Exploring self-efficacy and self-esteem in tertiary music students: A systematic review

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Abstract

Background: The role of self-efficacy in musicians has been a key area of inquiry in music psychology for over 20 years, resulting in a large body of research. Self-efficacy has been examined in various age groups and contexts alongside additional constructs, such as music performance anxiety, self-regulation, practice habits, and musicians' overall well-being. However, the growing volume of research has not been systematically synthesised, making it difficult to navigate and fully understand. While a meta-analysis on self-efficacy and performance exists, it excludes qualitative findings. This study aims to address this gap by systematically reviewing both quantitative and qualitative research on self-efficacy and self-esteem in tertiary music students.

Objectives: This study reviewed, analysed and synthesised peer-reviewed studies investigating self-efficacy and self-esteem in tertiary music students, including both quantitative and qualitative findings, and to explore its impact on related psychological and behavioural constructs.

Method: A systematic review was conducted according to PRISMA guidelines. Five electronic databases (e.g., PubMed) were searched for studies published in the last twenty years that measured self-efficacy or self-esteem in tertiary music students. Studies were screened against strict inclusion criteria, requiring samples of tertiary music students and an assessment of self-efficacy or self-esteem. Data extraction followed a standardised process, and thematic analysis was used to synthesise findings. Risk of bias was assessed across the studies.

Results: From over 700 studies identified, 46 met the inclusion criteria, encompassing a total of 8 446 participants. Of the 46 included studies five were focused on self-esteem. The analysis confirmed self-efficacy's significant role in several areas, including reducing music performance anxiety, improving psychological functioning, mediating the relationship between personality and health-promoting behaviours, enhancing self-regulation, improving practice and performance, and aiding students in making informed career decisions. Self-esteem was also found to assist with performance anxiety, emotion regulation, and coping. Despite various interventions addressing self-efficacy, none directly targeted self-efficacy beliefs. Additionally, the role of gender in self-efficacy remains ambiguous and warrants further investigation.

Conclusions: The findings highlight self-efficacy and self-esteem as critical constructs in music education that should be more actively addressed and supported. Harnessing their

potential could directly improve performance and learning while also influencing broader behaviours crucial for building resilience in professional music careers. As the importance of self-efficacy and self-esteem becomes more evident, music educators can better support and guide students.

Future Research: Future studies should focus on larger, more diverse student samples to gain a global understanding of self-efficacy. Additionally, further exploration of gender differences in self-efficacy is essential to inform educational practices that address the unique challenges faced by women in music education.

Keywords:

Self-efficacy; self-esteem; systematic review; health-promoting behaviours; music performance anxiety; tertiary music students

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Thank you to my family for patiently supporting me through this rather lengthy process and always believing in me, even when I didn't.

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To my Poppy for keeping me company always

And to the angels of all my family that surround me, I know you're still cheering me on.

DECLARATION OF ORIGINALITY
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Topic of work: **Exploring self-efficacy and music performance in tertiary music students: A systematic review**

Declaration

1. I understand what plagiarism is and am aware of the University's policy in this regard.
2. I declare that this **Dissertation** (e.g. essay, report, project, assignment, dissertation, thesis, etc) is my own original work. Where other people's work has been used (either from a printed source, Internet or any other source), this has been properly acknowledged and referenced in accordance with departmental requirements.

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Chapter 1

Introduction

1.1 Background and Context

Every performance encapsulates a journey within a musician's development scheme. The moments of silence before the performer produces the first notes that float across the air towards the audience are heavy with the intertwined threads of their self-concept. The weight of their self-doubt drags down some musicians, and others float amongst the clouds of their self-assurance, saturated in their belief that they will succeed. Many are pulled between these spaces, and the musicians use these seconds of silence to quiet their minds, allowing their preparation and past experiences to guide them through a successful performance. This moment of quiet holds the power to make or break a performance, and this dissertation will attempt to untangle a few threads of this experience to grow our understanding of the roles of self-efficacy and self-esteem in music students.

Self-efficacy and self-esteem form a significant part of research literature within the field of music psychology. The amount of published research has exponentially increased in the last six years; there were 17 studies published between 2000 and 2017, and from 2018 to 2024, a total of 28 studies were published. This averages 5 studies per year in the last six years versus 1 per year between 2000 and 2017. There is a limited amount of secondary research available on this topic, which leaves an intimidating amount of research to be sorted through in order to find the data relevant to music students and their development. Self-efficacy and self-esteem are highly intricate concepts that are closely related and interwoven with many other important facets of a musician's development and, as such, should be easily accessible to students and educators.

1.2 Aims

The present study aims to investigate the role of self-efficacy and self-esteem in music performance among tertiary music students through a systematic review of the existing literature. An extensive search has revealed that there are currently no systematic literature reviews on self-efficacy in music. This study, therefore, aims to fill this gap and provide a much-needed synthesis of the large amount of available literature. This topic also lacks an analysis of the gaps and limitations within the literature; therefore, this research aims to inform future research.

1.3 Research questions

Which research methods are used to explore self-efficacy and self-esteem in the context of tertiary music students?

How has the existing literature examined the influence of self-efficacy and self-esteem on performance success among tertiary music students?

What interventions have been implemented to improve self-efficacy and self-esteem for music performance?

What are the roles of self-esteem and self-efficacy among tertiary music students?

1.4 Concept clarification

The concept of self-efficacy was first established in 1977 by the psychologist Albert Bandura. Within the social cognitive theory, self-efficacy refers to a person's belief in their ability to successfully complete a task (Bandura, 1997). This theory is applied to music through the definition of self-efficacy as a domain-specific construct; therefore, self-efficacy through the lens of music measures a student or musician's belief and awareness in their ability to give a successful performance or successfully complete any other musical task (Hendricks, 2014; McPherson & McCormick, 2006). Self-efficacy plays a significant role in understanding how and why musicians function, thrive, or fail and has been researched in combination with social support (Hendricks, 2013), music performance anxiety (Bersh, 2021; Gonzalez et al., 2017), practice and training (Miksza, 2013; Nielsen, 2004), music education (Biasutti et al., 2020; Kutch et al., 2015), and other constructs such as coping strategies and motivation (Hallam et al., 2018; Osborne & McPherson, 2018;).

Branden (1994) discusses self-efficacy as a pillar of healthy self-esteem. Self-esteem is a much older concept than self-efficacy, coined in 1890 by William James. It was initially defined as a person's ratio of successes achieved in domains of life important to the individual (Mruk, 2010). Self-esteem has been a recognised concept of psychology for a long time and has gained several definitions. Behavioural scientists in the 1960s adjusted James' original definition to "an attitude concerning one's worth as a person" (Rosenberg, 1965, p. 14). The third significant definition was established in the 1990s and posited that self-esteem is "the disposition to experience oneself as competent to cope with the basic challenges of life and as worthy of happiness" (Branden, 1994, p. 40).

1.5 Research methodology

The methodological process of a systematic literature review was chosen for this study as it best fits the intention of collecting the relevant data and processing it into an accessible presentation format. A PRISMA systematic review process was followed to produce a transparent and replicable study with a clear and predetermined protocol. Reflexive thematic analysis was used to synthesise the collected data. Chapter three consists of a full explanation of these processes.

1.6 Chapter outline

Following this introduction, chapter two delves into the theoretical frameworks of self-efficacy and self-esteem and the distinction between these closely related concepts. The impact of self-efficacy and self-esteem outside of the field of music is discussed in relation to mental health and academic achievement. The literature review concludes with the roles of self-efficacy and self-esteem in music. Chapter three lays out the protocol that was followed through this research as suggested by the PRISMA process, as well as a discussion of the process of analysis. Chapter four includes a discussion of the analysis process; the collected data is presented, first showing all research included in the review, followed by the analysis of each theme and analysis across the themes. Chapter five summarises the findings from each theme, addresses the research questions, and discusses the limitations and suggestions for future research.

1.7 Conclusion

There is an immeasurable amount of effort that goes into any performance or task that musicians complete. Synthesising the bigger picture of the roles that self-efficacy and self-esteem play in these processes is a crucial step to take as we consider the vast amount of research now available. Self-efficacy and self-esteem are so closely intertwined that there is a cyclical influence process between them. With high self-esteem, the musician is provided with a comfortable foundation to grow their self-efficacy and with high self-efficacy, the musician has a positive perception of their skills, which strengthens their self-concept. If an individual has a low sense of self-esteem or self-efficacy, the impact can be detrimental not only to a single performance but could derail a child's learning process and dissuade them from continuing with a music career. It is, therefore, crucial that we now take the information we have about these concepts and piece together a clearer understanding of how they can be influenced, how they function, and what directions future research needs to follow to better answer these questions and fill the gaps in the literature.

Chapter 2

Literature Review

2.1 Introduction

Chapter two presents a comprehensive review of the literature on self-efficacy and self-esteem, focusing on their definitions, theoretical foundations, and their roles across various domains. The discussion begins by defining self-efficacy and exploring its theoretical underpinnings, followed by an examination of its influence in areas such as academics, mental health, and performance-based fields. Next, self-esteem is introduced and situated within a relevant theoretical framework, highlighting its impact on similar areas, including mental health and academic achievement. The chapter then explores the intersection of self-efficacy and self-esteem within the context of music, discussing their significance in the development and performance of musicians. Finally, the chapter highlights the presence of numerous systematic reviews on self-efficacy in fields outside of music, emphasising the absence of such a review specifically focused on self-efficacy in music students, thus identifying a critical gap this dissertation seeks to fill.

2.2 Self-efficacy

Self-efficacy, as defined by Bandura, is a person's belief in their ability to complete a specific task (1997). This optimistic self-belief functions as a lens through which an individual can complete complex or unique tasks and cope with hard times. The concept of self-efficacy is situated in the social cognitive theory of psychology and has been shown to be the strongest predictor of a student's academic success (Richardson et al., 2012; Honicke & Broadbent, 2016).

Within social cognitive theory, we find models that attempt to explain and describe how our behaviours are regulated and controlled within our psyche (Bandura, 1977). Social cognitive theories focus on the impact of the environment around the individual on the development of their self-regulation, motivation, and learning (Schunk & Usher, 2019; Ryan et al., 2023). As seen in the field of psychology, there are many perspectives held within any given theory. According to Bandura, social cognitive theory tells us that our behaviours are regulated and controlled by personality elements and the complex ecosystem of our social systems (Jian, 2022). Self-efficacy within this lens system gives us the theoretical underpinning that self-

efficacy provides an individual with the ability to exact change over their own actions and cognitive processes and ultimately have an influence on their surroundings (Bandura, 1997).

If an individual does not believe that they have the power to produce results, it is unlikely that they will attempt to achieve those results (Bandura, 1997). Bandura makes a clarification between the processes of how things are made to happen and the power to make things happen. The mechanics behind a process are not consciously thought out, and athletes do not have to "tell their nervous system to get motor neurons to move their skeletal musculature in designated patterns" (Bandura, 1997, p. 3). Instead, it is a combination of the understanding of basic human ability in conjunction with beliefs about individual capabilities that result in developing a course of action that fits any given purpose (Bandura, 1997). While these plans may be followed, they will not always result in success or the intended outcomes, and it is the people with higher levels of self-efficacy who are better equipped to work through the setback and continue to try and achieve their goals (Bandura).

Self-efficacy beliefs are domain-specific. Bandura (1997) discusses how an individual is likely to possess varying levels of self-efficacy at any given time, and this is dependent on the task or situation they are trying to perform or complete. This nature of self-efficacy is not cut off at a domain level and can be broken down into task-specific evaluations within any domain. Past experiences significantly impact developing levels of self-efficacy, with past experiences of success and failures guiding self-efficacy beliefs in similar tasks. Other influences include social factors and level of mastery, each of which influences self-efficacy beliefs in slightly different ways (Usher & Pajares, 2008).

Bandura lists four sources that can influence self-efficacy: enactive mastery experience, vicarious experience, verbal and social persuasion, and psychological and affective states (1997). These sources of self-efficacy each hold a unique combination of influence in every individual's beliefs. This combination of influence varies according to factors such as gender, culture, ethnicity, values, and domain (Hendricks, 2016; Schunk & Usher, 2012; Usher & Pajares, 2008). As a construct of an individual's ever-changing psyche, it is understandable that self-efficacy beliefs shift and change within life's journey, and many different levels of self-efficacy beliefs can be held at one time in a single domain.

2.2.1 Self-efficacy and Academic Achievement

When looking at the possible reasons behind why someone engages in a task and what drives any attempt, we consider goal orientation, which is closely related to self-efficacy, as the

perception of competence impacts the goals that are set (Elliot & McGregor, 2001; Frumos et al., 2024). If unattainable goals are set and repeatedly failed to reach them, it will reduce feelings of competence as it will seem as if success is not possible, decreasing levels of self-efficacy as their belief in their ability to succeed diminishes (Kitsantas et al., 2008). Goal orientation theory provides two categories of goals: mastery goal orientation and performance goal orientation. Mastery goal orientations focus on the learning process and developing skills, while performance goals focus on a demonstration of competence and comparison with others to be better. Of these two approaches, mastery goal orientation results in an individual who sees challenges as a way to improve and develop skills that are important in continued learning involvement. It has been found in the disciplines of music, sport, and academics that educators, coaches, and teachers' goal orientation have an impact on their students' mastery goals, providing students with motivational beliefs. Ultimately, students with mastery orientation are equipped with a purpose to improve within a specific domain and concurrently improve their self-efficacy.

Self-efficacy holds the potential to significantly impact achievement through its influence on goals as it motivates behaviours that lead to success (Trautner & Schwinger, 2020). A student with a high sense of self-efficacy will have greater expectations of themselves to perform at a higher level and subsequently be discontent with a performance they perceive to be of a lower standard than they had set (Zimmerman & Bandura, 1992; 1994). This negative self-influence will drive their motivation and sustain their continued efforts to succeed. As self-efficacy beliefs increase, goals are raised, and the result over time is that the baseline quality of work produced with which one is self-satisfied increases, motivating their continued effort to achieve.

Within the current literature on academic performance and achievement, Richard et al. (2012) reviewed the research conducted over a 13-year period (1997-2010) that considered university students' grade point average, with performance self-efficacy displaying the highest correlation to success out of 50 possible measures. Honicke and Broadbent reviewed the research on the relationship between academic self-efficacy and university students' academic success over 12 years (2003-2015). The review included 59 papers, and the authors concluded that academic self-efficacy was moderately correlated with academic performance. An individual's self-efficacy is a vital personal resource that is seen in many different domains of functioning (Bandura, 2010) and is a crucial component that significantly impacts each person's way of thinking, doing, and feeling (Zarza-Alzugaray et al., 2020).

2.2.2 Self-efficacy and Mental Health

The umbrella term mental health refers to a comprehensive group of psychological variables such as anxiety, depression, stress, and resilience. The relationship between mental health and self-efficacy lies in the function of self-efficacy, which provides psychological resilience (Qin et al., 2023). Psychological resilience is essential in protecting individuals from conditions such as anxiety and depression (Ong et al., 2006). In the general population of tertiary students, Huang et al. (2023) clarified the relationship between self-efficacy and mental health in a long-term study that found a significant positive relationship between mental health and self-efficacy.

In a systematic research synthesis by Reed-Fitzke (2019), the role of self-efficacy is considered in the depression of emerging adults (ages 18-29), with reports of increased rates of clinical depression on college campuses (Gallagher, 2014). The research synthesis of Reed-Fitzke included 23 quantitative studies involving a total of 30,533 emerging adults from 28 countries. The author noted that there is minimal literature on self-efficacy, and the results are mixed. This points to a lack of appropriate or developmentally appropriate interventions for depression in emerging adults. There are, however, promising results in the relationship between self-esteem and depression. A study that reviewed character strengths-based interventions noted the impact of the intervention on depression in patients suffering from chronic illnesses and the improvement in their self-efficacy (Yan et al., 2019). This review included eight studies involving 692 patients; the comparison between these studies showed that character strengths-based interventions effectively improved self-efficacy.

2.2.3 Self-efficacy and Performance Domains

In the field of sport psychology, Wright et al. (2016) made a comparison of psychological performance enhancement techniques (PETs) used to improve self-efficacy and skill performance. This research was based on the sources of self-efficacy (Bandura, 1997). Bandura suggests that self-efficacy is built through four principal sources: mastery experiences, vicarious observation, verbal persuasion, and physiological states (1977). This study assessed 6 PETs on 96 participants who performed novel tasks to see which PETs best-improved self-efficacy. It was hypothesised that the PETs that used vicarious experience and verbal persuasion would have a more significant impact on self-efficacy. The result of this study by Wright et al. (2016) showed that verbal persuasion performance enhancement techniques increased self-efficacy. It was also partially confirmed that performance enhancement

techniques that provided sources of self-efficacy resulted in improved performance, with the vicarious experience intervention not showing an improvement in self-efficacy.

2.3 Self-esteem

The concept of self-esteem is relatively longstanding in the field of psychology, and as such, it has become difficult to give an exact definition or conceptualisation (Niveau et al., 2021). From the early definition of the ratio of success to the more recent notion that it is an indicator of our self-acceptance, self-respect, and satisfaction with ourselves, self-esteem can be understood as how we perceive our self-concept or our attitude towards ourselves (Greenwald et al., 2002). Self-concept is the "set of cognitive representations one holds about oneself" (Niveau et al., 2021, p. 1) a way to explain ourselves to ourselves. Self-efficacy also falls into the realm of self-concept, which can include many other constructs such as self-image, self-identity, self-respect, ideal-self, and self-awareness (Pushpalatha, 2020). Studies have shown a positive relationship between self-esteem and self-efficacy (Sahin, 2017). Specific and general self-esteem has been shown to be good predictors of outcomes, with good general self-esteem resulting in good global health-related outcomes such as psychological well-being or depressive symptoms (Rosenberg et al., 1995; Orth et al., 2014). For the purpose of this research, self-esteem encompasses the individual's capacity to view themselves as worthy (Thomson et al., 2016).

Self-esteem can be situated in the theoretical framework of self-concept theory from Carl Rogers (1951). Within humanistic psychology, like social cognitive theory, an individual's state of self-concept is not set but rather constantly evolving and responding to experiences, perceptions, and relationships (Roger, 1961). Rogers' theory of self-concept (1951) consists of three components: the real self, the ideal self, and self-image. The construct of self-esteem emerges from the relationship between the real self and the ideal self, with high congruence between these components resulting in higher self-esteem (Rogers, 1959). The more an individual's perception of their ideal-self aligns with the perception of their real self the greater their sense of worthiness will be (Lepcha, 2020).

2.3.1 Self-esteem and Academics

Self-esteem in the field of academics and education has been researched in conjunction with academic self-efficacy, with results showing that there is a significant positive correlation between them in several contexts (Afari et al., 2012; Luo et al., 2022; Mao et al., 2020). Self-esteem has been found to impact academic self-efficacy as well as being a determining factor

of success (Parker et al., 2010; Lin et al., 2014; Sahin, 2017). Luo et al. confirmed the relationship between self-esteem and academic self-efficacy in Chinese college students through a longitudinal study. The study comprised 2,473 college students who completed academic self-efficacy and self-esteem questionnaires. The average scores showed that self-efficacy declines in the first three years of college and rises slightly by graduation.

2.3.2 Self-esteem and mental health

A strong sense of self-esteem presents as a positive evaluation of self and gives an individual an additional tool that could help them more successfully navigate life (Cameron & Granger, 2018). While low self-esteem has been shown to predict anxiety and depression (Sowislo & Orth, 2013), higher levels of self-esteem are correlated with self-acceptance and better interpersonal skills (Cameron & Granger). Many interventions have been developed to improve one's self-esteem, with low self-esteem being attributed to negative self-beliefs, adverse life events and maladaptive behaviours (Niveau et al., 2021). Niveau et al. discuss various interventions, including cognitive-behavioural therapies, reminiscence-based interventions, support groups, and compassion-based interventions.

2.3.3 Self-esteem and performance domains

In the field of sports science, self-esteem has been shown to improve the performance of athletes, with athletes who participate in individual sports presenting a higher level of self-esteem as opposed to team sports (Šagát et al., 2021). The role of an adolescent athlete's gender has been examined in relation to the development of their self-esteem. Nikander et al. concluded in their investigation of the role of gender in developmental trajectories that males present a higher level of self-esteem through adolescence (Nikander et al., 2021). This was a longitudinal study that consisted of 391 student-athletes who completed the Career Adapt-Abilities Scale and Self-Esteem Questionnaire each year of high school. Further results showed that self-esteem was reasonably stable through high school years.

In a study of international-level gymnasts from the United Kingdom, self-esteem was found to be higher than the levels of self-esteem found in the standard school population (Tan et al., 2016). This study consisted of 51 gymnasts who completed four questionnaires relating to eating disorders, mental health, and self-esteem; the participants were ages 10-25 years. Within this population of gymnasts, the prevalence of eating disorders was found to be high, with higher self-esteem linked to reduced concern over body shape, and depressive symptoms positively associated with eating disorder symptoms (Tan et al., 2016).

2.4 Self-efficacy and self-esteem in the field of music

In 2000, McPherson and McCormick started researching self-efficacy within the field of music. Their research consisted of 332 instrumental students ages 9 to 18 who were completing externally graded exams. The aim was to establish the role of self-efficacy in different levels of achievement in music (McPherson & McCormick, 2003). Self-efficacy is developed from very early on, as we learn and develop our skills through formal education and informal lessons we receive directly and indirectly from friends, relatives, and teachers. Papageorgi et al. (2007) suggested that self-efficacy is vital to understanding musicians' learning journey. The four sources of self-efficacy do not contribute equally to an individual's self-efficacy; individual differences in aspects such as personality and gender result in each person's self-efficacy being developed through unique combinations and interactions (Hendricks, 2014; Zelenak, 2014).

Self-efficacy is a critical mediating factor in music performance anxiety (MPA). In research by Kenny et al. (2012), 51.5% of a sample of professional Australian orchestral musicians listed "lack of confidence in yourself as a musician" as a factor in their MPA, with 11.8% of this 377-person sample listing it as the most important factor. Understanding that self-efficacy transforms and shifts with a musician's growth and that it is one of the strongest predictors of a successful performance, how musicians learn and how they are taught are crucial to their success. A music teacher's self-efficacy will understandably have a profound impact on their students. Teachers do not single-handedly hold the potential for their student's success, as parents and peers also play a crucial role (Lehmann & Kristensen, 2014). However, a music teacher's self-efficacy is an indicator of their overall effectiveness (Klassen & Tze, 2014).

Self-esteem in music does not have a validated quantitative instrument of measurement. It is not dependent on domain-specific measurements but rather on the impact that positive self-reflection has on the musician. Self-esteem is frequently measured through scales such as the Rosenberg Self-Esteem scale (Rosenberg, 1965). There is a fair amount of literature on the relationship between self-esteem, self-efficacy, and motivation, with motivation being crucial to a musician's long-term success (Hallam, 2016). It has also been found that playing an instrument increases self-esteem (Hallam & MacDonald, 2016).

During the proposal process of this research in 2023 there had been no publications of reviews on self-efficacy in music. Zelenak (2024) then published a meta-analysis on self-efficacy in music students, specifically identifying the quantitative research on self-efficacy. The results of the meta-analysis showed that self-efficacy has a significant positive impact on performance

and the individual's ability to cope with music performance anxiety. In contrast, the research reported here systematically reviews the quantitative and qualitative data published within various populations of tertiary music students.

2.5 Conclusion

Many systematic reviews on self-efficacy and self-esteem have been published in the fields of sports science (Fang et al., 2021; Machado et al., 2018; Nwachukwu et al., 2019; Spence et al., 2005), health care (Dale et al., 2019; Albanese et al., 2019; Gow et al., 2020), psychology (Bridge et al., 2019; Niveau et al., 2021; Pereira & Barros, 2018; Reed-Fitzke, 2019; Whitehall et al., 2020), and education (Gordon et al., 2022; Hussain et al., 2021). Systematic reviews in music are also widely published on topics of music performance anxiety (Barros et al., 2022; Fernholz et al., 2019), self-regulation (Varela et al., 2014), and the impact of musicking on emotion regulation (Peters et al., 2023). However, there are no systematic reviews of self-efficacy or self-esteem in tertiary music students. This makes the large amount of available literature challenging to process, with very little evaluation of the gaps and limitations that the literature possesses. The present study aims to fill this gap and possibly inform future research.

Chapter 3

Research Methodology

3.1 Introduction

Research methodology refers to the roadmap that the researcher follows to guide the procedures and strategies employed in the research process, it serves as a foundation for the analysis and synthesis of a systematic review (Creswell & Poth, 2018). The design of a systematic review follows a structured approach, and this chapter will outline the processes that are involved in the data collection, extraction, and analysis. The inclusion and exclusion criteria will be meticulously detailed to make the process of this PRISMA review transparent and replicable in the future with the intent of producing an unbiased and comprehensive synthesis of the available evidence. Finally, the ethical challenges of this review regarding the reliability and validity of both the included research papers and the overall product of this dissertation will be considered.

3.2 Research design

A systematic review is a process through which relevant research that fits the suggested topic is collected with the intention of answering a research question (Jenson, 2011). A systematic review uses “explicit, systematic methods to collate and synthesise findings of studies that address a clearly formulated question” (Page et al., 2021, p. 2). These reviews make up an important part of research literature, giving a concise overview of the existing research on a specific topic, without which the reader may otherwise face an overwhelming amount of information to process (Page et al., 2021).

The systematic review is one of several review processes to choose from. Alternatively, there are scoping reviews as well as integrative reviews. A scoping review, or traditional review, is the process through which a broad understanding of a field is gained via explorative research without an established protocol (Jensson, 2011). A scoping review aims to create a bigger picture through a flexible process that follows the trail of research as it is found, resulting in a discursive analysis and synthesis of the results (Pilbean & Denyer, 2008). An integrative literature review is a process through which new frameworks or conceptualisations are generated and the representative literature is synthesised (Torraco, 2016). Integrative reviews according to de Sousa et al., (2010) are the most comprehensive methodological approach to reviews, with the inclusion of experimental, non-experimental, theoretical, and empirical literature.

Both of these processes result in valuable products of research that feed into the wealth of knowledge of academia. Jensson (2011) argues that a systematic review is built on a scoping review, while this may be true, it is the rigorous transparency of the data collection process that sets the systematic review apart. The process of an integrative review holds many similarities to a systematic review, the difference lies in the search strategy and data synthesis. Where the integrative review encompasses a flexible search strategy and a narrative synthesis, the systematic review requires a structured and reproducible approach with the quantitative synthesis of the relevant data.

With this in mind, the process of a systematic review was chosen to be the guiding framework of this dissertation. The methodology of a systematic review provides an approach that ensures transparency and minimises bias, as well as a structured method of synthesising the available literature, which fits the intended goal of this research by contributing to a deeper understanding of self-efficacy and self-esteem in tertiary music students.

3.3 PRISMA method

The key element in a systematic review is establishing a protocol, ensuring that there is explicit and rigorous planning (Moher et al., 2015). To achieve this the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P) method was utilised. The 2020 PRISMA protocol provides a 27-item checklist to guide the reporting of systematic reviews. PRISMA 2020 is designed for "studies that evaluate the effects of health interventions, irrespective of the design of the included studies" (Page et al., 2021, p. 1). The PRISMA 2020 protocol is the updated version of the PRISMA 2009 protocol, the 2020 updates intend to improve the transparency and accuracy of the reporting of systematic reviews (Page et al.).

3.4 Data collection techniques

A systematic review consists of several key phases, from developing a research question to the final synthesis and write-up of the final report (Jensson, 2011). The first phase of mapping the field through a scoping review happened through the process of the research proposal, whereby the knowledge gaps were identified and the research questions were established. The proposal process also defined the inclusion and exclusion criteria, keywords used to search the relevant databases, as well as a data extraction form for the data collection. With these elements in place, a comprehensive search was then done.

3.4.1 Search strategy

The method of data collection, according to the PRISMA protocol, should be made completely transparent in order to make the review more easily updated as well as improve the replicability of the study (Page et al., 2021). For this review, the following databases were searched:

- PsychInfo
- PubMed
- SAGE
- Science Direct

The selection of these electronic databases was based on their relevance to the research questions and was limited to the databases that are subscribed to by the University of Pretoria. The search strategy varied slightly between databases to accommodate the differences between the advanced search functions of each database. Boolean operators were applied to narrow down search results. Due to the clear scope of this study, the variation of search phrases was few. Search phrases included the keywords "self-efficacy", "self-esteem", and "music" or "music student". More variation was found in the advanced search function in terms of identifying where the keywords should be, namely the title, abstract, or keywords of the article.

Preliminary searches during the proposal process demonstrated that searching for self-efficacy and self-esteem in the title or abstract in combination with music and student in the abstract brought up the most relevant results across the databases. These search strategies are laid out in Table 1 showing the search strategy used for each database and the number of results exported from each database. From these results, any duplicates were removed, and the remaining citations went through the screening process.

Table 1
Search strategies used for each database

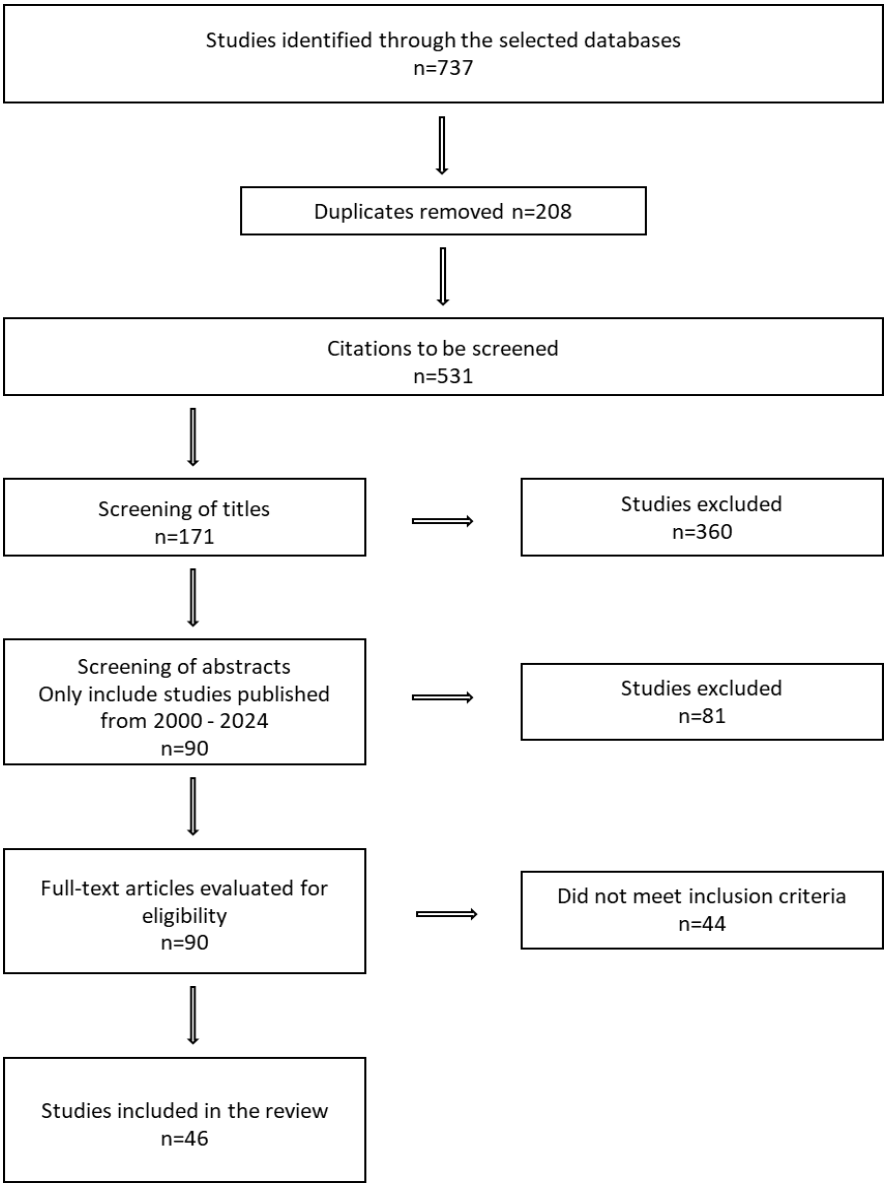
Database	Search phrase	Number of results
PsycINFO	Title(Self-efficacy OR self-esteem) AND music[Abstract]	129
PubMed	Title(Self-efficacy OR self-esteem) AND (music[Title/Abstract])	52
SAGE	Title(Self-efficacy OR self-esteem) AND music	213
Science Direct	(Title, abstract, keywords: self-efficacy OR self-esteem) AND Title: Music	45
ProQuest	Title((self-efficacy OR self-esteem)) AND abstract(music)	126

3.4.2 Study selection

The full search of the five databases was conducted in February 2024. A total of 737 citations were found, of which 208 were identified as duplicates and eliminated, resulting in 531 citations being screened (shown in Figure 1). The first screening of citations by their titles resulted in 360 citations being eliminated. Further screening of abstracts and elimination due to the date of publication resulted in 90 full-text articles screened for eligibility. From these 90 citations, 25 were eliminated as they were not published, peer-reviewed articles and a further 19 were eliminated per the inclusion criteria leaving 46 citations to be included in the review.

Figure 1

PRISMA process of searching databases and inclusion of studies



3.4.3 Data management

The data management program Zotero was used to store all of the citations found across the searched databases. Within Zotero, citations were organised alphabetically by author and duplicates were identified and merged. These results were exported into a Microsoft Excel spreadsheet, the first spreadsheet consisted of the full 532 citations, the second spreadsheet consisted of the citations to be screened by title, the third spreadsheet included the citations to be screened by abstract, and the fourth spreadsheet consisted of the citations that were included in the review. Through the screening process of the full texts, the third Excel spreadsheet was colour-coded to show why citations did not meet the inclusion criteria, such as the age of participants, no measures of self-efficacy or self-esteem, or articles not published in English.

3.4.4 Eligibility criteria

The studies included in this review were selected based on specific inclusion criteria. The following of which is an important part of the protocol of a PRISMA review. Through the search process, it was clear that there is a large number of studies that have been published in the fields of self-efficacy and self-esteem, it was therefore important to stick to the inclusion criteria that were set out so as to only include studies relevant to the intended scope of the review.

Participants

Only participants with an age range above 18 years were included in the study. This age range fits the age of students in tertiary education. Some studies do have participants below this age; however, they were included if the age range included participants between the ages of 18-26. Musicians who are transitioning into professionals need to be equipped with the appropriate tools to handle better the stresses of a career in music and music performance.

Phenomena of interest

Each study had to include a measure of either self-esteem or self-efficacy. This included validated quantitative measures of self-efficacy or self-esteem, as well as qualitative self-report questionnaires and interviews that prompted questions relating to elements of self-belief or self-concept.

Outcomes

This review includes all outcomes. To ensure an inclusive and transparent data collection, studies were not excluded due to their results unless they did not include an analysis of self-efficacy or self-esteem or publish the results of the self-efficacy or self-esteem measures.

Study type and design

All study designs, including quantitative, qualitative, and mixed-methods procedures, were incorporated. Studies also did not have to facilitate an intervention; studies that presented a measurement of self-efficacy or self-esteem within a population were included.

Publication status

Only studies published in peer-reviewed journals were included. Unpublished research or grey literature was excluded. Unpublished data was collected in the initial search (through the ProQuest database); however, once it became apparent that there was an overwhelming amount of data to process on this topic, it was decided that only published studies would be included.

Language

Only English studies, or studies translated into English, were included.

Time of publication

Research articles published between 2000, and February 2024 were included.

Exclusion Criteria

Literature that met the following requirements was excluded

a. Literature with no measure or discussion of self-efficacy and self-esteem
b. Literature that does not focus on tertiary music students' experience of or with self-esteem or self-efficacy
c. Literature that involved a process of music therapy
d. Literature published before 2000
e. Literature not published in a peer-reviewed journal

3.5 Certainty assessment and risk of bias

Following the PRISMA process, the studies included in the review should be assessed for certainty in the body of evidence. In addition, an assessment of the internal validity of the results of the systematic review should be carried out. The risk of bias in this systematic review is significantly decreased by only including research published in peer-reviewed journals. Peer-

reviewed journals only publish articles that have been through an assessment by experts in the field who "critically assess the quality and scientific merit" of an article (National Library of Medicine, n.d.). The use of peer-reviewed articles ensures the quality of research as well as the validity of the results which also fulfils the PRISMA requirement of an assessment of certainty in the body of knowledge. The limitations and suggestions for future research of the included studies are discussed in Chapter 5.

3.6 Data analysis and presentation

The data extraction process involved reading the full-text articles that met the inclusion criteria and then using a template to extract the fundamental characteristics of the included studies. This template was drawn up during the proposal stage of this research and during the data extraction process, additional data items were added to be extracted. These were limitations of the study and scales used to measure self-efficacy and self-esteem. From this point, the included studies were sorted into subcategories, the subcategories were:

Development and validation of self-efficacy measures
Self-efficacy and music performance anxiety
Self-efficacy, self-esteem, and psychological variables
Self-efficacy and health-promoting behaviours
Self-efficacy and self-regulated learning
Self-efficacy in practice and performance
Self-efficacy and the likelihood to persist in music

The aim of the data analysis stage of a systematic review is to produce an innovative synthesis through the unbiased interpretation of the collected information. Through a process of reflexive thematic analysis, the researcher is able to build theories grounded in the data and uncover unique insights from the sum of the collected data (Braun & Clarke, 2019). Reflexive thematic analysis consists of 5 key components: data reduction, data display, data comparison, conclusion drawing, and verification (Braun & Clarke, 2006).

Data reduction is the process of summarising the data and processing each primary data source into a small unit, typically one page of similar data for each source. This extraction is explained above. The next step of data display moves these reduced units of data into an appropriate visual representation, in this study, the data was processed into a spreadsheet. The extracted data is sorted into categories in order to classify patterns, themes, variations, and relationships (Whittemore & Knafl, 2005). This constant comparison of the data is the data comparison

component, which results in the themes. The bottom-up process of reflexive thematic analysis allows the researcher to isolate and extract themes that emerge directly from the data, regardless of the research questions or any theoretical frameworks that could skew the analysis (Braun & Clarke, 2006). From these themes, conclusion drawing can begin. These conclusions and conceptual models are revised throughout the analysis process to ensure that as much data as possible is included. The verification component requires reflection on the credibility, dependability, and transferability of the conclusions and findings. A discussion of the limitations and recommendations for future research can be found in chapter five.

3.7 Procedure and Data Handling

A total of 46 studies were meticulously identified and included in this systematic review. These studies were included based on the rigorous inclusion criteria set out in the previous chapter. Due to the large number of articles that met these criteria, the data analysis included several rounds of recapping and sifting through the research, as is recommended for a reflexive thematic analysis process. After finalising which articles were included, the initial data extraction was processed through an Excel spreadsheet. The objective, research approach, country of origin, number of participants, and additional concepts were extracted into the spreadsheet for each study. The limitations and recommendations for future research from each study were also extracted into this document. From this spreadsheet, the studies were sorted into subcategories for analysis.

Continuing the reflexive thematic analysis process, each eligible study was summarised into a data extraction table to collect the essential elements of data. This reduction of data was processed into the Excel spreadsheet and, from this display, moved into subcategories for analysis. Working through the subcategories, each article was critically studied and analysed, briefly presenting the relevant procedures, results, and conclusions in the following sections. Any connections, similarities, or contradictions between the studies' results were noted and discussed within the conclusions drawn from each subcategory.

3.7 Conclusion

This chapter consists of an extensive explanation of systematic reviews, laying out the possible options available, and the reasons for following the PRISMA method for this research. The data collection methods are laid out, including the search strategy, and the inclusion and exclusion criteria that were applied. The PRISMA requirements of certainty and risk of bias assessments were discussed and how they have been managed within this protocol. Finally, the data analysis process is explained and the presentation of the extracted data in tables will be

shown in the following chapter. The full protocol of this research is, therefore, fully transparent in following the requirements of a systematic review.

Chapter 4

Results and Discussion

4.1 Introduction

Chapter Four provides the results and discussion of the 46 studies included in this systematic review. The first section describes the studies included in the review and their characteristics, followed by an analysis of the nationality of the studies and participants, as well as the participants' demographics. The third section provides a thematic analysis of the studies in each of the seven themes: the validation and translation of self-efficacy measures; self-efficacy and music performance anxiety; self-efficacy and psychological variables; self-efficacy and health-promoting behaviours and well-being; self-efficacy in self-regulated learning; self-efficacy in practice and performance; self-efficacy and the likelihood to persist in music. Each theme briefly summarises the relevant studies and integrates their findings. Additionally, further analysis was conducted across these themes, isolating the studies that found gender differences and those that conducted interventions. Overall, chapter four provides a transparent account of the process of deconstructing and reconstructing the literature within each theme, effectively distilling the available knowledge into manageable units and conceptual overviews that will inform the research questions of this study.

4.2 Studies included in the systematic review and their characteristics

The following table provides an overview of the studies included in the systematic review. The chronological list in Table 2 presents the fundamental details of each study, including the reference, title, constructs measures in addition to self-efficacy, and the journal where the article was published. Each article meets the strict inclusion criteria set out in the previous chapter.

Table 2
Chronological list of studies included in the review

Reference	Title	Other concepts	Journal
1. Nielsen (2004)	Strategies and self-efficacy beliefs in instrumental and vocal individual practice: a study of students in higher music education	Deliberate practice Self-regulated practice	Psychology of Music
2. Kreutz et al. (2008)	Health-promoting behaviours in conservatoire students	Health-promoting behaviours Emotional state General self-regulation	Psychology of Music
3. Ginsborg et al. (2009)	Healthy behaviours in music and non-music performance students.	Positive and negative affect Health-promoting behaviours	Health Education

		Self-regulation Musculo- and non-musculoskeletal health problems	
4. Ritchie & Williamon (2010)	Measuring distinct types of musical self-efficacy	No additional concepts	Psychology of Music
5. Jaap & Patrick (2011)	The role of perceived self-efficacy in the development of musical ability: What can the study of successful musicians tell us about teaching music to able children?	Music talent development Self-regulation Persistence	Social and Economics Education
6. Matthews & Kitsantas (2012)	The role of the conductor's goal orientation and use of shared performance cues on collegiate instrumentalists' motivational beliefs and performance in large musical ensembles	Collective efficacy	Psychology of Music
7. Pike (2013)	An exploration of the effect of cognitive and collaborative strategies on keyboard skills of music education students	Collaboration Cognitive strategies	Music Teacher Education
8. Miksza (2013)	The effect of self-regulation instruction on the performance achievement, musical self-efficacy, and practising of advanced wind players	Self-regulation Performance achievement Practicing	Research in Music Education
9. Clark et al. (2014)	An investigation into musicians' thoughts and perceptions during performance	Self-talk Performance quality, experience, satisfaction	Research Studies in Music Education
10. Panebianco-Warrens et al. (2014)	Health-promoting behaviours in South African music students: A replication study	Health-promoting behaviours Self-regulation Positive and negative affect	Psychology of Music
11. Hatfield et al. (2016)	Instrumental practice in the contemporary music academy: A three-phase cycle of Self-Regulated Learning in music students	Self-regulated learning	Musicae Scientiae
12. Orejudo et al. (2016)	The relation of music performance anxiety (MPA) to optimism, self-efficacy, and sensitivity to reward and punishment: Testing Barlow's theory of personal vulnerability on a sample of Spanish music students	MPA Dispositional optimism Sensitivity to reward and punishment	Psychology of Music
13. Thomson et al. (2016)	Intensive opera training program effects: A psychological investigation	Flow Shame and Self-esteem Multidimensional Perfectionism	International Journal of Music Education

		Trait Anxiety Emotional Regulation	
14. Robson & Kenny (2017)	Music performance anxiety in ensemble rehearsals and concerts: A comparison of music and non-music major undergraduate musicians	MPA Depression	Psychology of Music
15. Gonzalez et al. (2017)	Music performance anxiety: Exploring structural relations with self-efficacy, boost, and self-rated performance	MPA Performance Boost	Psychology of Music
16. Mio (2017)	An investigation of postsecondary violin instructors' remedial pedagogy: A case study	Education Wellbeing Communication	International Journal of Music Education
17. Sandgren (2018)	Exploring personality and musical self-perceptions among vocalists and instrumentalists at music colleges	Personality dimensions Self-perceptions	Psychology of Music
18. Miksza (2018)	Self-regulated music practice: Microanalysis as a data collection technique and inspiration for pedagogical intervention	Self-regulated music learning Microanalysis measures of SRL	Research in Music Education
19. Matei et al. (2018)	Health education for musicians	Performance-related musculoskeletal disorders MPA Hearing loss Health Education and Health Promotion	Frontiers in Psychology
20. Tief & Gropel (2020)	Pre-performance routines for music students: An experimental pilot study	Pre-performance routine (PPR) MPA State anxiety	Psychology of Music
21. Cohen & Panebianco (2020)	The role of personality and self-efficacy in music students' health-promoting behaviours	Health-promoting behaviours Personality	Musicae Scientiae
22. Lopez-Iniguez & Bennett (2021)	Broadening student musicians' career horizons: The importance of being and becoming a learner in higher education	Learner identity Self-regulated learning	International Journal of Music Education
23. Huang & Song (2021)	How do college musicians self-manage musical performance anxiety: Strategies through time periods and types of performance	MPA Self-regulation strategies	International Journal of Music Education
24. Spahn & Nusseck (2021)	Classifying different types of music performance anxiety.	MPA	Frontiers in Psychology
25. Ritchie & Sharpe (2021)	Music student's approach to the forced use of remote performance assessments.	Resilience Wellbeing	Frontiers in Psychology
26. Nusseck & Spahn (2021)	Musical practice in music students during COVID-19 lockdown.	Practice Self-regulated musical learning	Frontiers in Psychology

27. Lewis et al. (2021)	Teaching methods that foster self-efficacy belief: Perceptions of collegiate musicians from the United States	Teaching methods Physiological and affective states	Psychology of Music
28. Herb (2021)	Effects of music self-perception on music education and non-music majors' ensemble participation	Self-esteem and motivation Music participation	Applications of Research in Music Education
29. Lee (2021)	The influences of college life adaptation and career decision self-efficacy on career achievement stress: Focus on students majoring in piano performance in South Korea	College life adaption Career decision self-efficacy Career achievement stress	International Journal of Music Education
30. Rose et al. (2021)	Hard work and hopefulness: A mixed methods study of music students' status and beliefs in relation to health, wellbeing, and success as they enter specialised higher education.	Wellbeing Self-determination	Frontiers in Psychology
31. Lewis & Hendricks (2022)	"It's your body, it's part of who you are!": Influences upon collegiate vocalists' performance self-efficacy beliefs	Performance capabilities	International Journal of Music Education
32. Wang & Wong (2022)	Factors influencing the career intentions of music performance students: An integrated model analysis	Social cognitive career theory Self-determination theory Career intention Outcome expectation Social supports Career barriers Autonomous motivation	International Journal of Music Education
33. Détári & Nilssen (2022)	Exploring the impact of the somatic method 'Timani' on performance quality, performance-related pain and injury, and self-efficacy in music students in Norway: An intervention study.	Performance-related injuries/pain	Frontiers in Psychology
34. Jian (2022)	Sustainable engagement and academic achievement under impact of academic self-efficacy through mediation of learning agility-evidence from music education students.	Academic self-efficacy Academic motivation Learning agility Student sustainable engagement Student academic achievement	Frontiers in Psychology
35. Cygrymus & Lent (2022)	Social cognitive predictors of music majors' academic well-being and persistence intentions	Outcome expectations Environmental support Negative affect Academic goal progress Academic satisfaction Perceived stress scale Intended persistence	Journal of Career Assessment

36. Casanova et al. (2022)	General Musical Self-Efficacy Scale: Adaptation and validation of a version in Spanish	Music SE	Psychology of Music
37. Burland et al (2022)	Validation of the musical identity measure: Exploring musical identity as a variable across multiple types of musicians	Self-identity Emotional attachment Resilience and adaptability Approach to learning Social factors Career calling	Musicae Scientiae
38. Lopez-Iniguez et al. (2022)	Understanding the musical identity and career thinking of postgraduate classical music performance students	Self-identity Adaptability Music career Resilience SCCT	Musicae Scientiae
39. Sickert et al. (2022)	Low self-esteem and music performance anxiety can predict depression in musicians.	MPA Depression	Medical Problems of Performing Artists
40. Woody (2023)	Student-directed learning in popular musicianship: An action research study of university music students	Vernacular musicianship Collaboration	International Journal of Music Education
41. Börekci et al. (2023)	Translation and validation of music performance self-efficacy scale into Turkish	No additional concepts	International Journal of Music Education
42. Matei & Ginsborg (2023)	Why do music students attend counselling? A longitudinal study of reasons in one UK conservatoire	Anxiety Mental health Mental well-being Distress	Research in Music Education
43. Lubert et al. (2023)	Effects of tailored interventions for anxiety management in choking-susceptible performing artists: a mixed-methods collective case study	MPA Fear of negative evaluation	Frontiers in Psychology
44. Arbinaga (2023)	Resilient behaviours in music students: Relationship with perfectionism and self-efficacy.	Perfectionism Resilience	Behavioural Sciences
45. Kalenska-Rodzaj (2023)	Emotionality and performance: An emotion-regulation approach to music performance anxiety	Temperamental traits MPA regulation	Musicae Scientiae
46. Zelenak (2024)	Self-efficacy and music performance: A meta-analysis	MPA Well-being Performance meta-analysis	Psychology of Music

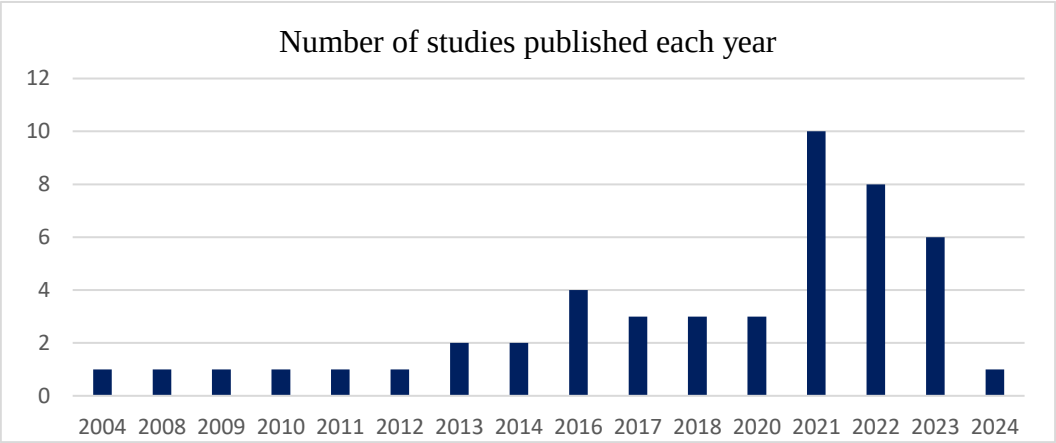
Note. SE (Self-efficacy) MPA (Music performance anxiety) SCCT (Social cognitive career theory) SRL (Self-regulated learning) PPR (pre-performance routines)
See Table 4 for the specific self-efficacy and self-esteem measures used in each of the included studies.

The first notable pattern across the studies within the systematic review on self-efficacy in tertiary music students is the exponential increase in research over the last twenty years, illustrated in Figure 2. 2021 had the highest number of publications (n=10). In comparison, the

same number of studies were published between 2004 and 2014. The increase in research is a promising trend in understanding the role of self-efficacy and self-esteem in tertiary music students. This increase in published data means that repeated elements within the research, such as measurement tools, have had the chance to be refined and improved. As the research contributes to improved education approaches and understanding of well-being, it also allows longitudinal comparisons across the years and populations.

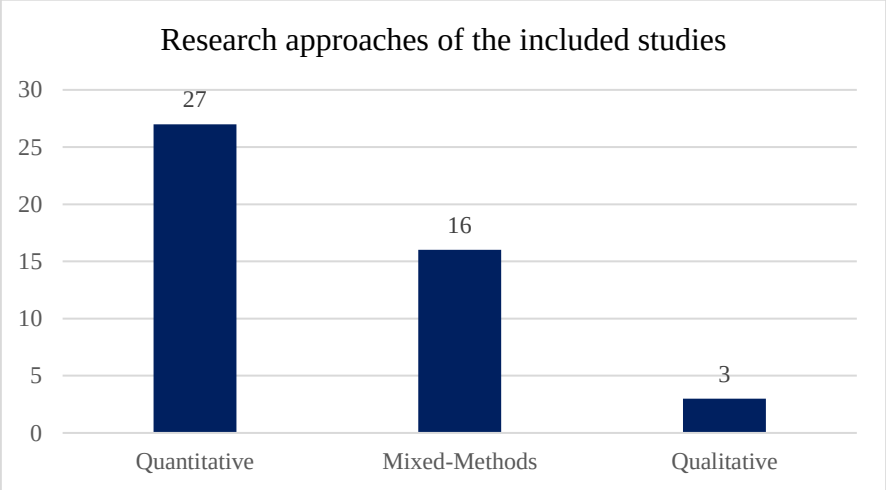
Figure 2

Number of studies published each year from January 2004 to February 2024



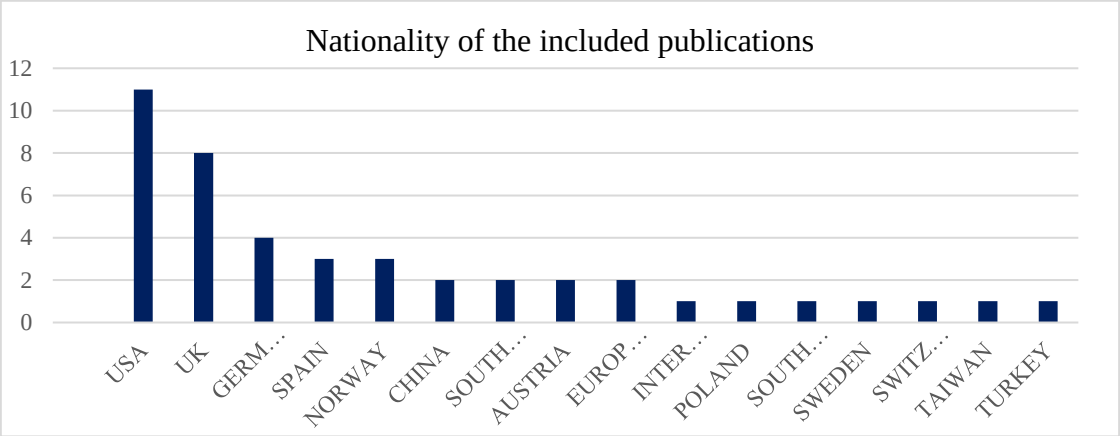
Delving deeper into these studies, Figure 3 illustrates the distribution of research approaches across all 46 studies. The data configuration in Figure 3 shows that quantitative and mixed methods procedures dominate the research approaches of the studies within this review. There is minimal purely qualitative data. The frequent use of quantitative methods highlights the validity and replicability of the measures used to study self-efficacy.

Figure 3
Distribution of quantitative, qualitative and mixed-method approaches



The studies selected for the systematic review of self-efficacy beliefs and music students represent research spanning a variety of cultures and populations from across the globe. Figure 4 illustrates the frequency of studies published in each country. Figure 4 illustrates that the USA and European countries contribute to a large portion of the existing literature (n=27). While the USA and Europe are leading contributors to the wealth of research, contributions from sociocultural contexts outside of these regions are becoming more frequent. Through this data, increasingly significant comparisons can be drawn across cultures, and the impact of context can be considered.

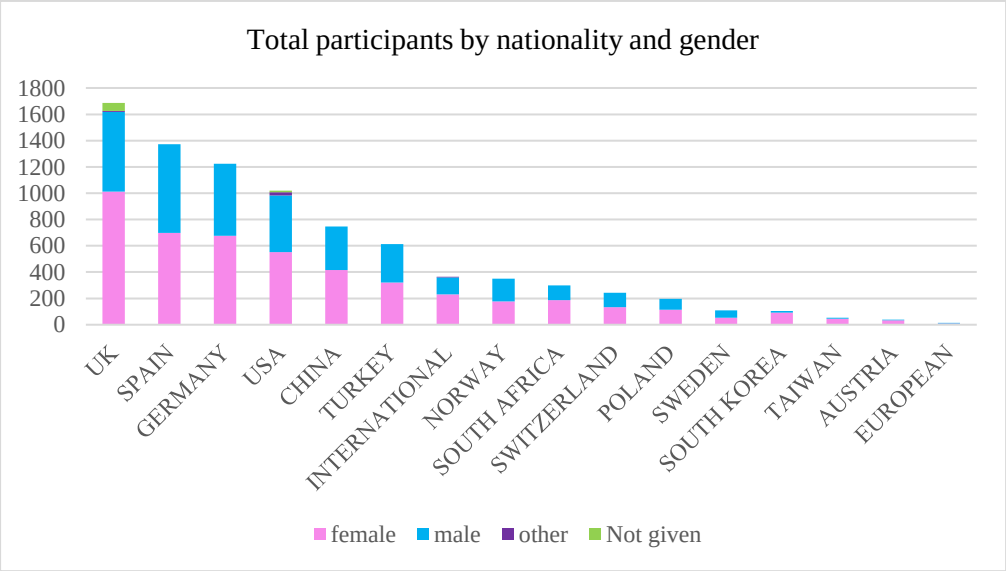
Figure 4
Nationality of publications



The systematic review combines data collected from 8,446 participants globally, of which 56% are women (See Figure 5). Figure 5 displays this information and shows that the USA drops to

the fourth highest contributor of participants versus producing the most publications, as shown in Figure 4.

Figure 5
Number of participants by nationality and gender



The highest number of total participants (Table 3) by country is from the UK, with a total of 1,687 participants comprised of 1,013 women, 606 men, and six individuals who did not identify as either male or female and the demographics of the remaining 62 participants were not provided. The USA and European countries still account for the majority of participants in the total sample of this review.

Table 3
Total participants from each country

Country	UK	Spain	Germany	USA	China	Turkey	International	Norway	South Africa	Switzerland	Poland	Sweden	South Korea	Taiwan	Austria	European
N	1687	1372	1223	1019	747	613	377	351	300	244	196	108	104	53	39	13

Collating the study characteristics brings into focus a number of important factors. The recent increase in publications on self-efficacy indicates the need for a systematic review process (Gough et al., 2017). Figure 2 confirms that research on the topic of self-efficacy has significantly increased over the last five years, the total of which needs to be systematically

navigated, synthesised, and assessed. The significant amount of quantitative and mixed methods processes may not be a weakness or a gap in the research. The global array of countries represented through these publications is an encouraging trend in music psychology. As the body of research increases and new perspectives are added, the understanding of global patterns of self-efficacy among music students can be brought together. The next section includes a brief summary of the self-efficacy that are frequently used in the literature.

4.3 Self-efficacy measures

The studies in this systematic review use a variety of methods and instruments to study self-efficacy. While there is a wide variety of standard measurement instruments available to measure self-efficacy beliefs (see Table 4), the studies predominantly use the following three: the General Self-Efficacy Scale from Schwarzer and Jerusalem (1995), the Musical Self-Efficacy Scale from Ritchie and Williamon (2010), and the Music Performance Self-Efficacy Scale from Zelenak (2010). In addition, qualitative data were collected through questionnaires, surveys, and interviews.

4.3.1 General self-efficacy scale - SES (Schwarzer & Jerusalem, 1995)

The general self-efficacy scale (SES) was first developed by Jerusalem and Schwarzer in 1979. The most recent version (1995) consists of 10 statements reflecting on the individual's abilities to cope with and adapt to the unpredictable and unknown challenges of daily life and significant events that may be faced. The respondents indicate on a scale from 1 (not true at all) to 4 (exactly true) how much each statement applies to them. The goal of this instrument was to measure a general sense of self-efficacy. This measure has been widely used and researched in conjunction with many constructs in a wide variety of fields across many populations and has been translated into 28 languages (Luszczynska et al., 2009**).**

4.3.2 Musical self-efficacy scale - MSES (Ritchie & Williamon, 2010)

This scale was first published in 2010 by Ritchie and Williamon. It provides a task-specific measurement of self-efficacy beliefs within the domain of music. These two sub-scales measure self-efficacy for music learning and self-efficacy for music performing. The scale for learning consists of 11 statements and the performance scale consists of 9 statements, each of which the respondent reports how much they agree or disagree with each item on a scale from 1 (0% completely disagree) to 7 (100% agree).

4.3.3 Music performance self-efficacy scale – MPSES (Zelenak, 2010)

The music performance self-efficacy scale (MPSES) is grounded in Bandura's four sources of self-efficacy. Zelenak (2010) developed the MPSES to measure music performance self-efficacy, explicitly evaluating the four sources through which the musician's performance self-efficacy beliefs are developed. Results from the MPSES show that it could discern between the self-efficacy beliefs of musicians and non-musicians. Through comparisons with academic and writing self-efficacy measures, the MPSES measures domain-specific self-efficacy levels. Each of the 24 statements of the MPSES scale reflects on one of the four sources of self-efficacy (Mastery (7), Vicarious (5), Verbal social (6), and Physiological (5)). Respondents report to what degree they agree with each statement from 1 (strongly disagree) to 100 (strongly agree). The statements are not grouped for each self-efficacy source but are randomised in the list of 24 items.

4.3.4 Qualitative research

In addition to these quantitative methods to measure self-efficacy, many studies used qualitative reports of self-efficacy. These qualitative responses gathered through interviews and questionnaires could refer to feelings of confidence or self-assurance for the relevant tasks. Participants' experiences with self-efficacy are not always explicitly labelled as self-efficacy and need to be processed, analysed, and coded by the researchers who interpret the qualitative data.

Table 4
Complete list of studies and the research instruments and methods used to measure self-efficacy or self-esteem, listed chronologically.

Reference	GSE	MSES	MPSES	MIXED	QUAL	Other
Nielsen (2004)						MSLQ
Kreutz et al. (2008)	X					
Ginsborg et al. (2009)	X					
Ritchie & Williamon (2010)		X				
Jaap & Patrick (2011)				X	Interviews	Secondary data analysis
Matthews & Kitsantas (2012)						SE scale Bandura
Pike (2013)				X	Instructor observations	Questionnaire
Miksza (2013)				X		Hendricks (2009)
Clark et al. (2014)					Interviews	
Panebianco-Warrens et al. (2014)	X					

Hatfield et al. (2016)	X					
Orejudo et al. (2016)	X					
Thomson et al. (2016)						Self-esteem ISS
Robson & Kenny (2017)						K-MPAI_Modified
Gonzalez et al. (2017)		X				
Mio (2017)					Interviews	
Sandgren (2018)				X	Open-ended questions	Self-esteem (Johnson & Blom, 2007)
Miksza (2018)				X	Interviews, video recording, focus group	
Matei et al. (2018)	X			X	Interviews	
Tief & Gropel (2020)		X				
Cohen & Panebianco (2020)	X					
Lopez-Iniguez & Bennett (2021)				X	Interviews	Academic SE Self-esteem
Huang & Song (2021)					Interviews, performance diaries	
Spahn & Nusseck (2021)						PQM (Sphan et al., 2016)
Ritchie & Sharpe (2021)		X		X	Open-ended questions	
Nusseck & Spahn (2021)		X				
Lewis et al. (2021)			X	X	Open-ended questions	
Herb (2021)						Self-esteem
Lee (2021)						Career decision SE
Rose et al. (2021)				X	Group brainstorming	ASKU – General SE
Lewis & Hendricks (2022)			X	X	Interviews	
Wang & Wong (2022)						SE scale (Chan et al., 2018)
Détári & Nilssen (2022)			X	X	Interviews	
Jian (2022)						Academic SE
Cygrymus & Lent (2022)						Academic and coping SE (Lent)
Casanova et al. (2022)		X				
Burland et al (2022)						Music SE
Lopez-Iniguez et al. (2022)				X	Open-ended questions	Musical Identity Measure
Sickert et al. (2022)						Self-esteem (Rosenberg)
Woody (2023)				X	Observations	Self-reported self-efficacy
Börekci et al. (2023)			X			
Matei & Ginsborg (2023)						Secondary analysis of data
Lubert et al. (2023)	X			X	Interviews	
Arbinaga (2023)	X			X	Interviews	
Kalenska-Rodzaj (2023)						Self-esteem (Rosenberg)
Zelenak (2024)	X	X	X			

Note. SE (Self-efficacy).
See Table 2 for the title, additional concepts, and journal of each study.

4.4 Thematic analysis

The studies of this review were sorted into groups through a process of constant comparison based on the constructs measured in addition to and alongside self-efficacy or self-esteem (see

Table 5). These sections were determined by significant statements within the abstract or titles, as well as additional constructs identified during the data extraction process (seen in Table 2, "other concepts"). The first distinct sections were those regarding self-efficacy and music performance anxiety (MPA), self-efficacy and self-regulation, and self-efficacy and well-being or health-promoting behaviours. Guided by research question 1 and the content of the studies, there was a need to group the studies that focussed on active music-making, leading to the theme of self-efficacy in practice and performance. Studies that investigated mental well-being or psychological constructs but did not measure health-promoting behaviours or MPA were categorised as self-efficacy and psychological variables. A handful of studies, which bordered on music education but specifically focused on career decisions and the role of self-efficacy in career planning and future aspirations, were grouped under self-efficacy and the likelihood of persisting in the field of music. Finally, the few remaining studies, which had a very narrow focus and did not closely examine additional constructs, primarily involved the quantitative measurement of self-efficacy. These were placed under the theme of the development and validation of self-efficacy measures. The theme of self-efficacy measures serves as the starting point for the thematic analysis.

Table 5

Studies grouped by theme: Research approaches and intervention status

	Theme	Studies included	Method	Intervention
1	Development and validation of SE measures	1. Ritchie & Williamon (2010)	Quant	X
		2. Casanova et al. (2022)	Quant	X
		3. Borekci et al. (2023)	Quant	X
2	Self-efficacy and Music Performance Anxiety	1. Orejudo et al (2016)	Quant	X
		2. Robson & Kenny (2017)	Quant	X
		3. Gonzalez et al (2017)	Quant	X
		4. Huang & Song (2021)	Qual	X
		5. Spahn & Nusseck (2021)	Quant	X
		6. Sickert et al. (2022)	Quant	X
		7. Lubert et al. (2023)	Mixed	✓
		8. Kalenska-Rodzaj (2023)	Quant	X
		9. Zelenak (2024)	Quant	X
3	Self-efficacy, self-esteem and psychological variables	1. Thomson et al. (2016)	Quant	✓
		2. Sandgren (2018)	Mixed	X
		3. Herb (2021)	Quant	X
		4. Burland et al. (2022)	Quant	X
		5. Lopez-Iniguez et al. (2022)	Mixed	X
		6. Arbinaga (2023)	Mixed	X
4	Self-efficacy and health-promoting behaviours	1. Kreutz et al. (2008)	Quant	X
		2. Ginsborg et al. (2009)	Quant	X
			Quant	X

		3. Panebianco-Warrens et al. (2014) 4. Matei et al. (2018) 5. Cohen & Panebianco (2020) 6. Rose et al. (2021)	Mixed Quant Mixed	✓ X X
5	Self-efficacy and Self-regulated Learning	1. Nielsen (2004) 2. Jaap & Patrick (2011) 3. Miksza (2013) 4. Panebianco-Warrens et al. (2014) 5. Hatfield et al. (2016) 6. Miksza (2018) 7. Nusseck & Spahn (2021)	Quant Mixed Mixed Quant Quant Mixed Quant	X X ✓ X X ✓ X
6	Self-efficacy in practice and performance	1. Nielsen (2004) 2. Matthews & Kitsantas (2012) 3. Pike (2013) 4. Clark et al. (2014) 5. Hatfield et al. (2016) 6. Mio (2017) 7. Tief & Gropel (2020) 8. Ritchie & Sharpe (2021) 9. Nusseck & Spahn (2021) 10. Lewis et al. (2021) 11. Lewis & Hendricks (2022) 12. Détári & Nilssen (2022) 13. Woody (2023)	Quant Quant Mixed Qual Quant Qual Quant Mixed Quant Mixed Mixed Mixed Mixed	X ✓ ✓ X X X ✓ X X X X ✓ ✓
7	Self-efficacy and the likelihood to persist in music	1. Lopez-Iniguez & Bennett (2021) 2. Lee (2021) 3. Wang & Wong (2022) 4. Jian (2022) 5. Cygrymus & Lent (2022)	Mixed Quant Quant Quant Quant	✓ X X X X

Note. Method: quant=quantitative, qual=qualitative, mixed=mixed methods; intervention: X=study did not conduct an intervention, ✓=study conducted an intervention

4.4.1 Theme 1: The development and validation of self-efficacy measures

This first theme comprises studies that examined self-efficacy in isolation from other constructs and focused on developing or validating modified versions of quantitative self-efficacy measures. Three studies fall within the opening theme (see Table 6). One focused on developing domain-specific self-efficacy measures in music (Ritchie & Williamon, 2010), and two involved validating self-efficacy measures translated into Spanish and Turkish (Casanova et al., 2022; Borekci et al., 2023). These studies employed a quantitative methodology, specifically using quantitative self-efficacy measures. The studies involved 1,531 participants from the UK, Spain, and Turkey.

Table 6

Summary of studies analysed in Theme 1: The development and validation of self-efficacy measures

Reference	Objective/aim	Country	Research method (design)	N	Scales
Ritchie & Williamon (2010)	These authors presented the development of music-specific measures of self-efficacy, distinguishing between self-efficacy for music learning and performing.	UK	Quantitative (Surveys)	**250** f=133 m=117	Musical self-efficacy Self-ratings of musical skills and attributes
Casanova et al. (2022)	This research was designed to adapt the general musical self-efficacy scale into Spanish and validate its results.	Spain	Quantitative (Surveys)	**668** f=353 m=315	General musical SE (Ritchie & Williamon) K-MPAI
Börekci et al. (2023)	This research was designed to adapt and validate the music performance self-efficacy scale into Turkish.	Turkey	Quantitative (Surveys)	**613** f=322 m=291	Music performance SE scale (Zelenak)

Ritchie and Williamon (2010) developed domain-specific instruments to measure music self-efficacy to test and validate self-efficacy measures for learning and performing. The study comprised of 250 tertiary music students from the University of Chichester and the Royal College of Music. Across both institutions, the distribution of participants by gender was reasonably even, with 133 women and 117 men, and their average age of 22.62 years (Royal College of Music) and 22.13 years (University of Chichester). Results from each institution were compared to identify any differences or similarities in learning and performing among these music students. Questionnaires were adapted from the general self-efficacy scale from Shere et al. (1982), with wording adapted to address relevant skills in music. Two scales were created, focusing on learning or performing, with a 7-point Likert-type scale for each statement. Through repeated measures, results showed that there were no significant differences between gender and self-efficacy beliefs. However, significant differences were found in the student's musical self-efficacy beliefs for learning between institutions, with stronger beliefs reported by the students enrolled at the Royal College of Music. In contrast, performance self-efficacy levels were similar in both institutions.

Ritchie and Williamon (2010) further tested the two self-efficacy instruments to ensure they measured task-specific self-efficacy beliefs. The students were asked to report on their abilities compared to other musicians, rating their skills from 1 to 7 (less ability to excellent ability) for each musical skill. These ratings were calculated using correlation calculations to find which skills correlated with learning and performing. The analysis confirmed that each of the self-efficacy instruments measured different subsets of skills within the domain of music. Significant correlations with performance self-efficacy were found with the 'ability to manage stage fright' and 'overall standard of performance', and learning self-efficacy correlated with 'quality and effectiveness of practice', 'level of perseverance' and 'motivation to excel'. Skills that correlated with performance self-efficacy did not correlate with learning self-efficacy. Differences in correlations between skills and self-efficacy beliefs were found between institutions, as the University of Chichester students had less distinction in their perception of which skills were more important for learning or performing.

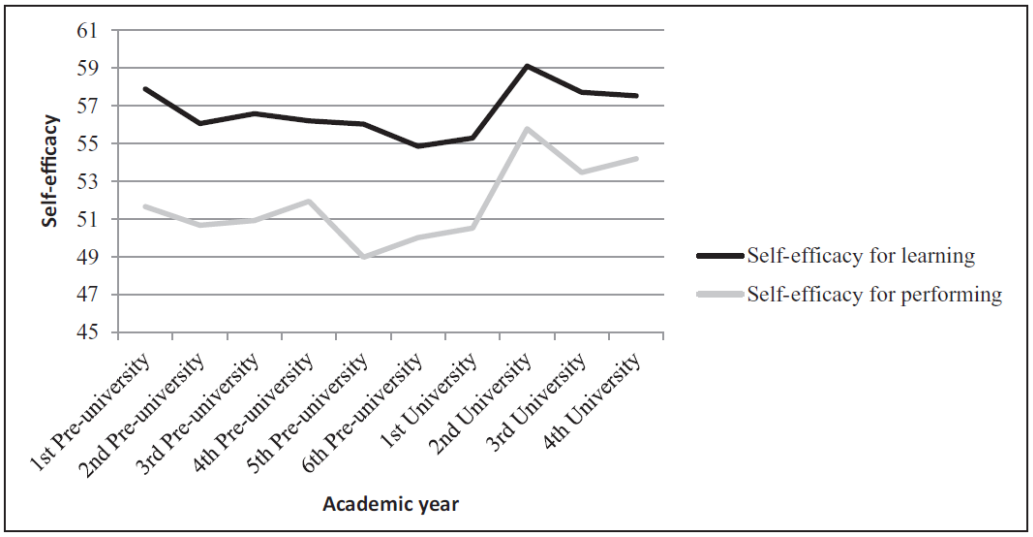
Overall, the research from Ritchie and Williamon (2010) contributes to the domain specificity theory of self-efficacy, proving that measures of music self-efficacy can be focused on task-specific abilities. These instruments measure the learning and performing self-efficacy beliefs of musicians. Notably, these findings lack gender differences. Through the analysis of this systematic review, the role of gender is regularly raised within the literature and will be further discussed.

Following the work of Ritchie and Williamon (2010), Casanova et al. (2022) validated the above measures translation into Spanish. Casanova et al. used a total of 668 music students from universities and secondary-level institutions across Spain. Casanova et al. also included a measure of music performance anxiety (K-MPAI). The results validated the Spanish measure of musical self-efficacy for learning and performing and found correlations with gender, age, and academic institution. Unlike Ritchie and Williamon (2010), Casanova et al. reported a significant difference in music performance self-efficacy levels in women, which was found to be lower. Gender differences did not carry over into music learning self-efficacy, which was similar between men and women. These authors did not discuss possible reasons for this difference and recommend that this phenomenon be studied further in future research. The role of age was found to have a significant impact, which differed between self-efficacy for learning and self-efficacy for performance. Self-efficacy for learning was found to fluctuate less over time than self-efficacy for performance, which was lowest in the last two years before transitioning into university or conservatoires and the first year of tertiary education. These

results from Casanova et al. are shown in Figure 6, which illustrates how self-efficacy beliefs are fluid and grow through the individual's music education experiences. Finally, institutions also had an impact on self-efficacy as the non-university music students reported lower levels of self-efficacy.

Figure 6

Self-efficacy by Academic Year (Casanova et al., 2022, p. 845)



In the same vein, Borekci et al. (2023) facilitated the translation of the music performance self-efficacy measure from Zelenak (2010) into Turkish. Borekci et al. utilised a sample of 613 undergraduate students, all of whom were enrolled in tertiary music education programs across Turkey. As briefly discussed previously, the Zelenak self-efficacy scale is concerned with extracting and measuring the composition of the musician's self-efficacy based on the four sources of self-efficacy as set out by Bandura. By measuring these important aspects, educators are given a deeper understanding of these unobservable characteristics, allowing them to better support, guide, and instruct their students. In addition, if students are given the tools to understand their self-efficacy and learning styles, they could be empowered to help themselves better in the future. The results from the translated version of the MPSES produced results similar to the English version of the scale, confirming the accuracy of the translation of the scale and producing a notable finding, as Zelenak initially measured the MPSES scale with secondary school students. The similar findings from Borekci et al. confirm that the scale can be used outside of that specific age range and, as the authors state, the MPSES scale provides reliable insight into students from secondary school to the undergraduate level.

An important takeaway from these studies is the measure of self-efficacy across different sociocultural contexts. While Casanova et al. (2022) identified significant gender differences in the performance self-efficacy beliefs of women, the work of Ritchie and Williamon (2010) and Borekci et al. (2023) did not support this trend. If we consider the role of culture here and examine existing research in Spanish populations, two other studies included in the systematic review took place in Spain (Orejudo et al., 2016; Gonzalez et al., 2017). Both of these studies identified gender differences, which points to a stronger possibility of the trend originating from the social influence of culture.

The studies within the first theme consider the relationship between self-efficacy and performance and confirm the positive relationship between these constructs, showing that strong self-efficacy is a good predictor of a successful performance. The results of these studies also confirm the relationship between self-efficacy and music performance anxiety. A strong sense of self-efficacy helps provide the tools needed to cope with anxiety during a performance. The interactions between music performance anxiety and self-efficacy have been extensively researched, and the next section works through the literature on self-efficacy and music performance anxiety in tertiary music students.

4.4.2 Theme 2: Self-efficacy and Music Performance Anxiety

The studies presented in the second theme contain research that investigated self-esteem or self-efficacy alongside music performance anxiety (MPA) (see Table 7). In combination with self-efficacy, an important influence on performance is MPA, which is a "ubiquitous experience in musicians of all types and ages" (Kenny & Ackermann, 2016, p. 664). As defined by Salmon (1990), MPA is the impairment of performance due to unjustified and persistent anxiety that exists despite aptitude, preparation or training. MPA can also have a facilitative effect on performance, and it depends on the musician's ability to process physiological and emotional arousal (Osborne & Franklin, 2022). Understanding the relationship between self-efficacy and self-esteem is essential to supporting music students through and improving their experiences with MPA.

The Kenny Music Performance Anxiety Inventory (K-MPAI) is a frequently used measure of MPA, developed by Kenny (2009), that "assesses an emotion-based theory of anxiety" (Kenny, 2023, p. 1). The K-MPAI measure has been used in over 400 studies across many different populations and cultures (Kenny, 2023). The results of the nine studies that focused on the theme of MPA are important to understanding how self-esteem and self-efficacy function

within music students. These studies were conducted geographically diversely, with several studies including populations outside tertiary music students. Most of these studies are quantitative (n=7), with one qualitative and one mixed-method, with a total participant pool of 2,109 musicians. The earliest research within the systematic review on self-efficacy in music students that examines MPA and self-efficacy was conducted in 2016 by Orejudo et al., although having started later in the timeline of publications, it is one of the more extensive categories in the systematic review.

Table 7

Summary of studies included in Theme 2: Self-efficacy and Music Performance Anxiety

Reference	Objective/aim	Country	Research method (Design)	N	Scales
Orejudo et al. (2016)	The goal of this research was to understand the origins and persistence of MPA in musicians, based on Barlow's anxiety theory supplemented with other personality constructs such as dispositional optimism, self-efficacy, and helplessness.	Spain	Quantitative (Surveys)	**434** f=201 m=233	K-MPAI Life orientation test General self-efficacy (Baessler & Schwarzer, 1996) SPSRQ
Robson & Kenny (2017)	This study assessed the MPA experienced in music ensemble rehearsals and compared the differences between music and non-music majors. It was hypothesised that low levels of self-efficacy would result in greater levels of MPA.	USA	Quantitative (Surveys)	**320** f=168 m=152	K-MPAI PRIME-MD Patient Health
Sickert et al. (2022)	These authors investigated the link between MPA, self-esteem, and depression among musicians of varying levels of expertise. This was done to ascertain if poor self-esteem leads to MPA or depression.	Germany	Quantitative (Surveys)	**295** f=170 m=125	Self-esteem (Rosenberg) K-MPAI Beck depression inventory

Gonzalez et al. (2017)	The aim of this research was to analyse self-efficacy as a predictor of MPA, boost, and self-rated performance. In addition, the impact of gender and professional status was measured.	Spain	Quantitative (Surveys)	**270** f=144 m= 126	SE for musical performance (Ritchie & Williamon, 2011) MPAI-A Performance boost scale Self-rated performance scale
Spahn & Nusseck (2021)	The focus of this study was to investigate the ways in which a musician's MPA fluctuates before, during, and after a performance and how self-efficacy functions within these processes.	Germany	Quantitative (Surveys)	**532** f=305 m=227	Performance specific questionnaire for musicians: MPA Coping with MPA SE Self-assessment of musical quality
Huang & Song (2021)	An investigation to understand the ways that college musicians manage their MPA, looking at the strategies used in the timeline leading up to a performance.	Taiwan	Qualitative (Semi-structured interviews)	**53** f=46 m=7	Performance diary
Lubert et al. (2023)	These authors present an exploration into tailoring the interventions used to address choking-susceptible performing artists' performance anxiety, fear of negative evaluation, self-efficacy, and impact on performance quality.	Austria	Mixed Methods (Case study)	**9** f=8 m=1	K-MPAI Fear of negative evaluation General SE scale
Kalenska-Rodzaj (2023)	The purpose of this study was to examine the connections between temperament structure, emotion regulation skills, and self-esteem in music students in order to verify a model of MPA regulation.	Poland	Quantitative (Surveys)	**196** f=115 m=81	EAS Temperament survey Rosenberg self-esteem levels of emotional awareness COPE inventory K-MPAI-R

Zelenak (2024)	This research measured the population effect sizes of the correlation between self-efficacy and achievement, the association between self-efficacy and MPA, and the impact of self-efficacy interventions through a meta-analysis.	Global	Quantitative (Meta-analysis)	Not given	Various SE measures

Note. SE=Self-efficacy

Orejudo et al. (2016) investigated the origin and persistence of MPA in music students through its relationship with self-efficacy, optimism, and sensitivity to punishment and reward. The impact that these constructs have on MPA was assessed through Barlow's theory of vulnerability. The sample involved 434 students with an average age of 22.56 years from music academies across Spain. Results showed that optimism, helplessness, and self-efficacy predict MPA. Gender differences were identified, with females reporting higher levels of MPA. Continuing with the findings in relation to gender, self-efficacy in women was found to have a protective function towards MPA, helping them cope with and decrease the negative impact that MPA can have on a performance. In contrast, the construct of optimism held a protective role in men. Returning to Barlow's theory of helplessness, the study confirms the role of helplessness in anxiety and that helplessness assumes the role of a mediator between MPA and constructs such as self-efficacy and optimism. To summarise the findings of the first study aimed at investigating MPA in tertiary music students, self-efficacy reduces the impact of MPA, taking on a protective role in women, while men use optimism.

Robson and Kenny (2017) compared the prevalence of MPA in music and non-music majors within an ensemble setting. These authors compared the experience of MPA between rehearsals and performances, as well as the impact of a previous negative performance experience and the influence that being graded has on MPA levels. This study took place in the mid-Atlantic region of the US with a sample of 320 students from universities and colleges. The questionnaires were distributed directly before and after rehearsals. The results on self-efficacy and MPA correspond with prior results, supporting the predictive role of self-efficacy on MPA. Depression was also found to be a predicting construct, as its occurrence corresponded with the severity of MPA symptoms and experiences. Music students within this population were found to experience greater levels of MPA than non-music students; in addition, previous negative performance experiences and the intimidation of being graded increased levels of MPA. Unlike Orejudo et al. (2016), Robson and Kenny did not find significant gender

differences in MPA levels. These results illustrate the vulnerable state of the population of tertiary music students, as they are susceptible to anxiety and depression.

The existence of depression among music students was also investigated by Sickert et al. (2022); the results of their study asserted that the co-occurrence of low self-esteem and MPA hold the potential to predict depression in music students. The vulnerable state of the music student population was also identified in this population of 295 German music students, as 32% of these musicians reported clinically relevant symptoms of depression. MPA was found to hold a partially mediating role between self-esteem and depression, with significant predictive power found in the co-occurrence of low self-esteem and high MPA.

Gonzalez et al. (2017) also identified a mediating role of MPA in their analysis of the relationships between MPA and performance self-efficacy. Their results showed that MPA mediates between self-efficacy and performance boost. In addition, self-efficacy was found to be a predictor of positive performance experiences, and MPA has a significant negative impact. The mediating role of MPA is clear: a student with low self-efficacy who experiences MPA will likely not experience positive states during their performance. Within the sample of 270 Spanish musicians, Gonzalez et al. identified gender differences in the MPA levels in women, who reported significantly higher levels. This gender difference was only identified in MPA levels and was not found to exist in self-efficacy levels. Gonzalez et al. concluded with a strong closing statement on the impact these results should have on future education. They suggested that students should be instructed to focus less on achieving perfection within performance and instead be coached through the process to make it less distressing. The goal of “perfection” should be counteracted and balanced by reducing anxiety and supporting self-efficacy growth.

The following three studies in this section are concerned with establishing types of MPA (Spahn & Nusseck, 2021), understanding the existing ways that students manage their MPA symptoms (Huang & Song, 2021), and the impact of tailoring interventions to help MPA (Lubert et al., 2023). All three of these articles identified the role of self-efficacy within their respective processes, concluding that increasing self-efficacy beliefs positively impacts the musician's ability to cope with MPA.

Spahn and Nusseck (2021) followed the musicians of a German orchestra over 15 performances. Through the data collected from 532 musicians, the authors identified three clear types of MPA. The first type presents low levels of MPA and strong self-efficacy throughout the performance, resulting in a positive performance and positive overall evaluation. The

second type of MPA was primarily identified in music students, and it involved higher levels of MPA symptoms at the beginning of a performance; strong self-efficacy beliefs then ease these symptoms through the performance, resulting in an overall positive performance. The third type is identified by moderate levels of MPA that increase through the performance as they are not mitigated through self-efficacy or other coping strategies. This leaves the musicians with an overall negative experience of the performance. Gender was not found to have a significant impact on the existence of these types of MPA; in contrast, age played a more significant role, with older musicians experiencing type one and younger musicians experiencing type two. In addition, the authors identified two points in the performance ritual in which self-efficacy beliefs play a crucial role. During the performance, as in MPA types one and two. And the importance of a positive self-efficacy belief after the performance, which sets the musician up for their next performance, mentally positioning it as a challenge rather than a threat.

Huang and Song (2021) identified nine strategies used to manage MPA through the qualitative analysis of the practice journals of 53 Taiwanese music students. These authors also identified which strategies are most used in different performance circumstances and the timeline leading up to the performance. The strategies that were used included:

- Self-talk
- Accepting mistakes
- Mental and visual rehearsal
- Contrived performance situations
- Breathing and muscle relaxation
- Physical activities
- Absorbing activities
- Dietary strategies
- Cognitive restructuring

Huang and Song theorise that these strategies are applied to increase self-efficacy beliefs and momentarily distract from perceptions of anxious arousal. The self-talk strategy was used mainly in the early stages before a performance, backstage and onstage. Self-talk increases self-efficacy as it is a form of verbal persuasion (a source of self-efficacy). The early stages of self-talk could play a role in setting goals and boosting their confidence to establish challenging

goals for performance. Backstage and onstage self-talk contributes to focus and confidence in the moment of performance.

Lubert et al. (2023) chose participants who were susceptible to choking under pressure. The process of this investigation offered six different techniques to assist the participants depending on their goals. The possible interventions included pre-performance routines, imagery, acclimatisation, relaxation, goal setting, and self-talk. The interventions used depended on the participants' goals; these goals were the guides to tailoring interventions. The intervention procedure of this article spanned 12 weeks with two data collection events. For each of these events, the musicians were given a psychological stressor and then had to perform in front of a panel; for ten weeks, in between these instances, the musician received five coaching sessions. Overall, the application of these processes reduced anxiety and improved self-efficacy, performance, and ability to manage the negative arousal associated with MPA. The overlap between strategies to manage MPA and effective interventions to treat MPA tells us that tactics such as self-talk, imagery, and relaxation are effective if used outside of the formal application of an intervention. These results also show that MPA management strategies are shared among the different populations of music students in Taiwan (Huang & Song, 2021) and Austria (Lubert et al.).

Kalenska-Rodzaj (2023) investigated a model of MPA regulation through temperamental traits, gender, emotion regulation, and self-esteem. Temperamental traits refer to the biological elements that shape personality when combined with life experiences (Kalenska-Rodzaj). This construct includes measures of emotionality, activity, and sociability. Emotion regulation is essential within music performance as it facilitates emotional stability and well-being, increasing levels of self-control, self-regulated learning, and positive self-concept. The results of this research about self-esteem reveal that adaptive coping is associated with self-esteem; this relationship is more prevalent in males. The gender differences identified through temperamental traits are significant and worth an in-depth investigation in conjunction with self-efficacy.

Many of the studies within this analysis identify gender differences that report women having weaker self-esteem or self-efficacy and more acute experiences of anxiety. The temperamental traits measured in this 2023 population of Polish musicians reveal that females in this demographic experience higher levels of distress, fearfulness, and activity. These scores are higher than those of the males in the study and are also higher than the general population

norms. The role of emotion regulation mediates between temperamental traits and MPA. Negative emotionality, which is prevalent among females, is mitigated through strategies of perspective change, which reduces its contributions to developing MPA. These are significant and important results that lead to a deeper understanding of the inconclusive gender differences reported throughout the studies included in this review. The topic of gender and self-efficacy is specifically addressed later in this chapter.

The most recent publication within the theme of self-efficacy and MPA is the meta-analysis by Zelenak (2024). This research collected quantitative results pertaining to self-efficacy in musicians to estimate the population effect size that self-efficacy has on performance, MPA, and the impact of interventions on self-efficacy. I will refer to this article regularly throughout this analysis as its findings combine the quantitative results within many sections because the practical implications of this research are significant. There is a significant overlap between the meta-analysis and this systematic review protocol. However, the difference lies in including qualitative and mixed methods studies, analysing the data in all forms, and focusing on a specific population. For this section, self-efficacy was found to have a medium negative effect size, indicating that musicians with higher levels of self-efficacy are less likely to experience symptoms of MPA.

These articles mention several constructs that predict MPA as well as the medicating role that MPA holds between other constructs, such as depression and performance boost. Self-efficacy is confirmed to be a predictor of MPA (Orejudo et al., 2016; Gonzalez et al., 2017; Robson & Kenny, 2017), as confirmed by the Zelenak (2024) meta-analysis. Depression was found to be a predictor of the severity of MPA symptoms (Robson & Kenny, 2017), and the combination of low self-esteem and high MPA is a significant predictor of depression (Sickert et al., 2022). The mediating roles of MPA were found between self-esteem and depression (Sickert et al., 2022) and self-efficacy and experiences of performance boost (Gonzalez et al., 2017).

Self-esteem contributes to adaptive coping abilities, which reduce MPA levels. Self-efficacy, in conjunction, directly reduces MPA experiences. Ensuring a positive mindset after a performance is essential to future performances, and strategies of perspective change or cognitive restricting could be effective interventions to ensure students cope with any performance outcome. If the goal of a performance is shifted, as Gonzalez et al. (2017) recommend, this combination of tactics could have a significant impact on the fragile self-concepts of vulnerable music students.

4.4.3 Theme 3: Self-efficacy and Psychological Variables

The categories of MPA and psychological constructs are closely related. In order to process the literature in manageable sections, the studies that specifically measured MPA were managed separately from the other studies that concerned general psychological constructs. The categories of this analysis contain sections focused on specific aspects of psychological constructs such as well-being and MPA. These categories could be collapsed into one broad umbrella of psychological constructs; however, details and connections between the research would be overlooked. Therefore, within this section of psychological constructs (see Table 8), the roles and relationships of self-efficacy and self-esteem are considered in conjunction with specific concepts such as personality (Sandgren, 2018), self-perception (Herb, 2021; Sandgren, 2018), musical identity (Burland et al., 2022; Lopez-Iniguez et al., 2022), resilience, and perfectionism (Arbinaga, 2023). Of the five studies in this review that specifically isolated self-esteem, three of them fell in this theme (Thomson et al., 2016; Sandgren, 2018; Herb, 2021).

Table 8

Summary of studies included in Theme 3: Self-efficacy and psychological variables

Reference	Objective/aim	Country	Research method	N	Scales
Thomson et al. (2016)	This article investigated the psychological impact of an intensive opera training program, and the long-term effect that two-week and four-week interventions had on shame, self-esteem, perfectionism, flow, and anxiety.	USA	Quantitative (Intervention - repeated measures)	**123** F=104 M=19	Difficulties in emotion regulation scale Dispositional Flow Internalised shame scale Multidimensional perfectionism scale State-trait anxiety inventory
Arbinaga (2023)	The objective of this research was to understand the correlations between self-efficacy, perfectionism, and resilience in music students	Switzer land	Mixed Methods (Surveys)	**145** f=84 m=61	Inventory of perfectionism (modified) Resilience scale General SE Scale
Sandgren (2018)	This study evaluated the differences in personality traits between vocalists and instrumentalists in music colleges through measures of self-esteem, musical self-perceptions, and the big five personality dimensions.	Sweden	Mixed Methods (Surveys and open-ended questions)	**108** f=52 m=56	Big Five Inventory Competence-based self-esteem Musical self-perceptions

Herb (2021)	The objective was to examine the self-perceptions of musicians, comparing music education and nonmusic education majors, looking and the interactions between self-esteem, gender, and persistence in music.	USA	Quantitative (Surveys)	**66** f=43 m=22 NB=1	Self-esteem of musical ability (Schmitt)
Burland et al. (2022)	The study aimed to validate a Musical Identity Measure. The goal of this measure was to help musicians understand their self-concept and apply this knowledge to better guide their future goals and ambitions.	Global	Quantitative (Surveys)	**377** f=230 m=13 1 non-binary =4	Musical calling Musical SE Emotional attachment Growth mindset
Lopez-Iniguez et al. (2022)	Exploring post-graduate students' career ambitions and why they are motivated to continue their involvement in music using the Musical Identity Measure and open-ended questions.	Europe	Mixed Methods (Case study)	**6** f=4 m=2	*Musical Identity Measure v1:* Resilience and adaptability Approach and learning Emotional attachment Social factors Music and self Career calling

The research from Thomson et al. (2016) measured the impact of two and four-week training programs for opera singers. These programs were aimed at addressing several psychological constructs, including shame, self-esteem, perfectionism, emotion regulation, anxiety, and improvement in performance and experienced flow. The intervention process contained several effective strategies that have been proven to lead to improvements, including a safe and encouraging space of self-exploration, a holistic view of improving the singers through music education, psychological interventions, and physical training programs, including yoga and the Alexander technique. Along with the application of these effective interventions, there was also exposure to public performance experiences, whereby the participants could apply the skills learnt throughout the program. Results showed improvements in all measures in the immediate post-test and the six-month follow-up. The promising results of this training program advocate for the holistic education of singers and addressing the physical, psychological, and music education needs of musicians in training programs. Self-esteem was found to be positively affected by emotion regulation, and as singers are more able to regulate negative emotions, their performance abilities improved.

The work of Thomson et al. (2016) and Arbinaga (2023) overlap slightly in their measures of perfectionism. The intervention from Thomson et al. that helped decrease perfectionistic tendencies involved bolstering their sense of self as well as a safe space without criticism, the combination of which may be what facilitated a decrease in the negative self-appraisals that lead to maladaptive perfectionism. Because Thomson worked with self-esteem and Arbinaga evaluated self-efficacy, the results of these studies cannot be seamlessly brought together. However, the intervention that positively impacted self-appraisals could be aimed at self-efficacy. It would also be valuable to evaluate both self-efficacy and self-esteem after an intervention such as the intensive workshop from Thomson et al.

Arbinaga (2023) explored the connections between self-efficacy and perfectionism in relation to resilience in music students. Perfectionism can be both adaptive and maladaptive; its defining characteristic is high personal demands, which, when they exist alone, is a motivating factor (Hill et al., 2020). When combined with negative self-appraisal, perfectionism becomes dysfunctional as doubt and preoccupation with mistakes become consuming and overwhelming. The results of the surveys collected by Arbinaga revealed a positive correlation between self-efficacy and adaptive perfectionism. Connections between resilience and perfectionism were also found, as a positive relationship between self-efficacy and resilience exists, as well as lower levels of resilience resulting in higher levels of maladaptive perfectionism. If this relationship is pulled apart, it could be assumed that lower levels of resilience result in lower levels of self-efficacy, which leads to a lowered ability to limit the negative self-appraisal associated with maladaptive perfectionism.

Continuing with measures of self-esteem, the work of Sandgren (2018) needs to be considered. When we take into consideration the various types of musicians that exist, not just in genres but different instrument types, from vocalists to cellists to percussionists, the question arises as to how personalities affect instrument choice. Sandgren took these questions and compared personality and musical self-perceptions between instrumentalists and vocalists. These results were also compared to a neutral control group of psychology students. What emerged from this inquiry was that musicians, both vocalists and instrumentalists, are not distinguishable through their big five personality traits (openness, conscientiousness, extraversion, agreeableness, and neuroticism) when compared to non-musicians or between themselves.

The differences arose from self-perceptions of musical development and musical expressivity. These musical perceptions were mapped in relation to the participants' statements about their

strengths and weaknesses within their musical development and what they thought were essential aspects of expression. Results for self-perceptions of musical development within vocalists were (in order of importance) goal orientation, personality, and expressivity. In comparison, instrumentalists also list goal orientation as the most important but follow that with expressivity and personality. The personality category refers to elements such as self-esteem, curiosity, anxiety, and sensitivity to criticism. The construct of self-esteem holds greater value to vocalists than instrumentalists. There were also apparent differences within musical expressivity, as vocalists rated aspects of timbre and emotion highly. This contrasted with the instrumentalist's ratings of dynamics and musical ideas as necessary to their musical expressivity. Vocalists also made specific mention of being emotionally connected to the music. The results of this study set up an exciting platform of understanding that tells us personality differences are not distinguishable between the groups. Instead, differences are found in their attributions to their musical development and the ways that they interact and exist with music.

Another study that measured self-esteem was Herb (2021), who investigated the music self-perceptions of music education and non-music education majors in music ensembles. Herb focused on the construct of self-esteem, using the Self-Esteem of Musical Ability Scale to measure the music self-perceptions of this population. Results showed that there were no statistically significant differences in self-esteem levels between musicians and non-musicians. These results align with those from Sandgren (2018), who found that self-esteem levels were consistent between musicians and non-musicians. Influences on self-esteem were, however, found in the number of years that the musician had been involved in an ensemble, which had a positive impact on their self-esteem.

Building on the research from Sandgren (2018) and Herb (2021), the musical identity measure from Burland et al. (2022) brings a practical approach to better understand and utilise the self-perceptions of musicians. Burland et al. (2022) aimed to validate a measure of musical identity, which uses six areas of identity: Resilience and adaptability, approach to learning, emotional attachment, social factors, music and self, and career calling (Lopez-Iniguez et al., 2022). The validation of this measure provides musicians with a tool for self-reflection and teachers with a way to measure what areas to focus their support and teaching. A notable finding from Burland et al. (2022) was the proneness to fluctuation in self-efficacy and growth mindset through life. The use of tools such as this musical identity measure ultimately gives the musician some control by understanding a psychological concept that is otherwise relatively abstract, like self-efficacy.

Lopez-Iniguez et al. (2022) demonstrated the practical application of this measure with postgraduate music students, specifically focusing on the way that understanding musical identity could help guide their career planning after completing their postgraduate qualifications. This measure's value was seen in how students could visualise their identity. By reflecting on their specific strengths and weaknesses as identified in the musical identity measure, students could develop a plan rooted in what is relevant to their development. This monitoring could be beneficial throughout the whole process of tertiary music education as students can focus on specific elements of themselves that require additional effort.

To conclude this section, these investigations into the self-perceptions of music students hold a great deal of information that shows the unique make-up of each musician and patterns of behaviour and responses. Lopez-Iniguez et al. (2022) noted that students associated a lack of resilience with a lack of confidence and self-efficacy, echoing previous results on the relationship between resilience and self-efficacy and the role it plays in carrying the musician through difficulties. The wide variety of results from these studies are challenging to group. The results overall contribute to a deeper understanding of the complex relationships that exist between the many constructs that come together to create the musician. A broad approach to interventions, like the intervention from Thomson et al., demonstrates the value of not only a broad spectrum of approaches but also a holistic methodology that addresses many aspects within the musician and does not isolate one aspect, such as performance. Through improving psychological well-being and making the music education process safe and nurturing, positive self-perceptions can be developed, which impact musical identity and resilience and equip the musician with the means to thrive.

4.4.4 Theme 4: Self-efficacy and Health-promoting behaviours and Well-being

As the focus is extended beyond the internal functioning of the musician, we are faced with health-promoting behaviours (HPB) and external well-being. The internal functions that contribute to outward behaviours. A total of six studies fell under the theme of HPB and well-being (see Table 9). Published between 2008 and 2023, there are two mixed-method studies (Matei et al., 2018; Rose et al., 2021) and four quantitative studies (Kreutz et al., 2008; Ginsborg et al., 2009; Panebianco-Warrens et al., 2014; Cohen & Panebianco, 2020). Geographically, the studies are from Europe (UK and Switzerland), as well as South Africa. Of these studies, only one conducted an intervention (Matei et al., 2018).

Table 9

Summary of studies included in Theme 4: Self-efficacy and Health-promoting behaviours and Well-being

Reference	Objective/aim	Country	Research method	N	Scales
Kreutz et al. (2008)	This study aimed to understand the health-promoting behaviours in music performance students and how these behaviours are associated with their self-efficacy, emotional state, and self-regulation.	UK	Quantitative (Surveys)	**273** f=174 m=99	HPLP II PANAS SES (Schwarzer & Jerusalem 1995) SRS (Schwarzer et al 1999)
Ginsborg et al. (2009)	This study consists of a comparison of the health-promoting behaviours in music and non-music student populations and the extent to which these behaviours impact lifestyle, positive and negative emotional affective states, self-regulation, and self-efficacy.	UK	Quantitative (Surveys)	**263** f=179 m=84	HPLP II PANAS SES (Schwarzer & Jerusalem 1995) SRS (Schwarzer et al 1999) Questionnaire for musculo- and non-musculoskeletal health problems
Panebianco-Warrens et al. (2014)	The purpose of this study was to evaluate the health-promoting behaviours and psychosocial well-being of undergraduate music students, considering the impact of gender and type of instrument. Measures included levels of self-efficacy, self-regulation and emotional state.	South Africa	Quantitative (Surveys)	**146** f=80 m=66	HPLP II PANAS SES (Schwarzer & Jerusalem 1995) SRS (Schwarzer et al 1999)
Matei et al. (2018)	The aim of the study was to develop a health education course to be implemented at a UK Conservatory of Music and to evaluate its effectiveness. The content of the course ranged from topics on psychological health (self-efficacy) to mental health and practical.	UK	Mixed Methods (Questionnaires)	**81** f=41 m=37 NB=3	HPLP II SES (Schwarzer & Jerusalem 1995) PANAS Perceived stress Health survey Rating of perceived exertion
Cohen & Panebianco (2020)	This study was conducted in order to explore the role of self-efficacy in the association between the personalities of music students and their health-promoting behaviours.	South Africa	Quantitative (Surveys)	**154** f=106 m=48	HPLP II Generalised self-efficacy scale (Schwarzer & Jerusalem 1995) Big five inventory

Rose et al. (2021)	This article evaluated music students' state of well-being as they entered the university music department and explored their understandings of well-being and success, looking at the relationship with self-efficacy.	Switzerland	Mixed Methods (Surveys and brainstorming)	**99** f=50 m=49	WHO-5 Well-being index WHO QoL ASKU - Gen SE

The first published study on health-promoting behaviours in this review was from Kreutz et al. (2008), who looked at health-promoting behaviours in conservatoire students from two conservatoires in the UK, specifically looking at the associations with self-efficacy, emotional state, and self-regulation. This quantitative study consisted of 273 students, with an average age of 21.94 years. Results showed notably low scores for the student's health responsibility, physical activity, and stress management. There were statistically significant gender differences in health-promoting activities, with females showing more frequent engagement in these behaviours. Conversely, scores for self-belief, self-regulation, and affect were above average. Positive correlations between self-efficacy and levels of healthy behaviours were found within this study; Kreutz et al. (2008), therefore, suggest that positive self-beliefs are an important motivator in maintaining healthy behaviours. Other results to note were the inferred systematic influence of age, with awareness for health increasing with age, and the low scores on stress management within the context of music education as the population is at substantial risk of music performance anxiety. In summary, there were no differences found between the institutions; scores for health-promoting behaviours were low, while scores for self-efficacy and effect were above average and positive correlations were found between self-efficacy and effect, which implies that positive self-belief is essential in maintaining and motivating health-promoting behaviours in conservatoire students. This builds on the existing observations from Bandura (1997), who theorised the interdependence of self-beliefs, emotions, and behaviours.

The following study within this theme, authored by Ginsborg et al. (2009), follows a similar route but compares music and non-music students' health-promoting behaviours and their impact on emotional affect, self-regulation, and self-efficacy. This sample consisted of 65 health students (nursing and biomedical faculties) and 198 music students, giving a total of 263 participants with an average age of 21.4 years. The musicians within this sample were found to have significantly lower scores compared to health students in several measures. This included health responsibility, physical activity, self-efficacy, self-regulation, and a lower present state of health. These results, in conjunction with a greater variety of musculoskeletal concerns and a greater severity of symptoms, when compared to health students, paint a

concerning state of health within this population of music students. This study revealed gender differences, like Kreutz et al. (2008), with women reporting higher levels of health responsibility but, in contrast, reported lower levels of self-efficacy. These results were found in both music and health students. Similarly, Kreutz et al. (2008) and Ginsborg et al. (2009) found positive correlations with perceived present health and healthy lifestyle, which in turn is associated with self-efficacy, self-regulation, and positive affect. These results lead us to the same conclusion as Kreutz et al., reinforcing our understanding that stronger self-efficacy beliefs motivate a healthier lifestyle. Ginsborg et al. suggest that music students should be taught health promotion skills to improve themselves as musicians.

Building on this, Panebianco-Warrens et al. (2014) replicated the study by Kreutz et al. (2008), looking at the health-promoting behaviours of South African music students. In addition to the procedure from Kreutz et al. Panebianco-Warrens et al. also examined the influence of instrument type and gender on healthy behaviours and mood states. The results from Panebianco-Warrens et al. mirrored those from Kreutz et al. Health responsibility, a subscale of the health-promoting lifestyle profile (HPLP), was the lowest-scoring subscale in both studies, and the highest-scoring subscales in both studies were spiritual growth and interpersonal relations. The results of these studies differed in the participants' experiences of negative affect in that South African students have significantly less acute experience of negative states of feeling. With regard to the relationship between instrument type and the variables above, this study found that keyboard players were found to be the weakest group among instrumentalists. This was illustrated in their low reports of stress management, health responsibility, and physical activity.

Across these three studies (Kreutz et al., 2008; Ginsborg et al., 2009; Panebianco-Warrens et al., 2014), behaviours concerning a healthy lifestyle and well-being were measured, and these constructs were measured in combination with self-efficacy, self-regulation, and emotional states. The existence of HPB was reported to be moderate through these studies, with low scores found consistently for health responsibility and high scores for nutrition, spiritual growth, and interpersonal relations. All three studies also reported gender differences, as females scored higher for nutrition and health responsibility and lower for self-efficacy and stress management. In terms of self-efficacy, positive emotional states were found to be strongly correlated with stronger self-efficacy beliefs, and the combination of self-efficacy and self-regulation held a significant positive correlation with HPB and healthy lifestyles. The results from Panebianco-Warrens et al. established that HPB can be generalised across

sociocultural contexts through similar self-reported results from students in the UK and South Africa. Furthermore, the results from Ginsborg et al. point towards the need for understanding these relationships and establishing interventions to effectively help music students, as they scored significantly worse in comparison to non-music students.

Matei et al. (2018) aimed to address this need through their health education course, which included mental and physical health information and interventions. This mixed-methods procedure collected results from 81 first-year students who participated in the course and 33 third-year students who functioned as a control group. These students were all from a UK conservatoire. Measures included self-efficacy, health-promoting behaviours, emotional states, and the qualitative analysis of essays submitted to assess the course. Students reported that they learned from the presented lectures and increased their knowledge of the covered topics, increasing their ability to handle and process issues. Another outcome of this intervention was an increase in self-efficacy, which the authors state may not directly result from these health education lectures. Some unwanted results from this process were identified. They included increased negative affect, sleep problems, and lack of vitality. As with the increase in self-efficacy, the increase in these negative experiences cannot be directly linked to this course but to the cumulative stress students experience.

Moving through this theme of research, Cohen and Panebianco (2020) considered the intersection between personality and self-efficacy in the HPB of music students. This study collected results from 154 participants across South Africa on measures of HPLP II, generalised self-efficacy, and the Big Five personality inventory. In line with previous studies, these students reported moderate levels of HPBs. In addition, the low and high scores within the HPLP II subscales were analogous to previous studies. This study also supports the existing identification of gender differences in women, who reported higher scores for nutrition and health responsibility and higher perceived levels of anxiety and neuroticism. Within this research, personality was found to be a significant predictor of HPBs. Specifically, the personality trait of conscientiousness was the most consistent predictor of HPBs overall. General self-efficacy holds both a predictive role and a mediating role in this study, as it predicts personality traits of conscientiousness, extraversion, and neuroticism and mediates the relationship between HPBs and personality. The mediating role is specific to the personality traits of conscientiousness and neuroticism. Understanding this mediating role of general self-efficacy within HPBs of music students reveals that interventions to increase self-efficacy may prove to be effective in improving the HPBs of music students in contrast to the health

education intervention of Matei et al., which did not have promising results in changing the music students approach and applications of interventions.

Educating students to help themselves may not be enough to effectively help them through the difficulties of a music career. This research shows that a different approach may be needed to reach students, make interventions more effective, and sustain longer-term improvements.

For the final study in this theme, Rose et al. (2021) set out to explore music students' perceptions of well-being and success and their beliefs about well-being in the tertiary education environment. In addition, these authors examined the role of self-efficacy concerning students' well-being. This sample consisted of first-year bachelor's and master's students from Switzerland. Results showed that the students grasped a holistic understanding of success and well-being. The level of well-being in this group was below average. Low scores were significant for the measure of physical health. Self-efficacy was found to be a predictor of well-being; this was relevant for both physical and psychological well-being. Results also showed that students believe the institution of education is partially responsible for the state of well-being in the student population and that they were also responsible for their state of well-being. Rose et al. also discuss redefining the goals of music education and views of success among students; these suggestions echo the work of Gonzalez et al. (2017), who posit that the goals of perfection in performance should be transformed into making the experience of performance less threatening and balanced through coaching the student through techniques to improve their anxiety.

The research from Matei et al. (2018) clearly demonstrates that effective health education in music students does not only lie in increasing knowledge and awareness. Cohen and Panebianco (2020) revealed that through the mediating role of self-efficacy, interventions that improve self-efficacy could be more effective in guiding students towards adopting healthy behaviours that will better support them as they move into their professional careers as musicians. Rose et al. (2021) confirm that students, even at the beginning of their tertiary training, understand that well-being and success both rely on the holistic health of the musician and, despite this understanding, report below-average levels of well-being. As Kreutz et al. (2008) mentioned, this discrepancy between a clear understanding of the need for healthy behaviours but reports of poor well-being and healthy lifestyles is perhaps bridged through higher levels of self-efficacy and experiences of positive affect.

4.4.5 Theme 5: Self-efficacy and self-regulated learning

Transitioning into the internal abilities to control outward behaviours such as practice, this theme contains studies that incorporated concepts of self-regulation in their research on self-efficacy. This included seven studies published from 2004 to 2021 that were conducted around the globe with a total participant pool of 606 students (see Table 10). Self-regulation results from the theories of Bandura and Zimmerman, which are concerned with the processes that people use to control their emotions, thoughts, and behaviours and streamline their actions to achieve outcomes specific to their goals. Zimmerman's theoretical model of self-regulation consists of three phases that exist in a cyclical process. These phases are forethought, performance, and self-reflection, each of which can be translated into the working environment of musicians. The interplay between self-efficacy and self-regulation is highly intertwined, as shown in the following studies' research.

Table 10
Summary of studies included in Theme 5: Self-efficacy and Self-regulation

Reference	Objective/aim	Country	Research method	N	Scales
Nielsen (2004)	This study investigated the practice and study strategies used by first-year music students in their instrumental practice and the relation of their self-efficacy to these strategies.	Norway	Quantitative (Surveys)	**130** f=71 m=59	Motivated strategies for learning questionnaire (MSLQ-inventory) SE measured through motivation subscale
Jaap & Patrick (2011)	This study collected musicians' statements about their talent development and aligned them with Bandura's characteristics of perceived self-efficacy.	UK	Mixed Methods (Interviews)	**62**	Secondary analysis of data
Miksza (2013)	This study evaluated the effectiveness of self-regulation interventions on advanced wind players, looking at their practice behaviours, performance, and musical self-efficacy.	USA	Mixed Methods (Intervention and survey)	**28** f=13 m=15	Self-efficacy measure (Hendricks, 2009) Performance achievement Practice frame analysis
Miksza (2018)	This research assessed the method of microanalysis to measure instrumentalists' self-regulation tendencies during practice sessions and if it would improve their self-	USA	Mixed Methods (Experimental)	**3** f=2 m=1	Microanalysis assessment technique Practice efficacy ratings

	regulated learning tendencies in practice. Self-efficacy was measured through the phases of self-regulation and addressed through goal-setting interventions.				Behavioural analysis
Hatfield et al. (2016)	This study was conducted in order to test the predictive power of Zimmerman's model of self-regulation in the instrumental practice of music students. The roles of self-efficacy were assessed within the phases of self-regulation.	Norway	Quantitative (Surveys)	**204** f=96 m=108	Self-regulated learning in music questionnaire (SLMQ) SES (Schwarzer & Jerusalem 1995)
Panebianco-Warrens et al. (2014)	The purpose of this study was to evaluate the health-promoting behaviours and psychosocial well-being of undergraduate music students, considering the impact of gender and type of instrument. Measures included levels of self-efficacy, self-regulation and emotional state.	South Africa	Quantitative (Surveys)	**146** f=80 m=66	HPLP II PANAS SES (Schwarzer & Jerusalem 1995) SRS (Schwarzer et al 1999)
Nusseck & Spahn (2021)	This research presents an investigation of the differences in practice behaviours before and during the lockdown semester of 2020 and how self-efficacy beliefs assisted with practice.	Germany	Quantitative (Surveys)	**33** f=19 m=14	SE for musical learning (Ritchie & Williamon) Musical self-regulated learning (Ritchie & Williamon, 2013) Practice situation questions

The first study within this theme is the first published study that meets the criteria of this systematic review. The results from this research are some of the earliest to demonstrate the importance of self-efficacy in the process of learning music, even at an advanced level. Nielsen (2004) conducted a study in Norway that looked at the practice strategies of 130 first-year students, specifically cognitive, metacognitive, and resource management. Self-efficacy beliefs were found to hold a positive relationship with cognitive and metacognitive learning strategies, illustrated by students with higher self-efficacy showing a greater use of practice strategies. Metacognitive practice strategies refer to the student's self-regulation abilities, following the cycle of forethought, performance, and self-reflection. Therefore, it can be deduced that self-efficacy and self-regulation have a positive relationship.

Jaap and Patrick (2011) conducted a secondary analysis of interviews with professional musicians with the intention of understanding the influence of self-efficacy in the development of musical ability. The development of musical talent was found to be highly reliant on four

aspects of self-efficacy. These aspects are individual judgement of capabilities, belief that outcomes are tied to actions, self-regulation of learning activities, and persistence. The impact of self-regulation, according to these musicians, was found to assist in maintaining persistence and motivation during practice through the long-term dedication required to become a professional musician. Overall, it was found that successful musicians experience a strong sense of self-efficacy, and that is what drives their self-regulation.

Miksza (2013), who examined the impact of self-regulation on performance, musical self-efficacy and practising, revealed that the implementation of self-regulation strategies during practice significantly improved performance. This research also revealed that self-regulation instruction has a positive impact on self-efficacy. Miksza published further research on the topic of self-regulation in music students in 2018; this research differed slightly in its aim to measure self-regulation tendencies through a process of microanalysis. This method of analysis clearly illustrated the nuanced existence of self-regulation behaviours in students, the results of which allow for tailored interventions that cater to specific weaknesses and deficiencies. This research also confirms the interconnected relationship between self-regulation and self-efficacy; as self-regulation is improved, self-efficacy beliefs increase. As such, a process of microanalysis could be implemented to create targeted interventions to improve self-efficacy.

Hatfield et al. (2016) investigated a model of self-regulated learning within the context of music education, looking at the interactions between the constructs of self-regulated learning (forethought, performance, and self-reflection). Hatfield et al. specifically isolated the performance and self-reflection phases and the impact that self-efficacy, goal setting, and time management have on these processes. From a group of 204 Norwegian music students, it was established that there are links between the constructs of the model with forethought predicting performance and performance predicting self-reflection. This confirms the cyclical structure of self-regulated learning and its application within music education. More nuanced relationships exist within these constructs, as self-efficacy predicts psychological skills, and self-observation predicts self-evaluation and coping. These results tell us that self-efficacy and goal-setting skills are crucial to the successful implementation of psychological skills during the performance phase.

Panebianco-Warrens et al. (2014) conducted a replication study looking at the health-promoting behaviours of music students in South Africa, following the work of Kreutz (2009).

Although this research focused more on general health-promoting behaviours, it also confirmed the positive relationship between self-regulation and self-efficacy.

The last article within this category looks at the impact that the COVID-19 lockdowns had on the practice routines of tertiary music students, looking at changes in self-efficacy and self-regulation. Nusseck and Spahn (2021) found that in a sample of 33 German music students, Bachelor of Music student's practice time decreased while music education students increased their practice time. Another notable difference was identified within self-regulation subscales of reflection, suggesting that students became more reflective of their practice process when forced into isolation, and the goal-setting subscale also improved. These results show that solid self-efficacy and self-regulation are very important in equipping students with the ability to be resilient in the face of extreme environmental challenges. It should be noted that although elements of self-regulation improved, self-efficacy remained consistent with pre-covid measures.

This research confirms that there is a positive relationship between self-regulation and self-efficacy. This relationship exists cyclically with positive self-efficacy beliefs supporting self-regulation and self-regulation practices and techniques improving self-efficacy. The feedback loop can be broken down further into the components of these concepts, considering the self-evaluation step; positive evaluations are made during a self-regulating process, which would positively contribute to self-efficacy beliefs. Suppose we zoom out from the musician's practice and performance routines and consider their holistic well-being. In that case, the research from Panebianco-Warrens et al. (2014) highlights the importance of self-regulation and self-efficacy in the general welfare of students, as this sets the students up with the ability to persist and actively participate in a healthy lifestyle.

The research by Miksza (2018) gives us a starting block to create profiles specific to students through a process of microanalysis. Further research using this technique would allow researchers to test individually tailored interventions to improve self-efficacy and self-regulation based on the student's specific weaknesses. This would target what needs to be targeted, and if we look at self-efficacy and the gender differences that exist, this could give a new foothold in decreasing that discrepancy. Self-regulation, as developed by Zimmerman, is closely related to the concept of self-efficacy, as set out by Bandura. Self-regulation aims to harness and understand how we motivate and keep ourselves dedicated to a specific path, while self-efficacy gives us the power to move forward and aim for greater things.

4.4.6 Theme 6: Self-efficacy in practice and performance

Practice and performance are everyday tasks of music students, and this research theme is the largest within this review, consisting of thirteen studies. There are a total number of 695 participants over these studies, with the research conducted over six countries including Norway (Nielsen, 2004; Hatfield et al., 2016; Detari & Nilssen, 2022), the United Kingdom (Jaap & Patrick, 2011; Clark et al., 2014), the United States of America (Pike, 2013; Miksza, 2013; Mio, 2017; Lewis et al., 2021; Lewis & Hendricks, 2022; Woody, 2023), Canada (Mio, 2017), Austria (Tief & Gropel, 2020), and Germany (Nusseck & Spahn, 2021). Most of these research articles utilised a mixed methods approach (n=7), followed by four quantitative and two qualitative studies.

The purpose of this theme was to isolate the research concerned with actively making music, either in groups or alone. When considering self-efficacy and practice or performance, the research can focus on the impact that self-efficacy has on performance success or measure the impact that a practice or performance intervention has on self-efficacy levels. The studies were broken down into smaller sub-categories of education, practice, and performance to work through the large amount of research within this category (see Table 11).

Table 11

Summary of studies included in Theme 6: Self-efficacy in practice and performance, grouped by sub-themes of education, practice, and performance

Reference	Objective/aim	Country	Research method	N	Scales
EDUCATION					
Pike (2013)	This research aimed to discover if the implementation of cognitive strategies could help undergraduate music education students in their collaborative piano skills lessons, measuring the impact on self-efficacy beliefs.	USA	Mixed Methods (Case study)	**12** -	Performance evaluations Qualitative self-efficacy observations
Woody (2023)	The main goal of this research was to explore the effects of a vernacular music-making intervention on music education students' self-efficacy beliefs and how the process impacted their teaching philosophies.	USA	Mixed Methods (Written reports and observations)	**34** f=15 m=19	SE for leading popular music making vernacular musicianship index
Mio (2017)	The objective of this research was to investigate the implementation of remedial pedagogy for first-year violin students, looking at the	USA & Canada	Qualitative (Case studies)	**10** -	Qualitative data

	instructor's perceptions, experiences and insights into the receptivity of students in relation to their self-efficacy.				
Lewis et al. (2021)	To examine music students' perceptions of successful teaching methods that strengthened their self-efficacy beliefs for performance and methods that hindered their growth.	USA	Mixed Methods (Surveys)	**83** f=39 m=44	Music performance self-efficacy (Zelenak, 2015)
PRACTICE					
Nielsen (2004)	This study investigated the practice and study strategies used by first-year music students in their instrumental practice and the relation of their self-efficacy to these strategies.	Norway	Quantitative (Surveys)	**130** f=71 m=59	Motivated strategies for learning questionnaire (MSLQ-inventory) SE measured through motivation subscale
Hatfield et al. (2016)	This study was conducted in order to test the predictive power of Zimmerman's model of self-regulation in the instrumental practice of music students. The roles of self-efficacy were assessed within the phases of self-regulation.	Norway	Quantitative (Surveys)	**204** f=96 m-108	Self-regulated learning in music questionnaire (SLMQ) SES (Schwarzer & Jerusalem 1995)
Nusseck & Spahn (2021)	This research presents an investigation of the differences in practice behaviours before and during the lockdown semester of 2020 and how self-efficacy beliefs assisted with practice.	Germany	Quantitative (Surveys)	**33** f=19 m=14	SE for musical learning (Ritchie & Williamon) Musical self-regulated learning (Ritchie & Williamon, 2013) Practice situation questions
Ritchie & Sharpe (2021)	This was an investigation of the impact of remote teaching on students' preparation for assessments due to the lockdown. Looking at how self-efficacy levels differed pre-lockdown and during lockdown.	UK	Mixed Methods (Surveys and open-ended questions)	**84** f=68 m=13 Non-binary =3	SE for performing (Ritchie & Williamon) Mental well-being short scale Resilience scale (Cooper et al 2013)
PERFORMANCE					
Clark et al. (2014)	This article investigated the impact of musicians' thoughts and perceptions on their performances, looking at what contributed to self-perceived successful	UK	Qualitative (Interviews)	**29** f=15 m=14	Qualitative data

	performances. The results pointed to the interactions between self-efficacy and self-talk.				
Tief & Gropel (2020)	An examination of pre-performance routines and their effectiveness on the performance quality and self-efficacy of music students.	Austria	Quantitative (Experimental)	**30** f=26 m=4	SE for musical performance (Ritchie & Williamon) K-MPAI Mental readiness Music performance quality
Lewis & Hendricks (2022)	The aim of this study was to investigate the four sources of self-efficacy and how they influence vocal students' performance capability beliefs in conjunction with other personal and contextual factors.	USA	Mixed Methods (Surveys and interviews)	**9** f=5 m=4	Vocal performance SE (mod Zelenak)
Détári & Nilssen (2022)	These authors investigated the impact of a Timani intervention on issues related to performance and the effect it has on performance self-efficacy.	Norway	Mixed Methods (Surveys and interviews)	**17** f=9 m=8	Music performance SE (Zelenak) Musculoskeletal Pain Intensity and Interference Questionnaire
Matthews & Kitsantas (2012)	To examine the conductor's goal orientation and the impact it has on the rehearsal environment. Specifically determining the ways in which they impact the collective efficacy and performance of an orchestra.	USA	Quantitative (Experimental)	**81** 39=m 42=f	Collective efficacy questionnaire (Short et al 2005) self-efficacy scale (Bandura) Performance ratings Ensemble attribution (open-ended)

Note. SE=Self-efficacy, NB=non-binary

Sub-theme 1: Education

The research of Pike (2013), Mio (2017), Lewis et al. (2021), and Woody (2023) concerns the education process of tertiary music students. Pike (2013) investigated the cognitive and collaborative strategies used within a group keyboard skills class, following the thread of interventions within tertiary institutions. Woody (2023) looked at the impact of a vernacular music-making exercise. Mio (2017) looked at the remedial pedagogy applied to first-year violin students, and Lewis et al. (2021) examined the pedagogical approaches that students felt best supported their self-efficacy.

Pike (2013) focused on a keyboard skills class and applied an intervention of cognitive strategies, which included chunking, elaboration, generation, and distributed practice. By implementing these strategies, students could work together far more effectively and showed significant improvement in skills such as sight-reading and harmonisation. In conjunction with cognitive skills, the collaborative process was shown to improve self-efficacy, motivation, and positive emotional engagement in the learning process.

Working in the space of social support and interventions within the class of music students Woody (2023) conducted an intervention of a vernacular music experience, focusing on education methods that were student-led and not the formal instructor-led methodology that takes place in a tertiary music institution. The process required music education students to form rock bands and perform songs at the end of the semester, rehearsing the music outside of class time. This intervention revealed that students with high self-efficacy levels were more confident and comfortable participating in the intervention, and those with lower self-efficacy showed significant improvement by the end of the intervention. A significant element of this process was the social connection and intrinsic motivation experienced by the participants, as the performance brought a sense of satisfaction that was not connected to any aspect of assessment for their music degrees.

Building on education approaches, Mio (2017) analysed the methods of education used by violin teachers when working with first-year students with technical or musical deficiencies. The reception of remedial pedagogy was found to rely on high self-efficacy, effective communication between the student and teacher, and creating a safe and supportive environment through the corrective process. The role of self-efficacy in this scenario is the strength and resilience that it provides the students to persist with the corrections and the mindset of motivation to learn and improve.

Lewis et al. (2021) also examined pedagogical approaches but focused on understanding the teaching methods students felt improved and supported their self-efficacy through their learning journey. The result of this inquiry showed that pedagogical methods that followed the four sources of self-efficacy had a significant impact on self-efficacy beliefs. Verbal or social persuasion and mastery experiences were found to have the most impact. The teacher's role is very important, and belief-enhancing approaches result in improved self-efficacy. Overall, these results tell us that the four sources of self-efficacy provide teachers with a blueprint for effective teaching. Implementing these pedagogical techniques within a supportive learning

environment has a good chance of building musicians who will have healthy self-efficacy beliefs.

Pike (2013) and Woody (2023) looked at interventions within the context of existing classes. Results from these studies, done ten years apart, both speak to the importance of facilitating a supportive environment between students at a tertiary level. A significant portion of the time a musician utilises to prepare themselves both to reach a tertiary education level and then a professional musician after tertiary education is spent in isolation practising and polishing their skills. Therefore, we can assume that learning not only to turn to social support for help is foreign, but the skills to effectively collaborate and support each other through classes, as is taught in the intervention by Pike, is necessary. These skills are not only important for increasing self-efficacy but also for facilitating a space of trust between peers, which improves overall well-being through self-efficacy.

Through their analyses of pedagogical approaches and their impacts, the research from Mio (2017) and Lewis et al. (2021) come together to create a fuller picture that strong self-efficacy is essential to the student's ability to persist through difficult periods within the music learning journey. These beliefs are also what propel students into confidently learning music in new genres and forms (Woody, 2023). Building on this, music teachers should use various sources of self-efficacy to better support and grow balanced musicians.

Sub-theme 2: Practice

The research from Nielsen (2004), Hatfield et al. (2016), and Nusseck and Spahn (2021) all consider the task of practice.

Nielsen (2004) assessed the implementation of cognitive and metacognitive learning strategies and how self-efficacy beliefs impacted the use of these strategies while practising. From the participants in this study, higher levels of self-efficacy were linked to an increased level of involvement in learning processes. Through both cognitive and metacognitive strategies, students were able to set goals more effectively, monitor progress, and regulate practising behaviours, resulting in more effective practice. Outside of self-efficacy levels, it was found that students were less likely to use resources such as peer learning and help-seeking. Nielsen also observed significant gender differences, with males reporting higher self-efficacy than females. Overall, self-efficacy was linked to effective practising behaviours, which equips the student with the ability to improve and progress, resulting in looping feedback that strengthens self-efficacy beliefs.

Hatfield et al. (2016) investigated the predictive power of a self-regulation model from Zimmerman (1989), specifically looking at how psychological skills and self-reflection are impacted by self-efficacy and goal setting. Strong correlations were found between self-efficacy and goal setting; this tells us that positive self-efficacy beliefs play an important role in the student's ability to set clear and achievable goals, which enhance both learning and performance processes. Building on this relationship, it was found that both self-efficacy and goal-setting have a significant reciprocal influence on psychological skills. With strong self-efficacy and effective goal setting, the student is more likely to engage in more effective arousal regulation and self-control during the performance phase of self-regulation. Within this research, it was found that self-efficacy has an influence on a number of processes within self-regulation, both directly and indirectly; most significant are the positive correlations between self-efficacy and goal setting and self-efficacy and arousal regulation.

The COVID-19 lockdowns produced a unique set of circumstances to monitor what may influence self-efficacy as well as how self-efficacy beliefs impact the practice behaviours of tertiary music students. Nusseck and Spahn (2021) looked at the practice behaviours of students during lockdown and found that there were no significant differences in self-efficacy levels pre-lockdown. It was revealed that higher levels of self-efficacy equipped students with the resilience to cope with the difficulties that the lockdowns imposed, but the isolation of quarantine did not directly change self-efficacy levels. Perhaps this could be a result of students not being particularly reliant on peer learning and help-seeking strategies, as was found by Nielsen (2004). However, this would have to be retested in the relevant population as this research was conducted 16 years prior to the work of Nusseck and Spahn. These authors also noted that higher self-efficacy levels were directly related to more productive practice and that self-efficacy should be approached as a mediating factor to improve practice effectiveness.

Over this period of quarantines and lockdowns, Ritchie and Sharpe (2021) examined the approaches employed to prepare for and handle remote assessments. Students within this study were given the option to submit a recording of their exam, or they defer to an in-person examination the following year. The majority of students chose to submit a recording for examination (78%), and these students reported firmer self-efficacy beliefs. Self-efficacy within this research contributed to the student's resilience and motivation to persist through the uncertainties of lockdown. While many students chose to submit a recording because they wanted to graduate on time, these students also displayed higher levels of engagement in their learning process as well as more varied practice strategies. On the other hand, the students who

chose to defer and reported lower self-efficacy beliefs also reported decreased engagement in the learning process and a negative mentality, which presented a significant roadblock to their motivation and resilience to persist through challenging circumstances. Well-being scores did not differ significantly between the groups which reveals that self-efficacy beliefs had a more direct impact on practice behaviours than wellbeing in this population.

The work of Nielsen (2004) and Nusseck and Spahn (2021) both refer to the importance of self-efficacy in productive practice routines, as students with higher self-efficacy show more involvement in the learning process. A large part of effective practice comes from being able to structure the use of time and setting both short- and long-term goals. The role that self-efficacy plays in this process is highlighted by Hatfield et al. (2016), who noted the significant correlation between self-efficacy and goal setting, with higher levels of self-efficacy resulting in more effective goal setting. This reinforces the suggestion from Nusseck and Spahn that self-efficacy should be approached as the mediator of effective practice. The role of self-efficacy within music practice and the impact that practice has on self-efficacy is dynamic and fluid. A looping cycle of feedback is created in this space; as the musician is taught to practice effectively, they are given the skills to improve and see their development, which feeds their self-efficacy beliefs. Their confidence and goal-setting behaviours improve as their self-efficacy improves, driving their motivation and forward trajectory through their education journey.

Sub-theme 3: Performance

Clark et al. (2014) investigated the thoughts and perceptions of musicians while they performed, looking at the impact that these thoughts and perceptions have and what contributes to a better performance. The interviews with the participants revealed that successful performances were attributed to thorough preparation, a positive mental space, and music that was of an appropriate standard for their respective abilities. Regarding the musician's thoughts while performing, positive and negative self-talk was found to hold significant potential over the success of a performance. Lesser advanced students reported having less control over negative self-talk that occurred if they felt the performance was not going well. Clark et al. linked self-talk to verbal persuasion, a source of self-efficacy, as verbal persuasion can be directed towards oneself (Hardy, 2006). Therefore, through this lens, self-talk directly impacts self-efficacy beliefs. The more advanced students within this sample were better able to control these negative thoughts as they emerged through a performance.

The relationship between self-efficacy, self-talk, and performance creates a cyclical path. Negative self-talk has a negative impact on self-efficacy, which in turn negatively impacts performance, which circles back to triggering negative self-talk in the musician. The topic of negative introspection is by no means unique to the performances of musicians. However, interventions to help these debilitating thoughts have been applied within the field of sports psychology. A method that has proved effective with athletes is pre-performance routines (PPR), which are aimed at improving focus and reducing anxiety. The research from Tief and Gropel (2020) provided some interesting results that seem to go against the relationship between self-efficacy and performance.

The objective of the research from Tief and Gropel (2020) was to test the effectiveness of pre-performance routines for musicians. The results showed improved self-efficacy beliefs but did not improve their performances. These results are contradictory to the well-established correlation between self-efficacy and performance, with self-efficacy being a consistent and reliable predictor of a successful performance. Interestingly, the student's self-reported evaluation of their performances was better than before the intervention, which suggests that the participants experienced the intervention to be helpful and positively impact their performance abilities. This study has several strengths within its procedure, including an objective panel of judges as well as an audience, which created a robust replication of the music student's average performance environment.

The authors suggested that the control group measure was not a neutral control group as they received a goal-setting intervention. As discussed previously, the research by Hatfield et al. (2016) could explain why this control group intervention was not neutral, as there is a relationship between self-efficacy and goal setting. Tief and Gropel (2020) also discuss the results of the trait anxiety measurements, which showed that the participants did not experience an increase in anxiety during the performance, which the audience and juror panel were supposed to trigger.

Overall, a PPR does have the potential to improve self-efficacy beliefs. However, the results of this research show that this improvement has not been proven to translate into their performances. Until the methodological difficulties are corrected to measure the exact impact of PPRs against a proper control group, PPRs should be considered as possible intervention aimed at self-efficacy rather than a method to improve performance.

The work of Lewis and Hendricks (2022) also considers the sources of self-efficacy and the ways in which individual experiences built their self-efficacy beliefs. Through questionnaires and interviews structured around the four sources of self-efficacy, the collegiate vocal students explored their past experiences and the ways in which they believed they impacted their learning and ability to perform. It was found that experiences corresponding to all four sources were experienced. In addition, the students discussed how self-regulation and participation in positive education contexts were crucial to their development. Mastery experiences were found to boost their confidence in their abilities to perform, and vicarious experiences with both professionals and peers provided them with inspiration. However, experiences where students felt they needed to measure up to their peers were not favourable. Physiological states were experienced as positive or negative, either existing as the driving force behind their motivation to prepare thoroughly or as a negative arousal with adverse impacts on performance. Verbal and social persuasion from teachers and peers hold significant influence; through the interview process, all the participants noted the role that encouragement had in their growth. This impact of the student-teacher relationship relies on clear instruction communication and the criticisms and encouragements from the teacher.

This exploration sheds light on the development of self-efficacy; understanding how a student's self-efficacy beliefs have been built according to the sources of self-efficacy increases their self-awareness and gives their educator a more precise direction of what to reinforce. The role of self-regulation in this context is the buffer to filter feedback from teachers or peers so that the comments may be constructively applied or disregarded if it is not beneficial to the musician or the experience. The facilitation of a group exploration and discussion of these experiences could contribute to a healthier support system between students in their classes and provide a learning experience for students who want to pursue the field of education in music.

Detari and Nilssen (2022) measured the impact of a Timani intervention, which aims to encourage healthy playing in musicians with the intention of improving performance quality and reducing performance pain. This evaluation also looked at the somatic Timani intervention's impact on self-efficacy. It was found that the application of Timani sessions aimed at instrumental technique, posture, and body mechanics resulted in decreases of performance related pain, positive performance outcomes, as well as psychological improvements. Participants observed an increase in their confidence in reaching goals, and these statements were linked to self-efficacy beliefs, with significant differences apparent in the subscale of vicarious experiences.

The sources of self-efficacy were raised several times within this subcategory. Lewis and Hendricks (2022) explored the ways that individual experiences came together to grow self-efficacy beliefs, Clark et al. (2014) considered the role of self-talk during performances functioned as a mode of verbal persuasion, and Detari and Nilssen (2022) found that Timani method interventions specifically impacted the vicarious experience subscale of self-efficacy. These studies apply cognitive and physical interventions that had positive impacts on self-efficacy beliefs; while not all of them resulted in performance improvements (Tief & Gropel, 2020), their impact on self-efficacy was concrete; these results point towards a need for further tailoring towards the students' specific weaknesses and vulnerabilities. This could possibly be achieved by utilising the student's make-up of self-efficacy beliefs, as Lewis and Hendricks (2022) did.

Matthews and Kitsantas (2012) took the collective unit of an orchestra and investigated the impact of the conductor's goal orientation on the musician's self-efficacy, collective efficacy, attributions to success, and performance quality. The musicians within this sample reacted significantly better to a mastery goal orientation and expressive performance cues, which resulted in higher levels of self-efficacy within the players and improved performance. A mastery goal orientation emphasises the learning process over the end performance product. Although the conductor's goal orientation did not have a significant impact on performance quality, it did impact the orchestra's sense of unity and ability to communicate, which is essential to a successful performance. However, the conductor's performance cues significantly impacted performance quality with expressive cues, resulting in improved efficacy and performance. The combination of these results informs conductors that a mastery goal orientation with expressive performance cues will give the orchestra the best chance to feel intrinsically motivated and accomplished and produce a good performance.

Across these studies, the role of self-efficacy within practice and performance is demonstrated to be complex and malleable within the student's learning processes. Mio (2017), Lewis et al. (2021) and Lewis and Hendricks (2022) all investigated the students' and teachers' perceptions of effective teaching methodologies to support and grow self-efficacy and musical ability effectively. These inquiries, if facilitated in a group setting of music students, could provide a multi-purpose educational process in which sharing positive and negative experiences with music education grows their sense of unity and support while also helping future teachers better understand education methods and how students receive them.

There is also a significant focus on the sources of self-efficacy and their roles in self-efficacy acquisition (Lewis et al., 2021; Clark et al., 2013; Lewis & Hendricks, 2022; Detari & Nilssen, 2022). The make-up of self-efficacy beliefs and how they have been built up until the point of tertiary education is essential to understanding how best to help students. This unique formula is possibly what filters the student's reception of an intervention and understanding how these formulae interact with different approaches gives a new insight into how to effectively tailor education programs to help support students as they go through the tertiary education journey.

When the role of self-efficacy within practice and performance is considered, interventions can either be focused on improving self-efficacy to improve performance and practice or the application of performance and practice tasks to improve self-efficacy. Through the summation of this work, it seems apparent that while self-efficacy is a reliable predictor of performance success, interventions to improve self-efficacy do not drastically and immediately improve performance outcomes. However, as interventions that positively impact self-efficacy beliefs are conducted, the long-term performance outcomes are still unclear.

Self-efficacy interventions that successfully improve self-efficacy beliefs may not have the same direct and immediate improvement in performance abilities. However, the application of these interventions that expose students to new methods of learning and coping do have a positive impact. Increasing and bolstering self-efficacy beliefs will not be detrimental to the student, and due to the lack of long-term studies, the long-term impact of interventions to improve self-efficacy has not been empirically measured. However, these improvements in self-efficacy can positively impact students and increase the likelihood of building a more competent and resilient musician. As self-efficacy has been found to assume a mediating role, the result of improving self-efficacy will more likely lead to the musician being able to more effectively apply and implement strategies and methods to improve practice or performance over time, and the improvements of this would not likely be immediate.

4.4.7 Theme 7: Self-efficacy and the likelihood to persist in music

This final theme of analysis reviews the relationships between self-efficacy and constructs outside the musician. The studies within this theme focused on understanding music students' career decisions, the roles that self-efficacy and self-esteem play in deciding to pursue a career in the music industry, and how best to support students with these choices (see Table 12). The seventh theme consists of five studies published in 2021 and 2022. This research was conducted more recently in Europe (Lopez-Iniguez & Bennet), South Korea (Lee), China (Wang & Wong,

2022; Jian, 2022), and the USA (Cygrymus & Lent, 2022). Wang and Wong established a conceptual framework that combines social cognitive career theory and self-determination theory; through this lens, the findings of the studies within the theme of self-regulation can be concisely synthesised. Overall, these studies involved 1,118 participants from a variety of sociocultural contexts.

Lopez-Iniguez and Bennet (2021) conducted a study to measure the efficacy and impact of an employability intervention developed based on interviews with post-graduate students at a European Academy of Music. Semi-structured interviews with the seven participants of the study guided the contents of lectures looking at career development needs, followed by a discussion panel with eight multi-professional musicians selected to provide career testimonies that focused on their training and subsequent careers. Self-efficacy and self-esteem were measured during the semi-structured interviews, and this intervention was found to improve academic self-efficacy and self-efficacy levels among emerging professionals.

Table 12

Summary of studies included in Theme 7: Self-efficacy and the likelihood of persisting in music

Reference	Objective/aim	Country	Research method	N	Scales
Lopez-Iniguez & Bennett (2021)	This study aimed to understand the career-related mindsets and confidence of music students and the impact that the employability intervention has on student's learner identity, as well as the role that self-efficacy plays in persistence and confidence in their future careers.	Europe	Mixed Methods (Surveys and interviews)	**7** f=5 m=2	Employability self-reflection tool
Lee (2021)	This study was conducted in order to examine the connections between adaptation to college life, self-efficacy in career decisions, and stress related to career achievement among music students	South Korea	Quantitative (Surveys)	**104** f=92 m=12	College life adaptation scale Career decision self-efficacy Career achievement stress scale

Wang & Wong (2022)	The purpose of this research was to explore how factors such as social support, autonomous motivation, career barriers, and self-efficacy impact the career intentions of music students.	China	Quantitative (Surveys)	**422** f=279 m=143	SE scale (Chan et al. 2018) Vocational outcome expectations Social support scale Career barriers scale Autonomous motivation scale
Jian (2022)	This paper presents an investigation into long-term academic engagement and achievement in music students, specifically the impact of academic self-efficacy and academic motivation.	China	Quantitative (Surveys)	**325** f=136 m=189	Academic SE scale Academic motivation Learning agility Sustainable engagement Academic achievement
Cygrymus & Lent (2022)	The aim of this inquiry was to understand the experiences of music students in college and how their academic satisfaction is influenced by variables such as self-efficacy and social support. And ultimately to evaluate how these constructs function together to impact persistence intentions.	USA	Quantitative (Surveys)	**260** f=120 m=116	Academic milestone SE scale Academic coping SE scale Negative affect

Lee (2021) investigated the relationships between college life adaptation, career decision self-efficacy, and career achievement stress. Career decision self-efficacy within this study is focused on goal selection, job information, and future planning factors. Results show that stress is handled better by students with higher self-efficacy, and subsequently, these students were able to make more proactive career choices. In addition, career achievement stress was reduced by the positive impact of self-efficacy on goal selection and job information.

Following this, Wang and Wong (2022) reported on the investigation conducted with Chinese music performance students focusing on understanding their career intentions. The authors used an empirical combination of Social Cognitive Career Theory (SCCT) and Self-determination Theory (SDT) to explore their behavioural intentions. Results of the questionnaires from 422 respondents show that self-efficacy significantly impacts career intentions within this population. Highly efficacious students demonstrated more positive

outcome expectations and, as a result, held stronger career intentions. Self-efficacy was found to have a positive influence on career intentions, and the same was found in the impact of autonomous motivation and social support. The authors suggest that these results tell us that stronger career intentions could be built by enhancing self-efficacy and creating environments that provide a strong sense of social support.

Cygrymus and Lent (2022) built on this research to understand career intentions through SCCT and examined music students' academic well-being and persistence intentions. Additionally, constructs of academic satisfaction and outcome expectations were measured in this sample of 260 music students. Academic satisfaction was measured through positive experiences of intellectual stimulation throughout the course and was found to be predicted by several constructs, including self-efficacy, outcome expectations, and social support. In turn, academic satisfaction influenced persistence intentions along with self-efficacy. These results combine to reveal that students with higher self-efficacy are more likely to experience academic satisfaction, and students who are content with their academic experiences display a stronger drive to persist with their career intentions. The role of social support was also found to be positive, resulting in stronger self-efficacy.

The critical elements across these studies include self-efficacy, social support, and autonomous motivation. Self-efficacy is found to be a significant factor within musicians and their career intentions, as students with higher self-efficacy display greater resilience and adaptability as well as the ability to make confident and proactive choices regarding their future careers in the music industry. Social support plays an integral role in developing the student's self-efficacy, as the results from Wang and Wong show the direct and positive impact that social support has on career intentions which is also mediated through self-efficacy. The importance of social support is mirrored in the work of Lopez-Iniguez and Bennett, as the discussion panel with experienced musicians was a key factor in their employability intervention. Finally, the role of autonomous motivation is seen across these studies in self-determined goals, and commitment to these goals requires motivation.

If we look back to the theories of Bandura, he posits that motivation is derived from our efficacy beliefs, and therefore, our self-efficacy impacts our autonomous motivation. From this, we can trace that a student with strong self-efficacy beliefs can make confident and informed career decisions, thereby displaying strong career decision self-efficacy. The research discussed above clearly illustrates that self-efficacy is essential to building lasting musicianship within the field.

Self-efficacy beliefs provide them with the intrinsic support to effectively handle the challenges that are associated with a career in the music industry and the ability to appropriately and proactively prepare themselves for their desired careers.

4.4.8 Conclusion of themes

Each of these themes brings the research together, illustrating the many ways in which self-efficacy and self-esteem are intertwined with each other and with the constructs within the musician. While self-efficacy and self-esteem solidify a sense of self that guides an individual in their career decisions, self-efficacy plays a role in driving the motivation to practice and the confidence to perform. The mediating role of self-efficacy in health promotion is a significant finding that suggests self-efficacy beliefs play a critical role not only in performance success and self-regulation skills to practice but also in the involvement of a healthier lifestyle. The role of helping the individual to cope with MPA and supporting psychological functioning ties into the findings on HPB, as beliefs in self-efficacy support the completion of tasks and self-esteem presents feelings of worth. Overall, these studies clearly show that self-efficacy is crucial to music students' adaptive and healthy functioning and successful performance. Each of the studies has implications for education, and gaps in the research have been highlighted. Future research could address specific topics or replicate procedures in different sociocultural contexts, the results of which are highly valuable in understanding self-efficacy in a broader context.

4.5 Analysis Across Themes

Thematic analysis of the studies within this systematic review has provided a process for dividing a vast amount of data into manageable sections, extracting the essential findings and correlations, and synthesising these extractions. Through this process, two themes arose that required further analysis; this included the impact of gender on self-efficacy and the studies that involved an intervention process.

4.5.1 Self-efficacy and gender

The influence of gender on self-efficacy beliefs is often raised when considering elements within individuals that impact their functioning. In Zelenak's meta-analysis, he mentions explicitly the unclear results on the impact of gender and the need for a systematic analysis of these existing results. In early music education, differences in children's levels of self-efficacy are not significantly different (Huang, 2013). As the children grow up, this changes and girls' levels of self-efficacy begin to drop in comparison to their male counterparts, with significant

differences identified in high school students (Hendricks, 2013; Schmidt & Shumow, 2012). Out of the total 46 studies in this review, 12 identified gender differences (see Table 13).

These studies have a total of 3,376 participants, which is 40% of the total participants included in this review. An overview of the basic characteristics of these studies shows that the results have been collected from a diverse geographic range, with the distribution of publications over time following the trend of all included studies (illustrated in Figure 2). Methodologically, the studies are primarily quantitative, with one study using a mixed-method approach. Only one of these studies was focused on self-esteem (Kalenska-Rodzaj, 2023). What stands out within the research that identified gender differences is the regular use of the general self-efficacy scale from Schwarzer and Jerusalem (1995) to measure a domain of self-efficacy for coping.

Table 13

Studies within the review that identified gender differences in self-efficacy beliefs

Reference	Country	Research method	N	SE domain	Identified gender differences	SE scales used
Nielsen (2004)	Norway	Quantitative	**130** f=71 m=59	SE for practicing	Females have lower SE for practice	MSLQ-inventory to instrument practising
Kreutz et al. (2008)	UK	Quantitative	**273** f=174 m=99	SE for coping	HPB (No SE differences)	SES (Schwarzer & Jerusalem 1995)
Ginsborg et al. (2009)	UK	Quantitative	**263** f=179 m=84	SE for coping	Females reported lower SE	SES (Schwarzer & Jerusalem 1995)
Panebianco-Warrens et al. (2014)	South Africa	Quantitative	**146** f=80 m=66	SE for coping	Females reported lower SE	SES (Schwarzer & Jerusalem 1995)
Orejudo et al. (2016)	Spain	Quantitative	**434** f=201 m=233	SE for coping	Females reported lower SE	General self-efficacy (Baessler & Schwarzer, 1996)
***Robson & Kenny (2017)**	USA	Quantitative	**320** f=168 m=152	SE to perform	MPA	SE measured within K-MPAI
Gonzalez et al. (2017)	Spain	Quantitative	**270** f=144 m= 126	SE to perform	MPA (SE differences not significant)	SE for musical performance (Ritchie & Williamon, 2011)

Cohen & Panebianco (2020)	South Africa	Quantitative	**154** f=106 m=48	SE to cope	HPB (No SE differences)	SES (Schwarzer & Jerusalem 1995)
Casanova et al. (2022)	Spain	Quantitative	**668** f=353 m=315	SE for learning and performing	Females reported lower SE for performance	General musical SE (Ritchie & Williamon)
Burland et al. (2022)	Global	Quantitative	**377** f=230 m=131 non-binary=4	SE as a musician	Females reported lower SE	Musical SE
Arbinaga (2023)	Switzerland	Mixed Methods	**145** f=84 m=61	SE for coping	Females reported higher perfectionism (no SE differences)	General self-efficacy (Baessler & Schwarzer, 1996)
Kalenska-Rodzaj (2023)	Poland	Quantitative	**196** f=115 m=81	Global self-esteem	Gender differences in emotionality	Self-esteem (Rosenberg)

Note. SE (Self-efficacy) MPA (Music performance anxiety) HPB (Health-promoting behaviours); Studies highlighted in grey identified gender differences, but they were not specific to self-efficacy beliefs. Blue highlight indicates studies that found self-efficacy differences and used the GSE scale.

Further analysis of this specific measurement of self-efficacy showed that other studies in this review that used this scale and did not report any gender differences did not compare the self-efficacy levels between genders. This measure of self-efficacy is specifically concerned with the individual's ability to cope with the unexpected and persist through trying circumstances, reporting on their ability to problem-solve through a challenging situation. The evaluation of this measure across populations revealed the repeated occurrence of women reporting lower scores of general self-efficacy beliefs (Schwarzer et al., 1997). This prompted me to look at these questions to better understand what is being evaluated and what may lead to these repeated differences in results.

The General Self-Efficacy Scale from Schwarzer and Jerusalem (1995) asks the individual to rate themselves on the following ten statements from "*not true at all*" to "*exactly true*":

1. *I can always manage to solve difficult problems if I try hard enough*
2. *If someone opposes me, I can find the means and ways to get what I want*
3. *It is easy for me to stick to my aims and accomplish my goals*
4. *I am confident that I could deal efficiently with unexpected events*
5. *Thanks to my resourcefulness, I know how to handle unforeseen situations*
6. *I can solve most problems if I invest the necessary effort*

7. *I can remain calm when facing difficulties because I can rely on my coping abilities*
8. *When I am confronted with a problem, I can usually find several solutions*
9. *If I am in trouble, I can usually think of a solution*
10. *I can usually handle whatever comes my way*

This questionnaire holds a fairly practical approach to coping, referring to problem-solving and planning abilities. The existing research on gender and coping concludes that women tend to use more emotion-focused strategies such as positive reframing, acceptance, self-distraction, and emotional support (Cholankeril et al., 2023). Perhaps the repeated findings of gender differences in this general self-efficacy scale lie in the fact that women may not identify with these coping strategies and, therefore, rate themselves lower on their practical problem-solving skills.

The research that has been done since the development of these statements tells us that the domain-specific aspect of self-efficacy cannot be sidestepped, and this scale measures the individual's self-efficacy to cope. This could be applied in a general sense that the individual completing the survey is given a prompt as to which situations they should consider their coping skills, for example, their ability to cope with anything that may arise during a performance. However, the practical problem-solving statements could still be what is producing the recurring gender differences. Future research needs to isolate these factors and establish what could be the underlying cause of women reporting poorer confidence in their ability to cope.

Beyond the studies that used the GSE scale, there are no repeatedly used scales. Further analysis of these studies did not reveal any clear underlying trends in the impact of gender on self-efficacy beyond women reporting lower levels of self-efficacy. A recurring finding outside of self-efficacy is the repeated findings of gender differences in trait anxiety and fearfulness, which women report to experience to a greater degree in the general population and significantly higher in these populations of musicians (Arbinaga, 2023; Casanova et al., 2022; Gonzalez et al., 2017; Kalenska-Rodzaj, 2023; Orejudo et al., 2016; Robson & Kenny, 2017). In addition, the role of age, as identified by Casanova et al. (2022), could be a limiting factor of this review as these studies have been selected based on a sample that included tertiary music students. The literature has considered the relationship between anxiety and self-efficacy, and it has been found to have an inverse relationship. Future research needs to isolate these relationships to better understand why these results are inconsistent and how women need to be supported in order to close the gap in self-efficacy beliefs.

4.5.2 Interventions

The studies of this review that conducted interventions were aimed at a variety of elements, including self-regulation, coping with MPA, improving HPB, collaborative skills, goal setting, and PPRs. Table 14 shows these studies grouped by the themes of analysis. Of the 11 studies that reported an intervention, six aimed to improve the practice or performance processes of music students. These interventions mostly used mixed methods approaches, taking quantitative measures of self-efficacy and other constructs, along with qualitative observations and reports. Three of these studies used quantitative data (Matthews & Kitsantas, 2012; Thomson et al., 2016; Tief & Gropel, 2020). The length of the interventions ranged from 30 minutes to an entire 15-week semester. Of these articles, 6 took place in the USA, and five were from European countries, including the UK, Austria, and Norway. The most significant sample was from Thomson et al. (2016), with a total of 123 people, and the smallest study involved three people (Miksza, 2018).

Table 14
Studies included in the review that conducted interventions

Theme	Reference	Intervention	Length of int.	N	SE domain	Results: Correlations with SE
MPA	Lubert et al. (2023)	Selected students participated in a pretest (psychological stressor and performance), a 10-week intervention of bi-weekly individual coaching sessions and a post-test (psychological stressor and performance)	12 weeks	9	SE for coping	Higher SE = Lower MPA
HPB	Matei et al. (2018)	Ten lectures on health and well-being were presented over two terms of the academic year. Students completed questionnaires and an essay on the material presented.	10 1 hour lectures	81	SE for coping	Health education = increase SE Higher SE = HPB Higher SE = Lower stress
SRL	Miksza (2013)	Two experimental groups either received practice behaviour instruction or self-regulation instruction. Participants would record their sight-reading of an etude, followed by 20 minutes of practice, and then recorded playing it again. This happens on days 1 and 5. On days 2 to 4, participants are given guidance and instruction on practice behaviours and self-regulation.	5 days	28	SE to perform	A trend towards increased SE through SR
SRL	Miksza (2018)	Over a 15-day period, participants recorded their practice sessions, completed a practice journal, and answered questions about their goals and processes of practising with the phases of self-regulation in mind.	15 days	3	SE for practice	higher SR = Higher SE Higher practice efficacy = higher SE

P/P	Matthews & Kitsantas (2012)	Participants were assigned to a condition with one of three performance cues (basic, interpretive, or expressive) and a goal orientation (performance or mastery). A total 30-minute process for each condition consisted of a rehearsal and a performance, which was recorded and assessed.	30 minutes + Recording	81	Ability to perform in ensemble	SE and collective efficacy SE and performance
P/P	Pike (2013)	Two groups of piano skills classes were taught collaborative skills, and the lessons consisted of collaborative work for up to 50% of the class time.	10 weeks	12	SE to learn and perform	SE improved cognitive strategies SE improved collaborative learning
P/P	Thomson et al. (2016)	Intensive two-week or four-week opera programs that ended with two public performances of a production. The content of programs included a diverse range of topics and teaching methodologies.	2 or 4 weeks + 6-month follow up	123	Shame scale - self-esteem	Emotion regulation = Improved self-esteem
P/P	Tief & Gropel (2020)	Participants were randomly assigned to a control group (goal setting) or PPR group. A 33-day intervention was preceded by a pretest (solo recording) and followed by a post-test (public performance). The intervention consisted of developing the student's PPR.	33 days	30	SE to perform	PPR=higher SE
P/P	Détári & Nilssen (2022)	Participants completed questionnaires before and after four 45-minute online Timani sessions with a certified instructor.	4 45min sessions	17	SE to perform	Increased SE through vicarious experience
P/P	Woody (2023)	Over a 15-week semester, students had to rehearse with their rock bands outside of class time and give a public performance at the end of the semester.	15 weeks	34	SE to learn and perform	SE increased through intervention
Careers	Lopez-Iniguez & Bennett (2021)	The procedure consisted of interviews, personalised employability profiles, four lectures that assessed and addressed strengths and weaknesses, and a discussion panel with accomplished professional musicians.	4 90min lectures	7	Academic self-efficacy self-esteem	SE= awareness of career trajectory SE = Ability to manage challenges of professional development

Note. MPA: Self-efficacy and music performance anxiety; HPB: self-efficacy and health-promoting behaviours; SRL: self-efficacy and self-regulation; P/P: self-efficacy in practice and performance; Careers: Self-efficacy and the likelihood to persist with music

Considering the overall limitations of these studies, the total number of participants from which data has been collected is relatively small. In addition to this, there are no longitudinal assessments of the interventions. Only a few of the studies employed a control group. However, this was due to ethical concerns and sample size limitations. Within the author's recommendations for future research, there are frequent recommendations for longitudinal studies on a larger scale.

The meta-analysis from Zelenak (2024) reports on the impact of interventions on self-efficacy. This analysis revealed that interventions significantly influenced self-efficacy, and Zelenak reported that all of the reviewed interventions involved an element of enactive mastery, a source of self-efficacy. Enactive mastery, as a prominent aspect of self-efficacy, involves establishing a record of success (Zelenak, 2020). In the domain of music, this could be facilitated through successful performances in a variety of situations and ensembles. Within the interventions listed above, the majority of these procedures involve a process of enactive mastery, with the exception of Matei et al. (2018) and Lopez-Iniguez and Bennet (2021).

The last column of Table 14 briefly gives results regarding self-efficacy beliefs from the intervention process. When I looked over the small number of studies that reported on an intervention, it surprised me how few were aimed directly at improving self-efficacy beliefs; in most, improved self-efficacy was a by-product of the process. After the process of systematically combing through the existing literature on self-efficacy, it was clear that there are a number of pathways that could contribute to self-efficacy. The work of Lubert et al. (2023) is a study in this collection that points towards the multiple options that exist to improve self-efficacy. Their protocol offers PPRs, imagery, acclimatisation, relaxation, goal setting, and self-talk intervention, which were applied according to the participant's needs and goals.

In conclusion, the interventions reported here illustrate that researchers have attempted to address a wide array of constructs within music students to support their practice and performance processes, cope with MPA, and improve self-regulation, health, and well-being. These interventions, overall, do include a broad scope of timelines and methodologies, but they are limited in long-term assessments and large-scale samples. While the procedures employed have reported improvements in self-efficacy beliefs, none of these articles directly addressed improving self-efficacy in order to improve performance or other areas. The findings from Zelenak's meta-analysis are extended in this review as these interventions also employ methods of enactive mastery. Across these interventions, I could not identify one specific method that best improves self-efficacy, and not all interventions have resulted in the expected improvements. As such, the evidence remains unclear and future research needs to confirm results through larger samples and long-term assessments of interventions that focus more specifically on addressing self-efficacy.

4.6 Conclusion

The amount of research available on self-efficacy and self-esteem has grown significantly in recent years, and a large amount of it is quantitative. It has predominantly been collected using validated self-efficacy instruments, either focused on the domain of music or related fields such as academics or coping. The majority of the research has been conducted in the United States and European countries, but the publication of studies outside of these regions is beginning to gain momentum. The thematic analysis of the included studies has consolidated numerous findings, establishing a more accessible framework of knowledge. Collectively, these studies on self-efficacy in tertiary music students illustrate that it is a highly intricate construct, delicately woven through both the external behaviours and internal processes that influence musicians' experiences.

Chapter 5

Summary and Conclusions

5.1 Introduction

This systematic review of the research on self-efficacy in tertiary music students brings together a large amount of data that would otherwise be overwhelming to process. This chapter summarises the findings of the thematic analysis, addresses the research questions, discusses the limitations of this review protocol and suggests recommendations for future research based on gaps of knowledge in the literature and trends identified through the analysis.

5.2 Summary of Thematic Findings

The following section provides a concise summation of the findings and conclusions of the thematic analysis.

5.2.1 The development and validation of self-efficacy measures

The studies in this review that focused on measuring self-efficacy among music students developed task-specific measures of music self-efficacy (Ritchie & Williamon, 2010) and translated existing tools for this purpose (Borekci et al., 2023; Casanova et al., 2022). These studies, which utilised quantitative methods, included a large number of participants, ensuring the robustness of their findings. Each study successfully validated a measure of self-efficacy, confirming its positive correlation with performance success. While gender differences in self-efficacy beliefs were observed in the studies by Ritchie and Williamon, and Casanova et al., Borekci et al. did not report similar findings. Additionally, all the studies highlighted the positive role self-efficacy plays in reducing MPA. Collectively, these studies demonstrate that self-efficacy is both domain- and task-specific within music and offer validated measures and translated instruments to assess these beliefs effectively among students and across diverse cultural contexts. While these are not all of the possible ways to measure self-efficacy, this research provides a foundation for measuring self-efficacy, which is repeatedly used across the studies in this review and provides essential tools for further exploration.

5.2.2 Self-efficacy and MPA

The second theme of the thematic analysis focused on studies investigating the relationship between self-efficacy and MPA. Nine studies published between 2016 and 2024 were included in this theme, with six of them using versions of the Kenny scale of MPA. The findings across these studies unanimously highlight the positive role that stronger self-efficacy and self-esteem

play in mitigating the negative impact of anxiety during performances. In this context, self-esteem contributes to enhancing an individual's ability to cope, which subsequently reduces MPA. Furthermore, MPA was found to act as a mediator in two distinct relationships: between self-esteem and depression (Sickert et al., 2022), and between self-efficacy and performance enhancement (Gonzalez et al., 2017).

The presence of gender differences in these studies remains unclear, with six reporting such differences, particularly in relation to anxiety. The relationship between gender and MPA warrants further clarification, as gender differences in anxiety experiences appear more consistent than in self-efficacy trends. Only one study in this section (Spahn & Nusseck, 2021) specifically isolated the impact of gender and did not report significant differences, whereas Kalenska-Rodzaj (2023) noted higher anxiety levels in women, along with other gender-related personality differences.

Each of the studies on the theme of self-efficacy and MPA contributes significant findings to the understanding of the relationship between these constructs. The first study on MPA in tertiary music students confirmed that higher self-efficacy reduces MPA (Orejudo et al., 2016). Robson and Kenny (2017) noted the vulnerability of music students in ensemble settings compared to non-music students. Sickert et al. (2022) found that low self-esteem predicts MPA severity and that music students report higher levels of depression. Gonzalez et al. (2017) identified MPA as a mediator between self-efficacy and performance, while Spahn and Nusseck (2021) highlighted that musicians with higher self-efficacy adopt more positive mindsets during performances. Huang and Song (2021) observed various coping strategies in Taiwanese music students, consistent with other studies. Lubert et al. (2023) showed that tailored interventions improved self-efficacy in students managing MPA, although limited by a small sample size. Kalenska-Rodzaj (2023) identified greater fearfulness and distress in women than men and the general population. Finally, Zelenak (2024) confirmed a medium effect size between MPA and self-efficacy in a meta-analysis.

Recent recommendations for future research from these studies emphasise informing educators on how to tailor interventions to meet individual student's needs and exploring how performance type and genre influence the experience of MPA. However, a limitation of these studies is the relatively small sample sizes and culturally homogenous populations. Lubert et al. (2023) provided the first account of tailoring interventions specifically for music students. While their results were positive, the small sample size makes it difficult to generalise their

findings. Nevertheless, their work represents an important first step toward the effective customisation of interventions.

In summary, these studies collectively support the conclusion that stronger self-efficacy and self-esteem reduce MPA, and positive reframing of performance holds immense potential for further reducing anxiety and assisting musicians.

5.2.3 Self-efficacy and Psychological Variables

The third theme of analysis focused on psychological variables related to mental health and psychological functioning, excluding MPA and health-promoting behaviours. This research includes three quantitative studies and three mixed-method studies, examining constructs such as emotion regulation, resilience, personality dimensions, musical identity, and perfectionism. The findings suggest several cyclical relationships between self-efficacy and these psychological constructs. The Musical Identity Measure from Burland et al. (2022) offers musicians a valuable tool for self-understanding with versatile applications. Lopez-Iniguez et al. (2022) applied this measure to a sample of postgraduate students. In terms of understanding musicians' personalities, Sandgren (2018) reported that personality types are not determined by the instrument played but by how musicians approach and interact with music and what they prioritize in performance outcomes.

Similar to previous themes, two studies reported gender differences (Arbinaga, 2023; Burland et al., 2022), although the impact of gender has not been specifically isolated or analysed. Limitations of these studies include small sample sizes and sampling techniques, with recommendations for future research to gather data from larger and more diverse groups of musicians. Overall, these studies underscore the importance of self-efficacy and self-esteem in fostering positive self-perceptions, which contribute to effective coping and overall well-being for music students.

5.2.4 Self-efficacy and Health-promoting Behaviours

The following theme consisted of six studies focused on well-being, health-promoting behaviours (HPBs), and health education. This section examined external behaviours aimed at wellness and how self-efficacy influenced the occurrence and effectiveness of these habits. The studies by Kreutz et al. (2008), Ginsborg et al. (2009), and Panebianco-Warrens et al. (2014) revealed clear trends among a collective sample of 682 students from various sociocultural contexts. These studies reported low scores in health responsibility but higher scores in spiritual

growth, nutrition, and interpersonal relationships, highlighting the vulnerable state of music students.

Matei et al. (2018) demonstrated that health education interventions did not lead to significant lifestyle changes, while Rose et al. (2021) found that students understood the importance of health and well-being for overall success. Cohen and Panebianco (2020) offered an alternative approach, suggesting that personality is a predictor of HPBs, with self-efficacy acting as a mediator between these constructs. Thus, improving self-efficacy may better equip students to apply HPBs in their daily lives.

Overall, the studies in this theme provide evidence that music students are a vulnerable population who would greatly benefit from adopting healthier lifestyle behaviours and that students with higher self-efficacy report greater engagement in HPBs.

5.2.5 Self-efficacy in Self-Regulated Learning

The fifth theme of the systematic analysis focused on research examining the relationship between self-regulation and self-efficacy. Self-regulation and self-regulated learning are well-established constructs within education, offering theories on how individuals control their behaviour to achieve desired goals through learning. Of the seven studies included in this theme, five reported a positive and cyclical relationship between self-efficacy and self-regulation (Miksza, 2013; Miksza, 2018; Nusseck & Spahn, 2021; Nielsen, 2004; Panebianco-Warrens et al., 2014). Jaap and Patrick (2011) found that professional musicians attributed their success to high levels of self-efficacy and effective practice techniques linked to self-regulation, which they found motivational.

The self-regulation interventions in Miksza's studies (2013, 2018) led to improvements in practice, performance, and self-efficacy. A closer examination of these relationships revealed that self-efficacy and goal setting specifically impact the use of psychological skills during the performance phase of self-regulated learning (Hatfield et al., 2016). However, limitations such as small sample sizes and a lack of comparable data were noted, with recommendations for more qualitative and longitudinal studies.

Two key findings emerge from the studies in this theme: first, self-efficacy enhances self-regulation, and second, these constructs exist in a cyclical relationship, continuously reinforcing each other.

5.2.6 Self-efficacy in practice and performance

The penultimate theme of analysis centres on the practical creation of music within practice and performance. Thirteen studies explored self-efficacy in these areas, making this the largest section of research in the analysis. Consequently, the studies were categorised into subsections of education, practice, and performance. These studies, spanning a diverse geographical range and employing quantitative, qualitative, and mixed-method approaches, also reported on five interventions.

Within education, the overarching conclusion is that self-efficacy equips students with the resilience to persist through difficult learning periods and fosters greater involvement in the learning process (Lewis et al., 2021; Mio, 2017). The sources of self-efficacy provide a foundational model for the different ways musicians should approach learning (Lewis & Hendricks, 2021). In the context of practice, self-efficacy was found to be a motivating factor, predicting effective practice skills and behaviours (Hatfield et al., 2016; Nusseck & Spahn, 2021; Ritchie & Sharpe, 2021). When it comes to performance, self-efficacy emerged as a significant predictor of success (Zelenak, 2024; Pike, 2013; Woody, 2023), helping individuals manage negative arousal during performances. Strong self-efficacy beliefs promote adaptive responses to anxiety and encourage thorough preparation before a performance.

A notable finding across these studies is that only one identified gender differences (Nielsen, 2004). This may be due to the instruments used to measure self-efficacy, as gender was not the primary focus of these studies, as outlined in Table 4. The limitations cited include small sample sizes, limited generalizability of results, and the subjective nature of self-report measures. Collectively, these studies highlight the critical role of self-efficacy in music practice and performance. Positive self-efficacy equips students with resilience in the face of challenges, such as the COVID-19 lockdowns (Nusseck & Spahn, 2021; Ritchie & Sharpe, 2021), motivates effective practice behaviours (Nielsen, 2004; Hatfield et al., 2016), and promotes active engagement in the learning process (Pike, 2013; Mio, 2017; Lewis et al., 2021).

5.2.7 Self-efficacy and the likelihood of persisting with music

The final theme of this analysis explored the impact of self-efficacy on future aspirations, plans, and commitment to music. This theme was based on a smaller number of studies (n=5) that delved into this topic. The evidence suggests several key factors that support musicians after completing tertiary education, including social support (Lopex-Iniguez & Bennet, 2021; Cygrymus & Lent, 2022; Wang & Wong, 2022), a positive and safe learning environment (Lee,

2021; Wang & Wong, 2022), academic satisfaction (Jian, 2022; Cygrymus & Lent, 2022), and intrinsic motivation (Jian, 2022; Wang & Wong, 2022). The role of self-efficacy in this context lies in the internal support that positive self-efficacy beliefs provide, helping musicians make informed and confident decisions about their futures. No gender differences were identified in these studies. The findings highlight the importance of clearly educating music students on the demands of a career in music and providing a supportive space where they can explore and learn before entering the professional world.

5.2.8 Gender differences in self-efficacy

Results on the impact of gender are very inconsistent and have not been specifically isolated and researched. Zelenak (2024) similarly recommends in his meta-analysis that the role of gender needs to be further investigated. The repeated result within self-efficacy beliefs is that women report lower levels of self-efficacy in comparison to men (Nielsen, 2004; Ginsborg et al., 2009; Panebianco-Warrens et al., 2014; Orejudo et al., 2016; Casanova et al., 2022; Burland et al., 2022). Furthermore, the impact of personality traits such as anxiety seems to be the underlying trend as the general population of women experience fearfulness to a greater degree (Arbinaga, 2023; Casanova et al., 2022; Gonzalez et al., 2017; Kalenska-Rodzaj, 2023; Orejudo et al., 2016; Robson & Kenny, 2017). Future research needs to evaluate the GSE scale to establish if the statements can be amended to be more inclusive of emotion-based problem-solving strategies. Furthermore, future research should isolate the impact of gender on self-efficacy beliefs.

5.3 Answering the Research Questions

The research questions will be addressed in the order that they were presented in Chapter One.

Which research methods are used to explore self-efficacy in the context of tertiary music students?

At the most basic level, the literature consists of a large amount of quantitative data. As shown in Figure 2 (pg. 25), it is the most common method of enquiry within these studies, collected in quantitative and mixed methodologies. As self-efficacy is an internal process that is not directly observable by researchers, the collection of data relies entirely on self-report measures and self-reflection. While this method of data collection is not completely objective, there are a number of validated and widely used instruments designed to extract the individuals' self-perceptions relating to their self-efficacy beliefs. Table 4 (pg.29) lists the instruments used within each study.

In order to investigate self-efficacy, the researcher has to identify the domain and task that they want to investigate. The research reviewed here considers the self-efficacy of music students in relation to practice, performance, learning, coping, and academics. The quantitative instruments by Zelenak (2010) and Ritchie and Williamon (2010) both measure self-efficacy beliefs in the domain of music, looking at the tasks of learning and performing. The General Self-Efficacy Scale from Schwarzer and Jerusalem (1995) measures the individual's general coping abilities and their confidence to persevere through any obstacles they may encounter. Each of these methods to measure self-efficacy has been frequently used across many sociocultural contexts and translated into other languages, making the results highly valid and comparable across samples of participants. In addition to these and other quantitative instruments available, the literature also provides qualitative research collected through open-ended questions, interviews, and practice diaries.

In all of the studies reviewed here, self-efficacy has been examined, investigated, and manipulated in various ways. This has produced a large body of rich data on the self-efficacy beliefs of tertiary music students.

How has existing literature addressed the role of self-efficacy in performance success among tertiary music students?

Self-efficacy beliefs influence performance in several ways, and the most direct is through the self-assurance they provide - an internal surety that success is possible. Beyond this, the literature has explored this construct in various ways, including evaluating the success of various interventions, understanding environmental supports and barriers, comparing outcomes between music and non-music students, investigating the ways in which self-efficacy beliefs are developed, analysing how the musician experiences the performance and the role that self-efficacy plays in the learning process.

Interventions addressing many constructs around practice and performance have been conducted, with results identifying the correlations between aspects of the musician and self-efficacy. Procedures aimed at improving performance either collected the participant's self-evaluation of their performance or evaluations of the performance from external judges. Other studies have focussed on understanding how the individual experiences the performance process or identifying how constructs such as MPA and self-efficacy fluctuate through the performance process.

Understanding the role of environmental influences holds crucial information on how to approach supporting and growing self-efficacy. Several studies have identified social support as a significant influence on intrinsic processes such as motivation and satisfaction, and a supportive environment has also been identified as a means of improving self-efficacy. Being surrounded by peers of similar proficiencies was identified to provide positive self-comparisons, which feed into self-efficacy beliefs. In the same vein, supportive and nurturing teaching relationships are perceived to be far more effective in developing self-efficacy. The importance of educating music teachers and lecturers on belief-enhancing pedagogies and incorporating the four sources of self-efficacy throughout their curriculums will result in students developing stronger self-efficacy beliefs from a younger age. This can only lead to stronger musicians who will be better equipped to deal with the unique set of challenges faced by professional musicians after completing their formal education.

The comparison of self-efficacy beliefs between music and non-music student populations has clearly illustrated that the well-being of music students needs to be addressed more effectively. Music students have repeatedly reported higher levels of MPA and depression and lower levels of health responsibility in comparison to non-music students. All of these factors of well-being impact performance capabilities and can be improved through self-efficacy.

What interventions have been implemented to improve self-efficacy and self-esteem for music performance?

The interventions used in the studies of this review were aimed at task-specific improvements, and the impact of these processes on self-efficacy or self-esteem was measured. Overall, the vast array of interventions conducted shows that the constructs of self-efficacy and self-esteem have been considered in many contexts; however, it must be noted that these constructs have not been isolated and manipulated directly within these articles. There are approaches that hold a more direct impact on self-esteem and self-efficacy, such as addressing self-talk or self-regulation. None of these interventions have been replicated within a population of music students. As such, each of these studies provides a starting data set for future research to build on.

The interventions of these studies investigate the impact of the following procedures on self-efficacy and self-esteem: Managing MPA (Lubert et al., 2023), self-regulation instruction to improve practice (Miksza, 2013; Miksza, 2018), developing pre-performance routines and goal setting (Tief & Gropel, 2020), the impact of the conductor's goal orientation and type of

performance cues on self-efficacy and performance (Matthews & Kitsantas, 2012), collaborative skills and collaborative learning (Pike, 2013; Woody, 2023), holistic education and training in a safe environment (Thomson et al., 2016).

What are the roles of self-esteem and self-efficacy among tertiary music students?

Only a few studies in this review focus on the construct of self-esteem, and no studies investigate the relationship between these constructs in music students. While these constructs seem to hold very similar functions at first glance, through the process of analysing this work, I have come to the conclusion that while self-efficacy and self-esteem are closely related, they should not be merged together under an umbrella of self-perceptions. Self-efficacy is a domain-specific evaluation of how confident an individual feels in their ability to successfully complete a task. Self-esteem, on the other hand, is the individual's capacity to view themselves as worthy.

The literature on self-esteem in this review has been investigated primarily in relation to the psychological functioning of music students. It has been found to contribute to effective emotion regulation and adaptive coping. In addition, low self-esteem has been found to be a predictor of depression in music students.

The role of self-efficacy has been the subject of much more research in a much broader scope of contexts. The identified correlations between self-efficacy and other constructs have been extracted in Figure 5 (pg.26), which illustrates the constructs that contribute towards improving self-efficacy beliefs and the constructs that self-efficacy beliefs improve. Figure 5 clearly illustrates the highly complex nature of self-efficacy, the many ways in which it can be approached, and the numerous benefits it would have to strengthen the self-efficacy beliefs of music students. Addressing and supporting the self-efficacy beliefs of music students is an approach that will not only improve isolated areas of achievement but lead to overall development and improvement that trickle down into the many other facets of the musicians' functioning.

5.4 Limitations of the study and recommendations for future research

Within this systematic review, the first clear limitation lies in the publication bias of only including published studies and eliminating unpublished dissertations and theses. While it is clear that there is already a large amount of published research, through initial scanning of the available literature, there were many articles of significant procedures and findings that were not considered in this review. This publication bias was noted during the process of data

collection. The decision to only use published data was based on synthesising an analysis of peer-reviewed work, as well as the total amount of data, including the unpublished work, went beyond the threshold of data that one researcher could analyse in the timeframe of a master's level thesis. Future research could cast a broader net to incorporate the unpublished work with the findings of this study, in conjunction with the meta-analysis from Zelenak (2024), to bring together a clearer understanding of self-efficacy.

The language barrier of only using English publications or articles translated into English also limits the data that was collected. Studies addressing existing gaps could already be published with significant findings, but they were not accessed or found due to language constraints. The large amount of research that has been identified to fall within the strict inclusion criteria of this study's protocol has been overwhelming to process through one researcher. A significant construct such as self-efficacy would greatly benefit from the attention of more than one researcher to more effectively synthesise the data on self-efficacy. While this research addresses the need for a clear synthesis, it has only started this process. Future research needs to continue this enquiry to complete a larger synthesis; for example, the focus on tertiary music students has eliminated a large amount of research on other age groups and levels of ability, which could be addressed through another systematic review.

There is a clear need to address the discrepancies in the impact of gender on self-efficacy beliefs. Future research needs to isolate this relationship within different populations of musicians and establish what role gender plays and how the weaker population can be supported. Future research could also investigate the application of interventions specifically aimed at improving self-efficacy in a longitudinal process. While the publication of research has significantly increased in recent years, there are still entire countries and regions that are not represented in the literature. The investigation into other populations is needed to improve the generalisation of results across different contexts. Any of these additions to the field of knowledge on self-efficacy through future research could significantly improve the well-being of musicians.

5.5 Conclusion

The objective of the present study was to explore the existing research on self-efficacy in tertiary music students. From over 700 articles found across five databases, 46 studies were identified that addressed various aspects of self-efficacy beliefs and self-esteem in music students. Through a thorough process of data extraction, analysis, and constant comparison,

the findings from these studies were deconstructed and synthesised into smaller, more accessible units of information. The significant volume of research is encouraging as the music profession increasingly shifts toward creating healthier environments for musicians as well as improving educational processes to better support them.

Previous research has consistently demonstrated that self-efficacy and self-esteem play a significant role in performance success. In addition to this direct impact, self-efficacy and self-esteem enhance various other processes in musicians, including coping abilities, the application of self-regulation strategies, and effective practice behaviours. Moreover, self-efficacy often serves as a mediator between different constructs, suggesting that even if an intervention aimed at improving self-efficacy does not immediately enhance performance, stronger self-efficacy beliefs are likely to benefit other areas. These improvements may gradually influence performance while simultaneously improving the individual's overall functioning and well-being. This systematic review contributes to a deeper understanding of the complex processes that shape the self-esteem and self-efficacy beliefs of music students. Applying this knowledge can help tailor interventions and provide support for students as they navigate the often challenging and overwhelming journey of tertiary music education.

Just as the moments of silence before a performance hold the weight of a musician’s self-concept, the process of this systematic review has revealed that every moment along their learning journey comes together to shape their confidence and resilience. This study has unravelled some of the intricate psychological threads that influence self-efficacy and self-esteem in music students, revealing their profound impact on performance, coping strategies, and overall well-being. By understanding these processes, we can better support musicians in transforming self-doubt into self-assurance, allowing them to step onto the stage not with hesitation, but with the quiet confidence that they are prepared to succeed.

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