time, before the transition to secondary level and investigate if

motivation and parental support is capable of explain part of their musical success or unsuccess.

Another element that could help understanding these results is the observed fact that music teachers tend to be generous when evaluating students on the elementary level: it was found that the grades awarded variables failed to meet a normal distribution, with a tendency to the higher grades of the scale. Again, it would be interesting to revisit the results when students move to middle school when the levels of demand on practice, exigence or artistic standards raise considerably with the more difficult repertoire students are expected to learn.

This study has provided insight into the current admission procedure in most music schools. The results found in this study point to the need of rethinking the admission process to the elementary level of Music Conservatoires because the variables that are being assess in the present do not allow decision-maker panels to anticipate the students' future musical achievement. This study shows that the aural aptitude assessment scores have little impact in the student's musical achievement. Based on that, for Music Conservatoires, the authors of this study suggest the inclusion of other domains in the admission process, such as motivation and parental support, to complement the data they are already collecting.

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GENERAL DISCUSSION AND CONCLUSIONS

This thesis concerns the same journey I have been on as a piano teacher. It is about the many times, I have felt the devastating burden of disappointment from being powerless to help a child to become a skillful musician from their early beginning, when I asked myself about which are the predictors of student musicianship: namely, aural skills; the quality of the lesson interactive behavior between the teacher and the student; motivation to learn a particular instrument; basic music familiarity; parental support; all of them or even none of them?

Thus, at the beginning of this project, I set out to paint a broad representation of the degree to which future musical achievement, namely instrumental musical performance, can be predicted from the entrance examination to select promising candidates for conservatories or schools of music. Unfortunately, my initial literature search demonstrated to me that almost none of the entrance procedures for musical studies are empirically validated (Blackwell & McPherson, 2022; Whellams, 1970). Therefore, one of the initial aims of this research was to fill a gap in the literature and provide schools with a reliable model as well as with measuring instruments to allow them a more effective admission procedure.

One would assume that this is just a question of selecting the different criteria for admission, choosing a procedure, and testing its performance across time. But instrumental musical achievement is dependent upon the acquisition and regular usage of a wide variety of skills, which means that becoming a musician requires many different capacities and personality traits (McPherson, 2000; McPherson, 2005; McPherson, Davidson & Evans, 2006; McPherson, Davidson & Faulkner, 2012; McPherson & Zimmerman, 2011; Sloboda & Davidson, 1996). Some of these capacities are perceptual and have to do with qualities or attributes of the sound itself such as pitch, duration, intensity, or timbre. For example, professional musicians need to discriminate sounds of a different pitch to understand the outline of a melody when these sounds are presented over time, or to comprehend a certain harmony or chord when the sounds are played at the same time, to discriminate between short and long notes, or even, to feel the different intensities of the sound to convey a given musical expression. Other capacities musicians need to develop is the sense of timing and its mathematical divisions so important for the perception of rhythm. Because playing a musical instrument involves movement and physical relation with the musical instrument itself,

musicians are required to develop motor skills, physical endurance, and motor coordination. For instance, professional pianists are featured by sophisticated motor coordination between hands, producing sound with different qualities from each hand. Another example comes from bow instruments, in which the musician plays two different movements from each of the arms and hands: right hand on the bow caring about the sound's intensity and duration, and left hand on the instrument's arm caring about intonation.

Although the above list of the required physical attributes for a professional musician could be much longer, the literature has shown that those are not the critical determinants for a successful selection process (Gagné, 2000). Musicians also must cope with an abundance of career and performance-related mental demands within the profession. Because on top of the qualities described above, professional musicians possess an array of personal traits that allow them to cope with the challenges and demands of the task. For example, musicians need to feel motivated and be persistent at sustaining the many hours of practicing required to master a given musical work. Resilience is another essential trait required to cope with the many difficulties and challenges the repertoire poses to musicians, or to react to the setbacks or negative criticism one has to face with. And when considering young music learners, parental support is paramount to organize and scaffold daily practicing routines.

As an Art expression, music calls for creativity, a central quality every musician needs to include in its work (Zaets, 2019). Even when playing core repertoire, the musician must find a new and fresh interpretation of the musical score: what is printed on the music score is just a visual representation of the music as a language, it is not music itself because musical is sound, vibrating air (Said & Barenboim, 2008). Musicians translate into sound what they read on the musical score and this translation is more interesting as the more creative the musician is.

Other capacities involve non-verbal language: understanding body language is important when playing chamber music or in an orchestra because the way one moves cues to colleagues elements of music expression, the direction of a musical phrase, or the way one breathes during a certain musical pulse.

The environment is also very important for young learners: a supportive family that is highly engaged in the learning process, attending lessons, supervising home practice, providing materials, and exposing their children to good quality performances, is more likely to foster and enhance the student's motivation. By signaling the importance music has in the

family's dynamics and in the child's life in particular, parents promote the development of a musical identity and enhance the internalization of the values and rules of the learning process by the student.

Consequently, and given the ubiquity of this process, conservatories and other music schools have surprisingly little research on this matter to support their decisions based on the students' music success. Indeed, many of the above-described qualities and capacities are not innate; they have been developed through training and formal learning. For this reason, some countries like Finland offer music education to every child from pre-school (Hietanen, Sepp & Ruismäki, 2020). In Portugal, considering that music training typically involves a relatively costly investment (e.g., one-on-one teaching and the prices of the instruments), the public conservatories have limited positions for students who wish to learn a musical instrument. As a reminder, there are only seven public music Conservatoires in Portugal, a small network that is complemented with private music schools with which the Ministry of Education signs contracts (Anqep. 2021). For this reason, the Portuguese public music Conservatoires have no other option apart from running an admission procedure to select students to the elementary level. As explained previously, the admission procedures are different among the different conservatories, but most concentrate on assessing the aural aptitude of candidates.

The procedure chosen by a public music Conservatoire is applied based on the principle that specialized music education must be offered to the most talented candidates (Diário da República Eletrónico, 2021) and they take aural aptitude as an indicator of musical talent. However, as exposed before, aural capacities are only a part of the requirements to become a musician, so, this practice poses a set of questions: *why only assess aural capacities from the array of the requirements to become a musician and not others?*, or *how reliable is this aural aptitude assessment?*, or *how good is this assessment at predicting the student's future musical achievement?*.

The work developed on the scope of this thesis is based on François Gagné (2000)'s perspective and on his Differentiated Model of Giftedness and Talent. He states that gifts (i.e., the natural abilities an displays in the early years of life), are only a part of the learning equation and not the most important. In fact, this model reinforces that the catalysts are more influential in the learning process than the gifts themselves. This proposal is self-evident because as gifted as one is recognized in a given task, without training, individual will be

unable to develop their capacities to their best expression: without training, an athlete will not become an Olympic athlete; without study, an enthusiast for biology will not become a doctor; and without practicing, a gifted child will not become a musician. These catalysts are twofold: environmental and intrapersonal. Environmental catalysts include domains such as the milieu (country, city, neighborhood, or household, for instance) or individuals with whom one interacts (family, peers, teachers, among others). Among the intrapersonal catalysts, we find, for instance, personality traits, such as motivation (Ho & Chong, 2010). It is interesting to observe that none of these catalysts are considered in the admission procedure to public music Conservatoires in Portugal.

Intrigued by this problem, this thesis evolved around the admission procedures to the elementary level at public music Conservatoires in Portugal as its research topic. We aimed at better understanding the procedure as it is run presently, namely, how reliable it is at predicting students' future musical achievement (namely monitoring one entrance examination and the following two years in a public music Conservatoire by collecting the grades awarded to the students in 3 music subjects – music instrument, ear training, and choir – and the ending of the 6 terms that comprise the 2019-2020 and 2020-2021 academic years). We also explored whether any specific sociodemographic variables influence the results of the aural aptitude assessment, as well as probing if the information on the candidates' motivation to learn a musical instrument and parental support could predict the students' musical achievement, as exposed in the introduction of this thesis. The purpose was to design a model that would have greater predictive power by complementing the aural aptitude assessment with data on other domains, namely on motivation and parental support. After a 2-year period, we did not find any predictive quality in any of the considered variable in isolation (aural aptitudes, motivation, and parental support) neither when combined.

The first chapter of this thesis, to our best knowledge, is the first systematic review of the literature on motivation to learn a musical instrument and parental support in samples of children and adolescents (Oliveira, Ribeiro, Mota Ribeiro, McPherson & Oliveira-Silva, 2021). This chapter confirms the influence of motivation and parental support in the learning process. Previous investigations have shown that the amount of practicing hours amassed by students are influenced by their parents' engagement with the learning process as well as with their parents' work ethics, i.e., the sense of commitment and responsibility with a project (Comeau, Huta & Liu, 2015). Other findings demonstrate the relationship between

motivation and practicing, observing that the most motivated students practice for long sessions and thus achieve better outcomes (Hallam, Papageorgi, Varvarigou, & Creech, 2021). The literature also stresses the importance of developing a musical identity from a very early age, meaning that children see themselves as musicians, their engagement and commitment to learning is more intense (Evans & McPherson, 2015). An article by Evans, McPherson & Davidson (2013) underlines the importance of three basic psychological needs (relatedness, competence, and autonomy) to the pursuit of music goals. Results from this study suggest that the students with the least satisfying psychological needs are the ones who cease musical studies and abandon their musical learning. This systematic review reinforces the need to consider other domains in the admission procedure to the elementary level of music conservatories to complement the data the institutions are collecting on aural aptitude assessment.

The findings of the second chapter of this thesis suggested that the aural aptitude assessment is not able to predict the students' future musical achievement as the correlation found between these two variables was not significant (Oliveira, McPherson, Mota Ribeiro & Oliveira-Silva, 2021). Nevertheless, we stress that these results must be confirmed with other samples and over a longer research span since the 2-year time span of our research may be insufficient to capture the predictive power of the aural aptitude assessment. Furthermore, we found that the aural aptitude assessment is biased by the sex of the candidate, meaning that girls present a developmental advantage over boys. This finding should encourage music schools to rethink their admission procedures considering that the developmental advantage found is not observed on adult musicians, i.e., the model adopted by schools is not capturing musical gifts or potential to become a musician because besides the constant presence of the parasite variables, the predictive power of these models has been demonstrated to be poor.

Taking advantage of the unexpected Covid-19 pandemic, we designed the study which resulted in the third chapter of this thesis. Our results showed a strong relationship between parental support and the students' musical achievement during a lockdown (Oliveira, McPherson, Mota Ribeiro & Oliveira-Silva, 2021). This investigation, run on during an atypical moment of our community lives, in which our daily routines were changed by the threat of a virus and forced us to be confined at home, showed the influence of parents on children music learning: with the transfer from in-school tuition to remote schooling, the parental responsibility of structuring the children's practicing sessions and providing the

required materials was added with the task of substituting the physical presence of the teacher during lessons, i.e., on remote learning the student cannot observe the teacher performing examples and listen to the actual sound, in other words, cannot interact with the teacher. Therefore, the parents' role as home teachers was complemented by the responsibility of compensating for the physical absence of the teacher. As a result, we observed that the students who received more external regulation were those who were evaluated by their music instrument teachers as having achieved a better performance as compared with the previous in-person schooling. Actions such as providing a physical and temporal space for practicing, observing the child while practicing, and encouraging during practicing presented high frequencies among parents. This study points to the need for considering parental variables on the admission procedure to music schools by providing evidence that learning a musical instrument is not a task for the student and the teacher as agents but part of a larger relationship involving the student, the teacher, and the family, in which each agent acknowledges its own role.

The research hypothesis of information on the candidates' motivation to learn a musical instrument and parental support predicting the students' future musical achievement was also not confirmed. We did not observe significant correlations between the candidates' motivation and the grades they were awarded in the music subjects during their first two years of learning (used as indicators of musical achievement) nor between parental support and the students' grades. We tested the relation of each single item from both the children's and the parents' questionnaire and the students' grades, but we did not find any significant relation. The same applies to the combination of the children's and parents' questionnaires as well as combinations of items or sub-scores. The explanations advanced are in the discussion of the fourth chapter of this thesis. We observed that music instrument teachers are generous when assessing the students' achievement, tending to award them good and very good grades. This way, the musical achievement variable failed to meet the requirements of a normal distribution. It must be said that the elementary level at public music Conservatoires works as a preparation for the artistic music course, which starts at the middle school level. Therefore, the pedagogy evolves around the development of practicing routines and the acquisition of musical fundamentals rather than on specialization. The higher demands of the artistic music course lead to more discrimination on the students' grading. As such, a longer time span research could analyze the correlation of the data on motivation

and parental support and the students' grades after they have started their artistic music course.

Other possible reasons that might explain our results has to do with the sample size. With the Covid-19 pandemic, we did not have access to other schools and respective candidates that would increase our sample. Future research could administer our questionnaires to other children and probe if the results differ depending on the sample size.

Also, the results of the third chapter of this thesis highlight the importance of external regulation, namely parental support, and its relationship with the students' learning. During the remote learning forced by the Covid-19 pandemic, the students who received more parental support were those who most improved their musical performance compared with the previous in-person tuition. As such, we suggest that this research line may be continued throughout middle and high school levels as a pilot study in a public music Conservatoire. It is still our conviction, based on the literature and on the results of the third chapter of this thesis that the candidates' motivation to learn a musical instrument and parental support could reliably predict students' musical achievement as they are two pillars of the learning procedure that support practicing and regulation.

As mentioned, this study presents some limitations that could be overcome on future research: to expand the sample size by including participants from more than one music school, considering both private and public institutions, and by collecting data from candidates to different academic years thus studying participants from different generations; other possibilities include a broader territorial coverage, both in Portugal and internationally, to find if our results are replicated in different samples. Future investigations could also revisit our data and collect grades awarded to the same students some years later once they have started the musical instrument basic course (at the age of 10 years-old) thus expanding this research's 2-year temporal span: it may happen that 6 terms were not sufficient to capture the relation between the predictive measures (aural aptitude, motivation, and parental support) and the students' musical achievement.

This research presents some innovative elements: although not being able to capture a relation between the predictive measures and the students' musical achievement, the longitudinal approach represents a step forward from the cross-sectional design that research in this field very often adopts. Another innovative feature is the inclusion of both children and parents in the sample because, as exposed, parental support is paramount in the learning

process of very young learners. Furthermore, the use of collecting data instruments and procedures specifically design to 5- and 6-year-old children such as stamping the answers, opens new approaches to interact with a sample with cognitive limitations.

In the absence of resources to support this pilot study, other admission procedures must be considered by music Conservatoires to solve the shortcomings of the aural aptitude assessment evidenced in the second chapter of this thesis. One would be based on the principle “first come, first serve basis” in which the available spots are taken by order of inscription. This model would select students prioritizing interest, i.e., the most interested families would apply first. However, it would disconsider children with interest that, for some logistical reason, would not make it on time. Another model would be randomly drawing the selected students from a pool of all applicants. This model is run by the Music Conservatoires of the Paris region and aims at equitable access for a music program to all children regardless of their socio-economic status (Ville de Paris, 2021).

This thesis points to the need for rethinking admission procedures to the elementary level at public music Conservatoires to reach better reliability and predictive power. Failing to do so, will undermine the confidence and trust of families in these schools and prevent access of many children to artistic education.

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Informed consent to participate in the EXPERT project

We invite you to participate together with your son or daughter in the EXPERT project (EXpectationsPERceptions&parentalsupportT) on the relationship and impact of motivation and parental support on the future musical achievement of candidates for the elementary level of a Music Conservatoire. This study is being conducted by the Faculty of Education and Psychology of the Portuguese Catholic University in Porto.

Your participation consists of the individual answering to two questionnaires administered after the completion of the aural skills assessment by your son or daughter at the Oporto Music Conservatoire. One of our research team members will be responsible for administering the questionnaire to your son or daughter.

Your participation is voluntary and you are free to refuse or withdraw at any time. Refusal to participate or subsequent abandonment will not harm your relationship with the Oporto Music Conservatoire or with the team of researchers at any level. All information about you and your family will be strictly confidential and other information you provide us will be kept in an encrypted form, with no possibility of breach of confidentiality.

This study was authorized by the Directorate of the Oporto Music Conservatoire, but the information collected will not be relevant in the selection process of candidates for this school.

For any further contact, or clarifications about the ongoing research or about your own rights as participants in the study, you can contact the main researcher of the study: Professor António Oliveira by phone number 918229424 or by email antoniomfoliveira@gmail.com.

Authorization

I, _____ (respondent's name), read and decided to participate together with my son or daughter in the project described above. The general objective was explained to me and what would be asked of me. My signature also implies that I have received a copy of this authorization.





EXPERT Questionnaire - children's version

Dear researcher,

For the administration of the EXPERT Questionnaire (EXpectationsPERceptions&parentalsupport - children's version) the answer book is given to the child, consisting of cover, sociodemographic, essay sheet (answer 27) and 26 answer sheets where the child will record their answers by stamping; slowly read each of the questions after explaining to the child how to answer the questionnaire. As a simulation, ask the child "Do you like soup?" and use answer sheet 27 captioning "no, more or less, yes".

Instructions: collect sociodemographic information on the 1st page and explain to the child that he/she must give an answer for each sheet by stamping the ball that he/she finds most appropriate (the response scale consists of 3 balls of different sizes). Make sure the child correctly turns the page to the next answer and read the captions pointing to the respective ball.

To prepare answer 3, ask before starting the questionnaire the gender of the kindergarten teacher to avoid discomfort on the part of the child when reading the question.

Record any questions not understood, any difficulties in answering, or any unusual reactions from the child, or any other relevant information.

1. Would you like to learn how to play a musical instrument?	no	maybe	yes
2. Would you like to study at the Conservatoire?	no	maybe	yes
3. Did your teacher advise you to study music? (If child doesn't understand the meaning of "teacher", help him out by adding "from the kindergarten")	no	maybe	yes
4. Do your parents want you to play a musical instrument? (In the case parents express different opinions, allow the child to answer twice and caption "dad" and "mom" in the respective answers)	no	maybe	yes
5. Do your siblings want you to play a musical instrument? (Depending on the answer on the sociodemographic questionnaire)	no	maybe	yes
6. Do your relatives want you to play a musical instrument? (If the child doesn't understand the meaning of "relatives", help him out by adding "grandparents", "uncles" or "cousins")	no	maybe	yes
7. Do you like to listen to music?	no	more or less	yes
8. Do you like to sing?	no	more or less	yes
9. Do you like to attend music concerts?	no	more or less	yes
10. For how long will you play your musical instrument?	only this year	until I finish my school	forever





11. Is studying music important to you? (If the child doesn't understand the meaning of "important", add "something special")	no	more or less	yes
12. Is playing a musical instrument important to you?	no	more or less	yes
13. Do you think that one needs to be gifted to play well a musical instrument?	no	more or less	yes
14. Do you feel you are gifted to music?	no	more or less	yes
15. Do you think you will become a good musician?	no	more or less	yes
16. Do you think you can play any tune in your instrument if you practice enough?	no	more or less	yes
17. How often will you want to play your instrument?	never	sometimes	everyday
18. Do you have any friends who play musical instruments?	none	some	many
19. Do you or your parents own music CDs or DVDs? (If the child doesn't know, he doesn't stamp)	none	some	many
20. Do you or your parents own music books or magazines? (If the child doesn't know, he doesn't stamp)	none	some	many
21. Do you have any music toys?	none	some	many
22. Do you listen to music along with your parents on TV, in the car, on smartphones, tablets or computer?	never	sometimes	many times
23. How often do you attend to music concerts along with your parents?	never	sometimes	many times
24. Do you sing or dance when you listen to music?	never	sometimes	many times
25. How often do you go to museums along with your parents?	never	sometimes	many times
26. How often do you go to theaters along with your parents?	never	sometimes	many times





Sex: male female

Age: _____(years)

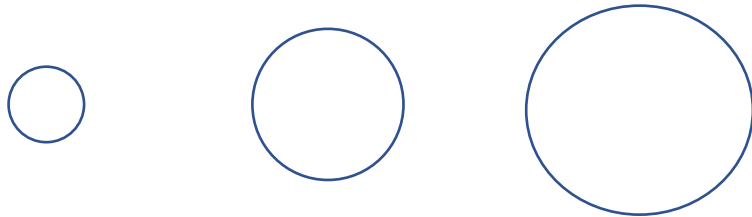
Have you ever studied music? _____

Do you play a musical instrument? _____

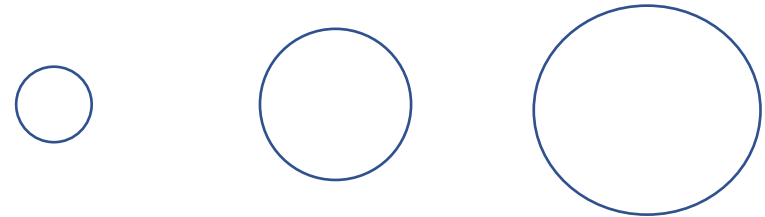
Do you have any sibling? _____

If yes, do any of them play a musical instrument? _____

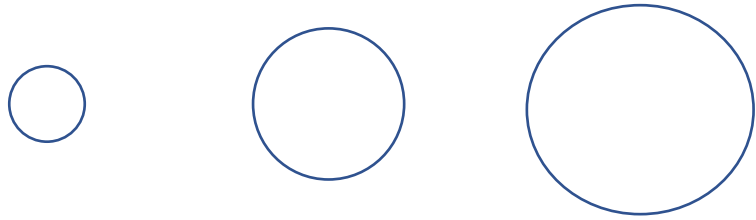
If yes, which one? _____



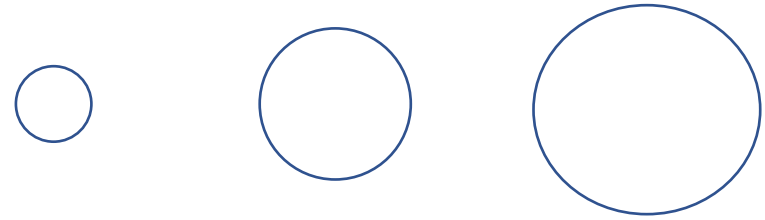
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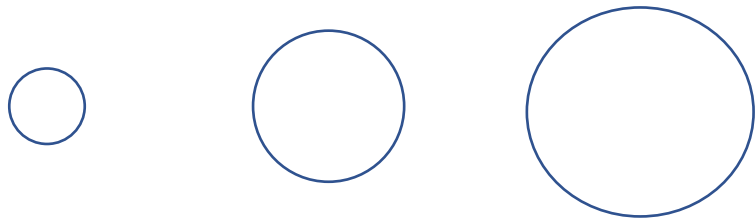
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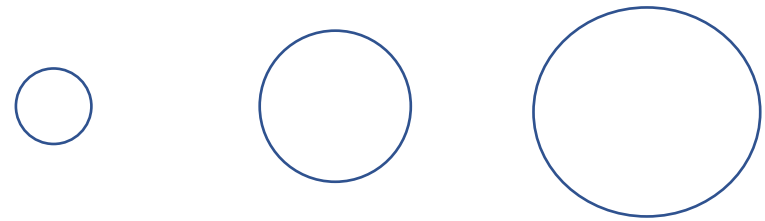
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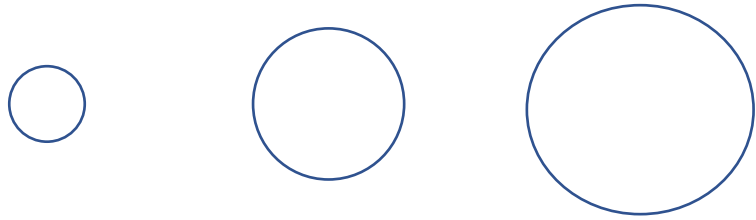
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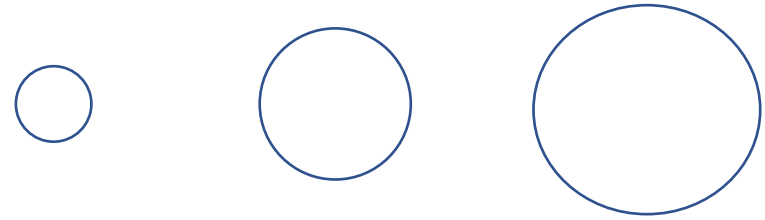
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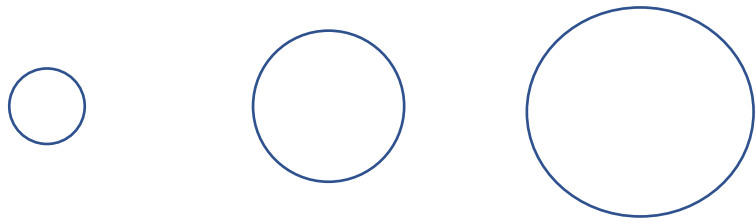
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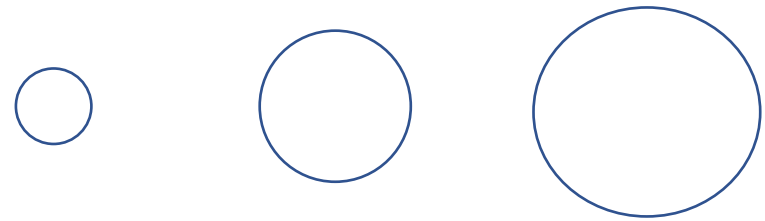
Answer 7



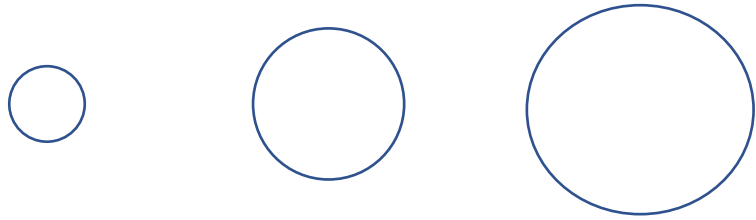
Answer 8



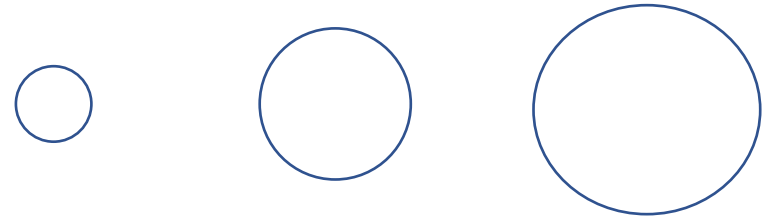
Answer 9



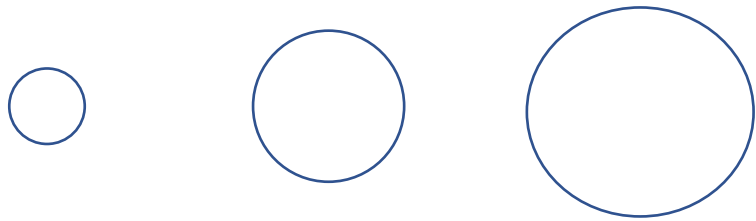
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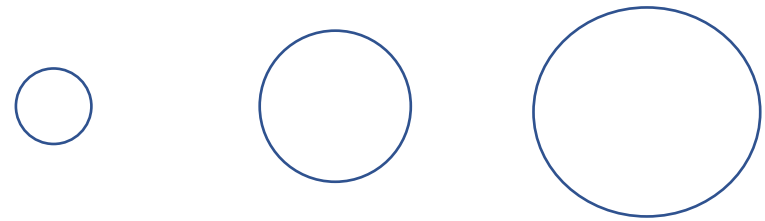
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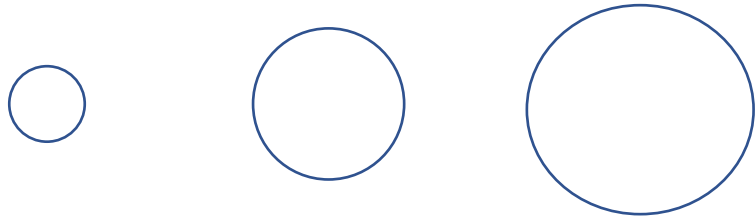
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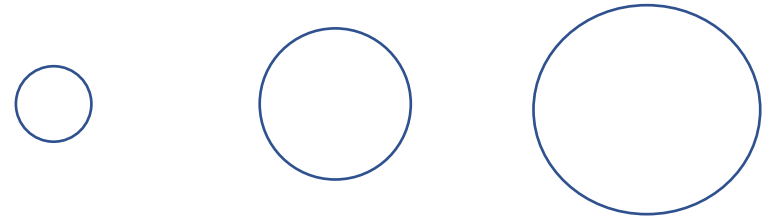
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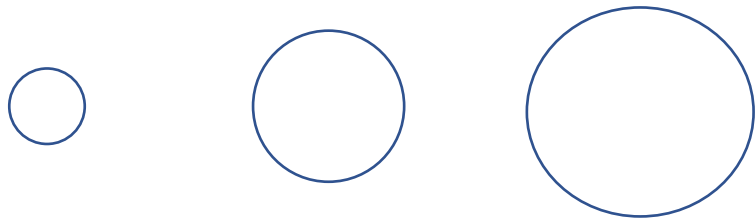
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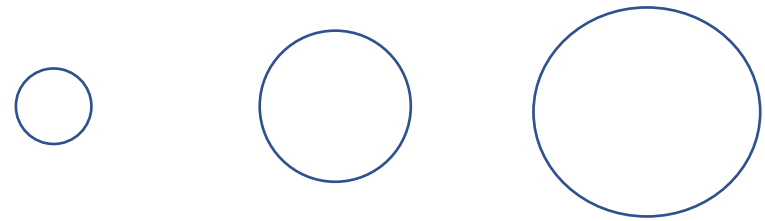
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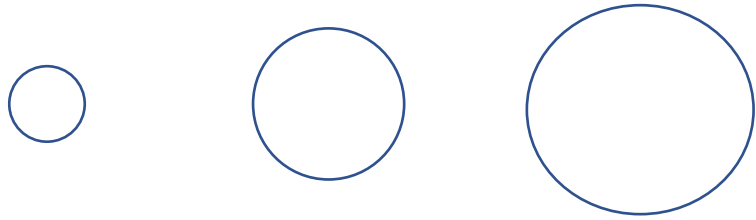
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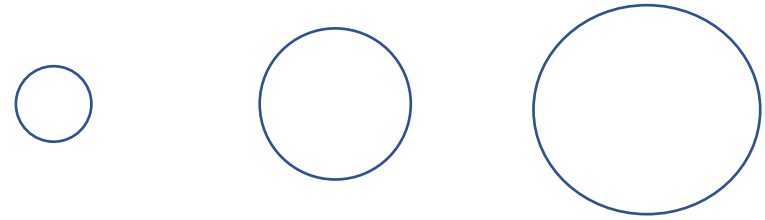
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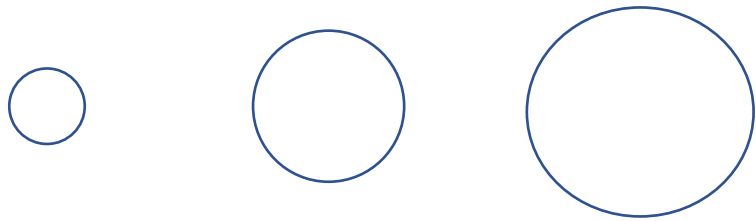
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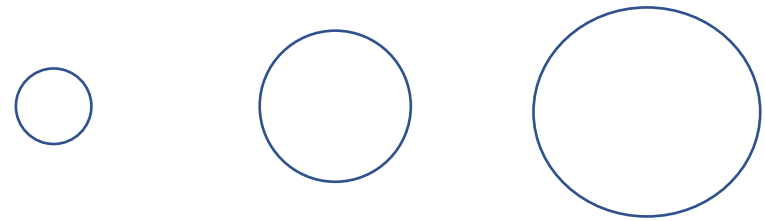
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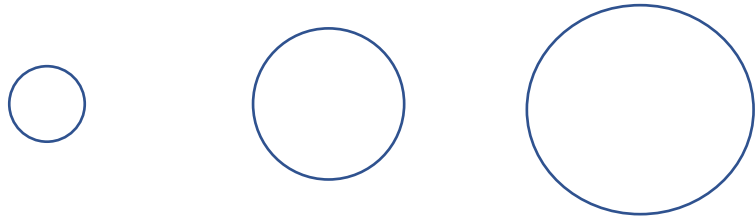
Answer 20



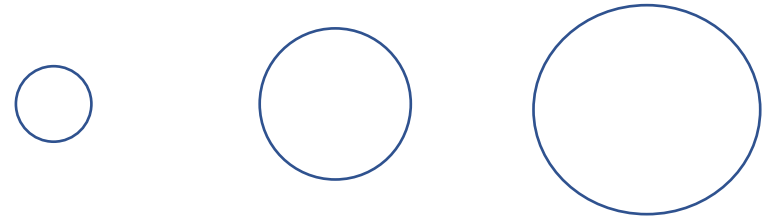
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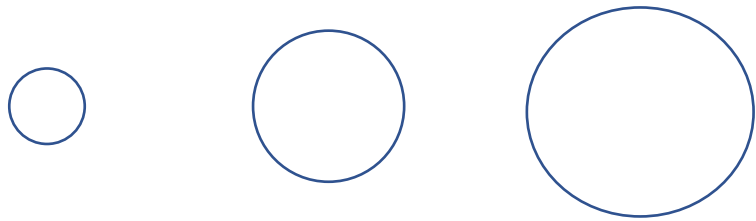
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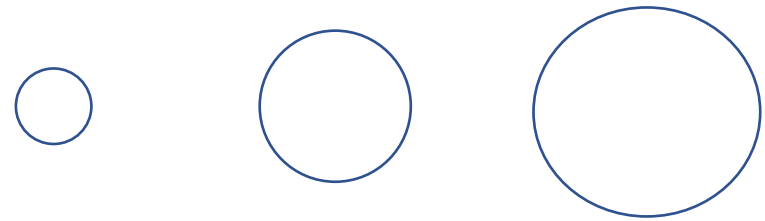
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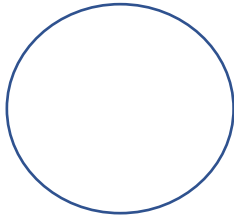
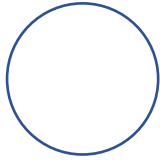
Answer 24



Answer 25



Answer 26



Answer 27

Date ____ / ____ / ____	Researcher's signature _____	Participant's ID 1=M 2=F . age . code
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EXPERT Questionnaire - parents' version

Age: _____(years) Sex: <input type="checkbox"/> Male <input type="checkbox"/> Female	Education level: <input type="checkbox"/> 4 th year <input type="checkbox"/> 6 th year <input type="checkbox"/> 9 th year <input type="checkbox"/> 12 th year <input type="checkbox"/> Bachelor's <input type="checkbox"/> Master <input type="checkbox"/> PhD	Have you ever studied music? _____ If yes, which instrument? _____ For how long? _____
Marital status: <input type="checkbox"/> Single <input type="checkbox"/> Married <input type="checkbox"/> Divorced <input type="checkbox"/> De facto union Job: _____	Do you own any musical instrument? _____ If yes, which one? _____ Can you afford a musical instrument for you child? <input type="checkbox"/> Yes <input type="checkbox"/> No	Do you have other children studying music? _____ If yes, which instrument? _____ At the Conservatoire or at another school? _____

Thank you very much for your willingness to participate in this study and answer this questionnaire. We ask you to read the following questions carefully and tick the right columns surrounding your answer.

How much do you agree with the following sentences?	Totally disagree	Tend to disagree	Neither agree nor disagree	Tend to agree	Totally agree
1. I encourage my child to take the initiative to play or sing.	1	2	3	4	5
2. I think I can help my child to learn to play a musical instrument.	1	2	3	4	5
3. Music education should be present in all schools.	1	2	3	4	5
4. I expect my child to get good grades in music subjects at the conservatoire.	1	2	3	4	5
5. I expect my child to feel fulfilled in music lessons.	1	2	3	4	5
6. I would like my child to complete the conservatoire course (i.e., high school).	1	2	3	4	5
7. I expect my child to do his/her best in music lessons.	1	2	3	4	5
8. My child's music education is important to me.	1	2	3	4	5
9. I believe that musical studies help children's performance in other subjects.	1	2	3	4	5
10. Musical involvement (eg. playing a musical instrument, listening to music, going to concerts, etc.) is a meaningful cultural experience.	1	2	3	4	5
11. Studying music will prevent my child from getting into conflict.	1	2	3	4	5
12. My child's musical involvement (eg. playing a musical instrument, listening to music, going to concerts, etc.) gives me reason to be proud.	1	2	3	4	5

How often...	Never	Rarely	Some times	Many times	Always
13. ... I will listen to my child practicing the instrument.	1	2	3	4	5
14. ... I will ensure that my child practices as much as required.	1	2	3	4	5
15. ... I will provide my child with the necessary materials.	1	2	3	4	5
16. ... I will listen to my child while he practices.	1	2	3	4	5
17. ... I will ensure a space (physical and temporal) for my child to practice.	1	2	3	4	5
18. ... I will encourage my child during the practicing.	1	2	3	4	5
19. ... I will attend public performances at the conservatoire.	1	2	3	4	5
20. ... I will take my child to concerts.	1	2	3	4	5
21. ... I will take my child to musical activities.	1	2	3	4	5
22. ... I will play a musical instrument with my child.	1	2	3	4	5
23. ... I will dedicate myself to learning more about music (e.g. posture, composers, etc.)	1	2	3	4	5
24. ... I or my partner played a musical instrument.	1	2	3	4	5
25. ... me or my partner had music lessons.	1	2	3	4	5
26. ... other members in my household sing or play a musical instrument.	1	2	3	4	5
27. ... I or my partner sings or plays nowadays.	1	2	3	4	5
28. ... I hear family members playing or singing.	1	2	3	4	5

At home we have...	None	Few	Some	Many
29. ... classical music discs/CDs/DVDs.	1	2	3	4
30. ... pop/rock music discs/CDs/DVDs.	1	2	3	4
31. ... jazz/blues discs/CDs/DVDs.	1	2	3	4
32. ... books/magazines/music sheet music.	1	2	3	4
33. ... sound system (eg. computer, smartphone, speakers, etc.).	1	2	3	4

Thank you for your cooperation!