Spring 2019

An Exploration of Musical Performance Anxiety (MPA) and Its Relation to Perfectionism and Performance

Gitta Marko
Bard College

Recommended Citation

An Exploration of Musical Performance Anxiety (MPA) and Its Relation to

Perfectionism and Performance

Senior Project submitted to

The Division of Science, Mathematics and Computing of Bard College

by

Gitta Markó

Annandale-on-Hudson, NY

May 2019

Acknowledgements

First, I would like to extend my deepest gratitude for my advisors. I want to thank Frank Scalzo for being so curious, encouraging, and supportive during the birth of this senior project. Without your positivity and hard work at the early stages of this project, I would not have had the courage to choose this topic. I want to also thank Justin Hulbert enormously for steering me on the right track, for making me think harder and more analytically than ever before, for going through my endless amounts of drafts, and in the meantime, never getting tired of encouraging me. Your constant hard and engaging work made me want to be a better student, and this project would not have been possible without your support. The occasional cat jokes didn't hurt either.

I would like to thank Luis Garcia-Renart for sticking up for me these past four years at Bard. Without your continuous help and dedication, I would not be the person and musician I am today. Thank you for letting me immerse myself in the world of Bartók this year and for doing it alongside me. Our weekly lessons were the perfect escape from this crazy year and truly reminded me why I do what I do.

I am, of course, forever indebted to the Conservatory for letting me run this project. I would like to especially thank Erica Kiesewetter and Hsiao-Fang Lin for making this project possible. Without your unconditional support and immense hard work, this project would literally not be what it is today. Thank you for going along with some of my crazy ideas and making them a reality. And of course, I would like to thank my second mom, Eileen Brickner - without you, I am not sure I would be turning in this senior project as a sane person.

To Bitó László 'Laci bácsi' and Olivia: I am forever grateful. Thank you for introducing me to the world of Bard - it was my dream school before I came here, and it is my dream school now. Thank you for always believing in me and constantly encouraging me to be brave. You inspire me to be a better musician, a better scholar, but most of all, a better human being. Thank you for all your support and curiosity throughout my time at Bard and beyond. You have shown me that anything is possible if you want it enough.

I would like to thank all my friends at Bard for standing by me through this project. Special shoutout to Valory Hight, Emma Neiman, and Amy Cassiere for reading through my final draft with me, putting in all the Oxford commas I left out. Your support throughout these last few months are a huge part of what kept me going and sane.

And last but not least, I want to thank my family and my parents, Apa and Anya. Thank you for being here for me throughout this difficult journey. Your encouragement and hard work inspired me to keep going, and without all your help, this project would not be what it is today. Thank you for everything.

Table of Contents

Appendix A

Appendix B

Appendix C

Appendix D

Appendix E

Appendix F

Appendix G

Appendix H

Appendix I

Appendix J

Abstract

Musical Performance Anxiety (MPA) is a critical and common issue for musicians, as much of their success and income depends on their quality of performance. MPA is the experience of distressful apprehension about and/or impairment of performance, not reflecting the individual's musical abilities. Since the pressure to perform their best is extremely high for musicians, striving for perfection in this field is typical. In my senior project, I investigated the elements and mechanisms behind the development of MPA and its relation to perfectionism. Seventeen Bard Conservatory musicians' levels of MPA and perfectionism were assessed using established measures prior to their participation in the conservatory's biannual blind orchestra placement auditions, where faculty evaluated their performance under pressure. I predicted a positive linear correlation between MPA and perfectionism, which was supported by my results, consistent with a role of perfectionism in MPA's development. Additionally, based on the facilitating and debilitating aspects of MPA, I predicted a curvilinear relationship between performance and MPA, with a steep decline of performance at higher levels of MPA. I hypothesized a similar curve for performance and perfectionism, following the assumption that striving for perfection can motivate individuals to aim higher, but being too concerned about flawlessness has the opposite effect. These latter predictions failed to reliably materialize in the data, perhaps due to my limited sample and failure to account for perfectionism subtypes. Distinguishing between adaptive and maladaptive perfectionism may reveal more nuanced relationships along multiple performance dimensions. Positive results stemming from the correlational approach advanced here could inform our understanding of MPA and its treatment.

The experience of psychological stress in musicians is one that should not be taken lightly - it may trigger thoughts of wanting to leave an orchestra job, or the music profession as a whole (Parasuraman & Purohit, 2000), but it may also cause long-term mental health issues. In fact, the working conditions of professional musicians have been described as producing a 'total stress quotient' that surpasses that in other fields (Sternbach, 1995). Part of the problem, of course, is the nature of the profession; musicians must continuously work to maintain their skills, which requires hours of individual repetitive practice and constant self-evaluation per day (Kenny & Ackermann, 2012). Additionally, the stress that comes with performing itself can be debilitating both on- and off-stage (Cox & Kenardy, 1993). In fact, performance anxiety is the most prevalent psychological stressor in musicians' lives, surpassing that of loneliness, homesickness, and relationship breakdown while on tour (Kenny & Ackermann, 2012). Because of the stressful work environment that musicians are exposed to, many turn to unhealthy coping strategies, such as drinking or taking drugs (for example beta blockers or marijuana; Kenny & Ackermann, 2012; Brandfonbrener, 1990), which further exacerbate the problem.

Of course, performance anxiety in itself is not pathological; it is something that everyone struggles with from time to time, be it before a public speech, an exam, or even a first date (Watson, 2009). Musical performance anxiety (MPA) is a particular type of performance anxiety that musicians experience before and during performing in front of others. It is a serious problem that affects even the most accomplished musicians and performers (McGinnis & Milling, 2005). It is a particularly critical issue, as for these individuals, performance anxiety is not just an occupational hazard, or a mild inconvenience; a significant portion of their success and income depends on the level of their performance and how they cope with their anxiety.

However, MPA is a hugely individualized issue, affecting musicians in extremely different ways. It has been found that perfection has a highly central role in the lives and well-being of performers (Mor, Day, Flett, & Hewitt, 1995), and this might especially be the case in the field of classical music. Precision and staying 'true' to the music are huge concerns for this particular population, and perhaps this is partly why they might experience more negative and less positive feelings related to performances than their non-classical counterparts (Perdomo-Guevara, 2014). Although performance anxiety is a common problem for performers and the general population as well, for the present purposes of this study, I will focus on the unique population of classical musicians.

As I have gathered from my discussions about MPA with fellow musicians outside of the realms of this senior project, everyone's experiences differ from one another, and MPA affects them in a variety of different ways, depending on the coordinates of the particular situation. One aspect that seems to be important for every musician I have interacted with is their type of audience is. Performing for non-musicians can be an entirely different experience from performing in front of classical musicians or their peers. This might be reflecting a broader issue of how we, as musicians, approach classical music. As mentioned above, precision and staying 'true' to what the composer might have wanted to convey through the score are huge concerns in this field - playing something widely different from the norm when it comes to Mozart's or Bach's music for example, can even be considered blasphemous. Because of this, the emphasis can often shift from what the musician wants to express to what the audience (and the composer) would want to hear.

According to some researchers, musical performance anxiety (MPA) stems from performing in front of people and anticipating that the performance will result in being

negatively evaluated (McGinnis & Milling, 2005). For musicians, being negatively evaluated or not performing to their best ability is not only of great personal concern, it can also be a matter of making ends meet. Striving for perfection can thus feel like the only option for musicians in order to avoid potential failure. This constant push towards perfection can result not only in feeling motivated to perform better, but it can also lead to excessive worrying that impairs performance (Flett, Endler, Tassone, & Hewitt, 1994).

In fact, the exceptionally high standards that musicians hold themselves to have been found to lead to higher levels of anxiety (Dobos, Piko, & Kenny, 2018; Mor et al., 1995). Some research has even suggested that certain types of perfectionism are associated with more debilitating performance anxiety (Mor et al., 1995), which can lead to impaired performance, not reflecting the performer's musical aptitude, training, or level of preparation (Salmon, 1990).

Nevertheless, the effects of MPA are not so clear-cut. In fact, anxiety as an evolutionary coping-mechanism and survival tool can undoubtedly be useful in a performance situation. It has been found that musicians' performance can improve with increased anxiety (Hamann, 1982; Hamann & Sobaje, 1983) and that anxiety can in fact be beneficial (Papageorgi, Creech, & Welch, 2013). However, the mechanisms behind MPA and perfectionism, and what makes them facilitating or harmful for musicians are not entirely known. In my senior project, I will further examine the relationship between MPA, perfectionism, and level of musical performance.

In Section I, I first introduce the concept of arousal, and how it relates to performance in general. Then, I examine the differences between arousal, stress, and anxiety. In Section II, I discuss when anxiety becomes chronic, and what diagnosis performance anxiety falls under. Next, I turn to the central focus of this project: MPA, and how it relates to personality traits, such as perfectionism. Then, I discuss the present study, and outline my results. Finally, I will sketch

out some current treatment options for those suffering from MPA, integrating the concept of perfectionism into the picture.

Section I: Arousal

1.1 Arousal in general. Performing in front of others puts an immense amount of pressure on those that do it professionally. However, the arousal that performers feel on stage is completely normal and natural to experience. Arousal has been defined as a "general physiological and psychological activation of the organism that varies on a continuum from deep sleep to intense excitement" (Gould & Krane, 1992, pp. 120-121). As this definition states, arousal exists on a scale of zero (deep sleep) to infinity (intense excitement).

However, arousal can be quite a 'fuzzy' term psychologically (Blascovich & Mendes, 2010). Higher levels of arousal correspond neither to negative nor positive emotions (Beltzer, Nock, Peters, & Jamieson, 2014), which means that arousal itself does not inform our experience of the valence of emotions (Barrett, 2006). Being aroused can mean that we are intensely happy and excited, but it can also mean that we are angry or upset. In fact, valence and arousal are so separate that distinct brain structures have been found to mediate the arousal and valence dimensions of emotions (with midline and medial temporal lobe structures mediating arousal and dorsal cortical areas and mesolimbic pathways mediating valence; Colibazzi et al., 2010).

So how does this translate to the physical experience of arousal? Highly aroused individuals (regardless of the valence of their emotions) may experience increased heart rate and respiration, sweating, dilated pupils or goose bumps. We can pinpoint quite well how these bodily states happen physically. There are three brain structures that are primarily responsible for making us aroused: the cortex, the hypothalamus, and the reticular formation. These three brain structures then interact with the sensory, endocrine, somatic, and autonomic nervous systems to

determine the level of arousal (Martens, 1974). In fact, it is the posterior area of the

hypothalamus that has control over heart rate, muscle tension, respiration rate, blood pressure,

and blood sugar level (Martens, 1974), which are of greatest importance for us.

      1.2 Arousal-performance hypotheses. How arousal affects performance is a different

and more controversial story. In the past, research on this topic was primarily done on athletes'

performance, as with sports, it is quite easy to track down the influence of arousal on motor

skills. Thus, the following hypotheses will be mostly drawn from the sports psychology

literature, and then how they are related to music performance will be explained.

      Until recently, the Yerkes-Dodson law was the most established hypothesis for the

arousal-performance relationship, but since then, competing theories have emerged (Arent &

Landers, 2003). I will first discuss the Yerkes-Dodson law and the rationale behind other

possible – perhaps more relevant – theories. Alternative theories that have emerged are the

catastrophe theory, Hanin's optimal zones of functioning hypothesis, the multidimensional

anxiety theory, and the reversal theory (Gould & Udry, 1994). For a detailed review of all of

these theories, the reader can refer to Gould & Krane, 1992 and Barbeau, 2011. Here, the

Yerkes-Dodson law, the drive theory, the catastrophe theory and the multidimensional theory

will be the ones further discussed, as they highlight the particulars of why the inverted-U

hypothesis may be oversimplified.

      Yerkes-Dodson law. Yerkes and Dodson (1908) found that performance improves with

mental and physical arousal, but only up to a certain point. When the levels of arousal get too

high, performance decreases, thus creating an inverted bell-shaped curve (see Figure 1). This

model claims that performance is best at moderate arousal and declines at both extremes,

creating a curvilinear relationship. This theory suggests that some anxiety is in fact healthy and

necessary for optimizing (or even enhancing) performance, but its positive effects disappear when the anxiety reaches a certain level. For many years, this inverted-U hypothesis was the most prevalent theory in explaining the relationship between arousal and performance (Arent & Landers, 2003; Martens, 1974; Robazza, Bortoli, & Nougier, 1998). Further evidence for this theory states that one of our bodies' main stress hormones, cortisol, also shows an inverted-U relationship with performance, where memory is improved with small increases in cortisol, but impaired at higher levels of cortisol (Blascovich & Mendes, 2010). This provides support for the idea that some stress is necessary for optimizing performance, but too much of it can have the opposite effect.

However, the symmetrical shape and the validity/reliability of the inverted-U has been called into question. Some have argued that although performance does decline above a certain level of arousal, this decline is not gradual (Arent & Landers, 2003), but it is quite a sharp one. This is especially the case if the task is complex or not prepared sufficiently (Papageorgi et al., 2013), which can definitely be so for musicians. Because the Yerkes-Dodson law has been called into question, competing theories have emerged.
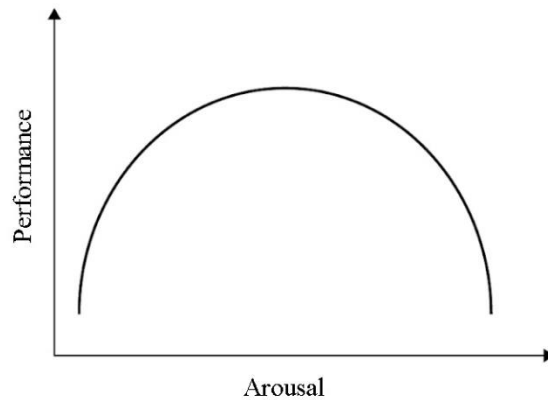
Figure 1. The Yerkes-Dodson law. This figure illustrates the inverted-U hypothesis explaining the relationship between performance quality and arousal. Adapted from "Psychology for Musicians: Understanding and Acquiring the Skills" by A. Lehmann, J. Sloboda, and R. Woody, Robert, 2007, *Psychology for Musicians: Understanding and Acquiring the Skills*.

   Drive theory. The drive theory was first explained by Spence and Spence (1966; cited in Martens, 1974), and it states the equation that 'performance = drive x habit' (in this scenario, drive is somewhat synonymous with arousal, and habit refers to hierarchical order of correct versus incorrect responses). According to this theory, state anxiety can have motivational aspects, which will enhance performance, but the degree of this depends on the combination of task mastery (correct habit strength) and the individual's trait anxiety (Hamann & Sobaje, 1983). Additionally, this theory also claims that early on during skill acquisition, increases in drive/arousal impair performance, whereas once a skill is well-learnt, arousal actually facilitates performance. This is because when the dominant response is the correct response, there is a positive linear relationship between performance and arousal – however, the correlation is less clear when the dominant response is incorrect.

Translating this to music, this would mean that in the early stages of learning a piece, arousal worsens performance, but once a piece is learnt sufficiently, it would facilitate it. The same goes for performers' level of training in general – it has been found that for those more experienced, higher levels of anxiety facilitate performance, but for those less experienced, anxiety is debilitating (Hamann & Sobaje, 1983). This is a very optimistic and simplistic way to look at it, suggesting a 'too-good-to-be-true' coping mechanism for dealing with MPA: overpreparing and staying in the field long enough to have high overall proficiency. The findings of Hamann and Sobaje (1983) oversimplify the relationship between arousal and performance and do not necessarily take into account individual differences. They operationalized experience with how many years one has played their instrument, but in reality, that may not matter as much. A situation can be imagined where someone with a lot of years of playing their instrument as a hobby would suffer more from the debilitating aspects of MPA, than someone with fewer years of experience overall, but a higher level of playing.

Thus, unless the drive theory is updated accordingly, it does not serve as a reliable measure of the arousal-performance relationship. Furthermore, this hypothesis trivializes the experience of MPA itself, putting too much emphasis on the level of performance, as opposed to the mental health of the musician. It is apparent from the literature that MPA happens regardless of preparedness, experience, and expertise in general (Salmon, 1990). Instead of assuming that for those highly skilled, MPA will be facilitating, the emphasis of research should be on making the experience of it more bearable.

Catastrophe theory. The catastrophe theory states that under low cognitive worry, physiological arousal will have an inverted-U relationship to performance, but that is not the case for higher cognitive worry. When an individual is highly anxious cognitively, physiological

arousal will facilitate performance up to a certain point. After that, huge deterioration of

performance (a catastrophe) occurs (see Figure 2). In short, how physiological arousal affects

performance hugely depends on the cognitive state of the individual (Hardy & Parfitt, 1991;

Robazza et al., 1998). Hence, even if someone is experiencing all the physical symptoms of

arousal, like sweaty hands, increased heart rate, and respiration, their performance might not

deteriorate that much if they do not worry about said symptoms. In studies done on athletes'

performance, the effect of anxiety on performance has been described as the shape of the left half

of a bell curve. Initially, there is a linear positive correlation between increasing anxiety and

performance, but at a certain level of anxiety, the level performance suddenly drops and does not
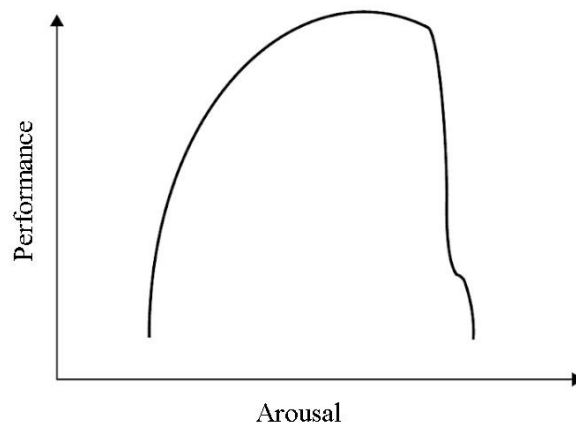
recover (Powell, 2004).

Figure 2. The catastrophe theory. This figure shows the sudden deterioration of performance
after the individual reaches a certain level of arousal. Adapted from "Psychology for Musicians:
Understanding and Acquiring the Skills" by A. Lehmann, J. Sloboda, and R. Woody, Robert,
2007, *Psychology for Musicians: Understanding and Acquiring the Skills*.

Multidimensional theory. The multidimensional theory is quite similar to the catastrophe theory. It predicts an increase in performance quality with an increase in physiological arousal up to a certain level, but it states that beyond that point, performance will decline. Additionally, it hypothesizes that any increase in cognitive anxiety (also known as worry) will impact performance negatively, creating a negative linear relationship between worry and performance (Robazza et al., 1998).

Although these different theories differ from each other somewhat, there are a few general rules we can infer. First, arousal is a multidimensional construct that consists of both physiological arousal and the individual's interpretation of such bodily sensations. Second, both physiological and psychological arousal might have a peak where performance is best facilitated, but the two peaks might not occur at the same time. This also means that the peak (contrary to what the inverted-U hypothesis tells us) might not occur at midpoint, potentially causing a steeper decline in performance with high levels of arousal (Gould & Udry, 1994).

It is important to note that when it comes to individuals' experience of arousal, those that are highly aroused may experience all the physical sensations that come with arousal normally, like increased heart rate, respiration, and sweating, but that does not necessarily translate to being anxious. In short, if you are anxious, you are also aroused, but being aroused does not necessarily mean you are anxious. Whether you end up experiencing anxiety depends on your own interpretation of the physical and psychological symptoms of arousal (Blascovich & Mendes, 2010; Robazza et al., 1998) and the situational factors that may have induced your bodily state (for example, evaluative pressure; Barrett, 2006). Increases in arousal can lead to both positive and negative affective states, but that depends on the individual's appraisal,

knowledge, and the context of the situation (Beltzer et al., 2014). Because of this, it is important to differentiate between the different set of terms used in the anxiety literature.

1.3 Differences in terminology. In the anxiety literature, the words stress, threat, and anxiety are commonly used interchangeably. However, for the present study, it is important to distinguish between what these mean and how they differ from each other. Stress, threat, and anxiety describe different aspects of the same emotional experience of an anxious state of mind. Spielberger (1972) has offered a compelling argument for how these three states are distinguishable, and so his line of reasoning is the one I will follow in this section.

Stress. Stress has been defined in various ways in the literature. In an abnormal psychology textbook, stress is defined as something that happens when individuals experience or perceive challenges to their well-being that may potentially exceed their abilities to cope (Hooley, Jill, Butcher, Nock, & Mineka, 2017). However, Hans Selye first defined stress as the "nonspecific response of the body to any demand" (McEwen & Lasley, 2002, p. 40), though some claim that stress is experienced when there is either a real or implied threat to the individual's homeostasis (Barbeau, 2011). Difference has also been made between *stressor* (stimuli that influence stress or anxiety), *distress* (anxiety or tension experienced), and *biological response* (the biological markers that suggest anxiety or tension being experienced; Sataloff, Rosen, & Levy, 1999).

In short, some claim that stress is a specific response, while some believe that it is nonspecific; some claim that threat might be involved in the experience of stress, but some think that threat has nothing to do with it. According to Spielberger (1972), stress refers to the objective coordinates of a particular situation (as opposed to it being an experience). Thus, the word stress can be used to describe environmental conditions, particular circumstances, or

external stimuli that might objectively be thought of as dangerous to some degree. Whether an objectively stressful situation is perceived as threatening by an individual hugely depends on their appraisal of the situation.

  Threat. A real threat might be something like an earthquake or a fire, whereas a musical performance or a public speech is thought of as implied threat. How these are experienced depends on external (a concert or an audition) and internal (fear of being negatively evaluated or judged) stressors, both of which may create the biological, physical, and psychological experience of stress (Barbeau, 2011). More importantly though, the brain is what decides whether an event is threatening or not (McEwen & Lasley, 2002). Hence, the importance of appraisal cannot be overlooked. Some might find an objectively non-stressful situation threatening - someone with social anxiety might fear going to parties -, whereas others might not consider an objectively stressful situation threatening at all. For example, if someone is adventurous, they might go bungee-jumping and not experience any fear.

  Anxiety. Trait anxiety has been characterized as individuals' stable proneness to feelings of anxiety (Flett et al., 1994), whereas state anxiety is a measure of situational anxiety. The latter has been defined as "unpleasant, consciously-perceived feelings of tension and apprehension, with associated activation or arousal of the autonomic nervous system" (Spielberger, 1972, p. 29). When someone experiences state anxiety, it is assumed that they are aware of being tense and scared, and their bodies will react with a set of particular responses - increased heart palpitation, sweating, quicker breathing, etc.

  In short, stress is referred to as the objective properties of a particular situation, whereas threat is an individual's perception of a situation as dangerous. Anxiety, or state anxiety, thus refers to the complex psychological and physiological experience of appraising a stressful

situation as threatening. In other words, if a situation is appraised as personally threatening or stressful, the complex emotional and physical responses that arise are known as state anxiety (Spielberger, 1972). In order to thoroughly understand the term musical performance anxiety, it is important to recognize the differences between the states of mind that might arise prior to what would be called stage fright. In summary, in order for MPA to fully evolve, a stressor needs to be interpreted as a threat. This translates to state anxiety if the individual's trait anxiety is high, creating a specific type of performance anxiety in anticipation of or during a musical performance.

Section II: When Arousal and Stress Become Chronic

As already mentioned above, feeling anxious or stressed out does not necessarily mean that anything abnormal is happening – in fact, anxiety has the capacity to facilitate performance in most aspects of our lives. However, for some individuals, stress can become chronic and turn into an abnormal physical and psychological response. In order to uncover what this means, we might want to turn to the Diagnostic and Statistical Manual of Mental Disorders (5th ed.; DSM–5; American Psychiatric Association, 2013) for some answers. According to the DSM-5, we can call something a psychological/mental disorder (for an explanation of the difference between the two, see Stein et al., 2010) if the psychological and/or physical symptoms cause significant distress or impairment in the individuals' daily life (APA, 2013). The impairment can be intellectual, professional, social, or educational. Additionally, the impairment and/or distress needs to be out of proportion to the individuals' culture or context. This means that even though the loss of a loved one may cause significant distress in someone's life, if the distress is appropriate, it is not necessarily considered a psychological/mental disorder.

According to the DSM-5, an anxiety disorder diagnosis is appropriate when fear and anxiety become excessive and persist beyond a period of time what would otherwise be developmentally appropriate (typically lasting 6 months or more; APA, 2013). Most people would get anxious about public speaking or taking an important exam, but relatively few would interpret these as potentially life-threatening situations. Those with an anxiety disorder tend to overestimate the danger and the risk in situations that they fear. Most anxiety disorders are more common in females than males (APA, 2013; Ginsberg, 2004). Of all different anxiety diagnoses outlined in the DSM-5, social anxiety disorder (previously known as social phobia) is arguably the one most relevant to the discussion of MPA. In fact, individuals with symptoms of MPA could be given a diagnosis of social anxiety disorder with a performance anxiety specifier. In order to unpack why this is, and what it means exactly, it is important to first examine social anxiety disorder independently.

2.1 Social anxiety disorder.

2.1.1 Classification. According to the DSM-5, socially anxious individuals are overly and often fearful about social interactions or situations in which they could be scrutinized in any way – for example, meeting strangers, eating or drinking in public, or performing in front of others. In these situations in particular, individuals may fear being negatively evaluated by others, embarrassed, humiliated, or rejected in any way. They might also fear that their anxiety will be visible and that their blushing, trembling, or sweating will be judged by those observing them (APA, 2013).

According to the diagnostic criteria, the anxiety individuals feel may not just be in the moment – anticipatory anxiety can occur way in advance of future situations, and as a result, the individual might avoid or endure the feared situations with great distress. It is important to note

that in order for a social anxiety diagnosis to be made, the fear needs to be objectively out of proportion to the consequences of being negatively evaluated. Additionally, the anxiety and fear must disturb the individual's normal routine and daily life, causing impairment in social, occupational, or other areas of functioning (APA, 2013).

2.1.2 Prevalence. Social anxiety disorder is quite prevalent in the United States – about 7% of the population suffers from it for at least a 12-month duration (APA, 2013). In other parts of the world, the numbers are slightly lower, with about 2.3% of people suffering from the disorder in Europe (APA, 2013). However, the lifetime duration of the disorder seems to be about 4% consistently across the world (Stein et al., 2017). In general, females experience social anxiety disorder at higher rates than males (Dobos, Piko, & Kenny, 2018; APA, 2013; Kenny, 2006).

2.1.3 Etiology. The onset and etiology of the disorder can vary greatly among individuals. It may follow an embarrassing or stressful situation (for example, being bullied as a child), but it might also develop slowly. Although social anxiety disorder has been found to be heritable (APA, 2013), there are also some risk factors in developing this disorder. Individuals that are behaviorally inhibited or fear negative evaluation in general will be more prone to developing a diagnosable form of social anxiety (APA, 2013). Certain facets of perfectionism (being concerned about making mistakes and doubting one's actions) have also been found to correlate to higher levels of social anxiety (Juster et al., 1996).

2.1.4 Performance anxiety as a specifier. Feeling anxious and distressed in performance situations where one might be evaluated by others has led researchers to believe that performance anxiety might be a specific form of social anxiety disorder (Kenny, 2006; Osborne, Kenny, & Holsomback, 2005). Thus, social anxiety disorder is highly relevant to the discussion

of musical performance anxiety, as performance anxiety is, in fact, a specifier of the disorder - someone suffering from MPA might actually get a social anxiety disorder diagnosis.

If the anxiety or fear the individual feels is limited to public speaking or performing, but does not extend to any other social situations, they will be diagnosed with the 'performance-only' type of social anxiety disorder (APA, 2013, p. 203; Dobos et al., 2018). In other words, those suffering from the 'performance-only' type of social anxiety disorder might fear performing in situations that could impair their professional lives (for example concerts for musicians, performances for dancers, or games for athletes) or those that involve public speaking, but they would not fear nonperformance-related social situations, like going to a party. Nevertheless, debilitating performance anxiety has been linked to some of the same factors present in social anxiety disorder, like self-focused attention, perceived lack of control over the situation, fear of negative evaluation, and catastrophizing (Dobos et al., 2018; Papageorgi et al., 2013; Steptoe & Fidler, 1987).

Performance anxiety can be thought of as an umbrella term that refers to a group of disorders affecting individuals in a variety of settings, for example while taking an exam (Park, Ramirez, & Beilock, 2014), public speaking (Price & Anderson, 2012), sports (Gould & Udry, 1994), sexual performance (Assalian, 2013), and performing arts (dancing, acting or music; Cheng & Hardy, 2016; Gould & Krane, 1992; Kenny, 2006; Matei & Ginsborg, 2017; Robazza et al., 1998; Roland, 1994; Salmon, 1990).

Cheng and Hardy (2016) define performance anxiety in athletes as "an unpleasant psychological state in reaction to perceived threat concerning the performance of a task under pressure" (p. 255). Their anxiety model is made up of three anxiety dimensions: a cognitive, a physiological, and a regulatory dimension. In this model, anxiety stems from a defense

mechanism that is meant to be evolutionarily adaptive, sending out warning signs to prepare

individuals to respond effectively to a potential threat (Cheng & Hardy, 2016). The problem

begins when the anxiety becomes excessive, and the appraisal of the performance situation does

not correspond to the actual present threat.

       The prevalence of performance anxiety has not been consistently calculated due to the

variety of settings it may appear in, but I will come back to the prevalence of musical

performance anxiety in the following section. When it comes to performance anxiety's effects of

performance, the results are again somewhat varied depending on the field we are looking at. A

linear negative correlation has been found between performance anxiety and math performance

(Foley et al., 2017). Additionally, stress (especially cognitive performance anxiety) has been

found to impair working memory (Angelidis, Solis, Lautenbach, van der Does, & Putman, 2019).

Moreover, a considerable amount of research has been done on sports performance anxiety in

particular, where "choking under pressure" has been characterized as what happens when

"athletes fail to meet self-imposed performance expectations in critical situations" (Mesagno &

Beckmann, 2017, p. 3). Because this phenomenon is attributable to an increase in anxiety levels,

the symptoms of performance anxiety might not simply be psychological; they may extend to

affect the professional lives of affected individuals.

       In summary, performance anxiety has been described in the literature as a specific type of

social anxiety. In fact, according to the DSM-5 (and personal communication with J. Dainer-

Best, April 1, 2019), an individual showing performance anxiety symptoms that were severe

enough to impair daily life, or cause significant distress would be diagnosed with the

performance-only type of social anxiety disorder - provided that those symptoms couldn't be

better explained by symptoms of another mental disorder (e.g. panic disorder or autism spectrum

disorder), medical condition (e.g. Parkinson's disease), or substance use. While there are a number of paths to such a diagnosis - not all of which involve musical performance anxiety - we stand to learn something about how performance anxiety could rise to the level of clinical concern through a brief examination of the disorder.

2.2 Musical performance anxiety.

Although musical performance anxiety is currently not a separate disorder (Dobos et al., 2018), it is commonly thought of as a type of performance anxiety affecting musicians (Barbeau, 2011). Its validity as a form of social anxiety disorder can be better understood using Turner et al.'s classification of social anxiety disorder into three subtypes: generalized (anxiety about social interactions generally), non-generalized (anxiety about situations in which the individual might be scrutinized, and specific (anxiety about very few specific performance situations) (Turner, Johnson, Beidel, Heiser, & Lydiard, 2003). Using this model, MPA can easily fit into the specific social anxiety sub-type, fearing musical performances in particular.

It is clear why it may be appropriate for musicians to fear how they are perceived by others, but the extent of this anxiety varies from people to people. As I have stated above, people's experience depends not only on their temperament and trait anxiety, but also on their appraisal of the particular situation, whether that situation be going to a party full of strangers, a public speech, or a musical performance. In this section, I will first explain the differences in terminology when it comes to MPA, then I will clarify the effects of MPA on performance using some of the different MPA models that can be found in the literature. After looking at its prevalence in the musical world, I will walk the reader through the different factors that influence the strength and development of MPA, including environmental and personality

differences. Then, I will explain why perfectionism might be related to MPA, which will tie this research back to the current study.

     2.2.1 Differences in terminology. There is considerable variation in the definition of performance anxiety, or more specifically, MPA. Before I get into what MPA is and why I am using this particular term, it is important to recognize some of the differences in the terminology.

     Stage fright. Because some people assume that performance anxiety leads to impaired performance, MPA has also been referred to by some as stage fright, which further emphasizes its debilitating aspect. It is thought of as a highly negative emotion (Jackson & Latané, 1981). Some authors have even talked about "overcoming stage fright" and it being a sign of "emotional disturbance", which again makes the assumption that performance anxiety is something that we need to get rid of in order to perform the best (Ullman, 1940). Stage fright is known as something that can cause memory slips, a state of panic, or even feeling uncomfortable and anxious for weeks before a performance (Ullman, 1940). Although those that use the term stage fright do claim that it can be beneficial, the word 'fright' itself causes negative connotations, and this is why it will not be used in this senior project.

     Musical performance anxiety. According to Salmon (1990), the psychological distress associated with performance extends that of stage fright. This is because musical performance anxiety is something that can be present far in advance and during the actual performance as well. It has been defined as "the experience of persisting, distressful apprehension about and/or actual impairment of, performance skills in a public context, to a degree unwarranted given the individual's musical aptitude, training, and level of preparation" (Salmon, 1990, p3). According to this definition, MPA is quite a negative emotion causing distress, as well as potential deterioration of performance to an unreasonable degree based on the performer's abilities

(Salmon, 1990). A more recent definition comes from Kenny, who extended Salmon's theory by stating that MPA is manifested through a combination of affective, cognitive, somatic, and behavioral symptoms (Kenny, 2009).

   2.2.2 The effects of musical performance anxiety on performance. Musical performance anxiety (MPA) in itself is not an entirely negative emotion, but it is something that can affect musicians at any stage of their career (Cohen & Bodner, 2018). It can be a problem for highly experienced professional musicians (Salmon, 1990; Ullman, 1940), amateurs (Hoffman & Hanrahan, 2012), student musicians, and children (Boucher & Ryan, 2010) alike. According to Kenny (2006), MPA may be triggered by cognitive, even rational concerns, or unconsciously by earlier anxiety-producing experiences or bodily sensation during performance. Once this trigger happens, the individual starts self-evaluating and doubting whether they are able to deal with the perceived threat of the performance. This usually narrows one's focus down to catastrophizing their bodily and mental sensations, causing disruption in their performance. However, although in one study, 60% of musicians claimed that MPA negatively affected their performance (Topoglu, Karagulle, Keskin, Abacigil, & Okyay, 2018), the exact effects of MPA on musical performance are controversial. According to the official definition, in order for a feeling/state of mind to be qualified as performance anxiety, it has to have a negative effect on both performance and one's mentality. However, the directionality of performance anxiety's influence is not so clear-cut.

   Let us think back to the Yerkes-Dodson law, which would seem to easily apply to the world of musical performance. If a musician has a performance that is considered low-risk and not anxiety-producing whatsoever, it might just mean that the person does not care enough about it or is not trying their hardest. However, if someone has too much anxiety, that might put all of

their mental focus on decreasing their stress as opposed to on the actual performance. Although, with an optimal level of anxiety, the adrenaline rush might be able push the boundaries of the performer a little further. This can put musicians in a state of 'flow', which not only optimizes, but might also enhance performance (Fullagar, Knight, & Sovern, 2013). However, the Yerkes-Dodson law by itself cannot entirely explain the variance in MPA's influence on performance. In order to uncover its potential effects, it is useful to look at some of the major MPA models that can be found in the literature.

The first theory was developed in relation to competitive anxiety in sports. As opposed to treating anxiety as a single dimension, this model distinguishes between the cognitive and somatic/physiological symptoms (Papageorgi et al., 2013). According to this theory, there is a negative linear relationship between cognitive anxiety and performance and an inverted-U relationship between somatic anxiety and performance (Papageorgi et al., 2013; Robazza et al., 1998). This model also states that somatic/physiological anxiety will decline with the start of performance, but cognitive anxiety will remain high with low self-confidence (Papageorgi et al., 2013). This theory has been found applicable to musicians as well. The existence of two separate but related dimensions of anxiety (cognitive and somatic) and their interaction with different levels of self-confidence (Miller & Chesky, 2004) was supported. For example, if someone feels physically nervous about performing, but are not overtly worried, there is an optimal level of such somatic anxiety where performance will be the best. However, if someone is cognitively anxious (which they will more likely with low self-confidence), a small amount of worrisome thoughts is enough to debilitate performance.

A more comprehensive view of MPA comes from Lang, who states that MPA can be best understood as consisting of three interactive yet partially independent components. It involves a

state of autonomic arousal, distressing, apprehensive thoughts and cognitions, and behavioral

responses to a perceived threat (Lang, Miller, & Levin, 1983). Lang's model has since been

expanded upon, theorizing that MPA consists of four dimensions; the previous three (autonomic

arousal, cognitions, and behavioral responses) and a separate emotional component (Kenny &

Ackermann, 2012). Some authors claim that anxiety stems from a cognitive appraisal of danger,

which then activates the other components, but it has also been theorized that autonomic arousal

comes first, which then leads to anxious thoughts and behaviors (Salmon, 1990). It is

nevertheless widely accepted that under extreme stress, a change in one of the components will

trigger a change in the others (Cohen & Bodner, 2018), which then leads to the entire system

getting highly activated and synchronized (Salmon, 1990). This is what maintains the experience

of MPA.

Although all four dimensions can potentially be equally debilitating, it is important to

note that the physiological symptoms of performance anxiety might be especially problematic for

musicians (Salmon, 1990). Surely, MPA has been associated with symptoms such as muscle

tension and increased heart rate (Yoshie, Kudo, & Ohtsuki, 2009), tremors (Nagel, Himle, &

Papsdorf, 1989), and even hyperventilation (Widmer, Conway, Cohen, & Davis, 1997).

The symptoms of autonomic arousal, such as dry mouth, excessive sweating, cold hands,

increased heart rate and respiration affect the playing of each instrument differently, but since the

physicality of playing an instrument is so particular and unique, even small changes in the body

can make major differences. These small changes can in turn affect all the other anxiety

dimensions as well. Let us think of an example. If a violinist's hands are getting sweaty, that will

make shifting positions on the instrument much more difficult. If their hands get cold, fast

passages will be much harder to play. Increased heart rate might lead to shaking, which can

affect the bow's movements, making it close to impossible to play softly and slowly. These symptoms combined make playing and musical expression increasingly difficult, creating feelings of distress and thoughts of worry. Will I hit that note if I cannot shift as well as I usually can? Will I mess up that really fast passage just because my hands are colder than usual? Will the audience notice that my bow is shaking? All of these seemingly minor changes in the body create worrisome thoughts, making it challenging for the performer to enjoy the actual performance. In general, the consensus in academic contexts is that high levels of anxiety affect attention, making it more difficult to focus on relevant information and to coordinate movement efficiently, which then causes decreases in performance (Nieuwenhuys, 2017).

   2.2.3 Prevalence. Musical performance anxiety (MPA) is a problem that impacts musicians' physical and mental well-being as well as the course of their careers. Some studies show that students suffer more from MPA than professional performers (Steptoe & Fidler, 1987), while others suggest that it affects people of all ages and ability levels (McGinnis & Milling, 2005). Middlestadt (1990) found that of professional symphony players, 15.5% experience stage fright, and about 8.3% report acute anxiety as a severe problem, interfering with their performance. However, in another study, Cohen and Bodner (2018) found MPA to be relatively low among professional musicians, and 43.7% of musicians reported almost never experiencing it.

   These numbers are quite similar for students, which suggests that years of experience do not majorly influence levels of MPA. In a study done at the University of Iowa School of Music, it was found that about 21% of musicians experience distress while performing, and 16% claimed that MPA damaged their careers (Wesner, Noyes, & Davis, 1990a). Strikingly, music students' biggest concerns seem to be about stress and pre-performance nerves (Dews &

Williams, 1989), which suggests some sort of a vicious cycle - the more concerned one is with

getting nervous, then the more likely they are to experience performance anxiety. This is in line

with the finding that those who perceive the most threat while performing will experience the

greatest amount of anxiety, whereas those who are the most anxious will perceive performing

more threatening (Kenny, 2006).

It is important to note that in general, females are more likely to experience anxiety than

males (APA, 2013; Ginsberg, 2004), and this relationship seems to hold true for MPA as well

(Dobos et al., 2018; Kenny, 2006; Wesner, Noyes, & Davis, 1990).

In summary, MPA has been thought to affect about 15-50% of musicians (Dobos et al.,

2018; Topoglu et al., 2018) and is thought to be a debilitating problem for about 14-19% of

professional musicians (McGinnis & Milling, 2005). Although some researchers tend to explain

MPA with lack of preparation, even performers like Pablo Casals or Luciano Pavarotti reported

experiencing extreme tension and distress while performing (Salmon, 1990). So where does this

anxiety come from, and why is it apparently unaffected by experience and expertise?

   2.2.4 Etiology. So how does MPA develop in the bigger scheme of things? What makes

one person more prone to the feelings of MPA than another? And how does the experience of

performance anxiety vary over the course of an individual's life? According to Wilson (2002),

three variables are thought to be important in the development of performance anxiety (and

MPA, accordingly): the performer's trait anxiety (or learned tendency to become anxious in

socially stressful situations), the degree of task mastery of the particular piece to be performed,

and the degree of situational stress. MPA is thus experienced according to the interaction

between these three variables. In line with this reasoning, someone high in trait anxiety will

perform their best if they are playing an easy, well-prepared piece in front of a low-pressure

environment, whereas someone low in trait anxiety might perform better if a hard piece is being

performed in a high-stress situation, like a competition (Osborne et al., 2005). In order to truly

understand why this might be and what three variables Wilson (2002) is referring to, I will

discuss the environmental and personality factors responsible for the development and

maintenance of MPA.

     Environmental factors. There are a plethora of environmental factors that influence MPA

and the different rates at which people experience it. Interestingly, it is something that Western

classical performers struggle with more than non-classical musicians (Papageorgi et al., 2013;

Perdomo-Guevara, 2014). This could be due to the fact that emotions are mediated by how a

performer approaches performance (Papageorgi et al., 2013); specific circumstances can

influence individuals' perceptions and ability to cope with the demands of the performance

situation. For non-classical musicians, the main goal of music-making is to have fun and be

connected to their audience (Perdomo-Guevara, 2014), but this is not necessarily the case for

their classical counterparts.

     The formality of the classical music world and the longstanding tradition of classical

concerts has the potential to put even more pressure on performers (Papageorgi et al., 2013).

Based on unstructured conversations with fellow classical musicians outside of the realm of this

senior project, performers in this particular field are often thought of merely as 'tools' for

transmitting the exact intentions and emotions of the composer to the audience. If one fails to do

so, not only might they embarrass themselves, they may betray the composer and the music itself

too. Perhaps this is why classical musicians appear to be more self-oriented and less people-

oriented (Perdomo-Guevara, 2014). By putting this much emphasis on the self and the

sacredness of music, the probability of experiencing humiliation, embarrassment and failure increases. This then naturallye leads to increased anxiety and fear of the performance situation.

Furthermore, it has also been found that the more exposed musicians feel while playing, the more performance anxiety they tend to experience (Roland, 1994). This is perhaps why solo performances are experienced as more nerve-wracking than group performances (Cox & Kenardy, 1993; Papageorgi et al., 2013). If one's playing is more audible, there is a higher chance that mistakes will be heard. If mistakes are heard, the chances that one will be negatively evaluated or judged are much higher, hence the higher level of anxiety. It is also important to note the discrepancies between the level and experience of MPA within different groups of instruments. For example, about 28% of harpists experience stage fright (Middlestadt, 1990), but brass players have more anxiety (22%) about playing than string and woodwind players (14%; Fishbein, Middlestadt, Ottati, Straus, & Ellis, 1988). This makes sense for several reasons. First, harpists are usually by themselves in symphony orchestras, and as solo instruments, the demand of the music itself is much higher. Harpists - unlike string players - do not have an entire section to rely on if they make a mistake. As such, the stakes for them to perform well and correctly are much higher.

The situation is somewhat different for brass instruments - they are by nature very much exposed, as their instruments are among the loudest in the orchestra; they will be heard no matter what. Brass instruments are also much harder to play physically than strings for example, and they usually have less number notes to play in pieces written for orchestra. Thus, when they do have passages, there is greater pressure on the players to 'prove themselves'. For the same reasons, those who play flute also have higher levels of MPA, whereas French horn players may be more anxious due to the increased difficulty in physically playing their instrument. In

summary, it is apparent that how exposed one's playing is, the physical/mental demands of the instrument, repertoire and the amount of solos one has all influence the levels of MPA (Middlestadt, 1990).

Personality characteristics. However, environmental factors alone do not explain all the variability in how people experience MPA. It has been found that MPA is caused by an interplay of personal characteristics, degree of task mastery and stress of the particular situation (Perdomo-Guevara, 2014). There are certain personality characteristics that are highly associated with MPA, for example perfectionism, neuroticism, introversion, trait anxiety or excessive need for control (Barbeau, 2011). These traits vary over the course of one's life though, so it is important to examine whether such variation affects the experience of MPA as well.

Most children love to perform. Getting up in front of people singing and dancing is not a big deal for them, and it is something most thoroughly enjoy doing. As such, they usually would not experience the same debilitating performance anxiety that adults do either. Then, some sort of a transition happens, and children start feeling self-conscious, fearful, and shy, causing them to start dreading performances (Kenny, 2006).

One of the reasons behind this transition from loving to perform to dreading it has to do with previous negative experiences (either direct or indirect; Kenny, 2006; Osborne & Kenny, 2008) which is why some think that MPA is learnt emotional behavior (Ullman, 1940). According to this view, performers learn to be anxious from their own bad experiences or from stories they hear from peers and teachers. We could infer from this view that it might be just as easy to unlearn these behaviors; it could even mean that if someone has not had any bad experiences on stage might not develop MPA. Is this truly the case though? Does a bad experience (even if indirect) need to happen in order to start to feel anxious about performing?

Here, I propose that MPA develops regardless of previous experiences. In fact, I will prove that

being a perfectionist might just be enough for anxiety to start manifesting itself during

performances.

Another reason the transition from loving to perform to dreading it is developmental.

When children's cognitive capacity starts to increase, self-reflection becomes a possibility

(Kenny, 2006). When there is potential for the self-evaluation of one's own performance in any

given situation, feelings of self-consciousness naturally arise. If I do badly, will that mean I am a

bad performer in general? If I make a mistake, does that mean I am worse than other people?

What will the audience think? These questions can only arise when a certain level of self-

awareness is present. This is also why MPA might actually stem from fear of embarrassment

(Jackson & Latané, 1981), which is something only those with self-awareness are concerned

with. Thus, for children to be scared of embarrassment, no previous negative experiences need to

have happened. Feelings of self-consciousness are natural, and from a certain age onwards, ever-

present. Children's increasing cognitive capacity and self-reflection are what make these feelings

translate to MPA (Kenny, 2006).

Children's ability to self-reflect might also make them more prone to perfectionism, and

this is where my research comes into play. In fact, it has been found that striving for perfection

and superiority might start in early childhood (Adler, 1956), and this might especially be the case

for those high in trait anxiety or those whose home environments expect a lot, but do not

necessarily provide enough support. For these individuals, early exposure to situations where

their self-worth is often evaluated or questioned may trigger the experience of musical

performance anxiety (Kenny, 2006). Additionally, social pressures and parental expectations are

all part of perfectionism as a concept (Flett & Hewitt, 1991), which suggests that how one is

brought up, temperament, previous interpersonal experiences, and technical skills all together might influence our experience of MPA (Kenny, 2006).

     2.2.5 The role of perfectionism in musical performance anxiety. Musicians are under extreme amounts of both physical and psychological stress from the demands of performing on a daily basis (Dews & Williams, 1989; Salmon, 1990). Let us think about auditions for the major orchestras - for a single spot in a major orchestra, there might be as many as 200 applicants. At this level of competition, playing the required excerpts perfectly is the least that is expected of the applicants. Inevitably, music performance demands constant discipline and self-critique (Dews & Williams, 1989) in order to become proficient in the diverse range of skills playing an instrument requires, which makes being a perfectionist in the classical music world highly favorable, if not necessary.

     Fully aware of this and the potential consequences of even a tiny mistake in the context of an audition or a competition, performing becomes a nerve-wracking experience for a plethora of musicians (Salmon, 1990). In fact, it often is one that is almost exclusively about perfecting every single note, and much less about fluid expression of musicality. Because of this, striving for perfectionism can easily lead to excessive worrying and debilitating performance anxiety. Setting high standards for oneself can be beneficial if the goals are attainable, but overall perfectionism, concern over making mistakes and doubts about the quality of one's actions have been found to be highly associated with anxiety (Frost, Marten, Lahart, & Rosenblate, 1990). In fact, perfectionism has been linked to a wide variety of psychopathological conditions, like alcoholism, depression, anorexia, and even suicide (Frost et al., 1990).

     Perfectionism is a concept somewhat loosely defined in the literature, but there are a few central features that all studies examining the concept acknowledge. In fact, Frost et al. defines

perfectionism as a personality characteristic that "involves high standards of performance which are accompanied by tendencies for overly critical evaluations of one's own behavior" (1990, p. 450). Two of the major tendencies include setting enormously high standards for oneself and being concerned about making mistakes (Frost et al., 1990). There exist two major multidimensional perfectionism models that attempt to characterize one's overly critical evaluations of their own performance.

The six-dimensional model was developed by Frost et al. (1990), and it considers the following six dimensions of perfectionism: high personal standards, concern over mistakes in performance, doubts about actions and overemphasis on organization, neatness and order, perception of parental expectations and perception of parental criticism.

The three-dimensional model that was developed by Hewitt and Flett (1991) differentiates between self-oriented, other-oriented and socially prescribed perfectionism. In other words, this model takes into account who the perfectionism comes from and who it is directed towards - is it intrapersonal or interpersonal (Bieling, Israeli, Smith, & Antony, 2003)? Self-oriented perfectionism (also known as intrapersonal perfectionism) refers to setting high personal standards for oneself, being concerned about making mistakes and doubting one's action and organization, neatness. Other-oriented perfectionism refers to setting high standards for a significant other, and socially prescribed perfectionism signifies high parental standards and criticism – these two together are sometimes referred to as interpersonal perfectionism.

Perfectionism has been found a highly relevant concept in regards to musicians' lives (Dobos et al., 2018). In fact, it might very well be that musicians in particular might have trouble separating themselves from their art and/or work (Dews & Williams, 1989). If a performance does not go as planned, it might for them be a reflection of musicality, overall ability, and even

value as a performer. In this case, the stress caused by performance results from a need to reach self-imposed standards of craftsmanship and musicianship (Dews & Williams, 1989), again reinforcing the vicious cycle. If one performance does not go as planned (and they rarely do), the perfectionistic person will see that as a reflection of potentially declining musicianship, which in turn will make them more anxious about upcoming performances. Interestingly, it has been found that MPA was reduced and performance quality improved when students were allowed to make mistakes (Fogle, 1982). This suggests that even though outside approval or evaluation might be an important factor influencing the strength of MPA, one's own (potentially unrealistic) standards matter more.

As it should be clear by now, MPA can both facilitate or debilitate performance. However, whichever effect ends up being the strongest depends on several things. The level of anxiety and performers' appraisal of the situation (Barbeau, 2011) all matter, but none of these can entirely explain the variability. In fact, this is when the nature of being a musician starts to matter. Negative evaluation is one of the biggest concerns musicians face on an everyday basis, so perfecting their art (both from a technical and an emotional point of view) is of highest importance. Striving for absolute perfection can lead to debilitating stress though, and this is why the level of perfectionism might explain the gap in our understanding of the effects of MPA on performance.

Current Study

In my senior project, I attempted to further examine the relationship between

perfectionism and musical performance anxiety, and how the combination of these two factors

might affect performance. I measured these three variables in a relatively high-stress situation,

using the Bard College Conservatory orchestra placement auditions as the quasi-experimental

situation. These took place February 1st-3rd 2019, and usually involve every orchestra musician

in the Conservatory (about 80 people) – worthwhile to note that this time, the trombone players'

auditions were not held. I originally planned to use a 3 (Low Anxiety, Moderate Anxiety, High

Anxiety) x 3 (Adaptive Perfectionist, Maladaptive Perfectionist, Non-Perfectionist) design, but

instead of dividing up my participants into groups depending on their levels of musical

performance anxiety and perfectionism, I treated these factors along a continuum. In some

psychology articles, dichotomization of variables by a median split or a proportional split

(DeCoster, Iselin, & Gallucci, 2009) often occurs, creating somewhat arbitrary categories and

groups of people. However, doing so can not only ignore potential individual differences, it can

also create dichotomous groups where such separate groups do not necessarily exist

(MacCallum, Zhang, Preacher, & Rucker, 2002). In addition, dichotomization, or splitting the

data up into arbitrary groups can also overlook potential non-linear relationships, which was a

huge concern in this case. Additionally, the literature in the field lacks agreed upon thresholds at

the moment when it comes to performance anxiety and perfectionism, thus the groups I would

have split my sample into would have been purely a matter of chance – especially given my

small sample size. While my small sample size is still a concern, not relying on arbitrary

thresholds also makes it easier not to overweigh one of the triads with relatively few data points too heavily.

   Thus, after measuring the participants' MPA, perfectionism and performance scores, I ran correlations between each of my variables. As I was unable to manipulate anxiety and perfectionism directly, I used these as person variables/predictors. My criterion/outcome variable was the participants' level of performance, which was rated by faculty members of the Conservatory.

   I had three main hypotheses. I first hypothesized that based on previous literature, there will be a positive linear correlation between MPA and total perfectionism scores. This could mean that individuals that are high in perfectionism will view musical performance as more anxiety-producing, but it could also mean that those high in performance anxiety might be so because they are expecting their performance to be perfect. Additionally, from such a positive correlation, we might be able to infer that those that have lower expectations for themselves might experience performing less stressful, and that those with less anxiety might care less about performing perfectly. Important to note that although a positive correlation between perfectionism and MPA would be consistent with previous literature (Dobos et al., 2018), determining a causal link would require additional data, and possibly even a longitudinal study (see Discussion section of this project).

   My second hypothesis was that there will be a curvilinear (non-monotonic) quadratic relationship between MPA and performance scores, with the lowest and highest MPA scores indicating lower performance scores. As opposed to a simple inverted-U shape known from the Yerkes-Dodson law, I expected there to be more of a sharp decline in performance with higher MPA, creating a non-symmetrical shape. I expect such a shape based on the different

performance-arousal theories I introduced earlier in my senior project (see Section I). The

different arousal theories state that both psychological and physiological arousal have a peak

where performance is best facilitated, but these two peaks do not happen at the same time. This

also means that the peak in overall arousal affecting performance does not necessarily happen at

midpoint, causing a steeper decline in quality of performance with higher levels of arousal

(Gould & Udry, 1994).

Alternatively, it is possible that no relationship will be found between overall MPA

scores and performance, as different dimensions of MPA (somatic/physiological, psychological,

cognitive and behavioral) might affect performance in a distinct way. For example, it is possible

that there is a negative linear relationship between cognitive anxiety (worrisome thoughts) and

performance, while there could be an inverted-U shape between somatic/physiological anxiety

and performance (Papageorgi et al., 2013; Robazza et al., 1998). With different dimensions of

MPA affecting performance uniquely, it is thus quite possible that overall MPA scores will not

reflect the true experience of MPA, and thus its effect on performance consistently. In this case,

further analysis is needed to determine the effect of each MPA dimension on performance

quality.

My third hypothesis stated that there will be a curvilinear (non-monotonic) quadratic

relationship between perfectionism and performance scores with the lowest and highest

perfectionism scores indicating lower performance scores. I hypothesized this because I would

expect that those very low in perfectionism will not be able to perform with as much precision

than those with moderate levels of perfectionism, but I also believe that (since there might be a

positive linear relationship between perfectionism and MPA) too high levels in perfectionism

would make individuals too focused on the details, unable to perform in a confident, even fearless manner.

There are, however, alternative theories when it comes to the relationship between perfectionism and performance. Following Hewitt and Flett's three-dimensional model of perfectionism (1991), studies have found that socially prescribed perfectionism correlates positively to psychological maladjustments, whereas self-prescribed perfectionism correlates positively to academic achievement (Bong, Hwang, Noh, & Kim, 2014). As a result, a scenario is possible whereas those very high in self-prescribed perfectionism but low in socially-prescribed perfectionism, and those very high in socially-prescribed perfectionism, but low in self-prescribed perfectionism will have similar total perfectionism scores, but very different performance scores, thus masking the actual effect of perfectionism on performance. Consequently, in this senior project, a multidimensional perfectionism scale was implemented for possible further analyses of the data.

In summary, my three main hypotheses were:

H1: There will be a positive linear correlation between MPA and total perfectionism scores.

H2: There will be a curvilinear relationship between perfectionism and performance scores with the lowest and highest perfectionism scores indicating lower performance scores.

H3: There will be a curvilinear relationship between MPA and performance scores with the lowest and highest MPA scores indicating lower performance scores.

Additionally, I hypothesized that consistent with previous research (McGinnis & Milling, 2005; Salmon, 1990), there will be no correlation between MPA scores and experience (in this

case, how many years participants have played their instruments). I also hypothesized that consistent with previous findings (Dobos et al., 2018), females would experience higher levels of MPA than males, but they would not differ on their perfectionism levels. Lastly, I hypothesized that because of how much more exposed their orchestral playing is, woodwind players will have higher levels of MPA than string players.

3.1 Methods

3.1.1 Participants. After receiving Institutional Review Board (IRB) approval (see Appendix I), classical music students (N = 33, 18 female, 12 male, one nonbinary, aged 18-24) were recruited from Bard College Conservatory of Music. Each participant received an email on January 20th and January 26th from the investigator briefly explaining the study and asking for their participation (see Appendix B). A SurveyGizmo link was attached to the recruitment email. The survey first included an informed consent form (see Appendix C), which was followed by demographic questions (see Appendix D). The survey continued with the Frost Multidimensional Perfectionism Scale (Frost et al., 1990; see Appendix E) and the Performance Anxiety Inventory (Nagel, Himle, & Papsdorf, 1989; see Appendix F), and concluded with a debriefing statement (see Appendix H). Participants were each assigned a random number at the end of the survey, which they were asked to send to a Bard College Conservatory Administrator through email. Participants were also informed that given their completion of the survey, they would be entered into an Amazon Gift Card Raffle to win a $10, a $25 and a $50 gift card.

Out of the 33 participants, five had to initially be excluded due to incomplete survey responses. After having gone through the blind auditions, 16 additional participants had to be excluded from data analysis due to various reasons. Four brass players had to be excluded because auditions were not hold for them this semester. Two percussion players also had to be

excluded because percussion auditions are administered separately from the rest of the orchestra

and are not blind. The rest of the participants were excluded either because they failed to send

the Conservatory administrator their assigned random number, or because they sent the wrong

number (as was the case with 3 different participants claiming to have gotten the same number).

The final sample consisted of 17 participants (12 female, 4 male, 1 nonbinary) whose average

age was 19.71. The sample included one brass player, five woodwind players and eleven string

players.

     3.1.2 Measures.

     Frost Multidimensional Perfectionism Scale (FMPS). In the initial survey that was

administered, perfectionism was assessed with the Frost Multidimensional Perfectionism Scale

(Frost et al., 1990), which is a 35-item scale (Appendix E). Subjects rated their agreement on a

five-point Likert scale (1-5) with items like "If I don't set the highest standards for myself, I am

likely to end up a second-rate person." The scale has an overall perfectionism score as well as six

subscale scores. The overall perfectionism score was calculated excluding the Organization

subscale, as it has been found to not contribute strongly to overall perfectionism (Frost et al.,

1990). This scale has been found to have acceptable reliability and is a valid measure of

perfectionistic attitudes (Stoeber, 2000).

     Performance Anxiety Inventory (PAI). After the Perfectionism scale, the Performance

Anxiety Inventory (PAI; Appendix F) was administered (Nagel et al., 1989). This is a

specifically developed and commonly used tool for measuring MPA (Biasutti & Concina, 2014;

Cohen & Bodner, 2018) and it consists of 20 self-report measures of state anxiety. It is based on

Spielberger's Test Anxiety Inventory (Spielberger, 1980) and consists of 20 items scored on a 4-

point (1 = almost never, 4 = almost always) Likert scale. The items describe the cognitive (e.g.

"Thoughts of doing poorly interfere with my performance"), physiological (e.g. "During recitals

my hands sweat"), behavioral (e.g. "If I make a mistake, I usually panic") and emotional (e.g. "I

wish recitals did not bother me so much") aspects of MPA, which are thought to all interact with

each other (Kenny & Ackermann, 2012). After I consulted Cohen (S. Cohen, personal

communication, October 31, 2018), items 17 and 20 were changed from "blocking" to "blacking

out", as her population found the expression "blocking" unclear. Mean MPA scores were

calculated by adding up the responses to all items (the first item is reverse scored) and dividing

the score by 20. The Performance Anxiety Inventory (PAI) has been found to have excellent

internal consistency (Biasutti & Concina, 2014; Nagel et al., 1989).

    Performance Rating Scale. A Performance Rating Scale was developed by the principal

investigator of this senior project (Appendix G). After consulting with a Conservatory faculty

member (E. Kiesewetter, personal communication, January 18, 2019, January 30, 2019) and an

alumni administrator (H-F. Lin, personal communication, January 30, 2019), the rating scale

included three somewhat separate dimensions: Calmness, Well-preparedness and Overall

Performance Quality. The scale was designed this way after realizing that in some raters' cases,

perceived anxiety levels would either be ignored or be too influential when rating a performer

overall. The separation of the three scales was thus done for more the raters' sake than anything

else. In the final analysis, the Overall Performance Quality score was used, but further

exploration of the data is possible with the other two scores.

    Inter-rater reliability between the two raters for the Overall Performance Quality

dimension of the scale using Pearson's correlation was very high ($r_P(15) = 0.863, p < .001$).

Using Cohen's Kappa, the correlation between the two raters was moderate ($\kappa = 0.497, p < .01$).

This means that even though the scale was designed by the author, the consistency of how people

score performers using the author's criteria was moderate to high (McHugh, 2012), thus
acceptable.

3.2 Results

Descriptive statistics for age, years having played their instrument, total perfectionism
scores, mean MPA and overall performance scores are presented in Table 1. Using Tukey's
method, no outliers were found in in the three variables, musical performance anxiety, total
perfectionism scores or performance scores. Tukey's method was used because it is not
dependent on the distribution of data, and the mean and the standard deviation, which are both
potentially influenced by extreme scores. The distribution for MPA, total perfectionism scores
and performance scores were found normal using the Shapiro-Wilk test.

Table 1.

*Descriptive statistics for age, years having played their instrument, total perfectionism scores,
mean MPA scores and overall performance scores (N = 17).*

	Minimum	Maximum	Mean	Std. Deviation
Age	18	22	19.71	1.45
Years having played their instrument	7	18	11.71	3.35
Total Perfectionism	69	119	92.00	15.49
Mean MPA	1.55	3.45	2.39	.56
Overall Performance Score	3.00	8.50	6.37	1.63

A strong positive correlation was found between mean MPA scores and total perfectionism scores ($r_S(15) = .61$, $p < .001$; see Figure 3). This means that those who are more perfectionistic will be more likely to experience MPA, and it also means that their symptoms might be worse than those less perfectionistic.

No significant linear correlation was found between perfectionism and performance scores (r_S (15) = .37, $p = .14$), and MPA and performance scores (r_S (15) = .30, $p = .23$) so further analysis was needed. To test my second and third hypothesis, I first ran a linear, then a quadratic polynomial regression analysis in SPSS (I used IBM SPSS Version 25).

For testing the relationship between performance scores and perfectionism, I first ran a linear regression analysis. This did not yield significant results ($R^2 = .164$, F(1, 15) = 2.947, $p = .107$). Then, I found that although I hypothesized a non-linear relationship between MPA and performance scores and perfectionism and performance scores respectively, adding a quadratic component to my model did not further my predictions significantly when it comes to the relationship between performance and perfectionism ($R^2 = .168$, F(2, 14) = 1.408, $p = .277$; see Figure 4).

A linear regression analysis did not yield significant results for testing the relationship between performance scores and MPA scores either ($R^2 = .086$, F(1, 15) = 1.404, $p = .254$), and adding a quadratic component to my model did not further my predictions significantly ($R^2 = .124$, F(2, 14) = 994, $p = .395$; see Figure 5).

My additional hypothesis that how long one has played their instrument for does not correlate significantly with MPA was supported by my data (r_S (15) = -.08, $p = .767$; see Figure 6). This means that in my sample, experience did not have a significant effect on levels of MPA.

To test for any gender differences, an independent-samples t-test was conducted to compare mean MPA scores and total perfectionism scores in males and females. No significant difference was found between males ($M = 2.14$, $SD = .46$) and females' ($M = 2.48$, $SD = .60$) mean MPA scores ($t(14) = 1.04$, $p = .31$). Additionally, no significant difference was found between males ($M = 87.00$, $SD = 13.44$) and females' ($M = 93.33$, $SD = 16.95$) total perfectionism scores ($t(14) = .68$, $p = .51$). This means that contrary to previous research, in my sample, females were not significantly more anxious than males, nor were they more perfectionistic overall.

Lastly, no significant difference was found between levels of MPA in woodwind ($M = 2.38$, $SD = .90$) and string ($M = 2.34$, $SD = .38$) players ($t(14) = -.13$, $p = .90$). This means that contrary to my hypothesis, what instrument one plays, and how exposed their playing might be does not have an effect on their levels of MPA.
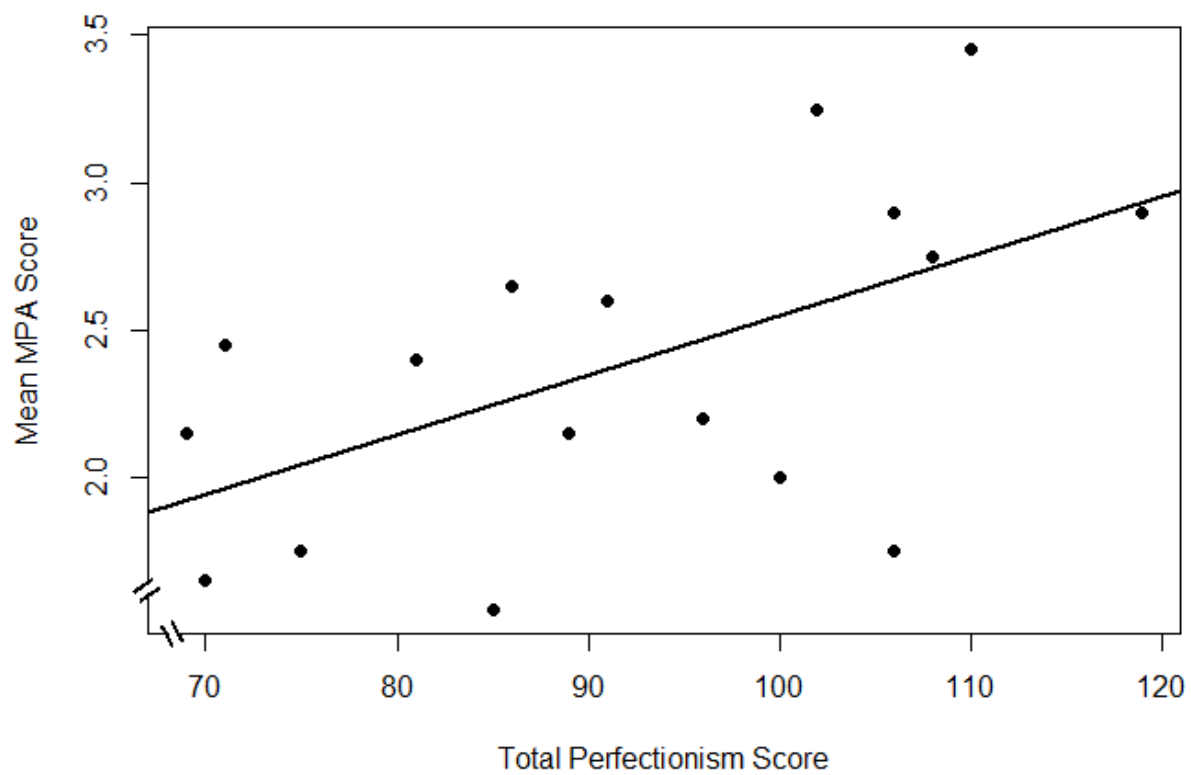
Figure 3. Correlation between mean MPA and total perfectionism scores. A strong positive correlation was found between mean MPA and total perfectionism scores, suggesting that those more perfectionistic will experience more musical performance anxiety.
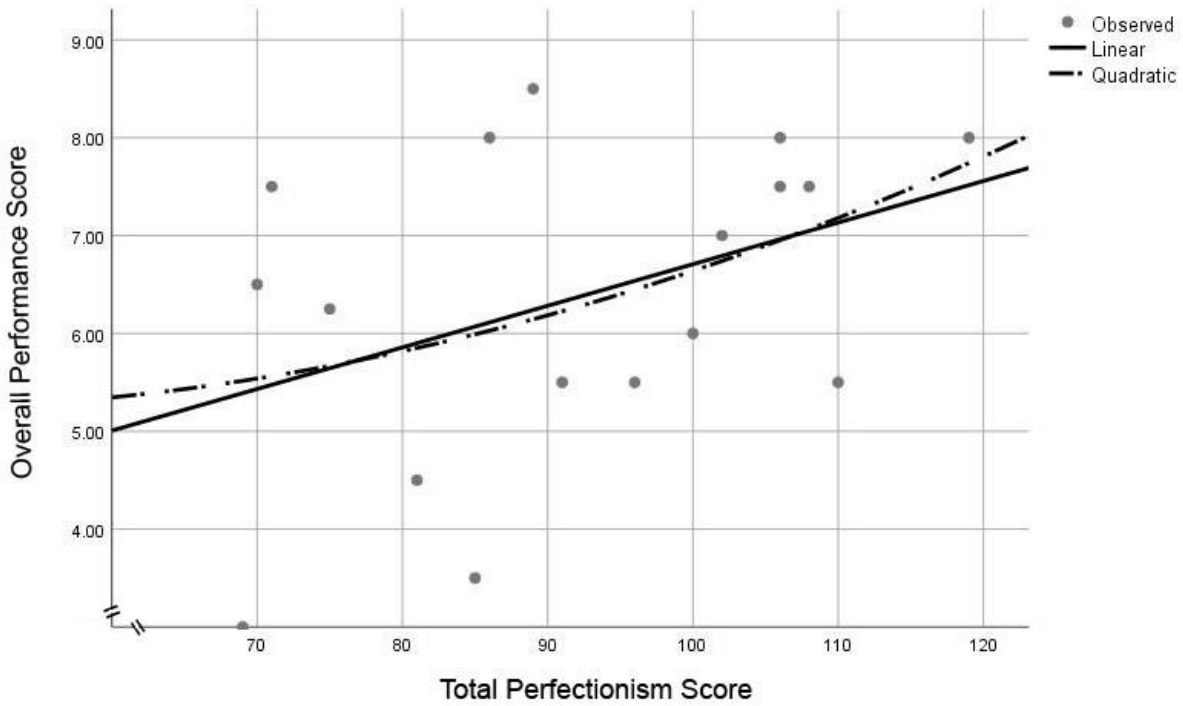
Figure 4. Polynomial regression analysis on performance and perfectionism scores. Higher MPA scores implicate stronger anxiety, and higher performance scores implicate better performance. As can be seen on the graph, adding a quadratic component to my model did not provide reliable evidence of a relationship between the two measures.

Figure 5. Polynomial regression analysis on performance and MPA scores. Higher MPA scores implicate stronger anxiety, and higher performance scores implicate better performance. As can be seen on the graph, adding a quadratic component to my model did not provide reliable evidence of a relationship between the two measures.
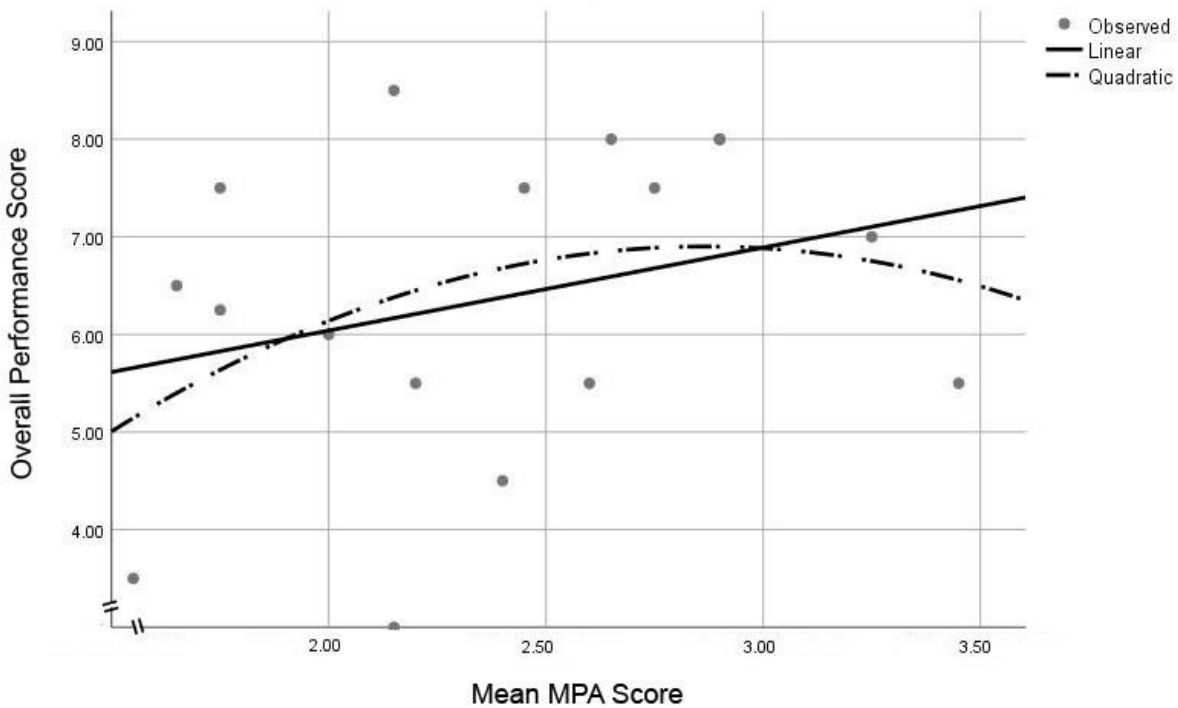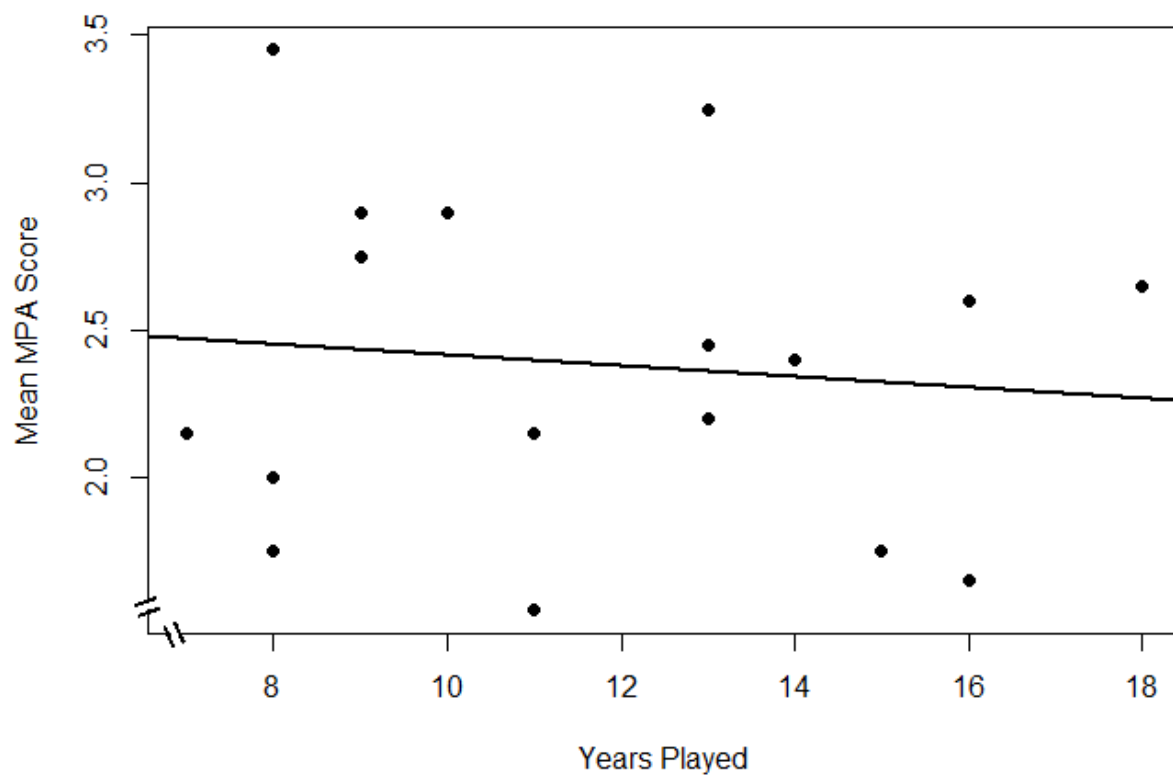
Figure 6. Correlation between mean MPA scores and experience. No correlation was found between mean MPA scores and how long participants had played their instrument, suggesting that experience does not influence the levels of MPA.

Furthermore, on account of some recent developments in the published literature highlighting a multi-dimensional approach to the understanding of perfectionism (for exmaple Dobos et al., 2018), I decided to explore whether there were any obvious signs of areas for further study. Additional exploratory analyses are highlighted in Table 2. These revealed that there was a significant positive linear correlation between the Concern over Mistakes (CM) perfectionism dimension and mean MPA scores (r_S (15) = .51, p = .035; see Figure J1), and a marginally significant positive correlation between the Parental Criticism (PC) perfectionism dimension and mean MPA scores (r_S (15) = .47, p = .055; see Figure J2). Some sings of non-linearity can be observed in this latter relationship though, so further polynomial regression analyses might be helpful in establishing such a finding.

Additionally, a significant positive correlation was found between Parental Expectations (PE) and performance (r_S (15) = .51, p = .038; see Figure J3). Although no significant linear correlation was found between Parental Criticism (PC) and performance, there are some signs of non-linearity (see Figure J4) that should be further explored, perhaps using polynomial regression analysis with an adding a quadratic component. These exploratory findings should be further qualified by the extremely small sample size.

In summary, no obvious relationship was found between perfectionism and performance quality and MPA and performance quality. Thus, according to my data, how perfectionistic an individual is overall does not significantly debilitate or facilitate performance. Additionally, my results suggest that how anxious one is about performing does not have an effect on the actual performance. However, I did find that the more perfectionistic one is overall, the higher their MPA will be. Moreover, experience did not seem to affect levels of MPA, and no gender differences in level of MPA or overall perfectionism were found.

Table 2.

Additional Analyses

	Concern over Mistakes	Personal Standards	Parental Expectations	Parental Criticism	Doubts about Action	Organization
MPA	$r_s(15) = .51, p = .035$ see Figure J1	$r_s(15) = .13, p = .605$	$r_s(15) = .44, p = .073$	$r_s(15) = .47, p = .055$ see Figure J2	$r_s(15) = .19, p = .463$	$r_s(15) = .07, p = .779$
Performance	$r_s(15) = .34, p = .183$	$r_s(15) = .15, p = .565$	$r_s(15) = .51, p = .038$ see Figure J3	$r_s(15) = .36, p = .146$	$r_s(15) = -.27, p = .295$	$r_s(15) = -.03, p = .890$

Note. Highlited are the three correlations that were significant.

Discussion

4.1 Other Measures of Performance

In my exploratory analyses, a significant positive correlation was found between Parental Expectations (PE) and performance, but no other significant correlation was revealed between the different perfectionism dimensions and performance quality. This may suggest that although it is possible to differentiate between adaptive and maladaptive forms of perfectionism, these findings might not extend to actual performance. However, due to my extremely small sample size, and previously unestablished measure of performance, no notable conclusions can or should be drawn.

Nevertheless, as noted above, it is possible that other significant correlations do exist but were not revealed because my performance rating scale did not accurately represent actual performance quality. My rubric used some of the same language that can be seen in Wesolowski et al.'s (2018) rubric for performance. In their study, Wesolowski et al. used a 30-item rubric to collect judges' evaluations of performances, which was then transformed to differentiate between rudimentary, emerging, proficient, and exemplary performances (2018). I chose to only loosely base my rubric on theirs for several reasons. First, a 30-item rubric would have been much too demanding for the already overworked Conservatory faculty members, especially given that rating in such a way is not an otherwise established method at the orchestra placement auditions.

Additionally, Wesolowski et al. (2018) put all performances into one of the four above-mentioned categories (rudimentary, emerging, proficient, and exemplary), which I did not want to do. I chose to keep my variables continuous so that my analyses allowed for individual differences. Moreover, after consulting with a conservatory faculty member (E. Kiesewetter,

personal communication, January 18, 2019, January 30, 2019), I realized that the four categories

Wesolowski et al. (2018) set up were not necessarily appropriate for conservatory-level

musicians. In the rudimentary category, they described the coordinates of a performance "where

fundamentals are still being developed, such as proper instrument positioning and body

positioning […], technical facility is in its infancy, and the performance demonstrates little to no

attention to expressive devices" (for the full rubric, see Wesolowski et al., 2018, p. 17). Given

that conservatory-level musicians should be past this stage, if I were to use this preexisting

rubric, then all performers would have been placed in either the proficient or exemplary

categories. This would not have allowed for individual differences to show, and would have

limited variability. Additionally, their rubric was developed for secondary-level solo

instrumental music assessments, not orchestral auditions. It was also tested on wind and brass

players, as opposed to all instrument types (like strings or percussion), and this was of additional

concern.

Previous performance evaluating measures have been formulated, but most of these have

been either string instrument-based evaluations and for middle to high school level (Barnes, &

Zdzinski, 2002), for a particular instrument (Abeles, 1973; Gillespie, 1997; R., 1975) or for

choral performance (Cooksey, 1977). Music is fundamentally subjective and is therefore difficult

to objectively evaluate (Abeles, 1973; Matei & Ginsborg, 2017).

Future studies examining MPA, however, should take into account musical ability. It is in

fact possible that musicians become anxious about public performances due to awareness of their

weak technical ability (McGinnis & Milling, 2005) – in this particular situation, anxiety might

actually be the consequence and not that cause of poor musical performance. It is indispensable

for future research to evaluate players' technical abilities, because the effects and causes of MPA

differ somewhat based on the players' level of experience (even if the levels of MPA themselves do not). One previous study has done so in the past, and it screened individuals based on their sight-reading skills (Sweeney & Horan, 1982). Further evaluation of technical abilities in future studies of MPA are much needed.

Nevertheless, in accordance with what was discussed with the previously mentioned Conservatory faculty member (E. Kiesewetter, personal communication, January 18, 2019, January 30, 2019), the circumstances of the orchestra placement auditions and the confines of the present study, the author developed her own performance rating rubric. However, the development of a more valid and reliable performance evaluation measure is needed, and future research should focus on how best it could be done. This is of course all contingent upon whether or not it is possible to objectively evaluate something that is by nature entirely subjective.

4.2 Adaptive and Maladaptive Forms of Perfectionism

I made the informed decision to focus my primary analyses on overall perfectionism, as it has been suggested in previous research that those with high levels of perfectionism also experience a higher frequency and a wider range of psychopathology (Frost et al., 1990). In this current study, a strong positive correlation was found between overall perfectionism scores and musical performance anxiety. This is in line with Frost et al.'s results, which suggests that anxiety is associated positively with total perfectionism scores (1990). Although we cannot draw any causal claims from this, we can infer either that those who are more perfectionistic overall might be more likely to experience performance anxiety, or those who are more anxious might be more likely to be perfectionists. None of these suggestions are surprising at all. In fact, perfectionism has been found to be a factor in a variety of mental disorders, including obsessive-

compulsive disorder (Ojserkis & McKay, 2017), eating disorders (Costa, Hausenblas, Oliva, Cuzzocrea, & Larcan, 2016), depression (Ferrari, Yap, Scott, Einstein, & Ciarrochi, 2018), and anxiety (Mahaffey, Watson, Clark, & Kotov, 2016; Mor et al., 1995).

However, the various dimensions of perfectionism affect individuals differently (Dunkley, Zuroff, & Blankstein, 2003), and this could be one of the reasons my second hypothesis did not lead to any significant results. In my analysis, I used overall perfectionism scores instead of separate dimensions to determine participants' perfectionism, as my predictions were directed towards whether too much or too little would cause performance to deteriorate, no matter the particular dimensions. As a result, the effects of adaptive and maladaptive forms of perfectionism may have cancelled each other out during analysis. In order to unpack what this means, it is useful to examine some of the different ways perfectionism has been theorized in the literature.

Some authors have made a distinction between 'normal' and 'neurotic' perfectionists. This distinguishes those who aim for high, but allow themselves to be less precise in a given situation from those who allow for no mistakes, and consequently have overly negative evaluations of themselves (Hamachek, 1978). It is then natural to think that those of the neurotic kind would also feel more anxiety when faced a performance situation in which they have to 'prove themselves.' Let us think about what this means in practice. Performing perfectly in any given situation is almost impossible; minor mistakes are part of what makes us humans unique and special in our own way. Perfection is a goal that is almost always unattainable, which automatically sets neurotic perfectionistic individuals up for failure. When they experience this inevitable type of failure, they will eventually begin to dread similar performance situations. This

in turn creates more anxiety, doubts, and concerns about making mistakes, which forces the perfectionistic individual into an inescapable, vicious cycle.

The reason why I did not want to differentiate between 'normal' and 'neurotic' perfectionists is because this dichotomization can potentially create unrealistic categories of people. The cutoff between a normal and a neurotic perfectionist seems somewhat arbitrary to me, and it does not allow for any individual differences to shine through. As a result, it is possible for two people that are only slightly different from each other on the normal-neurotic scale to be put into two separate categories just because the cutoff score is right in between them. This could not only skew data analysis, but it also leads to huge generalizations that do not apply to all given situations. What if someone is a perfectionist when it comes to something they care about, like music, but could not care less about making mistakes in something like chemistry or math? Further research is needed to unpack the way perfectionism works in different situations, because overgeneralizations are not useful from a research perspective.

Although I was cautious about dichotomizing variables by assigning people to separate groups based on their type of perfectionism, it is crucial to consider the adaptive and maladaptive forms of this personality characteristic. Going back to Frost's (1990) multidimensional perfectionism construct, high personal standards and organization were found to affect individuals positively. In fact, these perfectionism dimensions correlate negatively with procrastination and positively with self-efficacy. On the other hand, concern over mistakes was the dimension that was most closely related to psychopathology (Frost et al., 1990; Mahaffey et al., 2016). In fact, most perfectionism dimensions seem to lead to distress (Frost et al., 1990; Hamachek, 1978; Pacht, 1984).

While it was not my primary intention in this senior project to individually examine these perfectionism dimensions, my procedure for measuring perfectionism did allow for some finer-grain exploratory analyses. The finding that most perfectionism dimensions lead to distress (Frost et al., 1990; Hamachek, 1978; Pacht, 1984) was partially supported by my exploratory analyses, which revealed a significant positive correlation between the Concern over Mistakes (CM) perfectionism dimension and mean MPA scores, and a marginally significant positive correlation between the Parental Criticism (PC) perfectionism dimension and mean MPA scores. This suggests that in line with previous research on multidimensional perfectionism (Dobos et al., 2018), certain perfectionism dimensions might be more associated with increased anxiety than others.

In short, it makes sense to not only group the different dimensions in a particular way, but also to differentiate between adaptive and maladaptive forms of perfectionism (see Table 1 for a demonstration of the three major perfectionism models). As explained above, high personal standards (also known as perfectionistic strivings) seem to be adaptive, and thus beneficial to individuals, whereas concern over mistakes and doubts about action (also known as perfectionistic concerns) are maladaptive forms of perfectionism (Akay & Bratton, 2017; Bieling et al., 2003; Cheng & Hardy, 2016).

Although in this current study, no support was found for a relationship between perfectionism and performance, this might be due to my small sample size. In fact, it has been found that certain facets of self-oriented perfectionism relate positively to academic achievement (Bong et al., 2014), so they could affect an audition situation as well. It is important to note that when it comes to music, perfectionism can be directed towards both musicality/emotionality and/or technical accuracy, which are two entirely different things. Those that strive for technical

perfection might not worry so much about fulfilling the musicality of a piece and those whose

main concern is pouring all their emotions into a performance might not care about a few missed

or out-of-tune notes. However, if they were unable to express themselves enough through the

music, that might be detrimental to their self-evaluation. It is clear that the concept of

perfectionism in the musical world is far from simple, so further research and analysis is needed

in order to truly unpack how certain types of perfectionism might affect musical performance.

Table 2.

Three Major Models of Perfectionism

Frost et al., 1990	*Hewitt & Flett, 1991*		*Cheng & Hardy, 2016*	
High personal standards	**Self-oriented perfectionism**	High personal standards	**Adaptive**	High personal standards
Concern over mistakes		Concern over mistakes	**Maladaptive**	Concern over mistakes
Doubts about action		Doubts about one's action, organization		Doubts about action
Overemphasis on organization and neatness				
	Other-oriented perfectionism	Setting high standards for a significant other		
Parental expectations	**Socially prescribed perfectionism**	High parental standards		
Parental criticism		Parental criticism		

Note. This table explains the three major perfectionism models that can be found in the literature. Frost et al. (1990) theorized six separate perfectionism dimensions, while Hewitt and Flett (1991) grouped six dimensions into three major types of perfectionism based on who it is directed towards. Cheng and Hardy (2016) examined perfectionism dimensions based on how they affect individuals, grouping them into adaptive and maladaptive types.

4.3 Treatment of Maladaptive Perfectionism

So, if this is the case – that there exists potentially 'good' and 'bad' forms of perfectionism, then is there a way to transform one's maladaptive concerns into adaptive strivings? It has been found that perfectionism starts in early childhood (Adler, 1956), so interventions can and should start early on as well. Adlerian play therapy has been suggested as a possible method for transforming one's maladaptive perfectionism to more adaptive strivings (Akay & Bratton, 2017). This therapeutic method has several goals, some of which include recognizing self-defeating themes in children's play and beginning to shift their behaviors, learning to balance their reaction to perceived criticism from others, restructuring distorted cognitions, learning strategies to recognize anxiety and cope with it, and developing greater tolerance for imperfection, risk and making mistake (Ashby, Kottman, & Martin, 2004). Although Adlerian play therapy has not been found to be consistently effective, this type of intervention might make people more willing to talk about negative situations in their lives and could improve their ability to face or work on challenging tasks (Akay & Bratton, 2017). This is something that is not only crucial for children to learn, but could be incredibly useful for musicians too.

If not through Adlerian play therapy, however, then what are some other forms of treatment for maladaptive perfectionistic thoughts? As a matter of fact, a technique called 'self-compassion' has been found to effective in treating such thoughts and their effects on one's mood (Ferrari et al., 2018). Self-compassion is defined as 'being open to and moved by one's own suffering, experiencing feelings of caring and kindness toward oneself, taking an understanding, nonjudgmental attitude toward one's inadequacies and failures, and recognizing that one's own experience is part of the common human experience' (Neff, 2003a, p.244).

According to this definition, self-compassion is composed of three major elements: self-kindness instead of self-criticism, common humanity instead of self-isolation, and mindfulness instead of overidentifying with one's critical thoughts (Ferrari et al., 2018; Neff, 2003b). Through such cognitions, self-compassionate individuals are able to recognize that imperfections and mistakes are universal issues in life (Neff, 2003a), and are in no need to be criticized or judged for.

It has been found that self-compassion moderates the relationship between depression and maladaptive perfectionism (Ferrari et al., 2018; Mehr & Adams, 2016). Following the hypotheses of such previous studies, it is logical to think that the positive effects of self-compassion would extend to navigating performance anxiety. Further research is needed to determine its effectiveness on MPA in particular, but it has indeed been found that self-compassion weakens the relationship between maladaptive perfectionistic thoughts and negative affect. This is because through its three elements, self-kindness, connection, and mindfulness, individuals are encouraged to strive for mastery and expertise, while they are also 'let off the hook' if such goals are not directly accomplished (Ferrari et al., 2018). This way, mistakes, imperfections, and flaws are not seen as direct reflections of one's abilities, they are seen more so as evidence of humanity; looking at it this way, it may even be freeing for individuals to reveal to others their flaws and mistakes (Ferrari et al., 2018). Further research is needed in order to examine whether the positive outcomes of self-compassion extend to that of MPA, but seeing that there is a positive correlation between overall perfectionism and MPA, it is reasonable to assume so.

4.4 Treatment of MPA

Although reasonable to think that treating maladaptive perfectionistic thoughts would affect MPA positively as well, further research should be done to determine if this really is the case. Alternatively, it is possible to go about my findings in a different way and look at how MPA could be treated directly. As I have gathered through personal encounters throughout my work on this senior project and beforehand, individuals differ greatly in how they experience and cope with MPA. Some people get more nervous when playing for musicians than non-musicians, playing dead people's music rather than living composers', or playing for people they know versus complete strangers. Coping mechanisms include taking beta-blockers, 'hyping up before performances', or thinking of music and the performance in the context of a bigger picture. In this section, I will go through what the literature says about said coping mechanisms and establish whether research lines up with individual experiences.

The effects on taking beta-blocking agents is a somewhat under researched area in the context of performance anxiety, even though some studies have found that about a quarter of musicians take them (Fishbein et al., 1988). Beta-blocking drugs (most commonly in the form of propranolol) were originally developed in order to treat various cardiovascular diseases and hypertension, but they have become widely available to musicians for treating performance anxiety as well (Brandfonbrener, 1990). These drugs are potentially highly beneficial for musicians, as they work peripherally to block the physiological symptoms of adrenaline, like tremor, sweating, or increased heart beat (Bourgeois, 1991; Lehmann, Sloboda, & Woody, 2007). In fact, since the four dimensions of MPA are so interrelated and synchronized in a state of perceived danger (Salmon, 1990), if the somatic symptoms of anxiety are absent, it is reasonable to think that the cognitive, behavioral or psychological symptoms of performance

anxiety would decrease accordingly (Lehmann et al., 2007). This has indeed been the experience

of many musicians (based purely on my own anecdotal data), but further research is needed to

establish such a theory. However, one study has shown that a low dose of beta blockers does

increase the quality of musical performance, but a high dose actually decreased it (Gates et al.,

1985). This might actually reflect some sort of a curvilinear relationship between anxiety and

performance (McGinnis & Milling, 2005), which was one of the hypothesizes in this current

study. Again, this suggests that some level of activation is required for optimal performance.

And although beta-blocking agents have been described as a safe and effective way to

combat the negative effects of anxiety in performance situations, they are advised to be taken

under medical supervision. Additionally, pharmacological treatment is thought to be most

effective when combined with some form of therapy (Bourgeois, 1991; Brandfonbrener, 1990).

In addition to the use of beta-blocking agents, cognitive behavioral therapy (CBT) has been one

of the most common ways to treat performance anxiety (Kenny & Ackermann, 2012; Lehmann

et al., 2007). CBT, as its name suggests, is a combination of behavioral and cognitive

interventions. Behavioral therapy for anxiety disorders includes deep muscle relaxation training

(Conrad & Roth, 2007) and systematic desensitization (Pagoto, Kozak, Spates, & Spring, 2006).

The latter is a technique through which individuals have to imagine a feared situation in graded

steps based on the fear hierarchy, from the least to the most stressful scenarios possible. Once the

individuals can imagine facing said situation in a safe environment without any muscle tension,

they are then encouraged to apply the learnt technique to real-life scenarios (Choy, Fyer, &

Lipsitz, 2007; Kenny & Ackermann, 2012). On the other hand, cognitive therapy is used to

change the faulty negative thinking patterns that arise in individuals, when faced with a stressful

situation (Kenny & Ackermann, 2012). One of the main skills cognitive therapy is set out to give

is called cognitive restructuring – a process through which individuals replace irrational, negative, catastrophic thinking with more rational thoughts (Murphy, Yaruss, & Quesal, 2007). To put it into the context of musical performance, this might mean replacing thoughts like "If my hands get sweaty, then I might drop my violin in that really hard spot in the piece, and my violin will break, the performance will end, and my career as a musician will be over" with thoughts for example "If my hands get sweaty, then I might miss one or two notes, but even that will not be the end of the world. The thing that matters most is playing musically anyways!"

In addition to cognitive coping strategies, the finding that flow actually acts as a moderator for MPA (Cohen & Bodner, 2018) might explain why some performers like to 'hype themselves up' before performances. Flow has been described as "complete absorption in a given task as well as by enhanced skilled performance" (Sinnamon, Moran, & O'Connell, 2012, p. 6). Additionally, the task in hand is experienced as enjoyable and rewarding (Cohen & Bodner, 2018; Fritz & Avsec, 2007; Fullagar et al., 2013; Lopez, Snyder, Nakamura, & Csikszentmihalyi, 2009). In the fields of work, education and sports, research on improving performance has mainly focused on building strengths and positive functioning, and thus the concept of flow has been of central concern (Cohen & Bodner, 2018). And although some authors have implied that facilitating flow may be an effective tool in alleviating the debilitating effects of MPA (Fullagar et al., 2013; Lamont, 2012), few studies have actually investigated such a claim. In their study, however, Cohen and Bodner found that most professional orchestral musicians often experience flow while performing, while MPA was concerning for about half of them. Additionally, they found a strong negative relationship between flow and MPA (2018). Of course, it is advised to be careful about making causal claims – this could very well mean that those with less anxiety are in turn more likely to experience flow. Nevertheless, techniques for facilitating the experience of

flow during performance are worthwhile further exploring. Flow might not only make

performing a more enjoyable experience, but it has the potential of encouraging focused

concentration, increasing awareness, a sense of control, and can create lack of self-consciousness

(Cohen & Bodner, 2018; Lopez et al., 2009), which are things musicians are highly concerned

with (based purely on my own anecdotal evidence).

       'Hyping up' before performances can of course refer to something that is a more

frequently researched area in the psychology literature: the reappraisal of stress arousal (Beltzer

et al., 2014). It has indeed been found that those that reappraise arousal as excitement or as a

challenge, rather than anxiety actually experience less shame and anxiety (Beltzer et al., 2014),

and perform better than controls (Jamieson, Mendes, Blackstock, & Schmader, 2010). Of course,

some musicians report meditation as being useful right before a big performance, and this has

also been found to be beneficial for musicians (Chang, Midlarsky, & Lin, 2003). Again, we can

see that not only is there variation between individuals' coping mechanism, the literature differs

greatly in what has been found to be effective, when dealing with performance anxiety.

4.5 Conclusion

      Although the current study was only a small contribution to current research on MPA,

perfectionism and performance, it was an important step in furthering our understanding in how

these three factors potentially interact and influence each other. MPA is an issue that affects the

majority of musicians in one way or another, regardless of how long one has been working in the

field (Salmon, 1990), and therefore should not be neglected. Performing can be an immensely

exhilarating experience, but it can also cause long-term feelings of dread and even acute terror

(McGinnis & Milling, 2005). Which one ends up being the case depends on a huge number of

variables though. The preliminary findings of this project suggest that the more perfectionistic

one is, the more MPA they are likely to experience, but these two variables do not necessarily

influence the level of performance directly. There might be an interaction of MPA and certain

dimensions of perfectionism with other variables, like who the members of the audience are,

what kind of music one is playing, how technically demanding the pieces are, the coordinates of

the concert hall, or even when one is playing during the concert. The countless combinations of

these variables makes it immensely difficult to come up with treatment methods for classical

musicians, and future research should take into account such possible discrepancies in

individuals' experiences of MPA.

Some cognitive strategies however, have been found helpful for coping with MPA. These

include (1) learning to accept that anxiety and minor mistakes are a natural part of performance;

(2) appreciating the process of performing instead of ruminating over what the audience might

think; and (3) using self-talk to counter self-critical thoughts with more realistic and task-

oriented ones (Lehmann et al., 2007; Wilson, 2002). Additional coping strategies include

facilitating a state of flow during performance and taking beta-blocking agents, but some find

meditating or getting even more 'hyped up' before performances helpful.

It is not surprising that there are contradictions between my own anecdotal evidence and

the existing literature. MPA is a hugely unique experience that can differ greatly between both

people, and within one individual from one day to another. What works for one person might not

work for another, and vice versa. The beauty of performing comes not only from connecting with

the audience and making a piece of music your own; it also comes from navigating the

experience of performing constantly. Some might wonder why we, as musicians, constantly put

ourselves through the huge pressures of performing (in fact, we, as musicians do sometimes

wonder too – especially before a particularly stressful performance), but once you are on stage, it

all starts to make sense. It is about distancing your pride enough from the performance in order

to be able to play as fearlessly and confidently as possible, but it is also about the immense

vulnerability that comes with sharing a piece of yourself with your audience. If you manage to

pluck even just a single heart string in a member of the audience, you are good to go.

References

Abeles, H. F. (1973). Development and Validation of a Clarinet Performance Adjudication

   Scale. *Journal of Research in Music Education*, *21*(3), 246–255.

   https://doi.org/10.2307/3345094

Adler, A. (1956). The individual psychology of Alfred Adler. In A. H. L. & A. R. R. (Eds.) (pp.

   239–262). New York, NY: Harper.

Akay, S., & Bratton, S. (2017). The effects of Adlerian play therapy on maladaptive

   perfectionism and anxiety in children: A single case design. *International Journal of Play

   Therapy*. Bratton, Sue: Department of Counseling and Higher Education, University of

   North Texas, 1155 Union Circle #310829, Denton, TX, US, 76203-5017,

   sue.bratton@unt.edu: Educational Publishing Foundation.

   https://doi.org/10.1037/pla0000043

Angelidis, A., Solis, E., Lautenbach, F., van der Does, W., & Putman, P. (2019). I'm going to

   fail! Acute cognitive performance anxiety increases threat-interference and impairs WM

   performance. *PLOS ONE*, *14*(2), e0210824. Retrieved from

   https://doi.org/10.1371/journal.pone.0210824

Arent, S. M., & Landers, D. M. (2003). Arousal, Anxiety, and Performance: A Reexamination of

   the Inverted-U Hypothesis. *Research Quarterly for Exercise and Sport*, *74*(4), 436–444.

   https://doi.org/10.1080/02701367.2003.10609113

Ashby, J. S., Kottman, T., & Martin, J. L. (2004). Play Therapy with Young Perfectionists.

   International Journal of Play Therapy. Ashby, Jeffrey S.: GSU, Dept. of Cnslng and Psych

   Services, Atlanta, GA, US, 30303, jashby@gsu.edu: Assn for Play Therapy.

https://doi.org/10.1037/h0088884

Assalian, P. (2013). Psychological and interpersonal dimensions of sexual function and

dysfunction. *Arab Journal of Urology*, *11*(3), 217–221.

https://doi.org/10.1016/j.aju.2013.07.007

Barbeau, A.-K. (2011). *Performance Anxiety Inventory for Musicians (PerfAIM): A New*

Questionnaire to Assess Music Performance Anxiety in Popular Musicians. Schulich School

of Music, McGill University.

Barnes, G. and Zdzinski, S. (2002). Development and Validation of a String Performance Rating

Scale. *Journal of Research in Music Education*, *50*(3), 245–255.

https://doi.org/10.2307/3345801

Barrett, L. F. (2006). Solving the Emotion Paradox: Categorization and the Experience of

Emotion. *Personality and Social Psychology Review*, *10*(1), 20–46.

https://doi.org/10.1207/s15327957pspr1001_2

Beltzer, M. L., Nock, M. K., Peters, B. J., & Jamieson, J. P. (2014). Rethinking butterflies: The

affective, physiological, and performance effects of reappraising arousal during social

evaluation. *Emotion*, *14*(4), 761–768. https://doi.org/10.1037/a0036326

Biasutti, M., & Concina, E. (2014). The role of coping strategy and experience in predicting

music performance anxiety. *Musicae Scientiae*, *18*(2), 189–202.

https://doi.org/10.1177/1029864914523282

Bieling, P. J., Israeli, A., Smith, J., & Antony, M. M. (2003). Making the grade: The behavioural

consequences of perfectionism in the classroom. *Personality and Individual Differences*.

Bieling, Peter J.: Dept of Psychology, St. Joseph's Hosp, 50 Charlton Avenue East,

Hamilton, ON, Canada, L8N 4A6, pbieling@stjosham.on.ca: Elsevier Science.

https://doi.org/10.1016/S0191-8869(02)00173-3

Blascovich, J., & Mendes, W. B. (2010, June 30). Social Psychophysiology and Embodiment.

    Handbook of Social Psychology. https://doi.org/doi:10.1002/9780470561119.socpsy001006

Bong, M., Hwang, A., Noh, A., & Kim, S. il. (2014). Perfectionism and motivation of

    adolescents in academic Contexts. *Journal of Educational Psychology*, *106*(3), 711–729.

    https://doi.org/10.1037/a0035836

Boucher, H., & Ryan, C. A. (2010). Performance Stress and the Very Young Musician. *Journal*

    of Research in Music Education, *58*(4), 329–345.

    https://doi.org/10.1177/0022429410386965

Bourgeois, M.D., J. A. (1991). The Management of Performance Anxiety with Beta-Adrenergic

    Blocking Agents. *Jefferson Journal of Psychiatry*, *9*(2).

Brandfonbrener, A. G. (1990). Beta-blockers in the treatment of performance anxiety. *Medical*

    Problems of Performing Artists, *5*(1).

Chang, J. C., Midlarsky, E., & Lin, P. (2003). Effects of meditation on music performance

    anxiety. *Medical Problems of Performing Artists*, *18*(3), 126–131.

Cheng, W. N. K., & Hardy, L. (2016). Three-dimensional model of performance anxiety: Tests

    of the adaptive potential of the regulatory dimension of anxiety. *Psychology of Sport and*

    Exercise, *22*, 255–263. https://doi.org/10.1016/j.psychsport.2015.07.006

Choy, Y., Fyer, A. J., & Lipsitz, J. D. (2007). Treatment of specific phobia in adults. *Clinical*

    Psychology Review, *27*(3), 266–286. https://doi.org/10.1016/j.cpr.2006.10.002

Cohen, S., & Bodner, E. (2018). The relationship between flow and music performance anxiety

    amongst professional classical orchestral musicians. *Psychology of Music*, 1–16.

    https://doi.org/10.1177/0305735618754689

Colibazzi, T., Posner, J., Wang, Z., Gorman, D., Gerber, A., Yu, S., … Peterson, B. S. (2010).

Neural systems subserving valence and arousal during the experience of induced emotions.

Emotion, *10*(3), 377–389. https://doi.org/10.1037/a0018484

Conrad, A., & Roth, W. T. (2007). Muscle relaxation therapy for anxiety disorders: it works but

how? *Journal of Anxiety Disorders*, *21*(3), 243–264.

https://doi.org/10.1016/j.janxdis.2006.08.001

Cooksey, J. M. (1977). A facet-factorial approach to rating high school choral music

performance. *Journal of Research in Music Education*, *25*(2), 100–114.

Costa, S., Hausenblas, H. A., Oliva, P., Cuzzocrea, F., & Larcan, R. (2016). Maladaptive

perfectionism as mediator among psychological control, eating disorders, and exercise

dependence symptoms in habitual exerciser. *Journal of Behavioral Addictions*, *5*(1), 77–89.

https://doi.org/10.1556/2006.5.2016.004

Cox, W. J., & Kenardy, J. (1993). Performance anxiety, social phobia, and setting effects in

instrumental music students. *Journal of Anxiety Disorders*, *7*(1), 49–60.

https://doi.org/https://doi.org/10.1016/0887-6185(93)90020-L

DeCoster, J., Iselin, A. M. R., & Gallucci, M. (2009). A Conceptual and Empirical Examination

of Justifications for Dichotomization. *Psychological Methods*, *14*(4), 349–366.

https://doi.org/10.1037/a0016956

Dews, C. L. B., & Williams, M. S. (1989). Student Musicians' Personality Styles, Stresses, and

Coping Patterns. *Psychology of Music*, *17*(1), 37–47.

https://doi.org/10.1177/0305735689171004

Dobos, B., Piko, B. F., & Kenny, D. T. (2018). Music performance anxiety and its relationship

with social phobia and dimensions of perfectionism. *Research Studies in Music Education*,

1321103X18804295. https://doi.org/10.1177/1321103X18804295

Dunkley, D. M., Zuroff, D. C., & Blankstein, K. R. (2003). Self-Critical Perfectionism and Daily

Affect: Dispositional and Situational Influences on Stress and Coping. *Journal of*

Personality and Social Psychology, *84*(1), 234–252. https://doi.org/10.1037/0022-

3514.84.1.234

Ferrari, M., Yap, K., Scott, N., Einstein, D. A., & Ciarrochi, J. (2018). Self-compassion

moderates the perfectionism and depression link in both adolescence and adulthood. *PLoS*

ONE, *13*(2). Retrieved from

http://ezprox.bard.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=ps

yh&AN=2018-15711-001&site=ehost-live

Fishbein, M., Middlestadt, S. E., Ottati, V., Straus, S., & Ellis, A. (1988). Medical problems

among ICSOM musicians: Overview of a national survey. *Medical Problems of Performing*

Artists, *3*, 1–8.

Flett, G., & Hewitt, P. L. (1991). Perfectionism in the self and social context: Conceptualization,

assessment and association with psychopathology. *Journal of Personality and Social*

Psychology, *60*(3), 456–470.

Flett, G. L., Endler, N. S., Tassone, C., & Hewitt, P. L. (1994). Perfectionism and components of

state and trait anxiety. *Current Psychology*, *13*(4), 326–350.

https://doi.org/10.1007/BF02686891

Fogle, D. O. (1982). Toward effective treatment for music performance anxiety. *Psychotherapy:*

Theory, Research & Practice. US: Division of Psychotherapy (29), American Psychological

Association. https://doi.org/10.1037/h0088448

Foley, A. E., Herts, J. B., Borgonovi, F., Guerriero, S., Levine, S. C., & Beilock, S. L. (2017).

The Math Anxiety-Performance Link: A Global Phenomenon. *Current Directions in Psychological Science*, *26*(1), 52–58. https://doi.org/10.1177/0963721416672463

Fritz, B. S., & Avsec, A. (2007). The experience of flow and subjective well-being of music students. *Psihološka Obzorja / Horizons of Psychology*. Fritz, Barbara Smolej: Barbara Smolej Fritz, Univ. Dipl. Psih., Glasbena sola Krsko, Kolodvorska 2, Krsko, Slovenia, 8270, barbara.smolej-fritz@guest.arnes.si: Slovenian Psychological Assn.

Frost, R. O., Marten, P., Lahart, C., & Rosenblate, R. (1990). The dimensions of perfectionism. *Cognitive Therapy and Research*. Germany: Springer. https://doi.org/10.1007/BF01172967

Fullagar, C. J., Knight, P. A., & Sovern, H. S. (2013). Challenge/skill balance, flow, and performance anxiety. *Applied Psychology*, *62*(2), 236–259. https://doi.org/10.1111/j.1464-0597.2012.00494.x

Gates, G. A., Saegert, J., Wilson, N., Johnson, L., Shepherd, A., & Hearne, E. M. 3rd. (1985). Effect of beta blockade on singing performance. *The Annals of Otology, Rhinology, and Laryngology*, *94*(6 Pt 1), 570–574. https://doi.org/10.1177/000348948509400609

Gillespie, R. (1997). Ratings of Violin and Viola Vibrato Performance in Audio-Only and Audiovisual Presentations. *Journal of Research in Music Education*, *45*(2), 212–220. https://doi.org/10.2307/3345581

Ginsberg, D. L. (2004). Women and Anxiety Disorders: Implications for Diagnosis and Treatment. *CNS Spectrums*, *9*(9), 1–3. https://doi.org/DOI: 10.1017/S1092852900001978

Gould, D., & Krane, V. (1992). *The arousal-athletic performance relationship: Current status and future directions. Advances in Sport Psychology*.

Gould, D., & Udry, E. (1994). Psychological skills for enhancing performance: Arousal regulation strategies. *Medicine & Science in Sports & Exercise*, *26*(4), 478–485.

https://doi.org/10.1249/00005768-199404000-00013

Hamachek, D. E. (1978). Psychodynamics of normal and neurotic perfectionism. *Psychology: A Journal of Human Behavior*, *15*(1), 27–33.

Hamann, D. L. (1982). An Assessment of Anxiety in Instrumental and Vocal Performances. *Journal of Research in Music Education*, *30*(2), 77–90. https://doi.org/10.2307/3345040

Hamann, D. L., & Sobaje, M. (1983). Anxiety and the College Musician: A Study of Performance Conditions and Subject Variables. *Psychology of Music*, *11*(1), 37–50. https://doi.org/10.1177/0305735683111005

Hardy, L., & Parfitt, G. (1991). A catastrophe model of anxiety and performance. *British Journal of Psychology*, *82*(2), 163–178. https://doi.org/10.1111/j.2044-8295.1991.tb02391.x

Hoffman, S. L., & Hanrahan, S. J. (2012). Mental skills for musicians: Managing music performance anxiety and enhancing performance. *Sport, Exercise, and Performance Psychology*, *1*(1), 17–28. https://doi.org/10.1037/a0025409

Hooley, Jill, M., Butcher, J. N., Nock, M. K., & Mineka, S. M. (2017). *Abnormal Psychology*. Pearson.

Jackson, J. M., & Latané, B. (1981). All alone in front of all those people: Stage fright as a function of number and type of co-performers and audience. *Journal of Personality and Social Psychology*, *40*(1), 73–85. https://doi.org/10.1037/0022-3514.40.1.73

Jamieson, J. P., Mendes, W. B., Blackstock, E., & Schmader, T. (2010). Turning the knots in your stomach into bows: Reappraising arousal improves performance on the GRE. *Journal of Experimental Social Psychology*, *46*(1), 208–212. https://doi.org/https://doi.org/10.1016/j.jesp.2009.08.015

Juster, H., G. Heimberg, R., Frost, R., S. Holt, C., I. Mattia, J., & Faccenda, K. (1996). *Social*

phobia and perfectionism. Personality and Individual Differences (Vol. 21).

   https://doi.org/10.1016/0191-8869(96)00075-X

Kenny, D. T. (2006). Music performance anxiety: origins, phenomenology, assessment and

   treatment. *Context: A Journal of Music Research*, *31*(Special Issue: Renegotiating

   Musicology), 51–64. https://doi.org/10.1038/ng.2826

Kenny, D. T. (2009). Kenny Music Performance Anxiety Inventory (K-MPAI) and scoring

   form, (March).

Kenny, D. T., & Ackermann, B. (2012). Optimizing physical and psychological health in

   performing musicians. In *The Oxford Handbook of Music Psychology*.

   https://doi.org/10.1093/oxfordhb/9780199298457.013.0036

Lamont, A. (2012). Emotion, engagement and meaning in strong experiences of music

   performance. *Psychology of Music*, *40*(5), 574–594.

   https://doi.org/10.1177/0305735612448510

Lang, P. J., Miller, G. A., & Levin, D. N. (1983). Anxiety and Fear BT - Consciousness and

   Self-Regulation: Volume 3: Advances in Research and Theory. In R. J. Davidson, G. E.

   Schwartz, & D. Shapiro (Eds.) (pp. 123–151). Boston, MA: Springer US.

   https://doi.org/10.1007/978-1-4615-9317-1_4

Lehmann, A., Sloboda, J., & Woody, R. (2007). *Psychology for Musicians: Understanding and

   Acquiring the Skills. Psychology for Musicians: Understanding and Acquiring the Skills.*

   https://doi.org/10.1093/acprof:oso/9780195146103.001.0001

Lopez, S. J., Snyder, C. R., Nakamura, J., & Csikszentmihalyi, M. (n.d.). Flow Theory and

   Research. Oxford University Press.

   https://doi.org/10.1093/oxfordhb/9780195187243.013.0018

MacCallum, R. C., Zhang, S., Preacher, K. J., & Rucker, D. D. (2002). On the practice of

dichotomization of quantitative variables. *Psychological Methods*, *7*(1), 19–40.

https://doi.org/10.1037/1082-989X.7.1.19

Mahaffey, B. L., Watson, D., Clark, L. A., & Kotov, R. (2016). Clinical and personality traits in

emotional disorders: Evidence of a common framework. *Journal of Abnormal Psychology*,

125(6), 758–767. https://doi.org/10.1037/abn0000187

Martens, R. (1974). Arousal and Motor Performance. *Exercise and Sport Sciences Reviews*, *2*(1).

Retrieved from https://journals.lww.com/acsm-

essr/Fulltext/1974/00020/Arousal_and_Motor_Performance.7.aspx

Matei, R., & Ginsborg, J. (2017). Music performance anxiety in classical musicians - what we

know about what works. *BJPsych International*, *14*(2), 33–35. Retrieved from

https://www.ncbi.nlm.nih.gov/pubmed/29093935

McEwen, B., & Lasley, E. N. (2002). *The end of stress as we know it*.

McGinnis, A. M., & Milling, L. S. (2005). Psychological treatment of musical performance

anxiety: Current status and future directions. *Psychotherapy*, *42*(3), 357–373.

https://doi.org/10.1037/0033-3204.42.3.357

McHugh, M. L. (2012). Interrater reliability: the kappa statistic. *Biochemia Medica*, *22*(3), 276–

282. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/23092060

Mehr, K. E., & Adams, A. C. (2016). Self-Compassion as a Mediator of Maladaptive

Perfectionism and Depressive Symptoms in College Students. *Journal of College Student

Psychotherapy*, *30*(2), 132–145. https://doi.org/10.1080/87568225.2016.1140991

Mesagno, C., & Beckmann, J. (2017). Choking under pressure: theoretical models and

interventions. *Current Opinion in Psychology*, *16*, 170–175.

https://doi.org/10.1016/j.copsyc.2017.05.015

Middlestadt, S. E. (1990). Medical problems of symphony orchestra musicians: From counting people with problems to evaluating interventions. *Revista Interamericana de Psicología*. Brazil: Interamerican Society of Psychology.

Miller, S. R., & Chesky, K. (2004). *The Multidimenstonal Anxiety Theory: An Assessment of and Relationships between Intensity and Direction of Cognitive Anxiety, Somatic Anxiety, and Self-confidence over Multiple Performance Requirements among College Music Majors*. *Medical Problems of Performing Artists* (Vol. 19).

Mor, S., Day, H. I., Flett, G. L., & Hewitt, P. L. (1995). Perfectionism, control, and components of performance anxiety in professional artists. *Cognitive Therapy and Research*, *19*(2), 207–225. https://doi.org/10.1007/BF02229695

Murphy, W. P., Yaruss, J. S., & Quesal, R. W. (2007). Enhancing treatment for school-age children who stutter I. Reducing negative reactions through desensitization and cognitive restructuring. *Journal of Fluency Disorders*, *32*(2), 121–138. https://doi.org/10.1016/j.jfludis.2007.02.002

Nagel, J. J., Himle, D. P., & Papsdorf, J. D. (1989). Cognitive-Behavioural Treatment of Musical Performance Anxiety. *Psychology of Music*, *17*(1), 12–21. https://doi.org/10.1177/0305735689171002

Neff, K. D. (2003a). *Self-Compassion: An Alternative Conceptualization of a Healthy Attitude Toward Oneself*. *Self and Identity - SELF IDENTITY* (Vol. 2). https://doi.org/10.1080/15298860309032

Neff, K. D. (2003b). *The Development and Validation of a Scale to Measure Self-Compassion*. *Self and Identity* (Vol. 2). https://doi.org/10.1080/15298860309027

Nieuwenhuys, A. (2017). Anxiety and performance: perceptual-motor behavior in high-pressure

contexts. *Current Opinion in Psychology*, *16*, 28–33.

https://doi.org/10.1016/J.COPSYC.2017.03.019

Ojserkis, R., & McKay, D. (2017). Scrupulosity and slowness in OCD: Perfectionism as a central

mechanism. In C. Pittenger (Ed.), *Obsessive-compulsive disorder: Phenomenology,*

pathophysiology, and treatment. (pp. 119–128). New York, NY: Oxford University Press.

Retrieved from

http://ezprox.bard.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=ps

yh&AN=2017-43726-012&site=ehost-live

Osborne, M. S., & Kenny, D. T. (2008). The role of sensitizing experiences in music

performance anxiety in adolescent musicians. *Psychology of Music*, *36*(4), 447–462.

https://doi.org/10.1177/0305735607086051

Osborne, M. S., Kenny, D. T., & Holsomback, R. (2005). Assessment of music performance

anxiety in late childhood: A validation study of the Music Performance Anxiety Inventory

for Adolescents (MPAI-A). *International Journal of Stress Management*, *12*(4), 312–330.

https://doi.org/10.1037/1072-5245.12.4.312

Pacht, A. R. (1984). Reflections on perfection. *American Psychologist*. US: American

Psychological Association. https://doi.org/10.1037/0003-066X.39.4.386

Pagoto, S. L., Kozak, A. T., Spates, C. R., & Spring, B. (2006). Systematic Desensitization for

an Older Woman with a Severe Specific Phobia: An Application of Evidenced-Based

Practice. *Clinical Gerontologist*, *30*(1), 89–98. https://doi.org/10.1300/J018v30n01

Papageorgi, I., Creech, A., & Welch, G. (2013). Perceived performance anxiety in advanced

musicians specializing in different musical genres. *Psychology of Music*, *41*(1), 18–41.

https://doi.org/10.1177/0305735611408995

Parasuraman, S., & Purohit, Y. S. (2000). Distress and boredom among orchestra musicians: The

two faces of stress. *Journal of Occupational Health Psychology*, *5*(1), 74–83.

https://doi.org/10.1037/1076-8998.5.1.74

Park, D., Ramirez, G., & Beilock, S. L. (2014). The role of expressive writing in math anxiety.

Journal of Experimental Psychology: Applied. Beilock, Sian L.: Department of Psychology,

University of Chicago, 5848 South University Avenue, Chicago, IL, US, 60637,

beilock@uchicago.edu: American Psychological Association.

https://doi.org/10.1037/xap0000013

Perdomo-Guevara, E. (2014). Is music performance anxiety just an individual problem?

Exploring the impact of musical environments on performers' approaches to performance

and emotions. *Psychomusicology: Music, Mind, and Brain*, *24*(1), 66–74.

https://doi.org/10.1037/pmu0000028

Powell, D. H. (2004). Treating individuals with debilitating performance anxiety: An

introduction. *Journal of Clinical Psychology*, *60*(8), 801–808.

https://doi.org/10.1002/jclp.20038

Price, M., & Anderson, P. L. (2012). Outcome expectancy as a predictor of treatment response in

cognitive behavioral therapy for public speaking fears within social anxiety disorder.

Psychotherapy, *49*(2), 173–179. https://doi.org/10.1037/a0024734

R., K. L. (1975). The construction and validation of a scale of trombone performance skills.

University of Illinois at Urbana-Champaign.

Robazza, C., Bortoli, L., & Nougier, V. (1998). Physiological arousal and performance in elite

archers: A field study. *European Psychologist*, *3*(4), 263–270. https://doi.org/10.1027/1016-

9040.3.4.263

Roland, D. (1994). How Professional Performers Manage Performance Anxiety. *Research*

Studies in Music Education, *2*(1), 25–35. https://doi.org/10.1177/1321103X9400200105

Salmon, P. G. (1990). A psychological perspective on musical performance anxiety: a review of

the literature. *Medical Problems of Performing Artists*, *5*(1).

Sataloff, R. T., Rosen, D. C., & Levy, S. (1999). Medical treatment of performance anxiety: A

comprehensive approach. *Medical Problems of Performing Artists*, *14*, 122–126.

Sinnamon, S., Moran, A., & O'Connell, M. (2012). Flow Among Musicians. *Journal of*

Research in Music Education, *60*(1), 6–25. https://doi.org/10.1177/0022429411434931

Spielberger, C. D. (1972). Anxiety as an Emotional State. *Anxiety: Current Trends in Theory and*

Research, *1*, 23–49. https://doi.org/http://dx.doi.org/10.1016/B978-0-12-657401-2.50009-5

Spielberger, C. D. (1980). *Test Anxiety Inventory*. Palo Alto, CA: Consulting Psychologists

Press.

Stein, D. J., Lim, C. C. W., Roest, A. M., de Jonge, P., Aguilar-Gaxiola, S., Al-Hamzawi, A., …

Collaborators, W. H. O. W. M. H. S. (2017). The cross-national epidemiology of social

anxiety disorder: Data from the World Mental Health Survey Initiative. *BMC Medicine*,

15(1), 143. https://doi.org/10.1186/s12916-017-0889-2

Stein, D. J., Phillips, K. A., Bolton, D., Fulford, K. W. M., Sadler, J. Z., & Kendler, K. S. (2010).

What is a mental/psychiatric disorder? From DSM-IV to DSM-V. *Psychological Medicine*,

40(11), 1759–1765. https://doi.org/10.1017/S0033291709992261

Steptoe, A., & Fidler, H. (1987). Stage fright in orchestral musicians: A study of cognitive and

behavioural strategies in performance anxiety. *British Journal of Psychology*. United

Kingdom: British Psychological Society. https://doi.org/10.1111/j.2044-

8295.1987.tb02243.x

Sternbach, D. J. (1995). Musicians: A neglected working population in crisis. In S. S. L. & M. L.

R. (Eds.), *Organizational risk factors for job stress* (S. L. Saut, pp. 283–302).

Stoeber, J. (2000). Frost Multidimensional Perfectionism Scale (pp. 310–314).

Sweeney, G. A., & Horan, J. J. (1982). Separate and combined effects of cue-controlled

relaxation and cognitive restructuring in the treatment of musical performance anxiety.

Journal of Counseling Psychology, *29*(5), 486–497. https://doi.org/10.1037/0022-

0167.29.5.486

Topoglu, O., Karagulle, D., Keskin, T. U., Abacigil, F., & Okyay, P. (2018). General Health

Status, Music Performance Anxiety, and Coping Methods of Musicians Working in Turkish

State Symphony Orchestras: A Cross-Sectional Study. *Medical Problems of Performing

Artists*, *33*(2), 118–123. https://doi.org/10.21091/mppa.2018.2019

Turner, S. M., Johnson, M. R., Beidel, D. C., Heiser, N. A., & Lydiard, R. B. (2003). The Social

Thoughts and Beliefs Scale: A New Inventory for Assessing Cognitions in Social Phobia.

Psychological Assessment. Turner, Samuel M.: Maryland Center for Anxiety Disorders,

Department of Psychology, University of Maryland, College Park, MD, US, 20742-4411,

Tumer@psyc.umd.edu: American Psychological Association. https://doi.org/10.1037/1040-

3590.15.3.384

Ullman, M. K. (1940). A note on overcoming stage fright among musicians. *Journal of Applied

Psychology*, *24*(1), 82–84. https://doi.org/10.1037/h0062345

Watson, A. H. D. (2009). *The Biology of Musical Performance and Performance-Related Injury*.

Lanham, MD, United States: Scarecrow Press.

Wesner, R. B., Noyes, R., & Davis, T. L. (1990a). No Title. *Journal of Affective Disorders*,

18(3), 177–185.

Wesner, R. B., Noyes, R. J., & Davis, T. L. (1990b). The occurrence of performance anxiety among musicians. *Journal of Affective Disorders*, *18*(3), 177–185.

Wesolowski, B. C., Athanas, M. I., Burton, J. S., Edwards, A. S., Edwards, K. E., Goins, Q. R., … Thompson, J. E. (2018). Judgmental Standard Setting: The Development of Objective Content and Performance Standards for Secondary-Level Solo Instrumental Music Assessment. *Journal of Research in Music Education*, *66*(2), 224–245. https://doi.org/10.1177/0022429418765482

Widmer, S., Conway, A., Cohen, S., & Davis, P. (1997). *Hyperventilation: A correlate and predictor of debilitating performance anxiety in musicians*. *Medical Problems of Performing Artists* (Vol. 12).

Wilson, G. D. (2002). Psychology for performing artists, 2nd ed. *Psychology for Performing Artists, 2nd Ed.* Philadelphia, PA, US: Whurr Publishers.

Yoshie, M., Kudo, K., & Ohtsuki, T. (2009). Motor/autonomic stress responses in a competitive piano performance. *Annals of the New York Academy of Sciences*, *1169*, 368–371. https://doi.org/10.1111/j.1749-6632.2009.04786.x

Appendix A
IRB Proposal

What is the title of your project?
An Exploration of Musical Performance Anxiety (MPA) and Its Relation to Perfectionism and Performance

Describe your research question briefly (approximately 250 words or less):

      Musical Performance Anxiety (MPA) is a critical issue for many musicians because much of their success and income depends on the level of their performance. Striving for perfection in this field can result in feeling motivated to perform better, but it can also result in excessive worrying that impairs performance. However, the exact effects of MPA and perfectionism have not been entirely examined in previous research. It is known that some level of performance anxiety is inevitable for performing to one's best ability, but too much or too little can greatly debilitate performance. It is somewhat unclear whether perfectionism would enhance or harm performance though, so in my senior project, I will further investigate if such a relationship exists.

      In short, I will examine the relationship between perfectionism and anxiety, and how the combination of the two affect performance. I will do this by measuring anxiety, perfectionism and performance in a group of Conservatory students within the context of compulsory blind auditions that will take place February 1-3, 2019. I will be using Bard College Conservatory orchestra placement auditions as the observational situation, which concerns every orchestra musician in the Conservatory (about 80 people). My quasi-independent variables are level of anxiety and level of perfectionism. My dependent variable is level of performance, which will be rated by those judging the outcome of the placement auditions.

Briefly describe how you will recruit participants. (e.g., Who will approach participants? What is the source of the participants?)
I will recruit participants from the Orchestra of Bard College Conservatory of Music, where - being college students - all my participants will be 18 years of age. Every September and February, the orchestra members are required to go through a blind audition procedure to determine the seating of the orchestra, where participants have to play a few orchestra excerpts, and part of a solo piece for their specific instrument.
I will send out recruitment emails a few days before the audition, where I will ask participants to fill out a survey on Survey Gizmo including The Frost Multidimensional Perfectionism Scale and the Performance Anxiety Inventory the night before their audition.

Briefly describe the procedures you will be using to conduct your research.

A few days before the audition, I will ask each participant to:

1. read and agree to the informed consent form, expected to take approximately 1 minute.
2. fill out a demographic questionnaire, expected to take approximately 1 minute.
3. fill out the Frost Multidimensional Perfectionism Inventory, expected to take approximately 10 minutes.
4. fill out the Performance Anxiety Inventory - expected to take approximately 8 minutes.
5. read the debriefing statement, expected to take approximately 1 minute.

The compulsory audition takes approximately 10 minutes to complete. Before the audition, I will ask a member of the audition board to rate each participant's performance, which the participant will be made aware of.

Approximately how many individuals do you expect to participate in your study?
Approximately 30.

Please describe any risks and benefits your research may have for your participants. (For example, one study's risks might include minor emotional discomfort and eye strain. The same study's benefits might include satisfaction from contributing to scientific knowledge and greater self-awareness.)

One potential risk of this study includes minor emotional discomfort when thinking about parental expectations and past - potentially negative - experiences with performing. Participants are compensated through entering a raffle to win a $50, a $24 and a $10 Amazon Gift Card. They may also experience satisfaction from contributing to knowledge about this topic.

What procedures will you use to ensure that the information your participants provide will remain confidential?

To ensure confidentiality, I will have a random code generator at the end of the survey. These are the steps that will ensure that confidentiality is maintained throughout the entirety of the study:
Step 1: participant completes survey

Step 2: participant gets randomly generated code

Step 3: participant sends this said code by email to Hsiao-Fang Lin right after completion of the survey

Step 4: participant shows up to the blind auditions and plays, and their performance is rated by Erica Kiesewetter and another faculty member, who are behind the screen.
At the end of the audition cycle, Erica and the other faculty member will have a list of every musician (Violin 1, Violin 2, Flute 1 etc.) and their scores, but she will not be aware of who the titles refer to. The only person that has access to that information is Hsiao-Fang.

Step 5: at the end of the auditions, Hsiao-Fang will be given the audition scores of Violin 1, Violin 2, Flute 1, etc., and she will match the names and randomly generated codes to Violin 1, Violin 2, Flute 1, etc., and their audition scores. After matching the information, she will present me with a list of which scores belong to which codes, but this list will not include any names/titles.

Step 6: all information linking participants to their randomly generated codes will be destroyed by Hsiao-Fang after graduation (May 25, 2019).

For projects not using deception, please include your debriefing statement.
See Appendix G

Certificate of Completion in the Ethical Treatment of Human Subjects

Certificate of Completion

The National Institutes of Health (NIH) Office of Extramural Research certifies that **Gitta Marko** successfully completed the NIH Web-based training course "Protecting Human Research Participants".

Date of completion: 03/08/2017.

Certification Number: 2345976.

Appendix B
Recruitment Emails

About 10 days before the auditions:

"Dear fellow Conservatory Orchestra members,

I hope this email finds you well. I'm writing to you with asking to participate in my Senior Project in Psychology. The purpose of my study is to examine certain attitudes and emotions that might affect musical performance in conservatory musicians - something that I think we all think about a lot from time to time.

If you choose to participate in this study, you will be asked to complete a questionnaire with basic demographic information. Then, you will be asked to complete a questionnaire assessing personality characteristics, followed by an additional questionnaire examining your experiences with performance anxiety. The questionnaires should not take more than 15 minutes to complete. If you choose to participate in this project, your orchestra seating audition will be scored by a faculty member, and this score will be matched to your responses. This study is completely confidential and anonymous. And if helping me is not enough motivation, at the end of the survey questions, you also have the chance to enter into a raffle to win a $50, a $25 and a $10 Amazon Gift Card!

Let me know if you have any questions about this project, and thank you for considering helping me! In the following days, I will send out a link to the survey, so keep an eye out!

Thank you all so much again,
Gitta"

A week before auditions started:

"Dear Dear fellow Conservatory Orchestra members,

I hope this email finds you well, and not super stressed out. I'm writing to you all following my previous email about Senior Project in Psychology. As a reminder, the purpose of this study is to examine certain attitudes and emotions that might affect musical performance in conservatory musicians.

The questionnaires that I will ask you to fill out should not take more than 20 minutes to complete. Here is the link to the survey questions: ---

If you choose to participate in this study, please fill this out until Tuesday before your audition. At the end of the survey, you'll get a chance to enter your email address to enter the Amazon Gift card raffle. Additionally, you will also receive a code, which will help us keep all your data confidential. Please take a screenshot of this code and show it to Hsiao-Fang before or after your audition. This will help me match your responses to your performance. Again, thank you immensely for your help. Without you, my senior project would not be what it is.

See you all around,
Gitta"

Appendix C
Consent Form

Effects of Personality on Musical Performance - Consent Form
Principal Investigator: Gitta Markó (gm9818@bard.edu)
Adviser: Justin Hulbert (jhulbert@bard.edu), Frank Scalzo (scalzo@bard.edu)
Psychology Program, Bard College

Introduction
You are being asked to participate in a research study conducted by members of the Psychology Department at Bard College. Please read the following information carefully.

Purpose
The purpose of this study is to examine certain attitudes and emotions that might affect musical performance.

Study Procedure
If you choose to participate in this study, you will be asked to complete a questionnaire that provides us with basic demographic information including your age, gender, instrument, time having played that instrument, and past experiences playing in an orchestra. Next, you will be asked to complete a questionnaire assessing personality characteristics (this will take up most of the survey), followed by an additional questionnaire examining your experiences with performance anxiety. The entire study must be completed in one sitting. The total duration of the study will be approximately 10 minutes (there will be 60 questions). **After completion of the questionnaires, you MUST send your unique ID (which will be generated at the end of the survey) and name to Hsiao-Fang.** If you fail to do this, you will not be able to participate in the study.
Your blind audition will be scored on a scale of 1 to 10 by a faculty member, and this score will be matched to your responses. You are free to skip questions, or stop taking the survey at any time during the process.

Risks and Discomforts
Participation in this study has some risk of causing discomfort and anxiety prior to/during the audition process, as some of the survey questions might be potentially triggering, and of personal nature. If you experience any discomfort during or after the study, please feel free to utilize the resources provided at the end of this consent form, or contact the Principal Investigator.

Benefits
You are not likely to benefit directly from participating in this study. However, your participation will contribute to the understanding of how much personality affects performance anxiety, and eventually actual performance.

Compensation
You will be entered into a raffle to receive a $50, a $25 or a $10 Amazon gift card when you send your unique ID and name to Hsiao-Fang at the end of the survey. This will not affect the confidentiality of the data.

Exclusion/Inclusion Criteria

In order to participate in this study, you must be a Bard College Conservatory Student that is required to go through the biannual seating auditions for orchestra. If you are not participating in the auditions this year, your data will be excluded from the final analysis.

Confidentiality
The confidentiality of your personal information will be ensured through several procedures. Your records will be kept under a code rather than by name. The Principal Investigator will only have access to the codes, and not the names, whereas Conservatory staff will know the names and audition scores, but will not have access to the survey information. All information linking participants to their randomly generated codes will be destroyed after graduation (May 25, 2019).
Your name will not appear when results of this study are presented or published. Your privacy will be protected to the fullest extent of the law. The final project of this study will be permanently and publicly available in the Bard College Library as well as online through the DigitalCommons. However, your identity will remain confidential, and your name will not appear in this final project.

In Case of Injury/Harm
If you are injured as a result of being in this study, please contact the Principal Investigator, Gitta Markó (gm9818@bard.edu).

Participant Rights
Your participation in this study is voluntary. If you choose to discontinue you the study, there will be no penalties.

Questions About Your Rights as a Research Participant
If you have any questions about your rights as a research participant, contact the chair of the Bard College IRB (irb@bard.edu).

Questions About the Study
If you have any questions about the study, contact Gitta Markó (gm9818@bard.edu).

Resources
If you experience any discomfort during, or after the study, please feel free to utilize some of these resources available to you on campus:
Bard Counseling Services
Phone: 845-758-7433
Fax: 845-758-7437
Email: counselingservice@bard.edu.

Let's Talk
Mondays 3–4 pm Kappa House
Wednesdays 12–1pm Library, Room 402
Fridays 12-1pm Bitó Conservatory, Room 206
BRAVE emergency hotline services are available on a 24-hour, seven-day-a-week basis. To contact a BRAVE counselor, call security at ext.7777 and ask to speak to a BRAVE Counselor.

Appendix D
Demographic Questionnaire

How old are you?
What is your gender identification?
    Male
    Female
    Nonbinary
What type of instrument do you play?
    String
    Woodwind
    Brass
    Percussion
    Harp
How many years have you played your instrument?
How many years have you played in a classical orchestra?

Appendix E
Frost Multidimensional Perfectionism Scale

Strongly Disagree (1)   Disagree (2)   Neutral (3)   Agree (4)   Strongly Agree (5)

1. My parents set very high standards for me (Parental Expectations)
2. Organization is very important to me (Organization)
3. As a child, I was punished for doing things less than perfect (Parental Criticism)
4. If I do not set the highest standards for myself, I am likely to end up a second-rate person (Personal Standards)
5. My parents never tried to understand my mistakes (PC)
6. It is important to me that I am thoroughly competent in everything I do (PS)
7. I am a neat person (O)
8. I try to be an organized person (O)
9. If I fail at work/school, I am a failure as a person (Concern over Mistakes)
10. I should be upset if I make a mistake (CM)
11. My parents wanted me to do the best at everything (PE)
12. I set higher goals than most people (PS)
13. If someone does a task at work/school better than I, then I feel like I failed the whole task (CM)
14. If I fail partly, it IS as bad as being a complete failure (CM)
15. Only outstanding performance is good enough in my family (PE)
16. I am very good at focusing my efforts on attaining a goal (PS)
17. Even when I do something very carefully, I often feel that it is not quite right (Doubts about Action)
18. I hate being less than the best at things (CM)
19. I have extremely high goals (PS)
20. My parents have expected excellence from me (PE)
21. People will probably think less of me if I make a mistake (CM)
22. I never felt like I could meet my parents' expectations (PC)
23. If I do not do as well as other people, it means I am an inferior human being (CM)
24. Other people seem to accept lower standards than I do (PS)
25. If I do not do well all the time, people will not respect me (CM)
26. My parents have always had higher expectations for my future than I have (PE)
27. I try to be a neat person (O)
28. I usually have doubts about the simple everyday things I do (DA)
29. Neatness is very important to me (O)
30. I expect higher performance in my daily tasks than most people (PS)
31. I am an organized person (O)
32. I tend to get behind in my work because I repeat things over and over (DA)
33. It takes me a long time to do something "right" (DA)
34. The fewer mistakes I make, the more people will like me (CM)
35. I never felt like I could meet my parents' standards (PC)

Appendix F
Performance Anxiety Inventory

Almost Never (1)   Sometimes (2)   Often (3)   Almost Always (4)

1. I feel confident and relaxed while performing before an audience
2. While giving a recital my hands are cold
3. Thinking about the evaluation I may get in a recital interferes with my performance
4. If I make a mistake, I usually panic
5. During a recital I find myself thinking about whether I'll even get through it
6. The harder I work in preparing for a concert, the more likely I am to make a serious mistake
7. Thoughts of doing poorly interfere with my performance
8. I feel very jittery when giving an important recital
9. Even when I'm well-prepared for a recital, I feel very anxious about it.
10. I start feeling very uneasy just before getting feedback on my performance
11. During recitals my hands sweat
12. I wish recitals did not bother me so much
13. During recitals I am so tense that my stomach gets upset
14. I seem to defeat while working on important recitals
15. I feel very panicky when I approach an important recital
16. If I were to take an important recital examination (jury), I would worry a great deal before taking it
17. During recitals I find myself thinking about the consequences of blacking out
18. I feel my heart beating very fast during recitals
19. As soon as a recital is over, I try to stop worrying about it, but I just can't
20. During a recital I get so nervous that I black out

Appendix G
Performance Rating Scale

<u>Calmness 1-10</u>

1-2: Player displays serious signs of nervousness. Playing sounds very shaky, and seems to get completely out of control. Playing sounds very unstable.

3-4: Player displays some serious signs of nervousness. Playing sounds shaky and gets out of control at times.

5-6: Player displays signs of nervousness. Playing sounds shaky, and the mistakes made definitely stem from said nervousness.

7-8: Player displays some signs of nervousness. Playing sounds a little shaky, but still focused and pretty stable.

9-10: Player displays no signs of nervousness whatsoever. Playing sounds entirely calm, focused and stable.

<u>Performance quality 1-10</u>

1-2: Performance is disastrous. There is no sense of clarity in articulation, no consistency in intonation, no demonstrable awareness of phrase structure, tempo or pulse. Performance is unsatisfactory.

3-4: Playing is just short of unsatisfactory. Technical facility is poor, articulation and intonation are inconsistent. There is almost no awareness of phrase structure, tempo and pulse. Musical ideas are inappropriate for the pieces in question. Playing is poor.

5-6: Performance is satisfactory. Technical facility is somewhat skillful, but articulation and intonation are inconsistent. There is some awareness of phrase structure, tempo and pulse, but they are not well-refined. Musical ideas are somewhat appropriate, but not well-articulated for the pieces in question. Playing is mediocre.

7-8: Performance is very good. Quite skillful technical facility can be heard, articulation and intonation is pretty consistent, and there is, for the most part, demonstrable awareness of phrase structure, tempo and pulse. Musical ideas are appropriate and somewhat well-articulated for the pieces in question. Playing is high level.

9-10: Performance is exemplary. Skillful technical facility can be heard, articulation and intonation is consistent and refined, there is demonstrable awareness of phrase structure, tempo and pulse. Musical ideas are appropriate and well-articulated for the pieces in question and are excellent. Playing is extremely high level.

Well-preparedness 1-10

1-2: Player is not at all prepared, and is clearly sight-reading the material. There is no sense of the musical ideas in the pieces in question, the tempos are inappropriate, and there is no awareness of phrasing.

3-4: Player is not well-prepared. There is some sense of the musical ideas in the pieces in question, but the tempos might be inappropriate. Playing is incoherent and has no sense of purpose.

5-6: Player is somewhat prepared. There is some sense of the musical ideas in the pieces in question, but the tempos and phrasing might be inappropriate. Playing is somewhat coherent, but does not demonstrate awareness of what is going in the orchestra.

7-8: Player is well-prepared. Some of the musical ideas seem to be thought-out, but there is not necessarily a real sense of coherence in the playing. Tempos and phrasing are quite appropriate, but there is not a real awareness of what might be going on in the whole orchestra.

9-10: Player is very well-prepared. All the musical ideas seem to be thought-out, and there is a real sense of coherence in the playing. Tempos and phrasing are appropriate at all times, and there is a real awareness of what is going on in the whole orchestra.

Appendix H
Debriefing Statement

Hi there!

Thank you for participating in this study! The purpose of this study was to examine how Musical Performance Anxiety and level of Perfectionism affect musical performance. Specifically, we hypothesized that those with low and high levels of anxiety will perform worse than those with moderate levels of anxiety. We also hypothesized, that those that set high standards for themselves will perform better than those who are concerned about making mistakes during a performance, even though both are forms of perfectionism.

Previous research has examined the role of both anxiety and perfectionism on performance, but little has combined the two in a real-life situation. Since Musical Performance Anxiety is such a huge concern for so many musicians' lives, it is indispensable to spend time examining it even closer. What we learn from this study can have significant implications on our understanding of the quality of performers' lives, and could potentially help formulate intervention programs for the anxiety musicians experience on a daily basis.

If you have any further questions about the study, feel free to contact Gitta Markó (gm9818@bard.edu).

The winners of the Amazon gift cards will be notified by email in the next couple days.

Thank you again for your time and input,

Gitta

Appendix I

Bard College   Institutional Review Board

Date: December 17, 2018

To: Gitta Markó (gm9818@bard.edu)
Cc: Frank Scalzo (scalzo@bard.edu)
From: Sanjay DeSilva, IRB Chair

Re: Do Musical Performance Anxiety and Perfectionism Interact to Affect Musical Performance?

DECISION: APPROVED

Dear Gitta,

The Bard Institutional Review Board reviewed the revisions to your proposal. Your proposal is approved through December 17, 2019. Your case number is 2018DEC17-MAR.

We have two further suggestions;

(1)   In the consent form, you could clarify that participants' can skip questions or stop taking the survey at any time during the process. The present form states only that they "are free to withdraw from the study at any time."

(2)   You could remove your own name from the list of people participants can contact if they experience distress during the survey. Providing references to trained professionals is appropriate.

Please notify the IRB if your methodology changes or unexpected events arise.

We wish you the best of luck with your research.

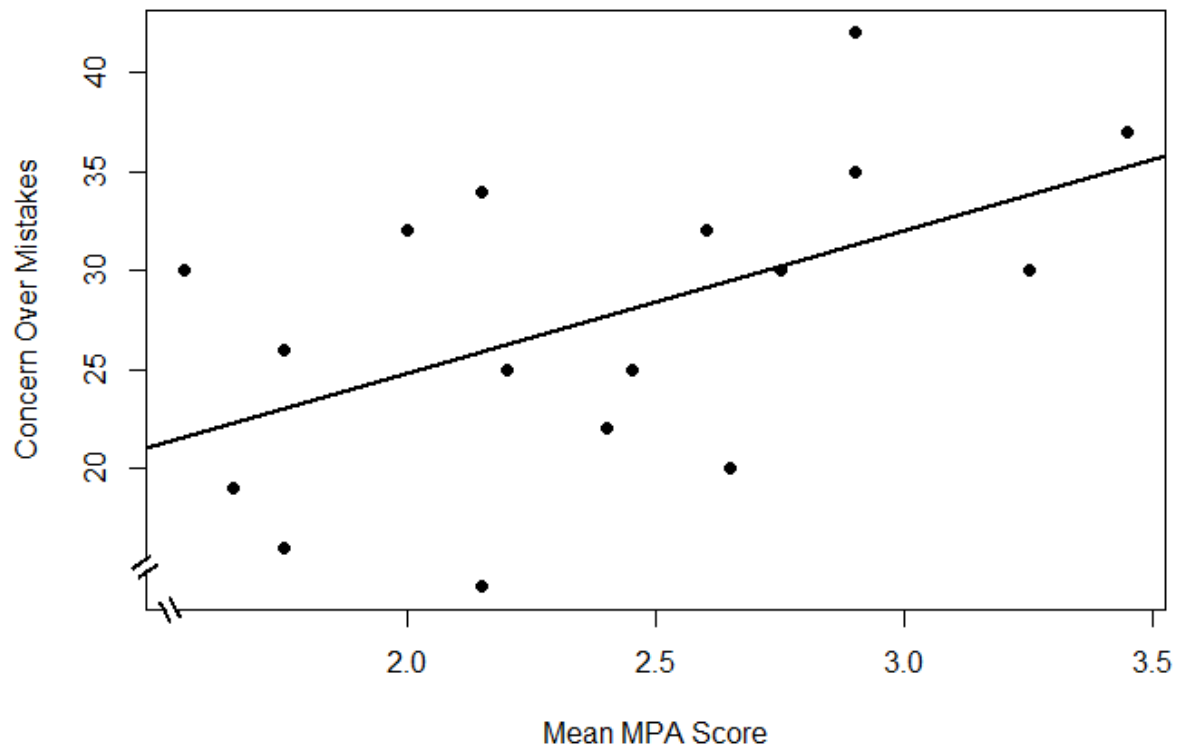Sanjay DeSilva desilva@bard.edu
IRB Chair

Appendix J
Additional Analyses

Figure J1. Correlation between concern over mistakes and mean MPA scores. A significant positive correlation was found between the concern over mistakes perfectionism dimension and mean MPA scores.
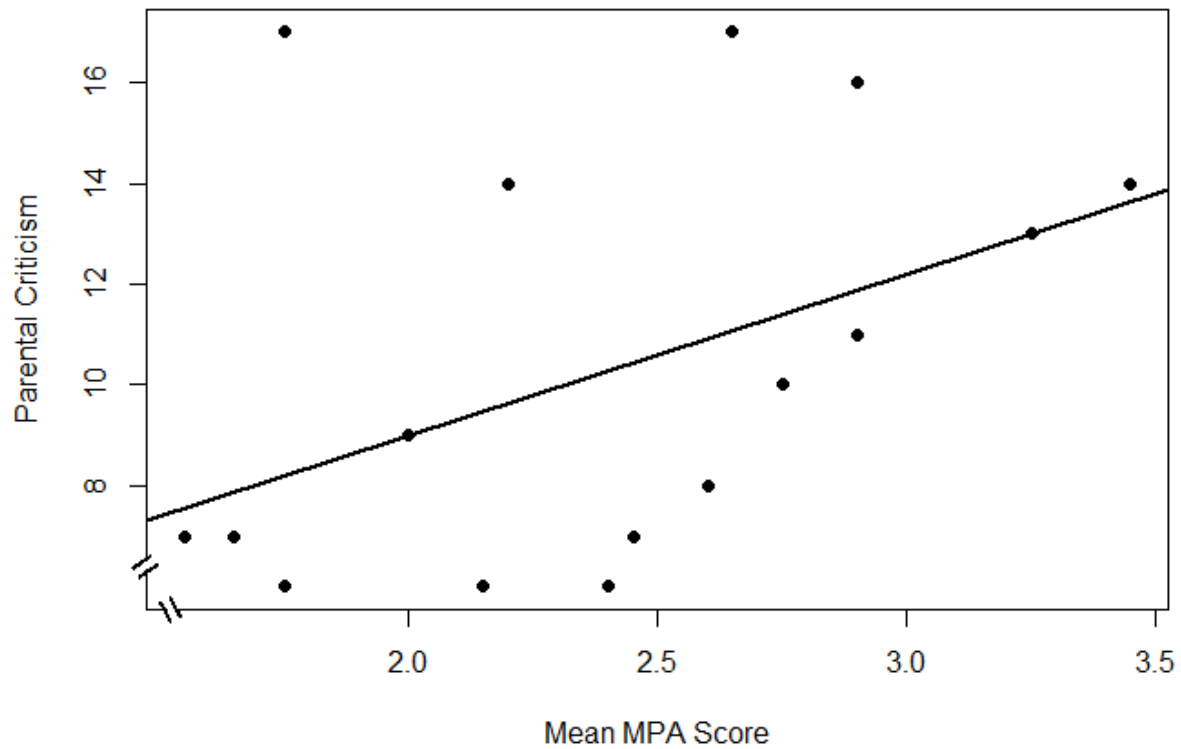
Figure J2. Correlation between parental criticism and mean MPA scores. A marginally significant positive correlation was found between the parental criticism perfectionism dimension and mean MPA scores. Some sings of non-linearity can be observed.
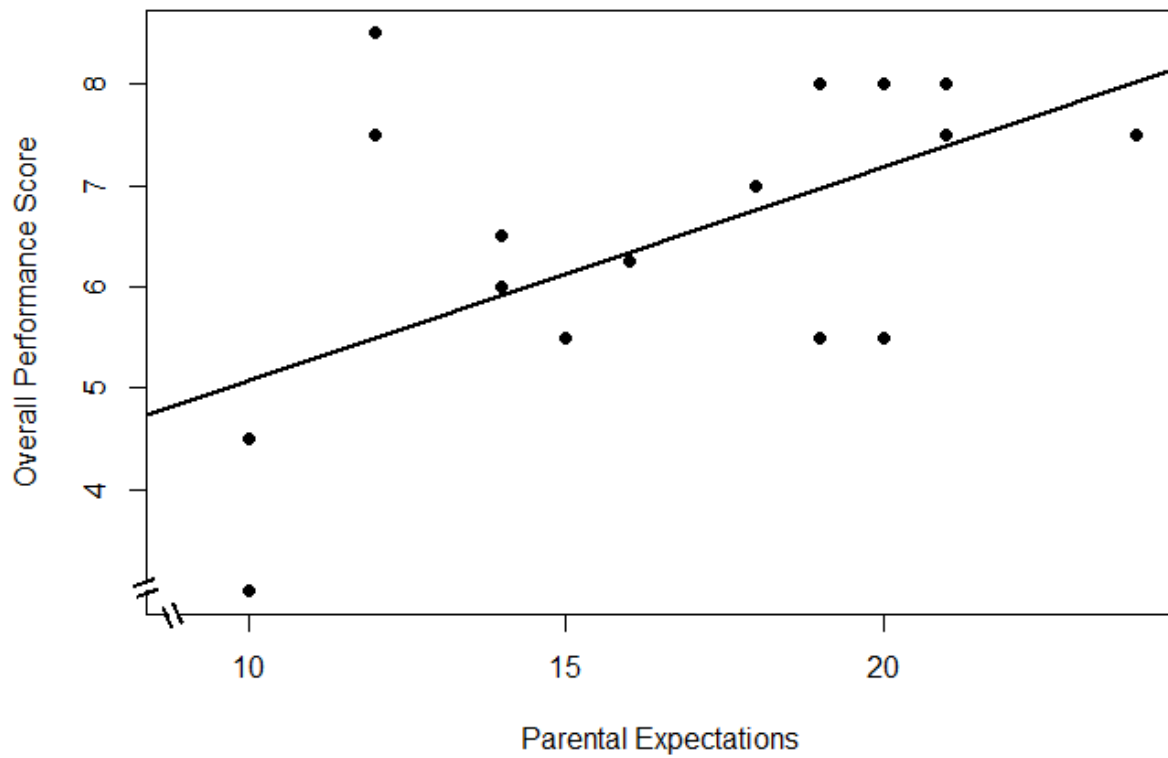
Figure J3. Correlation between parental expectations and overall performance scores. A significant positive correlation was found between the parental expectations perfectionism dimension and overall performance scores.
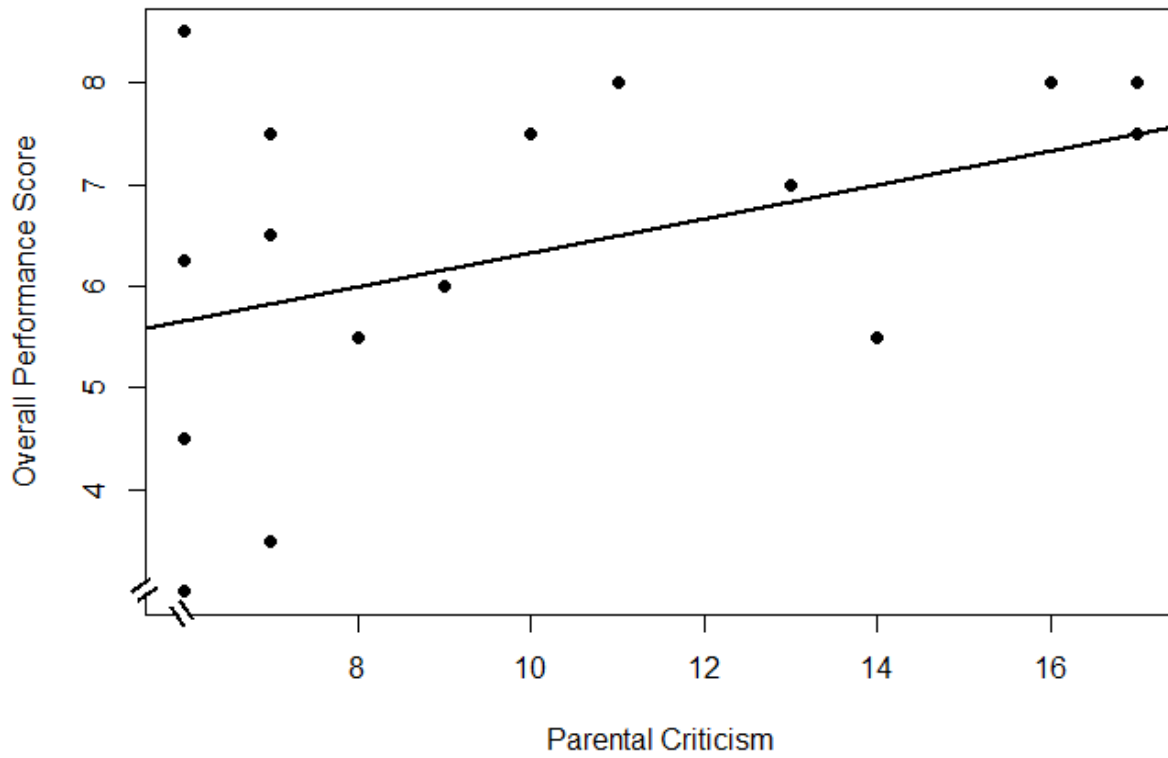
Figure J4. Correlation between parental criticism and overall performance scores. A possible non-linear relationship can be observed between parental criticism and performance, but further research should be done to account for my small sample size.