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**MANAGING MUSIC PERFORMANCE ANXIETY:
THE APPRAISAL THEORY OF EMOTION AS A FRAMEWORK FOR ANXIETY
REGULATION**

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ADRIANA JARVIS TWITCHELL

**MANAGING MUSIC PERFORMANCE ANXIETY:
THE APPRAISAL THEORY OF EMOTION AS A FRAMEWORK FOR ANXIETY
REGULATION**

Dissertation presented to the Graduate Department
of Music at the State University of Santa Catarina,
in partial fulfillment of the requirements of the
degree of Doctor of Music: Creative Processes
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This dissertation is dedicated to other performing musicians who, like me, have desired to manage rather than be managed by anxiety.

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If you are grieved about anything external, 'tis not the thing itself that afflicts you, but your judgment about it; and it is in your power to correct this judgment and get quit of it. (Aurelius, 2008, p. 103).

RESUMO

A ansiedade da performance musical (APM) pode manifestar-se de formas facilitadoras e debilitantes. Neste contexto, postula-se que a teoria de avaliação de emoção a partir de Arnold (1960) e Lazarus (1966) é especialmente útil para desvendar os fatores que contribuem para ambas. Esta tese ilustra como a teoria pode ser uma ferramenta apropriada para o trabalho de regulação de APM, tornando o cultivo de ansiedade adaptativa e a obstrução da APM desadaptativa mais prático, memorável e eficiente. O Capítulo 1 apresenta conceitos importantes da teoria de avaliação, seguidos de uma discussão sobre as informações examinadas e como elas afetam a compreensão da APM, suas causas, consequências e métodos eficazes para regulá-la. O Capítulo 2 mostra como modelos de regulação emocional baseados na teoria podem ser usados de maneira prática para orientar o processo de cultivar ansiedade benéfica, ajudando os músicos a equipararem estratégias de regulação com as variáveis da performance. O Capítulo 3 explora a implementação de estratégias baseadas na teoria em situações do mundo real. Com base nos estudos teóricos e a prática à luz da “teoria de avaliação”, pode-se inferir que a aplicação de seus princípios na prática instrumental reduz a dificuldade de regular a ansiedade através do fornecimento de uma estrutura integradora, que organiza a literatura existente sobre ansiedade de palco, e ilustra as condições em que estratégias específicas funcionam bem. Desta forma, a teoria de avaliação torna mais fácil e compreensível a tarefa de desenvolver sequências de estratégias adaptadas às circunstâncias individuais.

Palavras-chave: Ansiedade de performance musical; Teoria de avaliação; Regulação emocional

ABSTRACT

Music performance anxiety (MPA) can come in facilitative and debilitating forms. Given this context, it is postulated that the appraisal theory of emotion, originating with Arnold (1960) and Lazarus (1966), can be especially helpful in elucidating factors that contribute to both helpful and harmful anxiety. This dissertation illustrates how appraisal theory can be an appropriate tool for theory oriented MPA regulation, making the cultivation of adaptive MPA and the downregulation of maladaptive MPA more practical, memorable and energy efficient. Chapter 1 presents key appraisal theory concepts followed with a discussion of how the information examined impacts the understanding of MPA, its causes, consequences, and effective methods for regulating it. Chapter 2 demonstrates how emotion regulation models based on appraisal theory can be used as practical tools to orient MPA regulation, helping musicians match regulation strategies to fluctuating performance variables. Chapter 3 explores the implementation of appraisal-theory-based strategies in real-world situations. Based on theoretical and practical research oriented by the appraisal theory, it is inferred that the application of its principals in instrumental practice reduces the difficulty of MPA regulation by organizing existing literature on MPA strategies into an integrative framework, illustrating the conditions in which certain strategies work well and explaining why they do. In this way, appraisal theory makes easier and more understandable the task of developing strategy sequences adapted to individual circumstances.

Key words: Music Performance Anxiety; Appraisal Theory of Emotion; Emotion Regulation

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INTRODUCTION

This dissertation explores determining factors which contribute to both adaptive and maladaptive Music Performance Anxiety (MPA), an emotional phenomenon, through examining research in the field of affective science.¹ Surveys show that interest is high among musicians for increased help and instruction in managing MPA (Nascimento, 2013; Studer *et al.*, 2011; Fehm; Schmidt, 2006).

Music Performance Anxiety has been defined in a number of ways by researchers, with some equating MPA to stage fright (Steptoe, 2001; Ray, 2009), or viewing MPA as a graded phenomenon ranging from light apprehension to panic (Maciente, 2016; Wilson, 2002), with still others referring to MPA as a “pathological disorder” which “necessitates treatment,” with intense symptoms that are detrimental to performance quality (Brugués, 2019, p. 2). Although definitional discrepancies exist, Dianna Kenny’s 2009 definition has become increasingly relied upon, describing an “experience of marked and persistent anxious apprehension related to musical performance...” which is “manifested through combinations of affective, cognitive, somatic, and behavioral symptoms,” and that “*may or may not impair the quality of the musical performance*” (Kenny, 2011, p.433, italics added).

Many studies confirm Kenny’s statement about the two-sided quality of MPA, showing that performance anxiety can come in both adaptive and maladaptive forms (MacAfee; Comeau, 2020; Gültepe; Coskun, 2016; Osborne *et al.*, 2014; Kenny; Ackermann, 2009; Hanin, 2010; Connolly; Williamon, 2004). In seeking to identify elements which contribute to facilitative or debilitating MPA, a common assumption among researchers is that both low and high levels of anxiety are debilitating, while medium-level anxiety is facilitative (Paliaukiene *et al.*, 2018; Sinico da Cunha; Winter, 2013; Valentine, 2002; Steptoe; Fidler, 1987). Recent studies have emphasized the importance of examining beyond simple low-medium-high anxiety classifications, toward greater understanding of facilitative and debilitating aspects of performance anxiety, calling for not only an examination of means to reduce debilitating effects but also means to enhance performance via facilitative anxiety (Huang; Yu, 2022; MacAfee;

¹ Affective science is an interdisciplinary scientific domain that aims to “develop an in-depth understanding of emotions, moods, and feelings and how they are embodied within the brain” (Fox, 2018). Coan and Allen (2007) explain that although “long associated with psychology, researchers in the affective sciences can now be found in a variety of disciplines. Psychologists, biologists, sociologists, geneticists, neuroscientists, ethnologists, economists, behavioral ecologists, and even physicians each contribute their specific expertise like pieces of a puzzle” (p.3).

Comeau, 2020; Jamieson *et al.*, 2018a and 2018b; Crum *et al.*, 2017; Osborne; Greene; Immel, 2014).

Although much study has been dedicated to tracking numbers and percentages of musicians who suffer from debilitating symptoms of MPA, and indeed found these numbers to be high (Casanova, O.; Zarza, F. J.; Orejudo, S., 2018; Kenny; Driscoll; Ackerman, 2016; Miller; Chesky, 2004; Wesner *et al.*, 1990; Roland, 1994), recognition of MPA's facilitative factors invites movement beyond a one-sided view of MPA's potential to harm, and toward an exploration of how it can help.

Considering recent research emphasizing MPA's potential to improve performance, as well as the need for greater understanding of the phenomenon, this dissertation seeks to examine the following questions: (1) What are the contributing factors to both maladaptive and adaptive MPA? (2) What are some basic principles underlying the cultivation of facilitative MPA?

Additionally, in view of the need for further education among musicians regarding tools for MPA regulation, and the difficulty of understanding how and when to effectively apply these tools, two additional questions will be examined: (3) Given the breadth of MPA regulation strategies available, how can musicians choose strategies appropriately matched to performance variables that are in constant flux? and (4) How can musicians implement MPA regulation strategies in real-world situations? Where questions one and two focus on understanding the differences between facilitative and debilitating MPA, examining factors which contribute to each, these last questions delve deeper into the actual cultivation process in which facilitative MPA is generated, through exploring the problems of strategy selection and strategy implementation.

The literature on performance anxiety coping strategies includes many scientific and non-scientific publications which offer lists that, in the words of Zhukov (2019, p. 58), "illustrate the wealth of coping strategies available today" for maladaptive performance anxiety.² Other studies have looked at identifying which MPA management techniques are actually utilized by musicians (MacAfee; Comeau, 2023; Huang; Yu, 2022; Burin; Osorio, 2017) and found that the wealth of strategies described in research literature are not necessarily reflected in musicians' actual practice. This, together with the conclusion by Casanova *et al.* (2018) that "an overwhelming

² For example, see Silva; Leão, 2017; Maciente, 2016; Macgrath, 2012; Ray, 2009; Buswell, 2007; Greene 2002; Wilson, 2002; Wolfe, 1990.

amount of students would wish to receive... greater... support regarding this issue [MPA]” (p. 385), illustrates the need for increasing accessibility to such information, through the development of methods which translate research findings into practice in a useful and memorable manner, streamlining the application and implementation of MPA research.

McKnight and Kashdan (2009) posit that “people with access to a large set of self-regulatory tools, *with an ability to flexibly apply them*, are in an optimal position to navigate life challenges and sustain high levels of healthy functioning (p. 247, italics added). As pointed out in the preceding paragraph, the “gap” as MacAfee and Comeau (2023) describe it, between research in MPA and application of regulatory strategies points toward two distinct but related solutions: first, musicians need further education on the range and effectiveness of strategies examined in research literature (increased access to the large toolkit); and second, they need the *means* to flexibly apply these tools.

The experience of MPA and its contributing factors differs between individuals, thus “various combinations of MPA coping strategies need to be used, depending on individual circumstances” (Huang; Song, 2021, p. 96). The challenge of navigating MPA on a personal basis and assessing which strategies to implement, and when, is a demanding activity requiring extensive understanding not only of available tools, but how they relate to each other and when best to apply them.

One hypothesis which aids in answering questions about strategy selection and implementation rests on Kenny’s (2011) observations: a working theory or model can aid in reducing the difficulty of anxiety regulation, as theories assist in identifying unifying principles which orient and guide implementation of individual strategies in coherent ways. Kenny describes that “without theory...observations remain descriptive rather than explanatory and make it difficult, if not impossible, to develop appropriate ways to conceptualize and treat the condition [MPA]” (2011, p. 109). Thus, an important hypothesis operating in this dissertation is that organizing available strategies within an appropriate framework facilitates both conceptualization and understanding of the problem, and flexible implementation and effectiveness of treatment.

Despite Kenny’s above observations in 2011 about the importance of theory in orienting treatment of MPA, it has remained true in recent years that, as Papageorgi *et al.* observed in 2007, “there has been a tendency for any findings in the field not to be situated within a unified

and coherent model upon which later studies can be informed” (p. 83). A few notable exceptions to this tendency can be found (Leblanc, 1994; Kenny *et al.*, 2004; Wilson, 2002; Papageorgi *et al.*, 2007). These theories, though insightful, do not offer clear or systematic direction in implementing treatment strategies, and give little guidance for musicians who wish to put theory into practice on an individual basis. In addition, many of these models are based on outdated research and as such do not reflect advances made in the last twenty years in affective science. More attention will be given to these theories in Chapters 1 and 2, where it will also be shown that recent research offers new insights into the process of emotion generation, as well as how regulation of emotions is best accomplished, correcting and clarifying some of the assumptions made in these early models of MPA.

In contrast to these theories cited, this dissertation proposes the appraisal theory of emotion as a more appropriate and helpful theory for directing MPA regulation. The appraisal theory is examined for its capacity to elucidate the four research questions previously proposed.

The main objective of this dissertation is to aid musicians looking for practical help with MPA management. Although this necessarily entails examining psychological and emotional aspects of the performing musician’s experience, its principal aim is directed back at music performance itself, hoping to help musicians both reflect on and further develop their own anxiety management strategies.

Sub-objectives include offering a theory (appraisal theory) from the area of emotion science and applying it to the area of music performance, as a means for clarifying both maladaptive and adaptive MPA generation, illuminating basic principles behind these processes. Implications that key appraisal theory concepts lend to area of MPA self-regulation will be analyzed. Appraisal theory research will be discussed as an aid to understand and explain the factors which contribute to debilitating MPA on the one hand, and facilitative MPA on the other.

An additional sub-objective is the proposal of appraisal theory as a needed coherent framework to guide and facilitate the process of MPA self-regulation, making the cultivation of helpful MPA and the downregulation of debilitating MPA more practical, memorable and energy efficient. Appraisal-theory-based models will be highlighted as tools for meeting the challenge of matching strategies to circumstances, as well as orienting the creation of sequences of strategies which are custom-fit to individual circumstances. It is hoped that this discussion will facilitate the strategy selection process as it unfolds in ever-changing performance circumstances and clarify

principles behind knowing when and how to utilize individual regulation techniques. It is also offered as an organizing framework for the generation and individual adaptation of new strategies.

A final sub-objective is the presentation of appraisal theory as a basis which can guide, not only strategy selection, but actual strategy implementation, or practical application on an individual basis, hopefully facilitating the real-world implementation of treatment plans.

Chapter 1 focuses on the first two research questions proposed earlier, those which examine the difference between facilitative and debilitating MPA and the basic principles behind helpful MPA cultivation. This is done through highlighting key appraisal theory concepts and their implications for the understanding and management of MPA. It presents a review of both appraisal theory and MPA literature, in counterpoint (or dialog), organized by topic. Individual appraisal concepts are presented, each followed by a discussion of its implications for MPA management, and a discussion of the extent to which current MPA literature reflects an understanding of these implications.

Chapter 2 seeks to examine the third research question proposed, that of how musicians can match MPA strategies appropriately to ever changing circumstances, or the problem of strategy selection. Various MPA regulation strategies will be situated within an appraisal theory context, with the aid of important appraisal-theory-based models. The aim of this chapter is to demonstrate how various types of strategies can be inserted into theory-based models, and how these models can direct the selection of strategies, facilitating self-treatment for MPA.

Chapter 3 focuses on research question four, which asks how musicians can implement appraisal-theory-based MPA regulation in real-world situations. It is offered as a collection of personal examples of my own implementation of theory-informed strategies. Where Chapters 1 and 2 describe theory, Chapter 3 illustrates how one musician puts theory into practice and turns strategies into tactics. This chapter is not meant as a limiting description for how to apply theory driven MPA self-regulation, but instead as one example of what practical application of theory can look like. The aim of this modelling is to make individual adaptation of MPA regulation easier to conceptualize for the reader.

Chapter 4 further elucidates research question four by offering a glimpse into the practical experimentation process behind my theory implementation methods discussed in Chapter 3. It

illustrates not only my own experimentation process but also the means by which the implementation of strategies was tested.

Lastly, the conclusion summarizes points from the individual chapters and offers suggestions for future research.

It is hoped that such an examination will contribute to a more developed understanding of what triggers maladaptive or adaptive MPA and facilitate musicians' practical efforts to decrease the former and cultivate the latter.

METHODOLOGY

This research is drawn from my interest in the psychological aspects of performance, stemming from performing experiences, both negative and positive, which I have accumulated since I was a child. Performance anxiety, in my observation, is an occupational hazard for musicians, something that comes with the territory, and whether a musician succeeds or fails in the field of music is in part dependent on how the individual learns to deal with the anxiety inherent in performance situations. As McGrath (2012) comments in her dissertation on performance anxiety therapies, “equipping the next generation of musicians with the skills to handle fear, adrenaline, tension, and other threats to their concentration in demanding situations may not only improve the quality of the performing arts henceforward, but also their success and satisfaction onstage.” (p.2). It is these “skills to handle fear, adrenaline, tension and other threats” that I have chosen to focus on in this study. For this reason, it can be classified as interdisciplinary research, straddling the fields of both psychology and music.

The rigors of the musical profession usually prevent musicians from becoming specialists in non-artistic fields, but music’s embeddedness in the material world places it in an overlapping position with non-artistic life aspects. Borgdorff (2012) asserts that “artistic practices ... are always situated and embedded. Artworks and artistic actions acquire their meaning in interchange with relevant environments” (p. 165). The “relevant environments” for music include the sphere of performance, complete with its embedded psychological aspects. A performing musician is obliged to come to terms with a spectrum of psychological states on the concert stage, some more enjoyable than others, and a musician’s personal strategies for cultivating desirable states becomes at times a matter of professional survival. Performing musicians by necessity often must learn to become experts in *applied* performance psychology.

Applied performance psychology is something which I have been informally and intuitively exploring for decades, since my first childhood performances. I have, though not always consciously or systematically, been engaged in the process of developing psychological strategies for dealing with music performance anxiety for as long as I have been performing. Before engaging in formal doctoral research for this dissertation, my knowledge about psychology as it pertains to music performance was chiefly experiential, practical, and matter mediated. This has its own validity since a performer’s expertise can offer embodied knowledge (“the doer”) where a formally trained psychologist’s expertise offers theoretical knowledge about

music performance (“the thinker”). The performer’s embodied knowledge offers a peculiar and valid perspective from which to study performance psychology, an earned expertise through practical experience.

However, as Henk Borgdorff (2012) points out, “not only do thinkers and doers need each other, but in a certain sense thinkers are also doers, and vice versa” (p.18). In embarking on my doctoral research, I became intrigued with the prospect that “thinkers” and researchers in the area of psychology and emotion regulation might have valuable insights and tools to offer a “doer,” a performing musician seeking to manage her own mind on stage with greater facility. I became fascinated with deepening my theoretical knowledge about the psychology of music performance, to see how it might affect both the doing and thinking involved in playing music for an audience.

What drew my attention most was the intersection between theory and practice, exploring how theories tested in controlled conditions in other fields might benefit musicians embedded in an actual practice of ever-changing performing environments. To me there seemed to be an invitation to explore how psychological theories with implications for the performing arts could benefit performers by being applied and *embodied* by performers; in other words, how to convert theory into real-life practice, what it would look like, and how it could be done.

This research required an exploratory approach which, in the words of Gil (2008), is appropriate when the topic is “pouco explorado e torna-se difícil sobre ele formular hipóteses precisas e operacionalizáveis”³ (p. 27). Due to its being a subject about which I had “little or no scientific knowledge...but nevertheless [had] reason to believe it contain[ed] elements worth discovering,” it required the “special orientation” of the exploratory approach, which allows for “*flexibility* in looking for data and *open-mindedness* about where to find them” (Stebbins, 2001, p. 8). The aim of my research was consistent with that of exploratory investigation described by Gil (2008): “As pesquisas exploratórias têm como principal finalidade desenvolver, esclarecer e modificar conceitos e idéias tendo em vista a formulação de problemas mais precisos ou hipóteses pesquisáveis para estudos posteriores”⁴ (p. 27). I hoped to clarify, in a general overview form, how psychological performance theories could be beneficial to musicians’ practice, and an exploratory approach such as that described by these quotes was best suited to my aims.

³ “little explored, such that it becomes difficult to form precise and operational hypotheses about it” (author’s translation).

⁴ “Exploratory research has as its principal finality the development, clarification and modification of concepts and ideas with the view of formulating more precise problems or research-worthy hypotheses for posterior studies” (author’s translation).

My research process involved a series of stages or steps, which will be outlined here, followed by further explanation. The first step that preceded any formalized research was the initial and often unconscious practical exploration that I had engaged in for decades, that of developing my own performance-related strategies. Once I began formal research for my doctoral degree, I began a second step, that of literature investigation, which involved not only reading but “evaluating, comparing, and synthesizing retrieved information” in the style of exploratory research described by Bozzon *et al.* (2013 p.1). This synthesis and evaluation was necessary in order to move beyond a simple understanding of the psychological theories investigated, to identifying implications for the area of music performance. A final step involved attempts at personal application, to my own performing, of the theories studied. This entailed situating my previously developed strategies within the theoretical explanatory framework which I had synthesized from my literature research, which then facilitated further experimentation to improve the effectiveness of old strategies, as well as the development of new strategies based on theoretical guidelines.

Table 1 shows the stages of exploratory research identified here, which will each be discussed subsequently.

Table 1 - Exploratory Research Stages

Exploratory Research Strategies in Stages	Description
Intuitive Practical Exploration	<ul style="list-style-type: none"> • 40 years of developing personal practical strategies for optimizing performance through trial and error. • Largely intuitive process.
Formal Literature Research	<ul style="list-style-type: none"> • Exploratory research of theories in psychology and emotion science with implications for music performance. • Research of current literature on MPA. • Evaluation, comparison, and synthesis of data from above literatures.
Theory-Oriented Practical Exploration	<ul style="list-style-type: none"> • Situating previously developed performance strategies within theoretical frameworks learned. • Conscious utilization of theoretical frameworks to creatively experiment and explore in order to: <ul style="list-style-type: none"> ○ Improve effectiveness of old strategies. ○ Develop new MPA strategies.

Source: Elaborated by the author (2023)

INTUITIVE PRACTICAL EXPLORATION

I have been performing since the year my first formal piano lessons began, at age four. Over the years that followed I had numerous performance experiences, usually several annually of varying audience size, which fluctuated on a scale between traumatizing and exhilarating. The traumatizing experiences were terrifying, the peak performance experiences were highlights and kept me investing for more. Although when very young I was not always aware of elements that contributed to a positive or negative performance, and did not always connect the dots between cause and effect, over time I began to recognize features that peak performances shared, things I could do or avoid doing which seemed to make peak experiences more likely. I started to recognize patterns in the negative, fearful, and anxiety-filled performances as well.

At first unconsciously and later more purposefully, with the help of experimentation based on advice from colleagues, teachers, intuition, and trial and error over the space of several decades, I began compiling data on the process of navigating away from anxiety and toward more

comfortable, creative, and free performances. I developed my own personal strategies for how to maximize my chances for having a performance which was “in the zone,” or in *flow*, and how to avoid the traps of performance anxiety. This psychological state of flow, which I stumbled onto in certain memorable performance experiences, is defined by the pioneer of flow psychology, Csikszentmihalyi (1990), as an experience of total absorption in a significant activity, where action and consciousness merge, the individual feels a control that “flows” from one moment to the next without conscious intervention, indecision or anxiety. Distinctions dissolve between the self and the environment, between stimulus and response, between past, present and future. Rather than feeling anxiety, the subject experiences “order in consciousness,” a loss of self-consciousness, total absorption in the task at hand, and a sense of pleasure and control over the situation (p.6).

Although as a small child (under 8), I remember performing for friends and family members and feeling a sensation of flow during the experiences, as I got a little older and began performing for larger audiences, I often felt debilitating anxiety, and for several years performing was an experience that was often not pleasurable in and of itself. I had many opportunities to perform, including as soloist with orchestra, but these experiences were terrifying. I did not feel in control and did not feel pleasure or flow.

Following this phase, my first experience performing in flow instead of debilitating anxiety in a public, high-pressure situation came at age 18 when I performed as soloist with the Brigham Young University Philharmonic. During the concert I remember feeling that time had stalled, and I was in control of an experience for the audience in which we could access together the immense enjoyment of the music, the enormous piano, and its reverberations in the rich hall. I felt absorbed in the luxurious sound, and at the same time felt I could manipulate and control it, as if nothing else existed except my creation of the music in this moment. I found once again that pleasure I had felt as a child and was delighted to be able to share it with others. I was not afraid; I was focused on creating.

That taste of flow in a high-pressure performance setting, the first in many years, was formative. From that time on I began searching and seeking, though not systematically nor consciously, to replicate that experience in other performance situations. Decades of self-directed trial and error research have acted as my own personal MPA laboratory for developing helpful performance strategies. I have distilled out of this time a series of generalizations, personal rules

and methods which have helped me navigate varying performance challenges and, over time, increase the frequency of flow experiences, and decrease the number of performances hampered by debilitating anxiety.

Huang and Song (2021) describe such exploration as a “self-regulated learning process of developing [one’s] own expertise” (p. 95). Day (2005) calls the knowledge gained from this kind of exploratory research craft knowledge, which she defines as “professional knowledge gained by experience...but which is rarely articulated in any conscious manner” (p. 21).

It was this initial unsystematic but fruitful exploration in practical performing that led to my interest in a more formal study of psychological theories which might underlie the phenomena I had personally experienced. Thus, my first curiosity in beginning doctoral research was to educate myself about important psychological theories with bearing on music performance, in search of unifying principles, researched and tested by psychologists, which could explain the effectiveness of strategies I had intuitively stumbled upon in my life-long, informal exploration.

FORMAL LITERATURE RESEARCH

As referenced in the Introduction, Kenny (2011) proposes that unifying theories are essential for the task of explaining observations, rather than simply describing them. She emphasizes that treatment of a problem such as MPA is facilitated when we can move beyond simply describing the *what* of its manifestations, to an understanding of the *why* behind it. Theory helps us do this, according to Kenny, through identifying underlying principles and patterns which can explain the problem’s generation and behavior. This in turn facilitates the conceptualization and implementation of treatment. Though I had not read Kenny when I began my research, I intuitively felt that finding a unifying theory was a way forward to not only better understand my past experiences, and with this understanding to further improve my self-regulation capacities in performance, but also to be able to effectively communicate this understanding to others, including my students.

My initial literature investigations centered on the study of flow psychology. Kirchner (2011), who I came across early in my exploratory research, stresses the need among musicians for “strategies for decreasing performance anxiety,” and points toward “examining the conditions necessary to achieve a state of flow” as the most fertile source for such strategies (p. 291).

Csikszentmihalyi (1990) identifies seven different characteristics which exist in a state of flow, including clear goals, immediate feedback, total absorption, a match between challenge and skill level, a sense of control, a loss of self-consciousness, and transformation of time. I became intrigued with the idea of examining strategies which musicians employ to create these seven flow conditions, and what accessing flow looks like in actual practice among performers. As I got further into my examination of flow theory and its applications for music performance, however, I became aware of the amount of research already done in this area and had a sense that what I could add to this was perhaps not significant.

My focus on flow-theory research was interrupted or detoured by the covid pandemic, which put a hiatus on public performing and brought new issues to my attention. 2020 was a year of unexpected difficulty worldwide, and for me this included a devastating and prolonged battle with Long Covid, or Post Acute Sequelae of Covid-19 (PASC). Uncertainty and fear were part of the universal experience that year, and for someone desperately sick for months on end with a brand-new disease, the absence of understanding and effective treatment made coping difficult beyond words.

My salvation was an online support group of other long covid sufferers. It was here that I connected with thousands of other formerly healthy individuals worldwide who were suddenly broadsided with the same sickness, experiencing the same struggles and symptoms. These people helped me know that I was not alone. We shared our experiences and experiments in a great world-wide movement of patient-led research. We tried everything we could get our hands on, everything that seemed likely might help, and discussed our findings with one another.

Many discussions on this group were peppered with references to the vagus nerve, and how stimulating this nerve often helped with overall pain management, with breathing difficulties, with heartbeat irregularities, and with malaise. I had never heard of the vagus nerve, so I had to catch up with my covid colleagues, doing my first general research on the vagus nerve and parasympathetic function on dark sleepless nights when my breathing was tight, painful, heavy, and my lungs partially collapsed. The support group taught me my first vagus nerve stimulation techniques: deep breathing patterns, cold water therapy, stretches, humming, singing. It often helped my pain and heart dysregulation calm down enough that I could sleep for a few hours and gave notable relief even when it didn't put me to sleep. Other covid colleagues referred to the Polyvagal Theory and its usefulness for understanding vagus nerve operation, and in

recognizing one's autonomic state. I began reading extensively about this theory and applying its principles and techniques to coping and pain management associated with my illness.

What began as a search for healing and relief from Long Covid symptoms led to a dawning recognition of the myriad ways that Polyvagal Theory could be applied to my professional life as a musician, how learning to calm what the theory calls "defense states" could help ameliorate performance anxiety, among other things. The theory gave plausible connections and explanations as to why my self-compiled collection of techniques for peak-performance worked well for me.

I began to see that the issue of how to calm anxiety and access flow in performance was actually an issue of self-regulating to an autonomic state where concentration, creativity, and confidence are possible. My research on flow began to evolve instead into research on the steps *preceding* flow, elaborated in the Polyvagal Theory (PVT). I began to focus not on flow itself but on understanding the conditions for what PVT calls a "safety state," which is an autonomic state where flow and other creative states are possible. Through this research I compiled a list of strategies, many adapted from those taught by Polyvagal-Theory-trained practitioners, and began writing about how these strategies could be applied and practiced by musicians in performance settings.

I soon reached an impasse, however, when I came upon significant peer-reviewed criticisms of the theory and its limitations and was forced to recognize that it did not adequately or satisfactorily identify explanatory principles or patterns behind my practical experience. The Polyvagal Theory phase of my research did however help me recognize that a theory focused on emotion regulation, and the capacity to manipulate an emotional state that can prime for flow, was a promising direction to pursue. It was the theory's focus on understanding conditions which precede or underlie the flow state, which regulate anxiety and ready the nervous system for creativity and connection, that seemed especially valuable to me.

For this reason, I continued investigating theories of emotion regulation. One of the most empirically tested and widely used theories came to the fore, called the appraisal theory of emotion. The material I found in relation to this theory was potent, robust, and plentiful where Polyvagal Theory-related material had been weak. Not only did appraisal theory address what had been most helpful to me about the Polyvagal Theory, namely emotion regulation, but it also illuminated aspects of flow theory, explaining how a person's perception of demands and

resources can lead either to harmful MPA or to a flow state. More about this connection between flow theory and appraisal theory will be discussed in Chapter 1.

Exploring appraisal theory involved extensive highlighting, note taking, diagramming, synthesizing, digesting and transferring concepts to the musical sphere. This entailed a review of MPA literature, to assess whether authors studying performance anxiety were aware of implications raised by studies being done on appraisal theory-related topics. I began outlining appraisal theory concepts that seemed incompletely understood in the MPA literature I read. Beyond this, I began to see how appraisal theory-based models illuminated not only the processes behind my personal performing strategies but afforded tools to understand, manipulate, and manage variables that I had not managed well in the past. As these ideas began distilling in my understanding, my own practice began to change as I became more conscious of patterns behind my personal strategies. The work of defining and describing key appraisal theory concepts and their implications for MPA deepened my comprehension of how the theory could orient my own practice. My experimentation began to become more conscious and theory-based, leading to the final stage of my exploration.

THEORY-ORIENTED PRACTICAL EXPLORATION

Stebbins (2001) describes how exploratory research aims to produce “inductively derived generalizations about the group, process, activity, or situation under study” (p. 8). The conscious practical exploration stage of my research was an effort to induce how musicians could apply appraisal theory concepts by testing how it could be done on an individual scale, by one musician. Stebbins emphasizes the importance of “exploration and inductive reasoning... in science” because, he explains, “deductive logic alone can never uncover new ideas and observations” (Ibid.). Inducing the general from the individual is an exploratory starting point which can provide a foundation or preliminary investigation, upon which further research can build.

The principal difference between this later, conscious practical exploration and the previous, initial, informal exploration was the systematic reflection it required: first, reflection on how my performance strategies fit into the framework of theories I was studying, so as to understand the theory’s explanations of why these strategies worked for me; second, building on this explanatory understanding, a reflection on how old strategies could be perfected through

theoretically-guided experimentation; and third, a reflection on possible new strategies suggested by study of the theories and their tested applications in areas outside of music. Guided by this reflection, conscious experimentation with strategies ensued. In addition, reflection on consequences of experiments was crucial throughout this stage for conscious acknowledgment of experimental results. This involved not only mental checklists and private rumination, but charting, journaling, and registering observations.

A sample of such reflective journaling is included in Chapter 4. This chapter covers observations about seven concerts and a recording session, six of which took place from August 2019 through March 2020, at a stage early in my doctoral research when I was still principally focused on flow theory strategies. The pandemic and my severe illness necessitated a long hiatus in performing, from March 2020 through April 2023. During these three years, though I was unable to perform, I dedicated my energies to research, writing, and practical experimentation at home. A seventh performance in April 2023 allowed me to test both preparation and on-stage strategies that I had formulated, based on appraisal theory, during the previous three years of research. Chapter 4 describes this experimentation process and means by which implementation of strategies was tested. It does not embrace the entirety of my conscious experimentation process but is useful as a communicable sample of how this was done. While Chapter 4 shows the process of practical exploration, the strategies themselves will receive more detailed attention in Chapter 3, which is dedicated entirely to a description of personal strategy implementation.

CHAPTER 1: APPRAISAL THEORY CONCEPTS AND MPA IMPLICATIONS

The appraisal theory of emotion was pioneered by Arnold (1960) and Lazarus (1966) in the 1960s, though it has its roots in the writings of ancient thinkers such as Aristotle, Hume, Spinoza, and Sartre (Moors *et al.*, 2013). Since the 1980s researchers have been engaged in creating and empirically testing hypotheses based on appraisal theory, as well as offering variants to Arnold and Lazarus's original ideas. The resulting group of theories, called appraisal theories, which have grown out of the original 1960s roots, hold in common that "emotions are adaptive responses which reflect appraisals of features of the environment that are significant for the organism's well-being" (Ibid., p. 120). Marcus Aurelius offered in ancient times a handy summary of this position: "If you are grieved about anything external, 'tis not the thing itself that afflicts you, but your judgment about it; and it is in your power to correct this judgment and get quit of it" (Aurelius, 2008, p. 103). In the last fifty years, appraisal theory has become not only one of the major theories of emotion (Sander *et al.*, 2018), but also one of the most influential (Gratch; Cheng; Marsella, 2015).

This chapter highlights appraisal theory concepts that have significant implications for the understanding and management of both adaptive and maladaptive MPA. This is done in an effort to answer the first two research questions proposed in the introduction: (1) What are the contributing factors to both maladaptive and adaptive MPA? And (2) What are some basic principles underlying the cultivation of facilitative MPA?

As discussed previously, theory-oriented MPA regulation offers an advantage over fragmented or scattered implementation of strategies as it identifies unifying principles which guide and direct the regulation process, thus reducing the cognitive load of active regulation. This chapter seeks to illustrate how appraisal theory can contribute toward an understanding of adaptive and maladaptive MPA, and how it is an especially appropriate tool for theory-oriented MPA regulation. Individual appraisal theory concepts will be presented and outlined based on a review of research literature. Each appraisal theory theme will be followed with a discussion of how information examined impacts the understanding of MPA, its causes, consequences, and effective methods for regulating it. Table 2 summarizes the appraisal theory concepts to be presented in this chapter and their implications for the understanding and regulation of MPA.

Table 2 - Appraisal theory concepts with implications for MPA regulation

Appraisal Theory Concept	Implications for MPA
Emotions are processes with 5 basic components	<ul style="list-style-type: none"> • MPA is not a fixed state. It is a process continually in flux. • Changes in process components result in changes in emotion experience • MPA regulation is possible through manipulating the 5 basic components/networks
Appraisal is the central organizing component in emotion processes	MPA regulation begins with: <ul style="list-style-type: none"> • understanding how appraisal organizes other components • understanding which criteria our brains use to appraise situations • understanding various ways to influence appraisal
Appraisals organize other components, but components also influence appraisals	Effective MPA regulation should include: <ul style="list-style-type: none"> • Methods to directly alter appraisal/valuation • Methods to indirectly alter appraisal
Emotions are adaptive but not always helpful	<ul style="list-style-type: none"> • MPA is a protective evolutionary response whose protection is often inappropriate for modern times. • Seeing MPA without judgement reduces antagonism to it. This changes the appraisal of threat, an important step in regulating MPA. • Recognizing the MPA response as benign but often inappropriate provides a cognitive platform for evaluating when and how to regulate it.
Practice increases automaticity of appraisals	<ul style="list-style-type: none"> • Appraisal modifying techniques that require intensive energy expenditure can become automatic with practice. • MPA regulation techniques should be incorporated into the daily practice routine in order to become easy and unconscious on stage.
Emotion regulation involves optimizing appraised balance between demands and resources	MPA regulation involves manipulating appraisals so that resources \geq demands

Source: Elaborated by the author (2023).

The first appraisal theory concept to be discussed is that emotions are processes with five different components. This has implications for MPA understanding and management because it means MPA itself is a process continually in flux, and that MPA regulation involves understanding the interactions between components of the process, as well as learning how to manipulate them.

The second concept to be examined is that appraisal is the central component of the five and organizes changes in the remaining components. This is important for MPA regulation because it elevates appraisal modification as the key to MPA management and highlights the need to understand the criteria on which our brains base appraisals.

The third concept involves the mutual influenceability of appraisals and components, meaning that appraisals organize components, but components can also influence appraisals. For MPA management this means that management strategies should focus on either *directly* altering appraisals, or *indirectly* altering them via manipulation of the remaining components of emotion.

The fourth concept is that emotions evolved to help humans adapt to changing environments and maximize our chances for survival. Responses that were presumably useful in earlier times, however, are not always advantageous in modern-day environments. This concept has implications for MPA regulation, as it means learning to view MPA as a response geared toward individual benefit (survival) rather than harm. This can reduce a musician's sense of threat when MPA symptoms are felt and provide a lens for evaluating when and how to regulate MPA.

The fifth appraisal theory concept to be presented is that practice increases automaticity of appraisals. This means that even appraisal modifying techniques that require intensive cognitive energy can become automatic and easy with practice. For MPA this implies that regulation techniques should be incorporated into the daily practice routine in order to become easy and unconscious on stage.

Concept six examines the criteria behind stress-related appraisals: the appraisal of demands in relation to resources. When resources are viewed as insufficient to meet situational demands, threat appraisals are produced (as in debilitating MPA); when resources are seen as equal to demands, challenge appraisals result (as in facilitative MPA). This implies that the cultivation of helpful performance anxiety involves manipulating appraisals so that resources are seen as more than, or equal to, demands.

1.1 MULTI-COMPONENTIAL PROCESSES

Affective science, or the study of emotion, has resulted in the production of many models to explain emotion generation, which vary in their view of the underlying mechanisms involved. Despite differences, there is consensus between the models that emotions are not states but

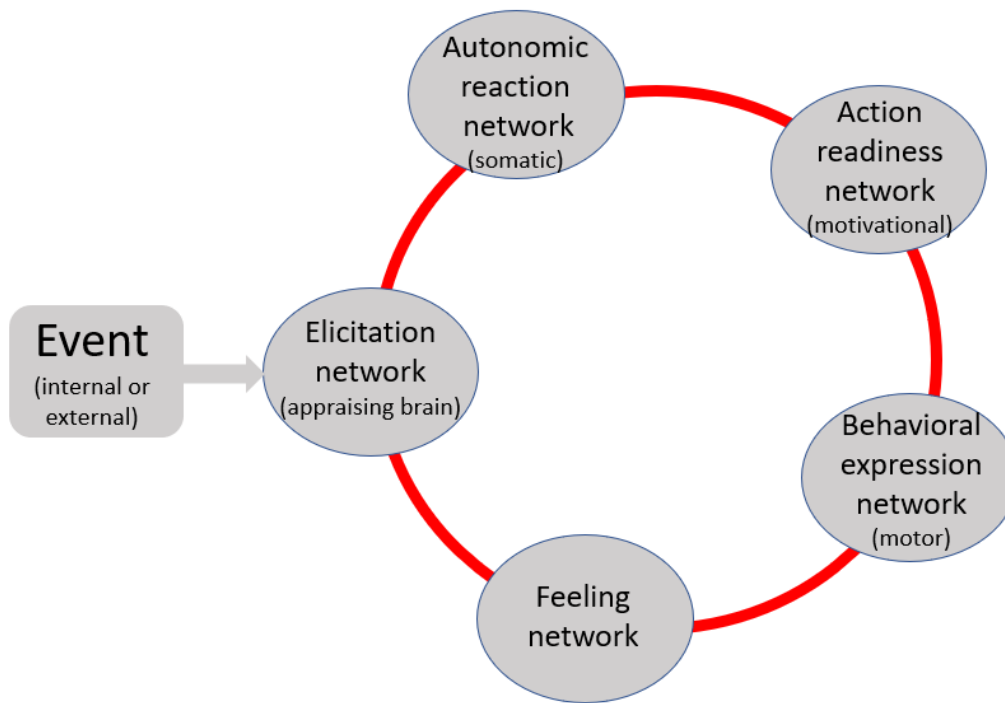
instead ever-changing processes (Sander *et al.*, 2018), comparable to “a river, rather than a collection of separate pools” (Ellsworth, 2013, p. 125). An emotion is not a “static, unitary phenomenon” but rather a dynamic “flow of continuously changing component states that constitute emotion episodes” (Scherer 2009, p. 1320).

Appraisal theory shares this process perspective with other emotion theories, along with the view that emotions have various components, or what Gross (1998) calls “multiple, partially independent information-processing subsystems” (p.5). There is consensus among appraisal theorists of the existence of five key components of emotion, namely: (a) an appraisal component, also called elicitation or information processing, which is the evaluation of the situation for its impact on the self; (b) a motivational component, producing action tendencies or action readiness; (c) a somatic component, in which autonomic reactions produce physiological responses; (d) a motor component, generating expressive behavior; (e) a feeling component (Sander *et al.*, 2018; Moors *et al.*, 2013; Scherer, 2009a; Ohman; Wiens, 2003).

The term emotion as it is used in appraisal theory refers to more than feelings such as happiness, sadness or anxiety. It is a term which includes the entire emotion process involving all components: appraisal, motivation, somatic changes, behavior and feeling. Although there is debate regarding the interactions between these components, such as whether the subsystems process information in parallel or in sequence, agreement does exist between appraisal theorists regarding the basic categorization of the five components above named (Moors *et al.*, 2013).

It is important to note that the process aspect of emotion implies that components are in flux and undergo changes throughout the emotion episode. Changes in evaluations, in physiological responses, in motivational tendencies, in behaviors and in feeling all provide “feedback to each other transforming the emotional experience” (Ellsworth, 2013, p. 127). Figure 1 provides an illustration of the five components of emotion processes.

Figure 1 - Components of emotion processes.



Source: Modified from Sander *et al.* (2018, p. 227).

This feedback between components and its effects on emotion will be discussed in greater detail in Sections 1.2 and 1.3 of this chapter, as it is central to the concept of emotion regulation.

1.1.1 Implications for MPA

The view that emotion is a process, not a state, is important in examining MPA because it means that performance anxiety, as an emotional phenomenon, is not a discrete, immovable entity but something continually in flux. Changes in individual components of the emotion of anxiety will influence and change other components, modifying the overall emotional experience. This promises a possible position of influence over MPA: if we study how to influence the components of emotion, we can learn how to change or regulate the emotional experience.

Literature on MPA commonly agrees with appraisal theory's view of emotion as multi-componential and acknowledges that MPA is indeed composed of various parts. There are diverse opinions, however, on the number and type of the components involved. Several authors

view MPA as having three components, namely physiological (or somatic), behavioral, and cognitive (or mental) (Valentine, 2004; Lehmann *et al.* 2007; Osborne; Greene; Immel, 2014; Burin; Osorio 2017; Kirchner 2003). Zhukov (2019) reduces these to two categories, physical and cognitive, and subsumes the behavioral component under the cognitive umbrella. Nagel (2017) holds three categories but does not separate behavioral as its own component and designates instead physiological, cognitive, and feeling. Still others classify four categories, somatic (physiological), cognitive, behavioral, and emotional (McGrath, 2012; Cina, 2021; Kenny, 2008).

All four categories listed in the previous paragraph are included among the appraisal theory's five basic components previously outlined. The cognitive component is subsumed within the appraisal component (the appraising brain), the physiological is the somatic component, the behavioral can be understood as the motor expression component, and the emotional component as the feeling network.

Appraisal theory however defines one additional component that is not distinguished in the MPA literature cited, which is the action readiness/motivational component, though some mention of motivation enters into MPA discussions in a scattered and oblique way. It is important that appraisal theorists identify not only a behavioral component (motor expressions) but also a motivational one (action readiness), illuminating motivation's role as one among a circle of five and thus an influencer at the table with cognitions, somatic manifestations, behavior, and feelings. In addition, recognizing that there are not only four but five basic components of emotional processes allows for more points of contact in examining how to influence the various networks and effectively regulate emotion. Table 3 summarizes these implications of the multi-componential process model for MPA.

Table 3 - Emotion is a multi-componential process

Appraisal Theory Concept	Implications for MPA
Emotion is a process with 5 basic components	<ul style="list-style-type: none"> • MPA is not a fixed state. It is a process continually in flux. • Changes in process components result in changes in emotion experience • MPA regulation is possible through manipulating the various components/networks (see Figure 1, p. 48)

Source: Elaborated by the author (2023).

1.2 APPRAISAL IS CENTRAL

Appraisal theory is so named because it sees appraisal as the central component of the five networks discussed. (Smith; Kirby, 2011). Appraisal, or valuation, is understood as “a process that detects and assesses the significance of the environment for well-being” (Moors *et al.*, 2013, p. 121). Magda Arnold was the first to publish the idea that such appraisal is continually being performed by organisms in relation to their environment (1960). Appraisal theorists emphasize that this evaluation is what determines emotional response, rather than any environmental stimulus. It is clear that “the cause cannot be the external event, because that event can mean different things to different appraisers” (Ellsworth, 2013, p. 126). Ellsworth and Scherer (2003) cite more than thirty studies which examine the link between appraisal and emotion, testing the hypothesis that emotions “can be reliably predicted if one knows how the individual has appraised the event,” and concluding that “research...has generally supported the theoretical predictions of appraisal theorists” (p. 582).

Although other emotion theories include an appraisal component in emotion processes, appraisal theorists see evaluation as the fundamental component which triggers and organizes the intensity and quality of changes in other networks (Yih *et al.*, 2018; Moors *et al.*, 2013). As evidence of the validity of this theorem, Uusberg *et al.* (2019) offer a list of thirteen studies performed between 1985 and 2018 which demonstrate appraisal’s organizing influence on other emotion components, including physiological (somatic) changes, action tendencies, vocal and facial expressions (motor component), and feeling.

Appraisal theory’s aim and “most original contribution” has been in “specifying what matters in the person’s perception of the situation” (Ellsworth, 2013, p. 125). Theorists have sought to identify the criteria, called appraisal dimensions, with which the brain evaluates stimuli for their bearing on well-being. Though some theorists identify more, the core appraisal dimensions generally agreed upon include goal relevance/congruence, valence, likelihood/certainty, agency, and coping potential/control (Yih *et al.*, 2018; Uusberg *et al.*, 2019; Moors *et al.*, 2013; Sander *et al.*, 2018).

Uusberg *et al.* (2019) offer a useful organization of these named dimensions into three main categories or meta-dimensions of appraisal, that of desirability, attribution, and expectancy, summarized in Table 4.

Table 4 - Appraisal meta-dimensions

Appraisal meta dimensions	Include the subdimensions	And answer the questions
Desirability:	valence; goal congruence/ relevance	<u>How good or bad is the situation?</u> Does it help or hurt me? How much?
Attribution:	accountability	<u>How did I get here?</u> How much is it my responsibility? How much is it caused by something/someone else?
Expectancy:	likelihood/certainty; coping potential	<u>What should I do?</u> How will it evolve? What could I do about it?

Source: Elaborated by the author based on information from Uusberg *et al.* (2019).

The meta-dimension of desirability encompasses the subdimensions of valence (intrinsic pleasantness or unpleasantness), goal relevance and goal congruence. It is concerned with answering the questions “How good or bad is the situation? [...] does it help or hurt me? [...] and by how much?” (Uusberg *et al.*, 2019, p.4). The focus here is on whether the stimulus hinders or helps the individual’s major concerns, also understood as needs, values, goals, desires and beliefs (Sander *et al.*, 2018; Moors *et al.*, 2013). The meta dimension of attribution examines accountability, illustrated by the questions “How did I get here? [...] How much responsibility for this situation belongs to me [...] and how much to someone or something else?” (Uusberg *et al.*, 2019, p. 270). The expectancy meta dimension looks at likelihood and coping potential, as in, “How will this situation evolve [...] and what could I do about it?” (Ibid., p. 271).

1.2.1 Implications for MPA

Understanding that appraisal is the central component in emotion generation has vital implications in the development of MPA regulation programs. If appraisal is the fundamental organizing component, any efforts to regulate performance anxiety need begin with cognizance of appraisal's pivotal role and understanding of the various ways in which appraisal can be influenced. Apprehending appraisal's function in interacting with the other components of emotion processes is critical for MPA regulation as it opens the way for manipulating all components of the performance anxiety experience.

Many authors in MPA literature understand appraisal's central role in the production of maladaptive MPA. A study by Liston *et al.* (2003) found catastrophizing, or mentally appraising threat in a situation to be worse than it actually is, to be the main predictor of debilitating MPA. Buswell (2007) proports that the performer's experience is determined by "what you *imagine* or *interpret* from an event" (p. 20) and that emotion regulation in performance depends upon changing "the way in which you imagine your world to be" (p. 21). Steptoe (2001) recognizes that the interaction between cognitive appraisals and physiology is more important than the factor of physical arousal alone, and both Kirchner (2003) and Kenny (2011) see MPA as initially activated by a perception or appraisal of threat.

Other MPA authors however do not recognize this central organizing position that appraisal holds. Ginsborg (2019) lists possible causes of MPA as stemming from emotional, behavioral, cognitive, or physiological factors, but fails to see that cognitive threat appraisals underlie and organize all other components listed. Wilson (2002) presents a model for MPA which views the level of performance anxiety as dependent on the interaction between factors arising from the person, the situation, and the task. Lehmen et al (2007) build on this model, adding symptoms as a fourth factor. Papageorgi *et al.* (2007) expand Wilson's model, adding a wider range of variables, organized as "(i) factors influencing a performer's susceptibility to experiencing performance anxiety; (ii) factors influencing their task efficacy; and (iii) factors related to the performance environment" (p. 84).

These models elevate external factors like environment, personal resources, and task to the position of direct *determinants* of appraisal. This is problematic because, as Kaleńska-Rodzaj

(2021) points out, when external factors are seen as direct causes of anxiety, a musician’s sense of control and efficacy is reduced, resulting not in reduced but increased anxiety.

Appraisal theory however does not see appraisal as dependent on external causes because, as was discussed previously, the same trigger can mean different things to different people, or even different things to the same person depending on the current mindset. Recognizing appraisal’s centrality to emotion generation requires changes to these MPA models, because it means that modification of appraisal can occur even when external factors cannot be changed. This perspective helps musicians move away from anxious focus on external factors and reclaim a sense of control through cultivating focus on their own appraisal of the situation, or the meaning they assign to it.

Appraisal theory’s research in defining what criteria the brain uses in evaluating stimuli helps move beyond external factors to explain appraisal, and look instead at how our brains answer questions such as how good or bad is this situation, how did I get here, and what should I do about it? Utilizing these questions and the appraisal meta-dimensions offered by Uusberg *et al.* (2019) is one way in which recognition and manipulation of appraisal in music performance situations can be developed, and appraisal modified even when external factors cannot be. Reappraisal as a regulation technique will be discussed further in upcoming sections of this chapter, and in depth in Chapter 2. Table 5 restates the implications of appraisal’s centrality for MPA regulation.

Table 5 - Appraisal is the central component

Appraisal Theory Concept	Implications for MPA
Appraisal is the central organizing component in emotion processes	MPA regulation begins with: <ul style="list-style-type: none"> • understanding how appraisal organizes other components • understanding which criteria our brains use to appraise situations • understanding various ways to influence appraisal

Source: Elaborated by the author (2023).

1.3 MUTUAL INFLUENCEABILITY

Appraisal theorists see the appraisal process as something inherently receptive to new information and thus malleable. They highlight how the flexible nature of emotion provided an

evolutionary advantage over non-emotional species. Emotions are not the “fixed action patterns” that simpler organisms employ in responding to stimuli, but instead allow for both “reinterpretation of the event” and “reinterpretation of response alternatives” (Ellsworth; Scherer, 2003, p. 572). Emotions evolved because they offered a survival advantage in being intrinsically flexible, through being able to take in new information and new ideas, triggering emotional change and a new, adaptive response. “Appraisals and emotions are not frozen in the moment of the initial perception, but constantly evolve as other beliefs, values, and memories come to mind and as the situation changes” (Ellsworth, 2013, p. 127).

This tractability of appraisal means that emotions can be modified through both unconscious and conscious reappraisal, a process which changes “how individuals perceive internal and external cues” (Jamieson *et al.*, 2018a, p. 31). Reappraisal then may trigger and organize changes in somatic, behavioral, motivational, and feeling networks.⁵

As an example of how reappraisal in a performance context can activate changes in other components, consider the scenario of a pianist waiting in the green room for a performance, feeling anxious because a contingent of music critics is expected to be present in the audience, a situation which she appraises as threatening. The appraisal may be inducing somatic and cognitive effects (jittery arms, sweaty palms, worry about possible memory slips). However, if a reliable friend opens the door and tells her the critics have decided not to come, the musician may reappraise the situation as less threatening, triggering a feeling of greater control, and the jitters, sweaty palms, and worries may stop suddenly.

It is equally important to recognize that, just as appraisal organizes other components, components can affect and alter the appraisal. As outlined in Section 1.1, changes in any component can influence other components in a feedback loop (Sander *et al.*, 2018, p. 225), in which “appraisals can cause emotions, and emotions can also cause future appraisals” (Ellsworth, 2013, p. 126).

For example, the musician in the preceding scenario, following news that the critics will be absent, could perceive that her hands have been sweating. This in turn could shape an appraisal that the upcoming performance will be treacherous to navigate. The somatic symptom (sweaty palms) can thus influence an appraisal (threat to smooth technical performance), even

⁵ The concept that appraisals can be modified does not imply that the reappraisal process is always accessible without assistance. Some appraisals, such as those associated with trauma, can be difficult to consciously reappraise without professional therapeutic help (Nagel, 2017).

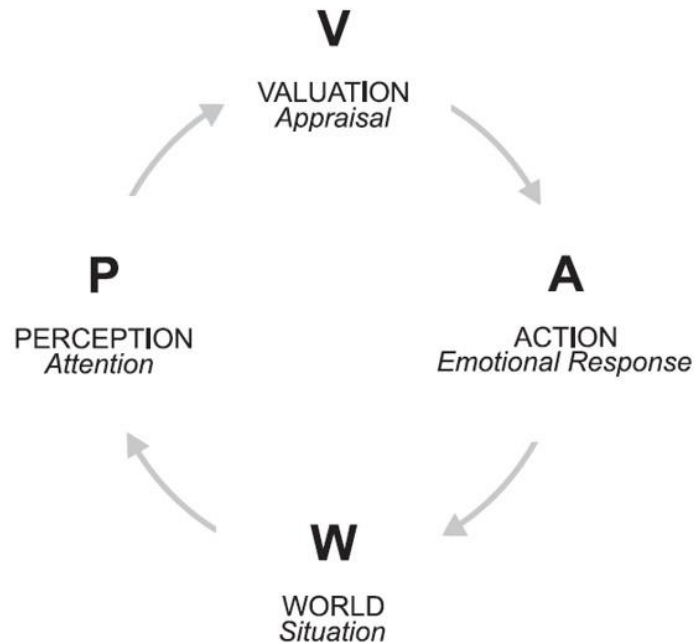
though the original appraisal which caused the sweaty palms (threat from music critics) is no longer active.

What Gross calls “bidirectional links” (1998, p.5) and Sander *et al.* call “not a one way street” (2018 p. 225) describes the nature of the mutual influenceability of emotion components. “Lower neural levels,” such as those involved in the somatic component, “can powerfully prime, bias, or otherwise regulate processing by higher neural structures,” such as those involved in cognitive appraisal. “The modulatory effect of visceral afferent information on higher cognitive and affective processes” produces “both direct and indirect mutual interactions...that impact both biological and psychological processes” (Bernston *et al.*, 2003, p. 1105-1107). In other words, as Gross summarizes, “it forces us to move beyond simple models of top-down control” (1998, p.5).

Though appraisal may be the central organizing component, changes in other components influence the situation being appraised, consequently changing the appraisal process. Figure 2 shows a cyclical diagram, the WPVA loop,⁶ illustrating how different elements of the appraisal process influence each other in the “unfolding emotion generation process” (Yih *et al.*, 2018, p. 5).

⁶ The WPVA loop has its origins in Gross’s process model, which will be discussed in depth in Chapter 2.

Figure 2 - The WPVA loop



The world (W) is perceived/monitored (P) and appraised/valuated (V), triggering emotional response (A), which in turn changes the situation/world (W) to be perceived (P) valuated (V) and responded to (A).

Source: Modified from Yih *et al.* (2018, p. 45).

In this model the stimulus or environment, here called “world” (W), is monitored according to the individual’s attention or “perception” (P), and appraised or “valuated” (V), which triggers or organizes changes in “behavioral, physiological, and experiential systems” of “action” (A) or an emotional response (Yih *et al.*, 2018, p 4). Note that we can understand the “action” (A) or emotional response item as subsuming *all of the four non-appraisal components* of emotion processes which were discussed in Section 1.1, the somatic, motivational, motor and feeling components, as they are networks triggered and organized by the valuation/appraisal (V) component.

The process does not end here, however. It iterates back on itself as the action/emotional response (A) affects the situation (W), which can lead to changes in the next cycle of perception (P), valuation (V), and response (A) (Gross, 2015a). It is a “continuous and recursive” process

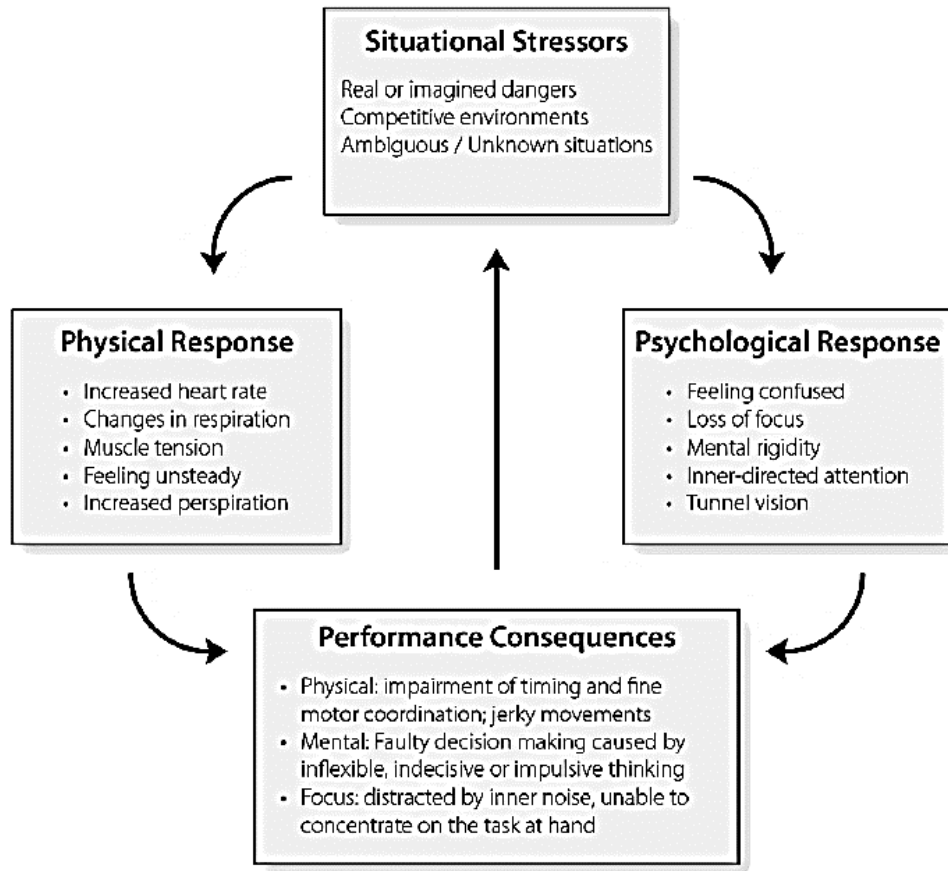
(Ellsworth, 2013, p. 126), in which “the emotional response becomes part of the situation being assessed...as the emotion generation system iterates.” (Yih *et al.*, 2018 p. 3).⁷

1.3.1 Implications for MPA

There is recognition in MPA literature of the recursive process through which an emotional response can modify the situation itself. Valentine (2002) details how three factors, “the person, the task and the situation—mutually interact: the effect of one depends on the level of the others” (p. 173). Osborne, Greene and Immel (2014) offer a model (shown in Figure 3) called the stress-performance model of choking which illustrates how different aspects of the MPA experience interact. In this model, situational stressors produce a response (physical and/or psychological), which produces performance consequences, which then can modify the situational stressors, and so forth.

⁷ Both Figure 2 and Figure 1 attempt to illustrate emotion processes. Figure 1 places the “event” (the world/situation in Figure 2), however, *outside* the emotion process it gives rise to. Figure 2 incorporates the event (situation) *inside* the emotion generation cycle, in an effort to demonstrate the iterating nature of emotion processes. In other words, it portrays the way in which emotional responses can modify the situation being appraised, and subsequently influence the next emotion generation cycle.

Figure 3 - The stress-performance model.



Source: Osborne; Greene; Immel (2014 p. 3)

What is missing in this model, which appraisal theory can provide, is an understanding that it is not the situational stressors themselves that produce the response, but the *appraisal* or *evaluation* of the situational stressors which triggers the response and consequences. In turn, the psychological and physical response can influence appraisal through changing the situation being appraised.

The fact that appraisals organize components, but components also affect appraisals has far-reaching implications for MPA management. It means that appraisal, as the central component, is where MPA regulation should center, but the avenues for altering valuation include more than just direct reappraisal tools. Reinterpretation can be addressed directly in a cognitive manner, but it can also be influenced indirectly by treating the components of emotion triggered by appraisal (somatic, motivational, motor, feeling).

As in the example of the pianist in the green room used previously (p. 42), physiological or somatic components of anxiety such as sweaty palms can be improved through cognitive reappraisal of threat but can also be addressed with physical methods that calm the body (massage, cold water, etc.) in a bottom-up manner. This in turn can change the situation (W) which is being evaluated and so lead to changes in perception (P) and appraisal/valuation (V), as illustrated in the WPVA loop from Figure 2. Such methods indirectly change appraisal through changing the situation being appraised. Thus, effective MPA regulation should explore methods for direct cognitive reappraisal of threat (the V in Figure 2), as well as methods which interfere at other points in the WPVA loop, and alter the situation (W), the perception (P), or the emotional response/action (A). Table 6 restates these conclusions.

Table 6 - Mutual influenceability of appraisals and components.

Appraisal Theory Concept	Implications for MPA
Appraisals organize other components, but components also influence appraisals	Effective MPA regulation should include: <ul style="list-style-type: none"> • Methods to directly alter appraisal/valuation (the V in the WPVA loop) • Methods to indirectly alter appraisal (by interfering at W, P, or A in the WPVA loop).

Source: Elaborated by the author (2023).

1.4 ADAPTIVE AND MALADAPTIVE EMOTIONS

As mentioned in the previous section, appraisal theorists view emotions as having an adaptive function, having evolved over the ages as a means to motivate useful responses to the environment (Ellsworth, 2013). Simpler species respond to ambient changes with rigid reflexes, “a mechanism that triggers fixed action patterns in response to appropriate stimuli.” A more adaptive and flexible response is provided to complex species through emotions, “an important evolutionary alternative,” which emotions produce “action tendencies without complete rigidity,” and open the possibility of “flexibility both in event interpretation and in response choice” (Ellsworth; Scherer, 2003, p. 572). Emotions valuably distill the “wisdom of the ages” (Lazarus, 1991, p. 829) earned through generations of evolution, and ready us to “respond to [environmental] challenges and opportunities.” They can also point us toward “information about what is important and how we are faring with respect to our goals” (Gross, 1998, p. 17). Viewed

from this perspective, even painful emotions like anxiety have adaptive functions which invite respect, curiosity and appreciation, rather than disregard, fear or resistance.

Emotions also largely evolved in circumstances different from those in the modern world, and “responses that served our ancestors well often are suited poorly to modern exigencies” (Gross, 1998, p. 11). As a result, emotions may prime for behaviors which were of utmost importance to survival in early human times, but which are not beneficial in present day conditions and can conflict with goals or overall health.

In order to take advantage of the good that emotional processes can offer while avoiding being taken hostage by unhelpful ones, Gross advocates a “middle course,” which requires “cooperation between reason and emotion.” This allows us to “decide which battles are worth taking up and which to avoid,” and keeps us focused on what Gross calls our “enduring concerns” rather than fancies of the moment (Gross, 1998, p. 18). This middle course recognizes that “emotions can be either helpful or harmful, depending on the context” (Gross, 2015a, p. 4). Analysis of the context is essential to determine if the wave of emotion should be ridden in the direction of its currents or regulated so that it carries toward a different destination. Emotion regulation, defined as “efforts to influence emotions in ways we think will increase the chance that they will be helpful rather than harmful” (Gross, 2015a, p.20), shares a theoretical framework with appraisal theory and is an area which has been studied extensively in recent years (Smith; Kirby, 2011; Yih et al, 2018). Emotion regulation will be looked at in depth in Chapter 2.

1.4.1 Implications for MPA

The idea that emotions evolved to help us adapt to our environment has bearing on MPA, even though we often view performance anxiety as an unwanted emotion. Instead of seeing it as an enemy to be combatted, understanding it as adaptive invites viewing MPA as “on our side,” so to speak, or as an evolutionary response with a history of success. Regarding it as friend rather than foe mentally reduces resistance and antagonism to it, which effectively changes our appraisal of threat, and important step in regulating maladaptive MPA, which will be discussed in detail in Section 1.6.

Understanding that our emotions evolved in circumstances different from our modern ones gives the added perspective that emotions such as MPA exist to protect their hosts in ways that are often inappropriate for the situation. This perspective gives us a cognitive platform for evaluating when and how to regulate MPA so that it becomes helpful rather than harmful. Table 7 offers a summary.

Table 7 - Adaptive and maladaptive emotions.

Appraisal Theory Concept	Implications for MPA
Emotions are adaptive but not always helpful	<ul style="list-style-type: none"> • MPA is a protective evolutionary response whose protection is often inappropriate for modern times. • Seeing MPA without judgement reduces antagonism to it. This changes the appraisal of threat, an important step in regulating MPA. • Recognizing the MPA response as benign but often inappropriate provides a cognitive platform for evaluating when and how to regulate it.

Source: Elaborated by the author (2023).

1.5 PRACTICE INCREASES AUTOMATICITY

Appraisal theorists agree that appraisal processes can happen unconsciously or consciously, automatically or nonautomatically, uncontrolled or effortfully, swiftly or deliberately (Scherer, 2009b; Ellsworth, 2013; Gross; Barrett, 2011; Moors, 2013; Ellsworth; Scherer, 2003). Simple appraisals happen quickly and automatically, “often in the millisecond range” (Scherer 2009, p.1338), whereas complex appraisals are often more labored, “rule-based and reflective” (Gross; Barrett, 2011, p. 13).

More important than classifying which appraisals happen unconsciously, however, is the empirically supported assumption among appraisal theorists that

... *any* appraisal or combination of appraisals can become automatic over time, as the type of eliciting situation becomes more familiar...Appraisals of a truly novel situation, except for the few biologically built-in stimuli, are slower, less certain, and more conscious than they will be the 30th time the situation is encountered. (Ellsworth, 2013, p. 129).

Rather than distinguishing “between conscious and unconscious processes,” Gross describes the two as poles on a “continuum from conscious, effortful and controlled...to

unconscious, effortless, and automatic” (1998, p. 5), highlighting that a process which begins at one pole can move along the continuum toward another. Moors *et al.* (2013) maintain that “increasing practice leads to greater automatization and that all appraisal variables can be processed more or less automatically” (p. 123). Ellsworth (2013) affirms that “even quite complex appraisals, such as incompatibility with moral norms, which are wholly absent in young children, can become instantaneous and automatic in the adult” (p. 130). Complex, slow, and effortful appraisal processes can become swift and effortless with practice (Kashdan, 2010).

1.5.1 Implications for MPA

This concept that practice increases automaticity of appraisals means that appraisal modification in music performance becomes easier with training. It means that self-regulation strategies which are energy-intensive to execute due to their high cognitive load can become streamlined and efficient, even automatic and unconscious, as they become more familiar and rehearsed. Efforts to reinterpret mistakes as learning opportunities, for example, and physiological arousal as facilitative rather than debilitating, may require intensive cognitive engagement initially but, if incorporated into daily practice regimes, can become as natural as any other habit of good playing technique. Becoming a master at MPA self-regulation involves not just learning to self-regulate in the hour of greatest pressure, when the spotlight is on, but learning to incorporate self-regulation practice into the daily routine. It means not just rehearsing repertoire, but also rehearsing regulation techniques, weaving them into the regular practice program from the first moment that performance preparation begins. Table 8 restates these concepts, and Chapters 2 and 3 discuss further how reappraisal can be practiced and incorporated into performance preparation.

Table 8 - Practice increases automaticity of appraisals

Appraisal Theory Concept	Implications for MPA
Practice increases automaticity of appraisals	<ul style="list-style-type: none"> • Appraisal modifying techniques that require intensive energy expenditure can become automatic with practice. • Self-regulation techniques should be incorporated into the daily practice routine in order to become easy and unconscious on stage.

Source: Elaborated by the author (2023).

1.6 THE DEMAND-RESOURCE BALANCE

Richard Lazarus and his colleagues are pioneers whose work gave rise to both appraisal theory and emotion regulation research (Yih *et al.*, 2018) through their study of stress (Lazarus, 1966; Lazarus; Folkman, 1984; Lazarus; Launier, 1978), which is seen as “undoubtedly, the most influential theoretical perspective concerning psychological stress and coping” (Smith; Kirby, 2011, p. 195). Leading models of stress, emotion and coping in the fields of affective science, psychophysiology, and social psychology have all been “directly informed” by Lazarus’s work on appraisal, stress and coping (Jamieson *et al.*, 2018a, p. 31).

Lazarus and Folkman define stress as “a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being” (1984, p.19). The words “taxing or exceeding” contain the basis for the two main categories of stress appraisals outlined by Lazarus (1991): an appraisal in which resources are seen as *taxed* by situational demands is termed a *challenge*, and an appraisal in which resources are seen as *exceeded* by demands is a *threat*.

The biopsychosocial (BPS) model of challenge and threat (Blascovich *et al.*, 2004) is one model that builds on the challenge-threat profiles established by Lazarus and has focused on studying stress responses in motivated performance situations. This model emphasizes that appraisals of demands and resources can occur consciously and/or unconsciously, so researchers using this model track challenge and threat states not through conscious assessments like self-report, but by analyzing physiological responses which can be measured even in the case of unconscious appraisal, like neuroendocrine and cardiovascular changes (Blascovich, 2008).

BPS studies have shown that both challenge and threat appraisals activate the sympathetic-adrenal-medullary (SAM) axis, but threat appraisals also activate an additional axis, the hypothalamic-pituitary-adrenal (HPA).

When there is SAM activation alone, which is the case in challenge appraisals, this triggers adrenaline production, increased cardiac output, constricted veins facilitating blood returning to the heart, and dilated blood vessels, resulting in “more blood (and hence more oxygen) being delivered to peripheral sites, such as the brain” (Jamieson *et al.*, 2018a, p. 32), increasing cardiac efficiency and facilitating cognitive performance (Kassam; Koslov; Mendes, 2009; Mendes *et al.*, 2007). A challenge response activates these bodily resources rapidly to meet the stressor, but once the stressor has passed, it turns them off quickly and returns the organism to homeostasis, avoiding unnecessary physiological expenditure. Challenge appraisals mobilize a desire to approach the stressor rather than avoid it (Blascovich *et al.*, 1999) and activate action readiness and “hormonal responses related to thriving and growth” (Crum *et al.*, 2016), facilitating improved performance (Blascovich *et al.*, 1999; Jamieson *et al.*, 2010).

With a threat appraisal, however, not only the SAM but also the HPA axis is activated. This “tempers the effects of the SAM axis” (Jamieson *et al.*, 2018a, p. 32) lowering cardiovascular efficiency as well as concentrating the blood in core areas of the body rather than peripheral areas like the brain, hindering cognitive performance and decision making (Blascovich *et al.*, 1999; Kassam; Koslov; Mendes, 2009; Mendes *et al.*, 2007). A desire to avoid the stressor is triggered (Jamieson; Mendes, 2016). The catabolic hormone cortisol is produced which has a longer half-life than the SAM catecholamines, resulting in a lengthy stress response that outlasts the stressor itself (Blascovich, 2008; Blascovich; Mendes, 2010). When extended over the long term, this overtaxing of physiological resources contributes to brain aging and heart disease (Jefferson *et al.*, 2010; Matthews *et al.*, 1997). Table 9 summarizes the physiological response patterns of challenge and threat.

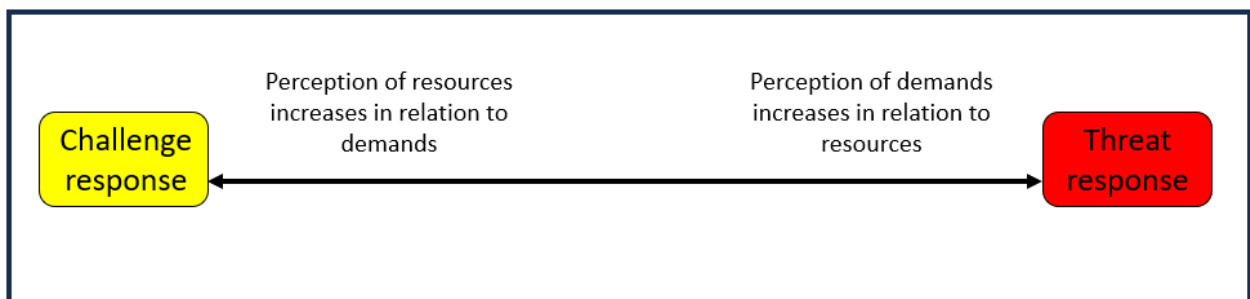
Table 9 - Challenge and threat response patterns

Challenge	Threat
Appraisals: coping resources > situational demands	Appraisals: coping resources < situational demands
Motivation: approach / appetitive	Motivation: avoidance / defensive
Affect: pride / excitement / ↑ self-esteem	Affect: anxiety / shame / ↓ self-esteem
Neuroendocrine and autonomic reactivity: <ul style="list-style-type: none"> • SAM axis activated • Hormone responses related to thriving and growth • Increased cardiac efficiency • More blood & oxygen delivered to peripheral sites (brain) 	Neuroendocrine and autonomic reactivity: <ul style="list-style-type: none"> • SAM and HPA axis activated • Cortisol ↑ • Lowered cardiac efficiency • Blood & oxygen concentrated in core areas of the body
Recovery: Fast. Return to baseline quickly after stress	Recovery: Slow. Stress responses linger.
Performance: Facilitated cognitive performance	Performance: Debilitated cognitive performance

Source: Modified by the author from Jamieson *et al.* (2018a, p.32).

Though outlined here as distinct responses for simplicity, the BPS model sees challenge and threat not as dichotomous states but as “anchors on a continuum of possible responses” to stress. As reappraisal happens and “the ratio of perceived resources to demands shifts... individuals move along the continuum” between challenge and threat responses (Jamieson et al 2018a, p. 32), as illustrated in Figure 4.

Figure 4 - BPS model’s challenge and threat continuum

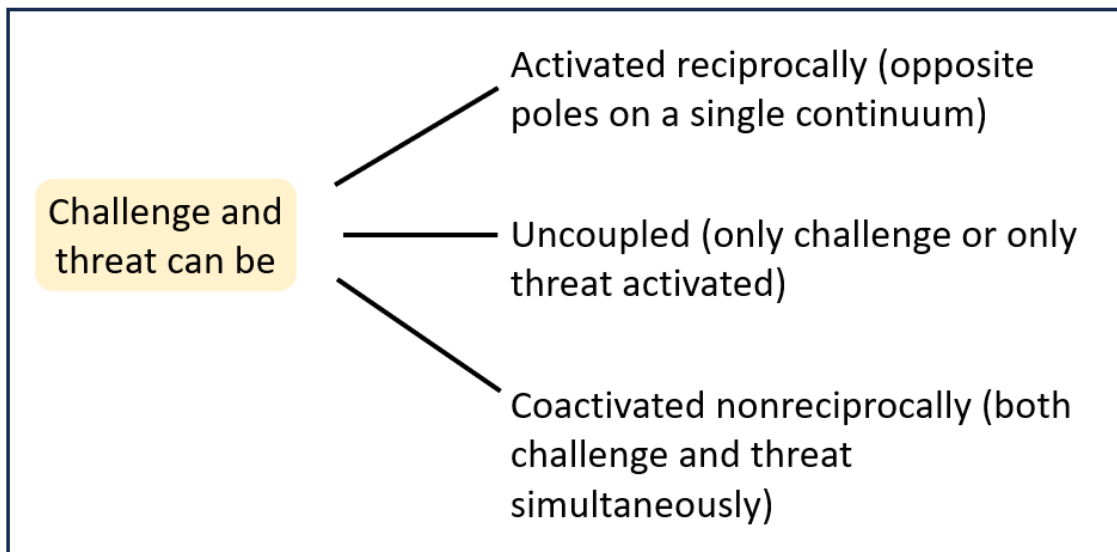


Source: Elaborated by the author (2023), based on information from Jameison et al (2018a).

The “primary application” of research based on the BPS model of challenge and threat has been in “developing regulatory methods that promote challenge [rather than threat] responses” through “manipulating or modifying appraisals” (Jamieson *et al.*, 2018a p. 33).

The BPS model, however, does not account for the possibility of experiencing challenge and threat simultaneously. An alternative model, the Evaluative Space Approach to Challenge and Threat (ESACT), is offered by Uphill *et al.* (2019) in an effort to explain why, in several sports- performance studies, “when not placed in artificial experimental procedures, individuals report experiencing both challenge and threat” (p. 4). Although acknowledging that “there is considerable evidence supporting many of the tenets of the BPS model” (Ibid., p. 3), Uphill *et al.* argue that its “bipolar approach to challenge and threat represents at best a partial and incomplete picture of the evaluative space” (Ibid., p. 4). They offer instead a model which views challenge and threat as “at least partially independent and bivalent states” (Ibid., p.2). Challenge and threat *can* be activated reciprocally, as in the BPS model where challenge increases as threat reduces, but the two states can also be uncoupled (only challenge or only threat activated), or coactivated nonreciprocally (both challenge and threat can be activated or decreased at the same time). In this last case, a situation can be seen “as an opportunity *both* for gain *and* loss” (Ibid., p. 5). Figure 5 illustrates these three possibilities.

Figure 5 - ESACT model’s three possibilities for challenge and threat



Source: Elaborated by the author (2023), based on Uphill *et al.* (2019).

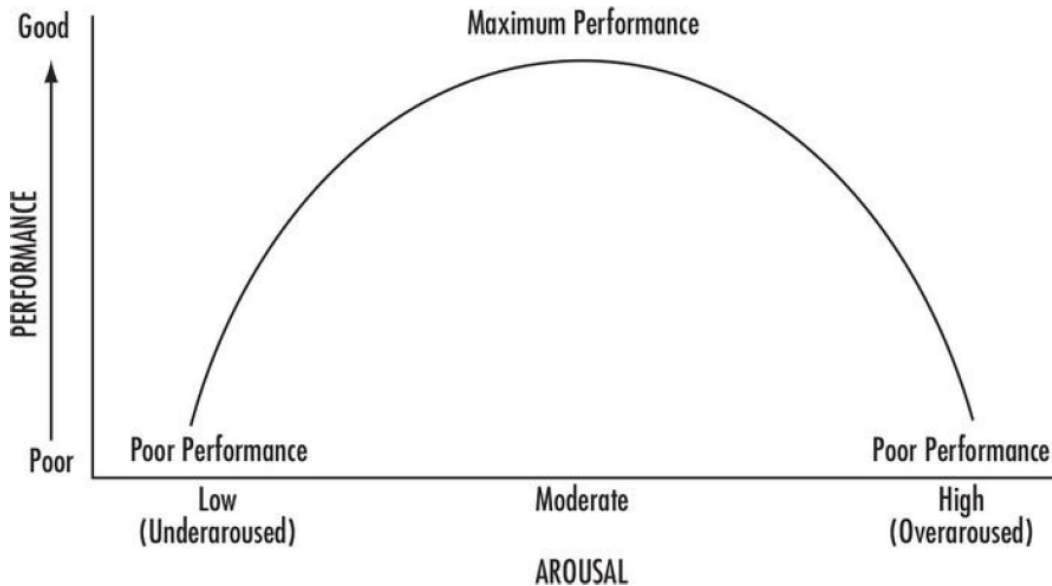
Rossato (2014) finds that mixed challenge-threat appraisals produce physiological responses which do not cleanly reflect those predicted by the BPS model, supposedly because combination appraisals activate combination physiological responses. These combined states do produce responses with traceable patterns, however. For example, higher anxiety scores have been associated with high challenge/high threat patterns, where low challenge/low threat patterns score lower on anxiety. Higher self-efficacy measures, increased goal approach motivation and lower goal avoidance motivation have been associated with High Challenge/Low Threat patterns, where High Challenge/High Threat patterns have shown the reverse.

Recognizing that both challenge and threat appraisals can be activated simultaneously offers an understanding of mixed emotions in stressful circumstances but does not change significantly the task of a person who seeks to cultivate a challenge mindset. Even with a the more nuanced view of challenge and threat offered in the ESACT model, strengthening beliefs that resources are up to the demands of the situation will change appraisals and result in a greater sense of challenge and a lessened sense of threat, even in cases where mixture states are operating.

1.6.1 Implications for MPA

Conceptualizing MPA in terms of challenge and threat appraisals offers a succinct and memorable framework for MPA treatment, but discussions about such models are rare in MPA literature. A more common model used to illustrate what conditions contribute to helpful vs. harmful anxiety is what is often referred to as the Yerkes-Dodson “law.” Much of both scientific (Kirchner *et al.*, 2009; Steptoe; Fidler, 1987; Sinico da Cunha; Winter, 2013; Wilson; Roland, 2002) and non-scientific MPA literature (Nagel, 2017; Lehman *et al.*, 2007) has relied on the concept presented in the Yerkes-Dodson inverted u-shaped curve, shown in Figure 6, to explain how MPA operates.

Figure 6 - The Yerkes-Dodson “Law.”



Source: Beilock S. (2010, p. 226).

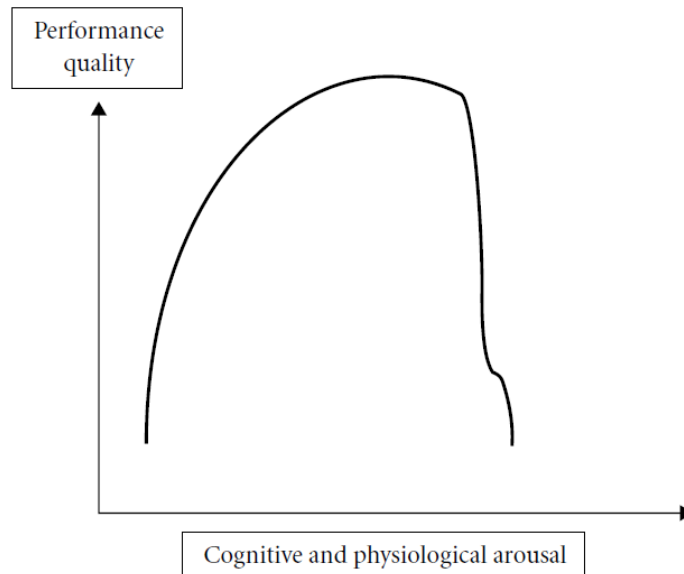
Authors who utilize this model typically speak about the importance of finding the optimal level of anxiety and contend that Yerkes-Dodson’s foundational experiments from 1908, as well as subsequent studies by other researchers based on these original findings, show that performance is facilitated when anxiety is at moderate levels, while both low and high levels of anxiety erode performance quality. This literature typically focuses on methods which can help performers attain moderate anxiety levels, by raising anxiety when it is low, and dampening anxiety when it is too high.

There are some key problems, however, with the assumptions upon which the inverted U perspective are based. Arousal here is typically understood as a unidimensional phenomenon, with little or no attempt to distinguish between physiological, cognitive, and emotional arousal. Hanoch and Vitouch (2004) trace this unidimensional view back to early scientific publications in the 1950s and 60s, “which conceptualized the arousal construct as one that represents all arousal states...[with] an energy axis from ‘low’ to ‘high’, in the sense that examining one arousal state reveals the nature of them all (with differences only in intensity)” (p. 433). Given this precedent in prominent scientific literature, it is thus understandable that MPA publications based on the inverted U hypothesis often equate arousal levels directly to anxiety levels, or to stress levels. Hanoch and Vitouch (2004) further point out that “arousal states—whether of low, medium or

high intensity— can stem from various sources, including those that have no emotional signature, such as exercising or consuming caffeine,” and emphasize the importance of distinguishing between physical and emotional arousal, as the two do not “represent the same phenomenon” (p. 433).

Some MPA literature does attempt to address the task of separating physical or somatic anxiety from cognitive anxiety. Valentine (2002) cites Hardy and Parfitt’s catastrophe model of performance (developed in research with athletic performance) to argue that when cognitive anxiety is low, performance will follow the Yerkes-Dodson inverted U prediction, even if physical arousal is high. When cognitive anxiety *and* physical arousal are high, however, performance quality can dive suddenly in a catastrophic manner. Lehman *et al.* (2007) also cite a version of the catastrophe model (Figure 7), arguing that “as more cognitive anxiety is introduced into the equation, the more catastrophic the loss in performance quality” will be (p. 150).

Figure 7 - The catastrophe model



Source: Lehmann, Sloboda, and Woody. (2007, p. 149)

This model modifies the U-shaped curve by showing a sudden and drastic loss in performance quality as high levels of anxiety are reached, rather than the gently sloping downward curve shown in Figure 6. This conceptualization, along with the others mentioned in the previous paragraph, do not offer an understanding of the way in which appraisal affects cognitive anxiety, and instead seek to attribute anxiety directly to situational stressors (personal resources, task difficulty, etc.) rather than the performer's *appraisal* of those stressors.

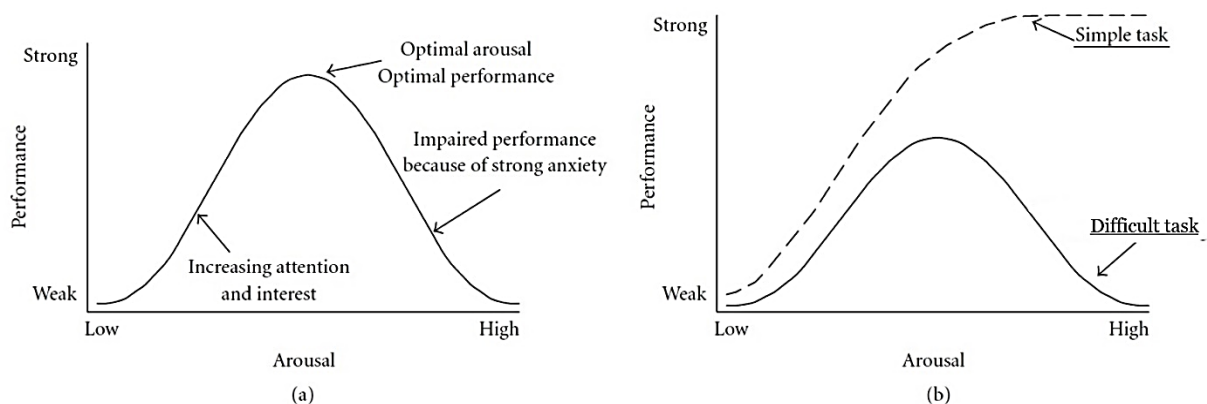
Appraisal theory-based models such as the BPS and the ESACT models shed light on what the “cognitive components of performance anxiety” from the catastrophe model actually are, and what triggers them to increase and become decisive in a performance situation. Understood from the perspective of appraisal theory, debilitating performance anxiety essentially stems from an appraisal of threat, where demands are seen to exceed resources (Kirchner, 2003). Thus the key to MPA self-regulation lies not in keeping arousal or anxiety at moderate levels, but in learning to manipulate cognitive appraisals of demands and resources. Modifying appraisals can transform a potential threat or “catastrophe” performance situation into a challenge, where anxiety is bypassed, and cognitive and bodily resources rise to meet demands.

Additionally, it is essential to recognize that both challenge and threat are high-arousal states, and that it is not the arousal aspect alone from the Yerkes-Dodson law which determines

anxiety levels and how performance is affected. Research based on the BPS model discussed previously shows us that high arousal states in and of themselves are not necessarily debilitating to performance. In fact, as shown by Brooks (2013), regulating from one high arousal state (anxiety/threat) to another high arousal state (challenge/excitement) is not only possible, but beneficial to performance, and *more effective* than attempting to regulate from a high arousal state (threat) to a lower arousal state (increased calm).

Another problem with the inverted U explanation of performance and anxiety is that it is a misrepresentation of the original Yerkes-Dodson findings, which emphasized the role of task difficulty in interaction with arousal and performance. Yerkes and Dodson concluded that “an easily acquired habit... may readily be formed under strong stimulation, whereas a difficult habit may be acquired readily only under relatively weak stimulation” (1908, p. 481-2). Their original experiments showed that performance quality on easy tasks did not suffer even when high levels of arousal were reached. It was only with difficult tasks that high arousal was shown to be debilitating. Diamond *et al.* (2007) explain that influential publications on emotion and learning in the 1950s ignored or misrepresented the complexity of Yerkes and Dodson’s original findings, illustrating the Yerkes-Dodson “law” as simply an inverted U. Diamond *et al.* (2007) offer a side-by-side comparison of what they call the “Hebbian version of the Yerkes-Dodson law (a), as it has been commonly represented for the last 50 years” with Yerkes and Dodson’s actual findings (b) (p.3), shown in Figure 8.

Figure 8 - “Hebbian” versus original version of Yerkes-Dodson findings

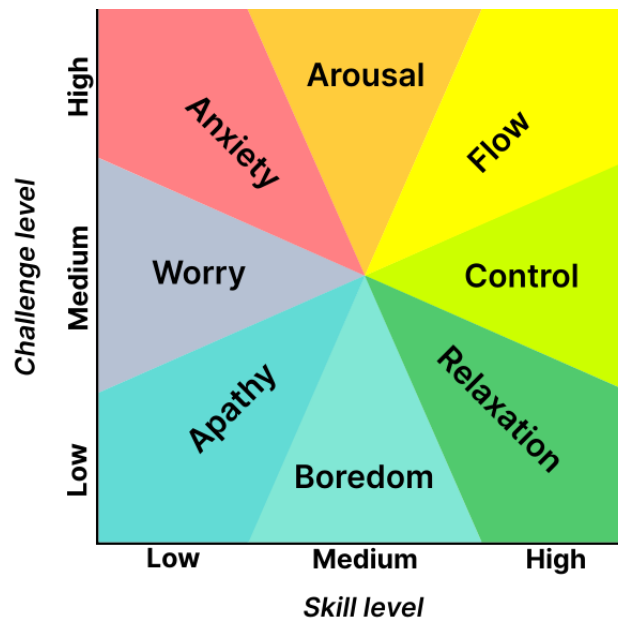


Source: Modified by the author from Diamond *et al.* (2007, p. 3).

The Hebbian version shown in graph (a) presents only the inverted U, while the original version (b) illustrates that task difficulty influences how arousal affects performance. Performance of simple tasks does not suffer with high arousal (dotted line in graph b), but performance of complex tasks does (inverted U in graph b). Thus, contrary to what is commonly alleged in much MPA literature, Yerkes and Dodson concluded that task difficulty, not simply arousal level, is the key to whether a stressful situation triggers facilitative or debilitating arousal. We must remember that the “problem with ‘task difficulty’ as a critical factor in understanding [arousal-performance] interactions,” as Diamond *et al.* (2007) so succinctly point out, “is that it is a *subjective measure*” (p. 4, italics added). In other words, task difficulty depends upon the subjective evaluation or appraisal of the task by the performer, not on the task itself.

Csíkszentmihályi’s flow model (1997), shown in Figure 9, is another well-researched model that illustrates the importance of task difficulty in relation to facilitative or debilitating arousal. This model has been tested in many domains and has been found to be valid and reliable in the arena of live music performance (Wrigley; Emerson, 2013). Flow, as discussed in the Methodology Chapter, is a psychological state of total absorption in an activity, such as music performance, where the individual feels “order in consciousness” and a sense of pleasure and control over the task without conscious intervention, indecision or anxiety (Csíkszentmihályi, 1990, p.6). Flow is a high arousal state that can enhance performance (Koehn *et al.*, 2014). As such, the concept of facilitative performance anxiety as used in this dissertation and in MPA literature can be understood as overlapping significantly with the concept of flow.

Figure 9 - Flow Model



Source: Csikszentmihályi, 1997, p. 31.

The flow model shows that appraisal of skill level interacts with appraisal of task challenge⁸ level, producing degrees of arousal and related psychological states. The bottom portion of the model shows low arousal states, the middle medium arousal, and the top half shows states of high arousal (the orange “arousal” triangle in the top half refers to high arousal). Beginning with the low arousal states in the bottom half, low challenge and low skill level produce a state of apathy; low challenge and medium skill level result in boredom; low challenge and high skill level yield relaxation. In the middle of the model worry and control are pictured: when task challenge is medium and skill level is low, this gives rise to a state of worry; medium challenge level and high skill level generate a sense of control. Among the high arousal states on the top half is (debilitative) anxiety,⁹ which happens when task-challenge level is high (appraised as high) and skill level is low (appraised as low); high challenge and medium skill level produces

⁸ “Challenge” as used by Csikszentmihályi in this model refers to task difficulty, better understood as the *demands* of the situation. These demands are part of what is appraised by the individual, together with “skill level” which can be understood as the individual’s *resources*. Thus the “challenge level” as discussed in this paragraph refers to appraised level of demands, and the “skill level” refers to appraised level of resources.

⁹ Csikszentmihályi’s (1997) use of the term anxiety denotes the type of anxiety harmful to performance, and thus should be understood as debilitative anxiety.

a state of high arousal; and finally, high challenge matched with high skill level yields a state of flow.

Consistent with Yerkes-Dodson’s conclusions, the flow model portrays that task difficulty (demands), in relation to skill level (resources), is key in determining whether performance will be hampered or helped by high arousal. Remembering that task difficulty and skill level are *subjective* measures, here again we see the central importance of appraisal in producing facilitative or debilitating arousal. As Osborne, Greene and Immel (2014) assert, “musicians transferring from the rehearsal studio to a concert performance demonstrate significant increases in heart rate and physical tension, which may or may not have a detrimental effect on their performance depending on whether they interpret those physiological symptoms as facilitating or debilitating to the performance” (p.1). What is operational here is an appraisal of whether resources meet demands in a given performance situation, and this is what determines whether the situation is met predominantly as a challenge or a threat.

Emotion regulation in MPA should be focused not on controlling and bringing down high arousal, as suggested by the oft misinterpreted Yerkes-Dodson law, but instead on manipulating appraisals when arousal and anxiety are high, so that resources can be seen as sufficient for situational demands, and threat appraisal converted to a challenge appraisal, as summarized in Table 10.

Table 10 - Optimizing perceived balance between demands and resources.

Emotion Regulation Concept	Implications for MPA
Emotion regulation involves optimizing perceived balance between demands and resources	MPA regulation involves manipulating appraisals so that resources \geq demands

Source: Elaborated by the author (2023).

1.7 SUMMARY OF CONCEPTS AND IMPLICATIONS

As outlined in this chapter, appraisal theory assists greatly in understanding what contributes to both adaptive and maladaptive MPA. Appraisal theorists agree that emotions evolved to make species more adaptable to changing environmental circumstances, and indeed

the capacity to mentally evaluate a situation and trigger a response based on that evaluation has distinct advantages over the more rigid, physical reflex-bound responses of simpler species. One of the principal adaptability advantages that emotions offer over rigid reflex is the capacity to take in new information as situations evolve, and to change responses accordingly. Given this added flexibility or mutability in appraisal which emotions offer, emotions can work well to help organisms adapt to changing circumstances. However, the mechanism of emotion processes is unfortunately not always helpful or adaptive, because appraisals can miss the mark and trigger maladaptive responses. The emotion of music performance anxiety is no exception. At times individual appraisals can trigger adaptive or facilitative MPA, which sharpens abilities and improves and enables performance, and at other times evaluations can create a maladaptive, debilitating MPA response, hindering and crippling music performance.

Appraisal theory helps us understand first that the central contributor to helpful or unhelpful MPA is mental appraisal of the situation. While the appraisal or the meaning which the person gives to the situation is paramount in emotion generation, various other elements can indirectly influence this appraisal, including the situation, the attention allocation of the individual perceiving the situation, and the symptoms of the person's emotional response itself (behavioral/motivational tendencies, somatic response, and feeling). MPA regulation is possible then through either direct modification of appraisal, or through indirectly influencing of appraisal via non-appraisal components of emotion.

In addition to helping us understand how appraisals are influenced, appraisal theory outlines the criteria which the brain uses to make appraisals. In the case of stressful situations (situations which seem to either *tax* or *exceed* personal coping resources), appraisals are based on how resources compare to situational demands. When personal resources look sufficient for demands, a challenge appraisal is generated, but when demands seem to outstrip resources, a threat appraisal is produced. Challenge appraisals mobilize physiological resources in a fundamentally different way than threat appraisals because they motivate toward approach rather than avoidance of the stressor. As detailed in Section 1.6, research studying the effect on performance of challenge and threat appraisals shows that challenge tends to facilitate while threat debilitates performance in domains such as sports, music, and academics. These findings suggest that adaptive MPA is generated when individuals form challenge or challenge-leaning appraisals, while threat-heavy appraisals produce debilitating MPA.

Appraisal theorists offer the additional insight that practice increases automaticity of appraisals. This implies that even when cultivating challenge-leaning appraisals requires significant cognitive effort, these appraisals can become automatic and even effortless with repetition.

In summary, appraisal theory teaches musicians what constitutes adaptive and maladaptive MPA, and what contributes to each. We learn from appraisal theory-based researchers that taking charge of the process which produces facilitative MPA is not only possible, but clearly outlined in a series of concrete and memorable concepts which can be applied to a variety of situations. Appraisal theory can help musicians understand the components of their own MPA and how to manipulate them. Chapter 2 examines in more detail the subject of manipulating components of MPA, through selecting regulation strategies, and Chapter 3 focuses on strategy implementation.

CHAPTER 2: MPA REGULATION ORIENTED BY APPRAISAL THEORY

2.1 ADAPTIVE STRATEGY SELECTION

The purpose of this chapter is to discuss flexible and adaptive strategy selection for MPA regulation as an exploration of the third research question proposed in the Introduction: given the breadth of MPA regulation strategies available, how can musicians choose strategies appropriately matched to performance variables that are in constant flux?

Learning how to regulate MPA emotions is more powerful than simply coping with MPA, as it “opens wider horizons for [...] development of psychological interventions [...] based on a wider range of psychological techniques” (Kaleńska-Rodzaj, 2021). In order for effective MPA regulation to occur, Jørgensen (2004) emphasizes that “every practitioner – from student to the professional musician – must have a thorough knowledge of his or her *repertory* of strategies and must be able to control, regulate, and exploit this *repertory*” (p. 87). Studies in psychological flexibility show that the optimal use of one’s repertory comes not from reliance on certain strategies that are superior to others, but instead from the “awareness of what a situation requires and an ability to organize and prioritize strategies that ‘fit’ the situation rather than relying on dominant, default strategies” (Kashdan, 2010, p. 12). Cheng and Chueng (2005) show that “the predominant use of any type of coping strategy can be debilitating” (p. 860). People who vary their coping strategies are more effective in handling stressors, and show reduced anxiety and depression, compared to those who use rigid coping approaches involving a few favored strategies (CHENG, 2001). Adaptive strategy selection involves not only utilizing a large toolkit, but the wisdom to perceive which tool or combination of tools is appropriate for a given situation.

In this chapter, the process model of emotion (an appraisal theory-based model) will be presented as a useful guide in strategy selection. A discussion will follow about how merging this model with existing MPA models can be beneficial, enhancing their utility for matching MPA variables with appropriate strategies. Additionally, the issues of MPA regulation versus MPA prevention will be discussed from an appraisal theory perspective.

Following this, a survey of regulation strategies from MPA literature will be presented. What distinguishes this survey from other lists that have been published previously is its effort to situate strategies within the context of a comprehensive and directing theory (appraisal theory), or more specifically within an appraisal-theory-based model (the process model), with an aim to

show how that model helps organize and direct, making clearer and simpler, the choice of which strategies to use when, in what sequence, and in what combination. It is proposed that with the appraisal theory and the process model as guides, the selection of varied strategies fitted for changing circumstances becomes both easier to understand and easier to implement.

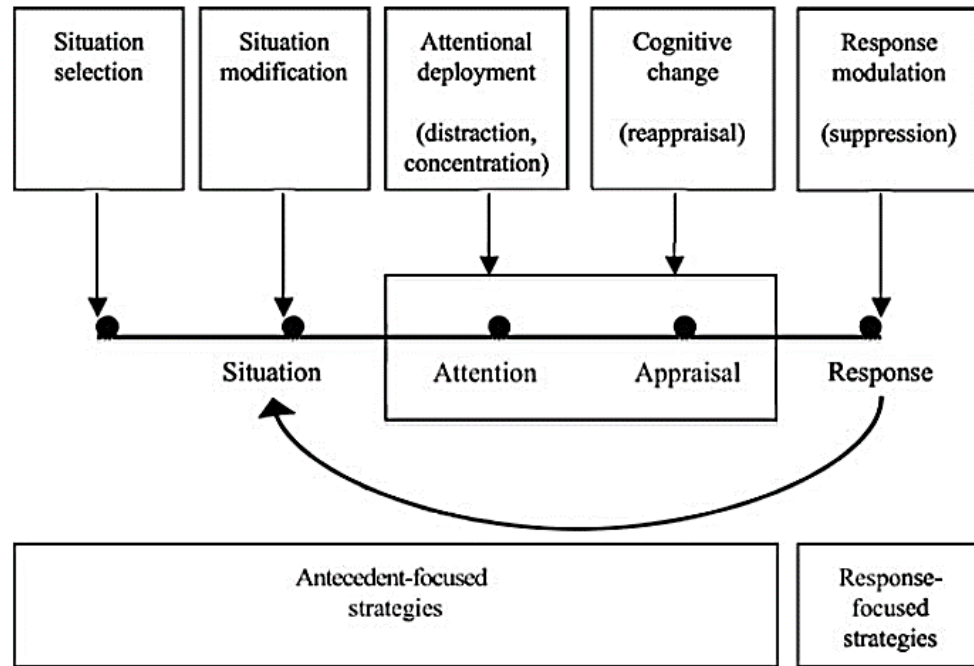
2.2 THE PROCESS MODEL

Emotion regulation, which owes its roots to appraisal theory, includes “the processes by which individuals influence which emotions they have, when they have them, and how they experience and express these emotions” (Gross, 1998, p. 5). It has been extensively studied in recent decades, having become “an active topic of investigation in all of the major sub-areas within psychology” (Gross 2015a, p. 2). Various models have been put forth to organize and explain the methods and mechanisms behind emotion regulation, including those offered by Koole (2009), Larsen (2000), Parkinson & Totterdell (1999), Gross (1998) and Thayer *et al.* (1994).

Gross’s process model of emotion regulation (1998) is “perhaps the most widely used model to date” (Web *et al.*, 2012, p. 776), and has been identified as “one of the best known and empirically verified emotion regulation models” (Kaleńska-Rodzaj, 2021). This model is based on appraisal theory assumptions outlined in Chapter 1 and teaches regulation through interference at four crucial points in emotion generation processes. These four points were shown previously in Figure 2 (the WPVA loop) and include (1) the situation (World), (2) the perception of the situation (Perception), (3) the appraisal of the situation (Valuation), and the (4) emotional response (Action/response).

These four key points in emotion generation provide the basis for five “families” of regulation strategies (Gross; Thompson, 2007). Web, Miles and Sheeran (2012) offer an illustration of these five emotion regulation families, provided in Figure 10, which is a slightly modified version of Gross and Thompson’s (2007) process model. The bold line in the center of the model represents a timeline of emotion generation processes which proceeds as follows: (1) the situation is (2) perceived according to the attention of the individual, and the (3) implications for the individual’s wellbeing are appraised, (4) producing an emotional response. An arrow on the timeline from the response back to the situation shows that the response itself can subsequently modify the situation being appraised, whereupon the cycle iterates.

Figure 10 - The process model



Source: Webb, Miles, and Sheeran (2012, p 776)

The five families of emotion regulation strategies, shown in boxes along the top of this model, interfere at different points along the timeline of emotion generation. Two of these families focus on influencing the situation, through *situation selection* and *situation modification*, which “change the situation to which one will be exposed” or change “one or more relevant aspects of the external world,” respectively. Perception is modified through adjusting how *attention* is deployed, “influencing which portions of the world” are noticed. Appraisals can be modified through *reappraisal*, revising “the way the world is cognitively represented” (Gross, 2015b, p. 11). *Response modulation* seeks to influence “experiential, behavioral, or physiological components of the emotional response after the emotion is well developed” (Gross, 2015b, p. 9).¹⁰

As shown in Figure 10, each of these strategy families interferes at different time points in the emotion generation process. Situation selection precedes the emotional process entirely, and situation modification can intercede prior to or early in the generative process. As such both are

¹⁰ The word “suppression” on the response modulation tab does not refer to *repression*, but to physical stimuli which can somatically suppress or modify an emotion response. Response-oriented strategies will be examined in Section 2.10 (p. 109).

classified as antecedent-focused strategies. Attentional deployment and reappraisal interfere a little later but still before the emotional response, and thus also fit within the antecedent category. Response modulation is a strategy which interferes last of all and seeks to regulate after the emotional response has already been generated.

It is interesting to note that although each family of regulation strategies interferes at a different time point, *all families of strategies essentially serve to alter appraisals*. Situation selection and modification “change appraisals by changing the world that is being appraised;” attention-related strategies “change appraisals by selectively amplifying or suppressing pieces of information that the appraisal process operates on” (Yih *et al.*, 2018, p. 4); reappraisal techniques work on appraisal directly; and response modulation strategies can, as previously mentioned, indirectly change appraisals when they contribute to modifying the situation being appraised.

Kaleńska-Rodzaj (2021) recommends using the “clear-cut framework” provided by Gross’s process model (Figure 10) to explore how it can orient “musician’s training, therapy and performance preparation” (p. 1768). In response to this recommendation, individual strategies presented in this chapter will be situated within Gross’s process model. The perspective that appraisal is central to regulation, and that all strategies influence appraisal either directly or indirectly (by interfering at points in the emotion generation process other than appraisal), will remain important throughout this discussion.

2.3 MODELS MERGED

One way to use the process model to orient performance preparation and MPA regulation is by merging it with existing models of MPA, thereby enhancing the utility and practicality provided by the models individually.

Many MPA theories seek to identify variables involved in the development of performance anxiety. Ray (2009) lists aspects which commonly contribute to severe stage fright, such as repertoire difficulty, insufficient preparation time, poor nutrition and insufficient rest, and low self-esteem. Silva and Leão (2017) attempt to classify MPA variables into four memorable categories, namely the performer, the task, the situation, or a tendency toward perfectionism. Merging such models with the process model clarifies that MPA variables themselves are either directly or indirectly influencing appraisals, which then produce an emotional response. Highlighting appraisal’s central role within the list of variables clarifies the path toward

regulation. Additionally, the process model helps move beyond listing variables toward practical matching of these variables with effective treatment strategies.

To illustrate how merging the process model with MPA models can be accomplished, this section will present LeBlanc's theory of performance anxiety (2021) and show ways its practicality can be improved by inserting it within the framework of the process model.

LeBlanc offers in his theory an extensive list of "major variables that influence the development and treatment of music performance anxiety" (p. 9). His model is especially of note for its effort to place these variables within the "timeline of a normal preparation for an important performance" (Ibid.), pinpointing *when* certain variables may become an issue. Figure 11 shows LeBlanc's model. It will be explained in detail first, followed by a brief analysis of its strong and weak points. A discussion will then follow showing how its utility can be improved by merging it with the process model. This merging is demonstrated to show how the process model can facilitate and guide the task of strategy selection for MPA regulation.

2.3.1 LeBlanc's Model Explained

LeBlanc's model, as mentioned previously, situates MPA variables on a timeline of preparation and performance. The numbers at the left of LeBlanc's model mark this timeline, which proceeds from the highest number (11) to the lowest (1). Level 11 is the first point on the timeline of performance preparation, and variables listed at this stage are subsumed within the category "Performer's Characteristics and Learning History." This category examines more stable and historical variables related to the performer that are present before the active preparation process begins. Factors related to age, musical ability, musical training, personality, amount and quality of performing experience, memory, and circadian rhythm are identified as worthy of attention. Some of these variables are non-malleable, such as age, while others can be ameliorated, such as circadian rhythm and memory. LeBlanc states that "performers and music teachers should consider these variables carefully before making a commitment to perform" (Ibid., p. 4). The implication is that such variables are difficult, or in some cases impossible, to manipulate, and thus the only option for treatment in problematic cases is in avoiding performance altogether, or perhaps in avoiding high or medium-stress performances.

Timeline levels 7, 8, 9 and 10 are all listed under the category "Preparation for Performance" and look at variables related to the preparation time-period. Level 10 explores the chosen repertoire, its difficulty and appropriateness. LeBlanc encourages repertoire choices which situate the difficulty comfortably within the capacity of the performer, considering which repertoire will be most appropriate for the audience. He opines that inappropriate or very difficult repertoire will tend to increase anxiety. Level 9 considers the adequacy of musical preparation, instrument, and physical conditioning. LeBlanc recommends scheduling performances to allow for ample musical preparation and optimal overall physical conditioning, including healthy functioning of important "physical subsystems" (p.5). The quality of the instrument is also listed as a factor which can contribute to or reduce anxiety. Level 8 addresses emotional and physical health. LeBlanc offers performance avoidance, as in Level 11, as the best treatment if emotional and physical health are poor, as he views these factors as increasing vulnerability to anxiety. Level 7 introduces "current affective state," encouraging performers to "do whatever is necessary to bring about a favorable mood at the time of the performance" (p. 5).

Level 6 lists factors related to the performing environment, including time of day, distractions present, physical comfort in the performance space, whether there is a memorization requirement, wires and microphones for recording or other research devices, and the presence and behavior of various audience members (and their relative importance to the individual). LeBlanc advocates advance consideration of these variables, as they “will have an effect at the time of performance, and this is unavoidable. It is possible, however, for the teacher and performer to anticipate their effect and prepare countermeasures if necessary” (p.5).

Level 5 considers what LeBlanc calls the “performer’s self-perceptions,” which in essence are the performer’s *appraisals* of various factors, including: repertoire difficulty and appropriateness, adequacy of preparation, personal appearance, personal exposure, importance of the performance, and audience support. As these are all aspects of the performer’s appraisal of the situation, LeBlanc notes that “a good teacher can provide a great deal of help here by pointing out fears that are groundless or exaggerated” (p.7).

Level 4 introduces psychological and physiological arousal at the time of performance. LeBlanc presents these variables separately to distinguish between “cognitive” and “biological processes” which can influence arousal level (p.7).

Level 3 marks the timepoint at which the actual performance begins and considers the focus of the performer’s attention at this point. LeBlanc asserts that if attention is focused on the “musical task at hand,” this will “greatly help to control performance anxiety” during performance (p.7).

Level 2, labeled “immediate feedback of performance quality,” refers to the performer’s appraisal of performance quality while the concert is in progress.

Level 1 refers to time after the performance and examines post-concert feedback that the performer receives from “music critics... photographs, tape recordings, and comments from people who were present” (p. 8). This level is also an appraisal of performance quality constructed by the performer, formed post-event and based on feedback from external sources, and is highlighted as “set[ting] the stage for the performer's next music event” by increasing or decreasing confidence.

2.3.2 Strong and Weak Points of LeBlanc's Model

Strong points of LeBlanc's model include the detailed and extensive list of MPA related variables, where many other authors only attempt to identify a handful. The inclusion and description of these variables helps build explicit awareness for both musicians and music educators of the many factors in MPA generation. Additionally, LeBlanc's endeavor to place all variables on a timeline can expand consciousness of when these factors often arise, acting as a map of sorts, and assisting performers to predict upcoming challenges and prioritize advance preparation.

One weak point of the model is LeBlanc's failure to recognize appraisal's centrality to all variables, or the way in which all variables either directly or indirectly affect appraisal. He allots a peripheral role to appraisal's importance in MPA generation and identifies it as operative only at three points on the timeline (Levels 5, 2, and 1). LeBlanc elevates external factors such as audience behavior, recording devices, and repertoire difficulty to the status of *direct* determinants of MPA, rather than recognizing their *indirect* influence on the central organizing network of appraisal. This is problematic because, as mentioned before, when uncontrollable external factors are viewed as direct determinants of MPA, the performer's sense of control and efficacy are reduced, resulting in augmented rather than reduced anxiety (Kaleńska-Rodzaj 2021). The demands of the situation, and the performer's resources for meeting the demands, are viewed as determined by external factors that cannot be manipulated, and a sense of uncontrollability and threat is heightened. When, however, performers recognize that it is not the demands themselves but the *appraisal* of those demands that determines MPA experience, power is restored to the performer. All variables, when seen in this light, either directly or indirectly affect appraisals. Threat appraisals can be modified through manipulation of the perceived balance of demands and resources. When appraisal's centrality is not recognized, on the other hand, treatment for MPA is hampered because the target problem is misunderstood.

Another weakness of the theory is that, while listing many MPA variables, it does little to match these variables to appropriate treatment strategies. LeBlanc does briefly mention three "avenues" for addressing MPA variables at the end of his article: educational, psychological, and pharmacological. These three categories are only vaguely defined, however, and he does not attempt to match all listed variables with one or more of these treatment categories.

The educational category is described as including strategies for “prepar[ing] the performer so that he or she will be less inclined to worry about the coming performance” (p.8). The implication is that if the preparation process is organized such that demands are kept low and resources bolstered, anxiety will be reduced. Lacking here is an understanding of appraisal’s organizing function, or recognition that demands and resources themselves do not produce “worry;” rather, worry results because of the performer’s appraisal of demands and resources.

The psychological category LeBlanc describes as including strategies to “minimize negative cognitions” during performance *and* focus attention on the task at hand (p.8). The category is a broad one, embracing both attention allocation and appraisal-related strategies. Missing again is an emphasis on appraisal’s centrality, and the recognition that attention allocation techniques influence appraisal indirectly by changing the perception of the situation being appraised. The broadness of this category, reflected in its subsuming not one but *two* key points (attention *and* appraisal) from the emotion generation process outlined by the process model, limits its utility. Where the process model distinguishes between appraisal and other components which indirectly influence it, LeBlanc’s model’s categories do not.

With the third category, pharmacological, LeBlanc advocates using “medication to lower or prevent attainment of an excessively high level of physiological arousal” (p.8). This last category designation is inadequate as a guide in strategy selection for two reasons. First, as discussed in Section 1.6 of the previous chapter, high arousal alone does not produce debilitating MPA; rather, when challenge appraisals are dominant, a high arousal state can facilitate performance. Second, this category focuses on symptoms produced by an already active emotional response but attempts to address these symptoms through one avenue only, namely chemical alteration through medication. Limiting response modification to pharmacological treatment ignores the many additional strategies for regulating an active emotional response. A range of response-focused strategies will be discussed in section 2.10 of this chapter (p. 107-112).

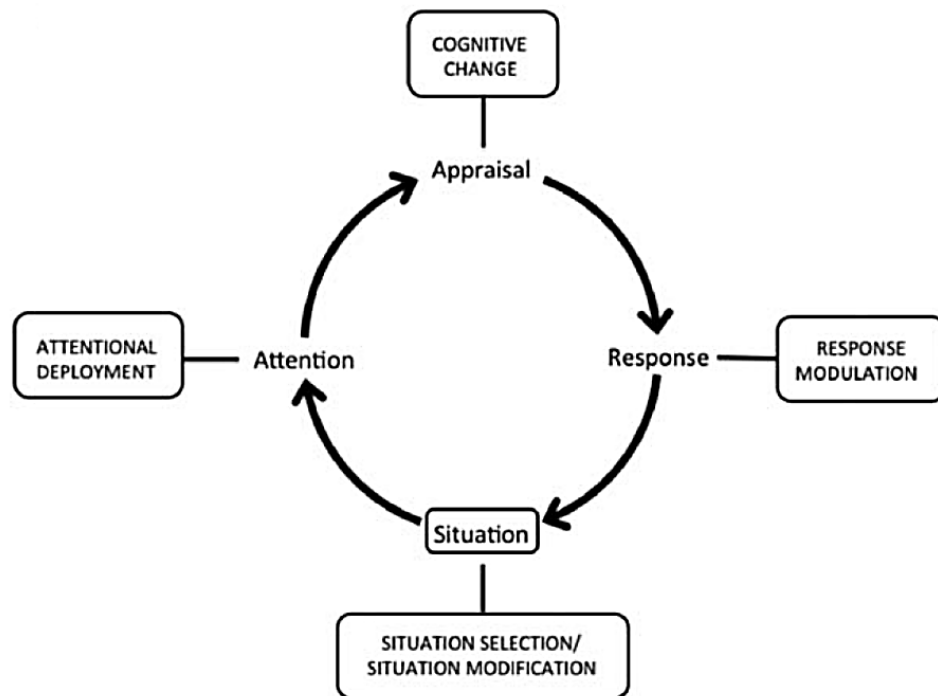
2.3.3 Advantages of Merging Models

Merging LeBlanc’s model with the process model can, however, help musicians capitalize on the strengths of each. Where LeBlanc offers awareness of variables and when they arise, the

process model can help match these variables to appropriate treatments in a clear and logical manner.

As discussed in Section 2.2, the process model highlights four points in the emotion generation process, where a (1) *situation* is (2) *perceived* according to the individual's attention and (3) *appraised* for its bearing on personal wellbeing, producing an emotional (4) *response*. Emotion regulation happens through interference at one or more of these four points, giving rise to families of emotion regulation strategies: (1a) situation selection strategies, (1b) situation modification strategies, (2) attentional deployment strategies, (3) cognitive change (reappraisal strategies), and (4) response modulation strategies. These families of strategies associated with the four emotion generation time points are illustrated in Figure 12.

Figure 12 - Five Families of Emotion Regulation Strategies



Source: Gross, 2015a, p. 4.

Crucial to the process model, as an appraisal-theory-based model, is the understanding that all strategies serve to alter appraisals, either directly or indirectly, because appraisal is the central organizing component in emotion generation. Strategies from the family of reappraisal

(cognitive change) work directly on appraisals, while strategies from all other families (situation, attention, or response) work on appraisals indirectly.

LeBlanc's variables can be inserted into the process model framework, clarifying the work of matching variables to appropriate strategy families. The first implication from combining the two models is the perspective that all LeBlanc's variables contribute to the MPA experience through influencing appraisals. For example, LeBlanc's variables of emotional health, personality, and amount of performing experience are factors which do not directly determine MPA generation, but instead can influence appraisals of demands and resources, and it is this appraisal that in turn shapes the MPA experience. Given this perspective, all variables listed by LeBlanc, since they contribute to MPA only insofar as they influence appraisals, can be treated directly with reappraisal (cognitive change) strategies.

In addition to direct treatment of variables through reappraisal, the process model can guide performers to match LeBlanc's variables with strategies families that work indirectly on appraisals. This can be done by pairing LeBlanc's variables with the process model's four key time points from Figure 12. For reasons which will be explored further in Section 2.6 of this chapter, working directly on appraisal is not always possible when emotion intensity is high (see p. 85-89). Even when reappraisal is possible, working on appraisal from multiple indirect angles can be more effective than working on it from one angle alone, because adaptive regulation relies on flexibly using a broad range of tools, as discussed previously in Section 2.1 (Kashdan, 2010; Cheng and Chueng, 2005; Cheng, 2001). Given the complexity of adaptive regulation, a facilitative model which is "concise enough to remember and flexible enough to be applicable in a wide range of situations" can "help lower the executive function demands of reappraisal" (Uusberg et al., 2019, p. 278). The process model fits this description and can be utilized to categorize MPA variables according to where they fit within the emotion generation timeline, thus clarifying which family of strategies will work best for indirect appraisal manipulation.

To illustrate, consider variables on LeBlanc's Level 11 ("Performer's Characteristics and Learning History"), Levels 10 through 8 ("Preparation for Performance"), and many items on Level 6 ("Performing Environment"), which all relate to the performer's *situation*. Appraisals of these situational variables can be indirectly manipulated through efforts at situation selection and situation modification. Likewise the "distractions" variable on Level 6, and "focus of attention" on Level 3 are related to *attention* allocation, and these appraisals can be indirectly managed with

attention-related strategies. The variables from Level 4, physiological and psychological arousal, are related to an already active emotional *response*, and thus appraisals of these variables can be treated indirectly with response modulation strategies. As Level 5, Level 2 and Level 1 variables, “Performer’s Self-Perceptions” and “Evaluation of Performance Quality,” all fit squarely within the process model’s *appraisal* category, these variables are best addressed directly with reappraisal techniques. See Table 11 for list of LeBlanc’s variables which situates each within the process model’s framework. As emphasized previously, all variables can be treated directly with reappraisal techniques, so the column dedicated to the process model’s appraisal timepoint lists all variables, with special emphasis on those variables which are exclusively appraisal variables. The other columns show which variables are associated with an additional timepoint from the process model (situation, attention, response). Appraisals of variables listed in these columns, besides being treatable directly with reappraisal, can be *indirectly* treated with situational, attentional, and response-focused techniques.

Table 11 - Merging the process model with LeBlanc's model

Process Model's 4 key points in emotion generation	Situation: Treat appraisals of these variables <u>indirectly</u> with situation selection and situation modification techniques	Attention: Treat appraisals of these variables <u>indirectly</u> with attention allocation techniques	Appraisal: Treat appraisals of these variables <u>directly</u> with reappraisal techniques	Response: Treat appraisals of these variables <u>indirectly</u> with response modulation techniques
LeBlanc's MPA variables	<ul style="list-style-type: none"> • Age • Musical ability • Musical training • Personality • Amount/quality of performing experience • Memory • Circadian rhythm • Difficulty/ appropriateness of music performed • Adequacy of musical preparation /instrument/ physical conditioning • Emotional/physical health • Measurement devices and procedures • Physical comfort in environment • Presence and behavior of audience authorities, educator, family, media, peer group • Memorization requirement • Time of day 	<ul style="list-style-type: none"> • Distraction • Focus of attention 	<ul style="list-style-type: none"> • Perceived difficulty/ appropriateness of music • Perceived adequacy of preparation • Perception of own appearance • Perceived amount of individual exposure • Perceived importance of performance • Perception of audience support • Perception of immediate/ subsequent feedback of performance quality • <i>All variables from other categories can be worked on directly with reappraisal</i> 	<ul style="list-style-type: none"> • Current affective state • Physical comfort in environment • Level of psychological and physical arousal

Source: Elaborated by the author (2023).

Identifying where LeBlanc's variables fit within the emotion generation process helps identify how each variable influences appraisal, and by extension, how to modify such variables and modify appraisals.

Although it is true that "skillful emotion regulation may involve not only blends of emotion regulation strategies but also carefully chosen sequences" (Gross, 2015a, p. 17), the process model helps make complex regulation more accessible by locating where variables fall

on the emotion generation timeline and identifying strategies which best address each. Determining whether an MPA symptom is related to the situation, to attention, to appraisal, or to response helps classify which family of strategies (situation selection/modification, attention allocation, reappraisal, response modulation) or sequence of strategies will be most effective in regulating it. More on guiding principles for strategy selection will be discussed in Sections 2.5 and 2.6, but this initial matching of variables with strategy families from the process model helps provide a clear and facilitative starting point for adaptive MPA regulation.

2.4 REGULATION VERSUS PREVENTION

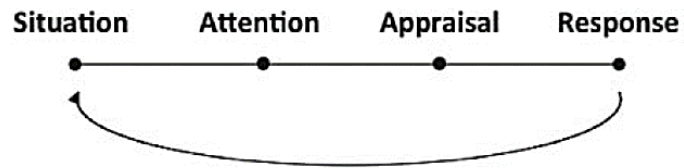
Before further exploring process-model-directed MPA regulation, one question important to address is the following: can the framework offered by the process model only be used for modifying emotions which are already active, or can it also be useful for the prevention of MPA? In other words, does the concept of regulation which the process model illustrates include the possibility of preventing certain emotions (debilitative MPA) from arising altogether, or does it only aid in modifying already existing emotions?

Gross (1998) sees emotion regulation as involving “the processes by which individuals influence which emotions they have, when they have them, and how they experience and express these emotions” (p. 5). By implication, this includes influencing both emotions which are active, and emotions which an individual expects to be active at a certain point in the future.

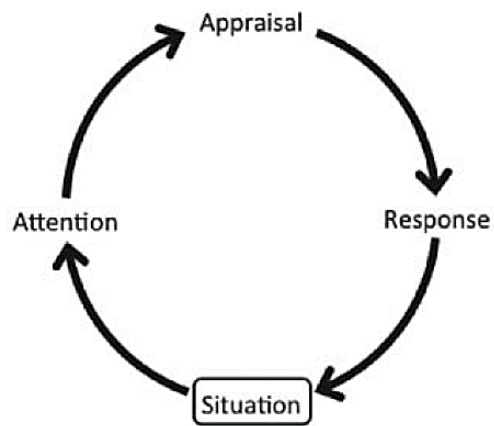
To illustrate first how regulation can alter the trajectory of an active emotion, Gross’s (2015a) depiction of the process model as it unfolds through time is useful. Figure 13 shows this unfolding version of the process model and compares it to two other versions: the first (a) is a linear representation; the second (b) is a cyclical representation; the third (c) shows the cycle unfolding through time, illustrating how the emotional response from the initial cycle changes the situation being appraised in the succeeding cycle. In this depiction of the process model, the second iteration of the emotion cycle does not duplicate the first but develops according to changes resultant from the first cycle.

Figure 13 - Three depictions of the process model

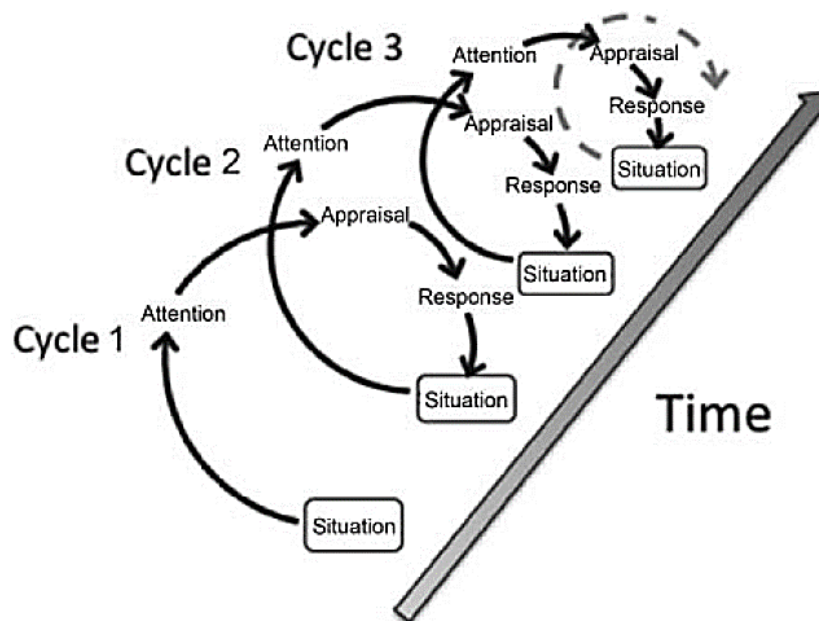
(a)



(b)



(c)



Source: Gross, 2015a, p. 4.

This third version of the model attempts to portray how, even without interference from regulation strategies, the emotion cycle unfolds through time in a process which changes from cycle to cycle. This happens because the emotional response from the initial cycle changes the situation being appraised in the next cycle, and so forth. Understanding how changes in one cycle influence succeeding cycles, even without conscious interference, clarifies how regulation or conscious interference can be used to alter the trajectory of future cycles in desirable ways. This unfolding model aids in conceptualizing how intentional interference in the emotion generation process at one of the four key timepoints can alter the future development of an existing emotion.

Additionally, Gross implies that his model can also be used to interfere preemptively in emotion processes which are expected to arise. He states that “emotion regulation may be viewed as altering an emotion trajectory *that would have occurred in the absence of that emotion regulation strategy*” (2015a, p.7, italics added). Gross’s concept of regulation as suggested by this quote applies not only to modifying emotion processes that have already begun, but also to altering emotion processes that have not yet been realized.

This is relevant to MPA management because, by extension, a musician who is guided by LeBlanc’s timeline and expects certain MPA variables to appear at particular phases of preparation and performance can *preemptively* interfere in these variables to influence future appraisals, and maximize chances for challenge rather than threat-leaning appraisals in future occasions. The presentation of regulation strategies in this chapter will include discussion of how strategies can be used for modification of both present and anticipated emotion, or in other words, how strategies can be used to manipulate active and prevent expected performance anxiety.

2.5 STAGES OF EMOTION REGULATION

To aid in identifying steps the emotion regulation process, Gross has outlined the following three: “(a) identification (concerned with whether to regulate emotion), (b) selection (concerned with what strategy to use to regulate emotion), and (c) implementation” (Gross, 2015a p. 130-131). These stages offer a conceptualization of how emotion regulation proceeds. Table 12 is offered for clarity to illustrate these steps in the case of MPA regulation. Since here we are examining the regulation of an emotion based on an appraisal of demands and resources (anxiety), Step 2 is focused on selecting strategies which will optimize this balance.

Table 12 - Stages of MPA regulation

Step	Description
1. Identification	Determine whether to regulate
2. Selection	Determine which strategy (blend/sequence of strategies) will change appraisal so that resources > demands
3. Implementation	Translate strategies into tactics

Source: Elaborated by the author based on Gross (2015a).

The first stage of emotion regulation, that of identifying whether to regulate an emotion, involves determining when emotions are helpful, propelling us toward our goals, and when emotions are harmful and should be regulated. Gross offers a list of criteria, summarized in Table 13, which aid in classifying emotions as either harmful or helpful.

Table 13 - Determining whether emotions are helpful or harmful

Emotions are helpful when they	Emotions are harmful when they
<ul style="list-style-type: none"> • appropriately guide sensory processing • enhance decision making • provide information regarding the best course of action • motivate socially appropriate behaviors <p>...that change the situation that gave rise to the emotion in desirable ways</p>	<p>are the wrong</p> <ul style="list-style-type: none"> • intensity • duration • frequency • type <p>...for a particular situation, and maladaptively bias cognition and behavior.</p>

Source: Elaborated by the author (2023) based on Gross (2015a).

Once an emotion has been identified as detrimental and needing regulation according to the criteria listed above, the regulation process proceeds to step two of the regulation process, that of strategy selection. This step is antecedent to active regulation, which happens when strategies are implemented, but decisions about which strategy or strategies to use will determine outcomes and effectiveness of the regulation process (Yih *et al.*, 2018).

As Gross observes, the strategies which are “‘best’ in a particular case will depend upon the details of the person, the situation, and the goals that person has in that situation” (Gross, 2015a, p.17). Gross identifies two substeps to selection, the “perceptual substep” where the options are noted, and the “valuation substep” in which alternatives are weighed according to desired outcomes, “in light of contextual factors” including “available cognitive and physiological resources, and the type and strength of the emotional impulse” (Gross, 2015a, p. 14). In other words, the perceived choices are considered according to what is important to the individual, and what is possible given present resources and limitations. The strategy chosen will be one which is first perceived as an option, and second, one which will likely further the person’s goals/concerns, within what is feasible in the given situation. Table 14 summarizes these concepts.

Table 14 - Steps for strategy selection

Step	Description
1. Perceptual	What are my strategy options?
2. Valuation	What is important to me? ... applied within my context’s limitations / possibilities? (physiological / cognitive resources, strength of emotion, etc.)

Source: Elaborated by the author (2023)

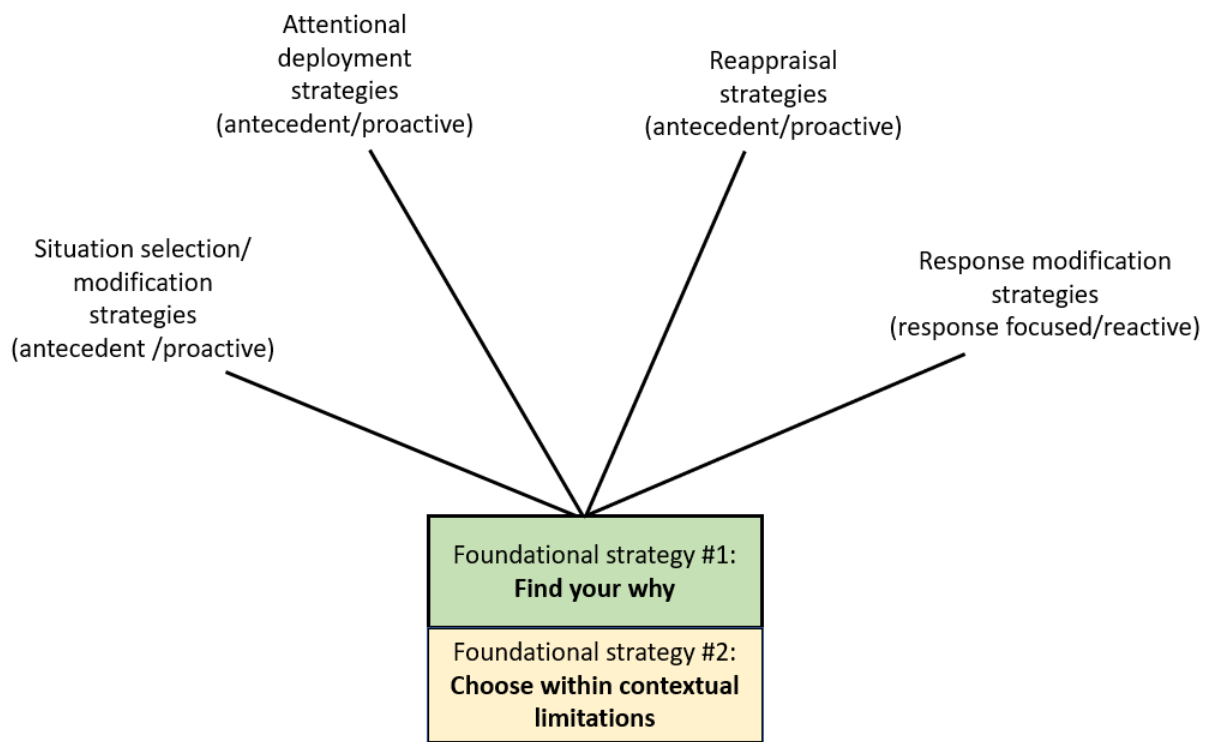
This chapter will address both substeps as they pertain to MPA regulation. In an effort to educate musicians about options for the first substep (perceptual), where strategy alternatives are perceived, a survey of strategies will be presented in the last sections of this chapter, Sections 2.7 through 2.12. These strategies will be, as previously mentioned, situated within the process model framework to clarify how all regulation strategies manipulate appraisals either directly or indirectly.

The second substep, that of valuation, will be discussed in Sections 2.5 and 2.6, previous to the general survey of strategies. This step involves relying on “personally meaningful values to guide decisions and actions” and is essential for flexible strategy selection, as it “fosters the

ability to discern multiple dimensions when assessing people and events” and direct finite energies toward clear priorities (Kashdan, 2010, p. 5-6). Because finding a sense of purpose is a guiding, foundational strategy upon which all choice for strategy implementation rests, it will be presented and examined first in Section 2.5. Second, the issue of selecting strategies according to what is possible in the moment, given circumstantial limitations, will be explored in 2.6. Following this, the survey of MPA regulation strategies will be presented in 2.7-2.10 according to where they interfere in the emotion generation process of Gross’s model.

Figure 14 offers a portrayal of how adaptive strategy selection will be conceptualized in this chapter: selection between the basic strategy categories (situation selection/modification, attentional allocation, reappraisal, and response modification), is guided case by case according to goals and circumstantial possibilities. The two foundational strategies mentioned (find your why; choose within contextual limitations) serve as a basis or starting point which orients and directs the subsequent selection of strategies from the “families” of techniques in the process model.

Figure 14 - Adaptive strategy selection based on foundational strategies.



Source: Elaborated by the author (2023)

2.5 FIND YOUR WHY

The first underlying practice for effective strategy selection in MPA regulation, that of cultivating a sense of purpose or “finding your why” (David, 2016), involves choosing a “central, self-organizing life aim that organizes and stimulates goals, manages behaviors, and provides a sense of meaning (McKnight; Kashdan, 2009, p. 242). Purpose has been described as “commitment to an ultimate life goal that serves to organize and plan the individual’s daily and long-term activities” (Hill; Burrow; Bronk, 2016, p. 258) and can be thought of as a “supraordinate goal manager” (Mcknight; Kashdan, 2009, p. 243) which “offers direction just as a compass offers direction to a Navigator” (Ibid., p. 242). Purpose differs from goals in the usual sense because goals orient people toward an endpoint and specific outcome, but “purposes, like values, do not have necessary terminal outcomes” (p. 244). For example, a person may adopt being a good mother as her purpose, which spurs her towards various goals, such as teaching her child to read, or encouraging the child to persist on a project which is difficult. Individual goals such as these have an endpoint, but the purpose of being a good mother is never really fulfilled and does not terminate. Rather, it helps organize new goals when the previous goals have been accomplished.

A sense of purpose orients strategy selection according to desired outcome. Reappraisal, for example, may be an effective strategy for modifying negative feeling and inducing adaptation and conformity to a given situation, but self-adaptation is not always desirable when situational change would be possible and helpful. For example, a person may seek to reappraise a stifling job to feel happier about it, but this reappraisal could prevent the person from feeling motivated to look for a more fulfilling and growth-inducing job. In such cases reappraisal would remove the emotional motivation for shaping the environment when altering it could actually further the person’s enduring concerns. (Ford *et al.*, 2018; Haines *et al.*, 2016; Uusberg *et al.*, 2019). Shaping the environment (situation modification), on the other hand, could equally be suboptimal in circumstances where reappraisal would better benefit long-term purpose. Someone with social anxiety, for example, might keep to the periphery of social gatherings to reduce anxiety, but miss out on an opportunity to gradually become accustomed to and reappraise social situations as less threatening (Clark, 2001).

Purpose is important in the context of MPA regulation and strategy selection for at least two reasons: 1) having a purpose changes perceptions of the demands/resources balance,

diminishing perceived demands and augmenting the sense of available resources; and 2) purpose takes the conflict of competing inner goals, which occurs naturally as a result of mixed challenge-threat states, and converts this energy-draining inner chaos into order, aligning goals in relation to our ultimate, most enduring concerns.

2.5.1 Purpose changes demand/resource balance

Finding a sense of purpose changes the appraisal of demands and resources in MPA regulation in fundamental ways, since it augments a sense of autonomy and shifts the individual's perception away from seeing his/her actions as "a mere consequence of an external force" (Kim *et al.*, 2014, p. 224). Focusing on what we want to accomplish overall in life regardless of challenging circumstances, defining our "overarching goals" (Hill *et al.*, 2018, p. 724), moves us away from fixating on difficulties and toward a focus on what we can create.

Korb (2015) details how exercising the power of choice, rather than focusing on aspects of life over which we have no control, makes the very same actions have a different effect neurochemically. He suggests this may be the result of ancient instincts, "the difference between running because you're hunting something and running because it's hunting you" (Korb, 2015, p. 132). David (2015) explains that "understanding what we want in the big picture helps us find the desire in circumstances where we otherwise might only see obligation" (p. 110). Purpose shifts a sense that circumstances control you, toward a sensitivity to the ways in which you have control within your circumstances.

Perhaps because of the way purpose shifts mindsets from hunted (victim) to hunter (agent), it has been associated with lowered levels of perceived stress and "less anxiety in real-world situations that tend to stress others" (Hill *et al.*, 2018, p. 725). A sense of purpose "motivates people to persist rather than quit in the face of difficult situations" (Mcknight; Kashdan, 2009, p. 249) by influencing appraisals and "altering [our] perceptions of stimuli as being more actionable—even when such actions may be seen as requiring substantial effort" (Burrow *et al.* 2016, p. 95). Purpose fosters the "perception that one can find multiple ways to deal with an obstacle" (Hill *et al.*, 2018, p. 728). Because purpose makes resources seem more robust and demands less daunting, it acts as "the motivating force to overcome obstacles, to seek alternative means, and to maintain focus on the goal, in spite of changing environmental

conditions,” generating approach rather than avoidance-oriented behaviors (Mcknight; Kashdan, 2009, p. 248).

This is especially important for the arena of music performance, where the elimination of stress is not realistic or even desirable. As Jameison *et al.* observe (2018b), “avoiding or minimizing stress can lead individuals to miss opportunities for performance and growth. Thus, during stressful situations, a more efficacious approach is to optimize stress responses” (p. 245). A sense of purpose gives meaning to endeavors and to life as a whole, and as Viktor Frankl so aptly demonstrated through his own experiences in surviving extreme stress, “there is nothing in the world...that would so effectively help one to survive even the worst conditions as the knowledge that there is meaning in one’s life [...] in the words of Nietzsche: ‘he who has a *why* to live for can bear almost any *how*’” (p. 126). A sense of purpose can turn the potentially threatening aspects of experiences, including music performance, into an opportunity, a challenge to engage in which fulfills overall life aims.

2.5.2 Purpose aligns conflicting goals

The second reason that purpose is important in MPA regulation is that it creates order out of the mental chaos of conflicting inner desires and helps classify each goal in relation to one’s most enduring concerns.

Emotional events can be very complex, as

...they tend to instigate various cognitive, motivational, and somatic components simultaneously, in competition, in conflict, or in interaction. Many events are congruent for one concern and incongruent for another. One both wants something and doesn’t want it. (MOORS *et al.* 2013, p. 124).

This idea that different appraisals happen simultaneously in our partially independent subsystems, and that the various subsystems seem at times to be champions of different and conflicting concerns, can potentially create the mixed challenge-threat states discussed in Chapter 1. A performer can both want to share his/her music with the audience and want to run away and hide, simultaneously. One subsystem can be tuned into the value of creating beauty for others, while another subsystem is focused on the value of self-protection.

Finding a sense of purpose modifies such situations by creating what Harris (2006) calls a “willingness to feel anxiety... allow[ing] it to be there in order to do something you value” (p.7).

In other words, having a sense of purpose enlarges one's ability to feel uncomfortable emotions without fear of the discomfort, without magnifying the discomfort, and proceed forward toward a valued aim. "As willingness [to experience anxiety] increases, anxiety goes down because, paradoxically, what has kept anxiety high is the attempt to keep it low" (Blackledge; Hayes, 2001, p. 253).

Roland (1994) observed that performers with performance goals "tended to take the focus away from the audience as being threatening" (p. 28). This is one illustration of how purpose-oriented goals can help performers allocate resources more efficiently, making them "able to sustain and shift attention to the most critical aspects of the situation" (Kasdan, 2010, p. 11) by "reshap[ing] [their] brain's perception and guid[ing] its attention to the things that matter most" (Korb, 2015, p. 97). Efficient resource allocation "involves the distribution of scarce resources (e.g., energy) to important processes," and "purpose may provide the causal force for efficient resource allocation; people living with a purpose tend to shift resources (i.e., physical, biochemical, neural, and cognitive) according to the greatest need" (Mcknight; Kashdan, 2009, p. 247). Purpose helps minimize wasted energy on competing concerns, by focusing the mind on what is most needful, or what concerns are most important to the individual.

Gross (2015a) explains that,

As we move through our daily lives, many different valuation systems are typically active simultaneously. Each is sensitive to different aspects of a particular situation, and each activates action impulses relevant to its own evaluation of that situation. The concurrent activation of multiple valuation systems frequently leads the valuation systems to interact with one another. Sometimes, valuation systems are mutually supportive...At other times, valuation systems pull in different directions, and their divergent action outputs compete with one another... This state of affairs may be resolved passively (the stronger action impulse wins) or may require adjudication by another valuation system (p.11).

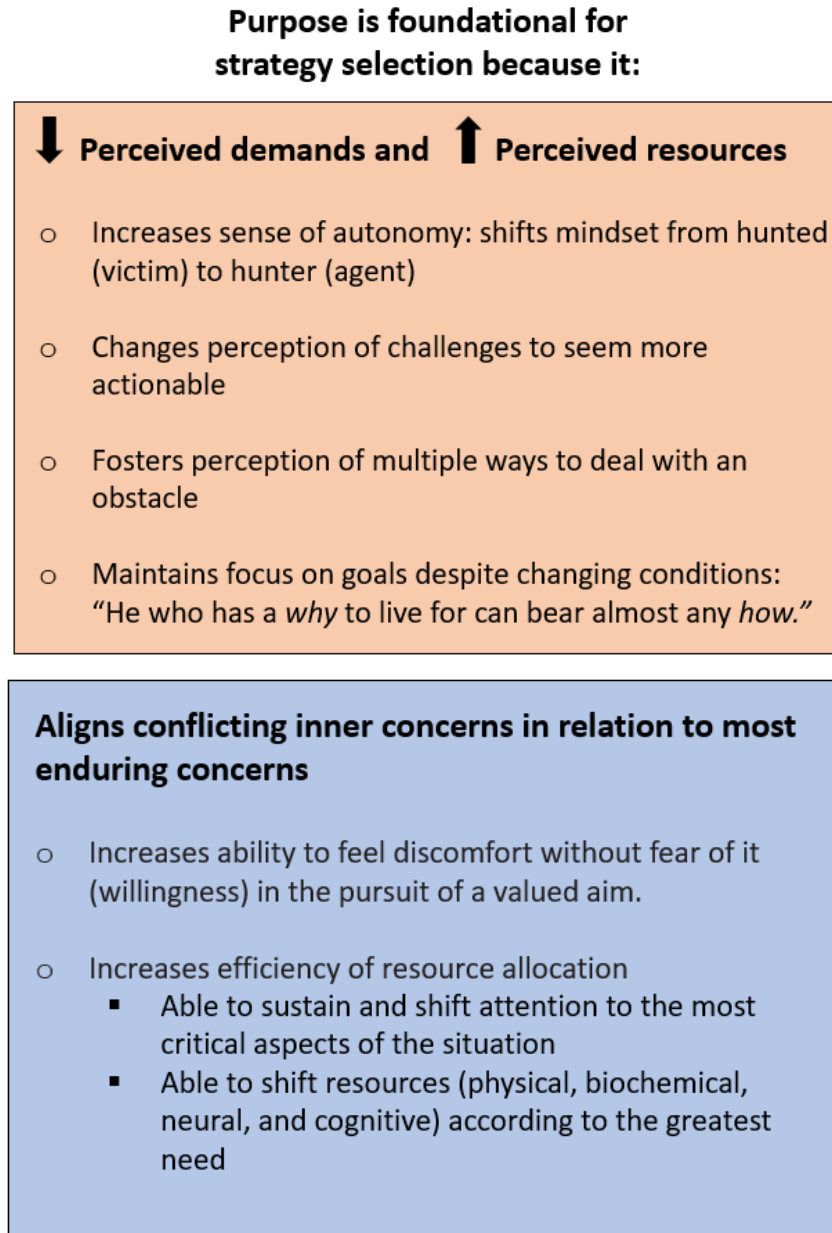
Resolving inner emotional conflicts passively in the case of music performance may result in performance avoidance, if the impulse to self-protect is stronger than an impulse to share beauty, for example. Overcoming strong conflicting impulses through "adjudication by another valuation system" is what is accomplished by finding an overarching sense of purpose, which identifies an individual's highest priorities. With a reduction in inner competition, inner order is bolstered, and threat is reduced as resources begin to feel more robust and efficiently consolidated. Having a sense of purpose focuses the mind on ultimate concerns, pointing the

individual, like a compass, toward where he/she wants to go, and efficiently orienting which strategies to choose to get there.

Psychologists who study purpose and meaning advocate various methods for identifying or cultivating a sense of purpose. Frankl (1985) proposes the mental exercise of living “as if you were living already for the second time and as if you had acted the first time...wrongly” (p. 132). In other words, imagine you have a second chance at life—what would you prioritize this time? How would you do better or differently than you did the first time? David (2015) uses questions such as “As I look back on today, what did I do that was actually worth my time?” and “if this were my last day on earth, how would I act to make it a great final day?” (p. 91). Gelder, Hershfield, and Nordgren (2013) found effective the exercise of writing a letter to your ‘distant self’ two decades from now, thinking about what is important to you now versus what will be important to you then. Forsyth and Eifert (2016) outline a means for examining existing goals in order to cultivate a life purpose by asking the questions “Why am I doing this? What am I trying to accomplish in my life with this goal? Where am I heading with this?” (p. 208). Covey (1989) proposes visualizing your own funeral three years from now, and writing down how you would like to be remembered.

However purpose is cultivated, it is a vital governing step in MPA strategy selection, as it sets the stage for overall threat reduction and directs regulation priorities. It does this through 1) influencing appraisals, making resources seem more abundant and demands less daunting and 2) organizing the inner chaos of conflicting desires, and efficiently allocating energy resources toward an overall desired aim. Figure 15 summarizes the foundational role of purpose in strategy selection.

Figure 15 - The foundational role of purpose in MPA strategy selection.



Source: Elaborated by the author (2023).

Cultivating a sense of purpose is a crucial preliminary regulation strategy for MPA management, foundationally directing all subsequent strategy selection. It does this not only by smoothing the playing-field and lowering the overall sense of threat, easing the difficulty of all subsequent cycles of regulation, but also by directing performers' focus toward their highest

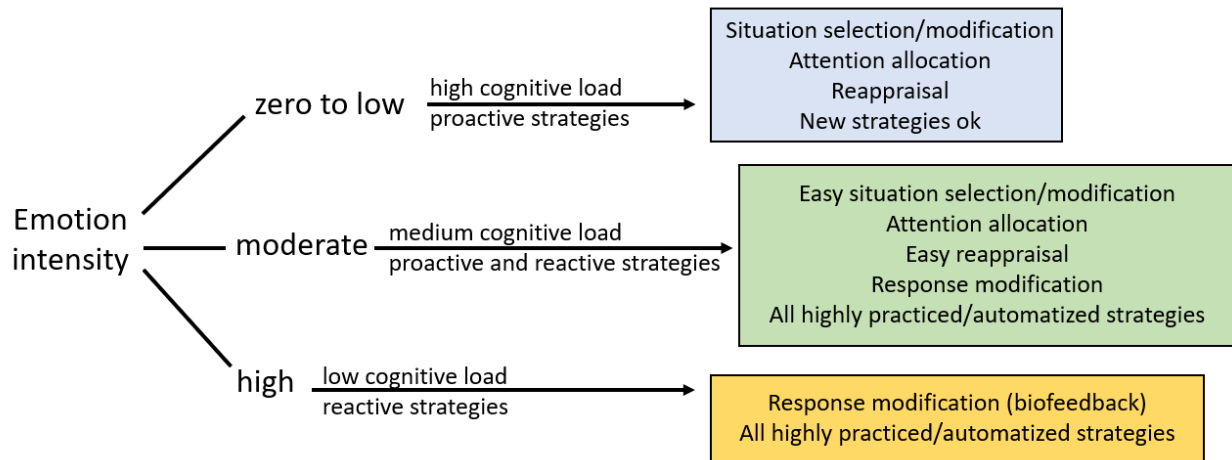
priorities. When musicians are conscious of what is most important to them, less important goals can be set aside in favor of what is ultimately valued, and regulation efficiently focused on long-term concerns. When performers know what end result they most desire, they are better able to choose, with minimal wasted energy, the means that will most effectively help them reach that goal.

2.6 CONTEXTUAL LIMITATIONS

Once overarching personal goals have been identified, strategy selection must also be guided by the second foundational strategy, that of choosing within contextual limitations. This is because not every strategy is accessible in every situation. As outlined in Section 2.2, (p. 61-63) regulation strategies can be divided into two main categories, those that are antecedent focused or proactive, implemented “before appraisals give rise to a full-blown emotional response” (Web; Miles; Sheeran, 2013, p. 34), and those that are response focused or reactive, applied after the response is already generated (Gross, 1998). It follows that selection of a given strategy will depend on situational possibilities. Proactive strategies are effective when selected to use before emotional response has flowered, where reactive strategies work on the response which is already active and intense.

One aspect of context that is crucial for strategy selection is emotional intensity, as it limits or facilitates the effectiveness of different strategy families. Veilleux *et al.* (2022) advocate the development of an emotional “toolbox” which contains both cognitive (reappraisal) and physical response-oriented regulation techniques. They point out that when emotional intensity is high, cognitive strategies become unproductive and impaired due to reduced blood flow in higher thinking areas, and instead the survival-oriented primitive brain takes command. Once above this “thinking threshold,” or point beyond which cognition is obstructed during intense emotion, strategies used for emotion regulation should be focused on the physical, bodily, and behavioral response rather than on cognitive reappraisal. They emphasize attention to context, and consciousness of when each tool, cognitive or behavioral, is most useful. Cognitive methods are essential for powerful reappraisal, but they are unreachable when emotion overwhelms cortical processes, so physical or bottom-up tools must be used first when anxiety is intense. Figure 16 provides an illustration of how to select strategies based on current emotion intensity.

Figure 16 - Selecting regulation strategies according to emotion intensity.



Source: Elaborated by the author (2023)

As shown in Figure 16, it is when emotion intensity is low that high cognitive load and proactive strategies are possible. At moderate emotion intensity levels, medium cognitive load strategies are used, including both proactive and reactive strategies. When emotion intensity is high, low cognitive and reactive strategies are the best option. As a reminder from Section 1.5 of the previous chapter (Practice Increases Automaticity), all highly practiced strategies can become automatized and low cognitive load, and thus accessible even in situations where cortical powers are hampered. Hence the importance of practicing high cognitive load strategies with regularity, so that even in intense emotion contexts these strategies can be accessed. Table 15 outlines how awareness of emotion intensity can orient strategy selection within the performance context.

Table 15 - Matching strategy selection to emotion intensity in a performance context.

Strategy type	When to implement	Objective of Implementation	Strategy examples
Proactive (antecedent focused) strategies	Before performance (or before emotion intensity is high)	Prevent threat appraisal AND/OR reduce overall cognitive load of strategy through practice/repetition, thus making it accessible even in situations of high emotion intensity	Situation selection Situation modification Attention allocation Reappraisal
Reactive (response focused) strategies	During performance (or while emotion intensity is high)	Reduce intensity of maladaptive anxiety to free greater cognitive resources, so that more (proactive) strategies are accessible	Response modification

Source: Elaborated by the author (2023).

Proactive or antecedent strategies are effective when selected to use before performance, or before emotion intensity is high. The objective of such strategies, on the one hand, is to prevent threat appraisals from occurring on stage, and on the other hand, to reduce the overall cognitive load of these strategies through practice and repetition. Automating high cognitive load techniques can make them effortless and easy to access even when debilitating anxiety is high.

For example, the strategy of “finding your why” just discussed is a high cognitive load activity. As such, it should be engaged in as a proactive or antecedent strategy long before performance, and when emotion intensity is low. Though finding your why may initially require heavy cognitive function, once your why has been found and you have practiced judging competing desires in light of your overall chosen purpose, integrating this purpose into high emotion intensity situations, such as when on stage, becomes easier and more accessible. The general rule to remember, then, is to practice cognitive strategies repeatedly and often while calm, long before performance, so that they become automated and easier to access even when emotion intensity is high.

Reactive or response-focused strategies are appropriate for moments when threat appraisals have already triggered intense maladaptive anxiety. The objective of these strategies is to reduce the anxiety intensity back below the thinking threshold, so that cognitive resources

come back online and proactive strategies become accessible. Response focused strategies will be surveyed and discussed in Section 2.10 (p. 108).

A state of high anxiety is not the time to attempt a new cognitive strategy, or even a mildly practiced one. High anxiety will only be regulated by physical soothing techniques which calm the anxiety response from the bottom up (response-oriented techniques). Once the body has been calmed, cognition may come back online, and cognitive techniques become accessible at this point. The key is first identifying the level of emotion intensity, and second the tools in your toolbox that match that intensity, as shown in Figure 16.

Obviously, not every tool that matches emotion intensity will always be available in every context. For example, a competition on a particular date cannot generally be rescheduled by an individual competitor. Even though he/she may have access to cognitive solutions in a calm moment, the specific situation selection strategy of rescheduling the competition may not be an option. In this case, regulation can focus on *modifying* the situation already selected, by increasing one's practice hours in the day, or on *reappraising* the upcoming date as allowing plenty of time for preparation. A sensitivity to current contextual possibilities and identifying the gamut of available options is crucial, after purpose cultivation, in orienting the strategy selection process.

2.7 SITUATION SELECTION AND MODIFICATION

After anchoring strategy selection on the foundational strategies of (1) purpose (finding your why) and (2) attention to contextual limitations, individuals choose between strategies from the four points in the emotion generation process (situation, attention, appraisal and response). This sections and the sections that follow focus on organizing surveyed regulation strategies according to these four points of interference in Gross's process model. Individual strategies are situated within the four families of strategies to show how each strategy category influences appraisals, either directly or indirectly, and to illustrate when, in the emotion generative cycle, specific strategies should be implemented, whether as antecedent or reactive to emotional response. While this chapter focuses on describing and placing strategies within the process model, Chapter 3 will be dedicated to a more in-depth discussion of strategy implementation.

Strategies associated with the first point on the emotion generation cycle, that of situation, will be examined in this section. As discussed previously, situational strategies are either aimed

at selection or modification. The term situation as it is used in the process model refers to the context in which the individual is situated, including both internal and external aspects of the physical, spatial and temporal environment. For example, a musician may be situated in a practice room (spatial) in which he/she has been practicing for three hours (temporal) and may be feeling tired (physical) and anxious (physical) about a performance which is three weeks away (temporal). Situational strategies select or modify aspects of the internal, external, spatial, physical, and temporal context, and as such can be helpful in preventing and regulating MPA.

Before examining any specific situation-focused strategies, however, it is important to re-emphasize that from an appraisal theory perspective, it is not the situations themselves which directly determine whether one experiences debilitating MPA. Rather, in selecting and modifying situations, one changes the situation being appraised, but it remains the appraisal which determines response, not the situation. Research has repeatedly shown that people are notoriously bad at predicting how they will feel in imagined future situations, or rather, how they will appraise situations once they become real (Lench *et al.*, 2019). Therefore, it must be remembered that while situation selection or modification can be a powerful tool for influencing appraisal, it can also miss the mark. Situation selection/modification is an indirect method, not a direct one, for changing appraisal, and its indirectness leaves room for a margin of error. If its indirect influence on appraisal is understood, however, it can be effectively leveraged as one of the many tools available for adaptive and flexible MPA regulation. These are antecedent strategies, implemented before appraisal and the emotional response is generated, or antecedent to the appraisal and response of a future emotion generation cycle. Thus as a category they can be thought of as preventative strategies, being employed in an effort to preemptively alter future appraisals of demands and resources. Table 16 shows the situational strategies that will be discussed in this section. Examples of how to implement these strategies will be presented in the following chapter, in Section 3.1.

Table 16 - Situational strategies

Strategy category	Sample strategies
Situation Selection	<ul style="list-style-type: none"> • Choosing graded challenges
Situation Modification	<ul style="list-style-type: none"> • Manipulating the performance environment • Desensitization through exposure • Pre-performance routine • Healthy lifestyle • Ample practice

Source: Elaborated by the author (2023).

2.7.1 Choosing graded challenges

Situation selection, as an antecedent strategy for MPA which modifies appraisal by selecting the situation which will be appraised, can be applied in selecting challenges which one appraises as surmountable. For example, many MPA authors advocate using care to select repertoire which is comfortably within a performer's ability, so that when under pressure, the performer's technical resources feel ample rather than precarious (Kenny; Ackermann, 2009; Nagel 2017). Increased anxiety on stage in this case will not so easily de-rail a comfortable technical execution, and so the performer may feel that even with heightened demands (anxiety), his/her resources are not exceeded. Other examples of graded challenges include choosing performance dates which allow a suitable preparation time (as appraised by the performer), and keeping the total number of performances to a frequency which allows for balanced sleep, social life, etc. Again, these are situation-selecting options which can indirectly influence MPA appraisals and should not be seen as direct determinants of appraisal. They may make it *easier* to appraise situations in a way which produces helpful MPA, but they do not substitute appraisal in its central role.

2.7.2 Manipulating the performance environment

Situation modification is an indirect appraisal-altering option often available when situation selection is not. The situation to be appraised cannot always be avoided or selected out, but often can be modified in some way. Arranging the stage and lighting is one-way performers can exercise control over the performance environment and maximize comfort and visibility. An increased sense of autonomy through controlling some aspect of the stage set-up helps bolster perception of personal resources in relation to environmental demands. On the other hand, unfamiliarity with the environment often increases the perception of threat, so those who plan extra time to familiarize themselves with the feel and sound space on stage can reduce new and threatening information to be taken in during the performance. Additionally, choosing performance clothing which is unrestrictive can affect bodily comfort and reduce demand perception.

2.7.3 Desensitization through exposure

Desensitization to high pressure performance situations is a powerful situation modifying strategy, as it can change situations appraised as high threat due to uncertainty, into situations of familiarity. As Jamieson *et al.* (2018) explain, when “familiarity increases (relative to uncertainty) resources may be appraised as increasing and demands appraised as decreasing” (p. 32).

Such a change in sensitization to threat can be accomplished through frequent, pressure-inducing practice performances (Wilson; Roland, 2002; Huang; Yu, 2022). These performances can be organized in a graded manner, beginning with more casual, familiar concerts such as playing for a small group of family and friends in a home environment, followed by several performances of increasing audience size and formality.

In addition to increasing familiarity, frequency of exposure has been shown by extensive research to “increase intrinsic pleasantness evaluation” (Ellsworth; Scherer, 2003, p. 577). Practice performances not only familiarize the performer with her/his typical physical and psychological responses to stress on stage, making them seem more predictable and less alarming, the very frequency and familiarity of these practice performances can change appraisals on the unconscious level of intrinsic pleasantness. As performing becomes less alarming and

more pleasant, a process called “affective learning” takes place, “where an organism experiences shifts in the context or contingent outcomes associated with a stimulus and learns to update its prior affective value and/or adopt a new affective response to the stimulus” (Braunstein; Gross; Ochsner, 2017, p. 3). In other words, appraisals which produce affective response are altered through affective learning, as updated information is gathered and the musician learns that performances do not necessarily have to feel uncertain, alarming, and unpleasant. Instead, they can feel predictable, familiar, and even pleasant.

Visualization of performance is another way to desensitize and mentally familiarize oneself with the concert setting, and “decrease the shock and novelty of actually being on stage” (Roland, 1994, p. 28). Buswell (2006) advocates doing this by imagining positively (“e.g. ‘I want to play smoothly’; NOT ‘I want to stop playing raggedly’”), with “as much detail as you can - the venue, your clothes, any sounds or smells, the skill you are rehearsing,” and picturing “perfection...everything exactly as you want it to be” (p. 64-65). Many conservatories also now offer virtual reality training, where performance settings of varied pressure or exposure levels are projected on large screens (Zhukov, 2019). Training with virtual reality screens has been shown to be effective at reducing MPA and improving performance (Orman, 2004; Bissonnette *et al.*, 2016).

Whether exposure desensitization is approached via actual practice or imagined performances, it is a tool which modifies situations by reducing novelty and increasing familiarity with the performance environment. A performance situation thus modified for both the conscious and unconscious brain can indirectly modify appraisal of threat, as it changes significantly the performance situation being appraised.

2.7.4 Pre-performance routine

In his study of MPA strategies utilized by performing musicians, Roland (1994) found that many performers implement a relaxing and predictable pre-concert routine as a situation-modifying strategy. For some this entails resting on performance day to “avoid other demanding responsibilities as much as possible,” as well as arriving “early for a performance to allow time to set up equipment or instruments in an unhurried fashion and to make the performing venue familiar before the audience arrive[s]” (p. 30). In addition, “many performers like to have some

time alone before going on stage, to achieve their performance focus” (Ibid.). Others like to have “a good warm-up on the instrument, or with the voice, prior to the performance” as a way of psychologically “reassuring them that their sound [is] there” (Ibid., p. 31). Modifying the external and internal pre-concert situation in this way preventatively changes the situation being appraised. Such actions cultivate a physically calming and controlled environment, indirectly modifying appraisals by creating a situation in which demands seem manageable rather than overwhelming, and resources seem ample.

2.7.5 Healthy lifestyle

Wilson and Roland (2002) advocate the situation-modifying technique of getting adequate sleep, exercise and pursuing a healthy lifestyle, as these can contribute to musicians’ overall stress reduction. Likewise, Ray (2009) emphasizes the importance of good nutrition and general physical health in MPA prevention. Rocha *et al.* (2014) found that undergraduate music students who engage in regular physical activity are less likely to have debilitating MPA than sedentary students. Similarly, Taylor and Wasley (2004) promote the importance of regular moderate-intensity exercise for musicians, as a tool for general anxiety reduction. As a situation-modifying strategy, cultivating a healthy lifestyle through adequate sleep, nutrition, and exercise changes the situation which will be appraised on stage, as it adjusts actual bodily resources for meeting demands. With resources bolstered, taxing demands in the moment of performance are more easily appraised as surmountable with the resources of a body and brain in healthy physical condition.

2.7.6 Ample practice

A somewhat obvious but nevertheless important situation-modifying strategy is that of ample practice. Roland (1994) cites “long-term preparation” as a highly valued preventative MPA strategy among performing musicians (p. 31). Such thorough preparation modifies the performing situation by shaping resources and demands which will be appraised. Robust muscle tone, quick and sensitive hand-eye coordination, automated execution of technical passages, and memory fortification are all resources which can be strengthened by extensive practice. With

resources amplified, appraisals of the demand-resource balance on stage will more readily tip toward challenge rather than threat. Although an indirect strategy for appraisal modification, thorough preparation bolsters physical performing resources, making easier the appraisal of those resources as sufficient for on-stage demands.

2.8 ATTENTION ALLOCATION

Because our brains have limited information processing capacity, humans have developed the capacity to pay attention to important information from the environment while excluding other information. This attentional control allows us to “focus on goal relevant...and ignore goal irrelevant information” (Ochsner; Gross, 2005, p. 2). Regulation strategies which manipulate how attention is allocated influence appraisals indirectly by selecting and limiting the information on which appraisals are based. Attention manipulation has been shown to diminish “the aversiveness of pain, reduc[ing] activity in cortical and subcortical pain-related regions” (Ibid., p. 3), a finding which is pertinent for MPA since maladaptive anxiety is an intrinsically unpleasant experience. Awareness exercises are one example of attention manipulation and have been associated with significant reductions in maladaptive MPA (Deen, 2000).

As previously illustrated in Table 15 (p. 90), attention allocation strategies are antecedent strategies, since they interfere in the emotion generation process previous to appraisal and emotional response. As such, they are preventative strategies, which pre-emptively manipulate the in-flow of information on which appraisals are made. Two examples of attention allocation strategies are offered here: desired outcome focus and present-focused practicing, as shown in Table 17. Implementation of these strategies as preventative measures will be discussed in Section 3.2 of the next chapter.

Table 17 - Attention allocation strategies

Strategy category	Sample strategies
Attention allocation	<ul style="list-style-type: none"> • Task-oriented thinking • Present-focused practicing

Source: Elaborated by the author (2023).

2.8.1 Task-oriented thinking

Task or goal-oriented thinking is one attention manipulation tool often employed by professional performers to reduce maladaptive MPA (Roland, 1994). Since processing capacity (also called working memory) is limited, focusing on fears and worries can interfere with the ability to put energy toward desired outcomes (Beilock, 2010). When the focus instead is on what one wants to create, such as a beautiful phrase, a clear direction, a convincing build and release in musical tension, fears and worries have less room to occupy attention. Focus on desired creative production means the information coming in, on which appraisals will be based, is concerned with approach rather than avoidance-oriented goals. This is important because, as explained in Section 1.6, challenge appraisals motivate toward approach of stressors, and consequently mobilize physiological resources in a fundamentally different way than threat appraisals, which motivate toward avoidance. Focusing on the task at hand thus influences appraisals toward an approach and challenge mindset and away from threat. Appraisals are manipulated through occupying attention with resources (creative capacity) while minimizing or ignoring demands. Implementing task-oriented thinking during practice and performance will be discussed in Section 3.2.1.

2.8.2 Present-focused practicing

The practice of bringing attention to the present moment, also called mindfulness, is effective against anxiety because “worrying and anxiety are projections of yourself into the future, they’re not things that exist when you are fully immersed in the now” (Korb, 2015, p. 46). The problem with present focus on stage is that it is an activity requiring cognition, a conscious shift in attention, and cognitive strategies become inaccessible under high emotion intensity. In order for mindfulness to be possible in moments where an anxiety response has already been triggered, it must be practiced to increase its automaticity and reduce cognitive involvement.

Incorporating a present focus into sessions of actual instrument practice simulates more closely the act of playing on stage than simply meditating while sitting cross-legged. Learning to mindfully focus on sounds, physical sensations in the fingers, and breathing *while playing music*, if practiced consistently, should reduce the cognitive demand of such focus. Once musicians are

able to easily shift attention to the present moment while one stage, thoughts and worries about the future will be minimized, and on-stage appraisals will not be influenced by attention to future threats (scenarios in which demands outstrip resources). Implementation of present-focused practicing will be discussed in Section 3.2.2.

2.9 REAPPRAISAL

While other strategy families exercise indirect influence, we arrive now at the only category of strategies that can directly change appraisals. As such, reappraisal can be a very powerful tool against maladaptive MPA. Reappraisal techniques are the focus of cognitive behavioral therapy (CBT) and have been shown to afford musicians “a significant reduction in self-reported anxiety” and “a significant increase in performance quality” over the short and long term (Hoffman; Hanrahan, 2011 p. 17; See also Kenny, 2011; Perdomo-Guervara, 2017).

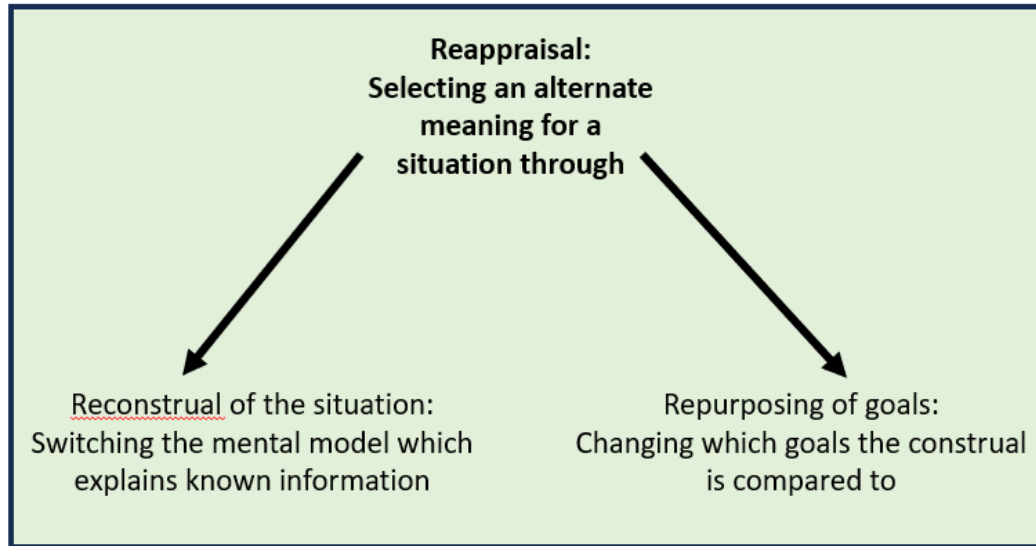
Reappraisal is different than suppression of emotions, where “an individual continues to feel a certain emotion, but masks or hides it from observers” (Brooks, 2013 p. 2). Rather, reappraisal targets the appraisal which generates the emotion, triggering a change at the root of emotional response, by “selecting which of several potential emotional meanings will be attached to a situation” (Gross, 2015a, p. 7). In this way, instead of suppressing response, reappraisal changes the emotion response trigger, aiming it toward a desired rather than undesired emotion. Emotions are not repressed but instead are regulated.

Uusberg *et al.* (2019) explain that reappraisal techniques can be divided into two categories: situational reconstrual and goal reupurposing. Reconstrual is about substituting one mental map for another. Situations often do not present all relevant information for appraisals in a manner readily detectable by our physical senses, for example, things like “causes of events, intentions of others, and future developments” (Uusberg *et al.*, 2019, p. 272). In order to appraise these situations, unknowns are “inferred from a combination of prior knowledge and information available about the situation. This process can be thought of as selecting a set of mental models to stand in for the situation based on how well the models fit available information” (Uusberg *et al.*, 2019, p. 272). Reconstrual is possible when more than one model could be used to explain the information in hand. The more sparse the information, the more malleable construal is, since various models could fill in the blanks left by unknowns.

For example, a performance in which an audience member gets up and leaves in the middle of a piece could be construed by the performer as indicating the person is disgusted with the playing quality. However, in the absence of factual information available as to the person's motives, the performer could just as easily explain the audience member's exit as due to needing to visit the bathroom urgently. In an alternate scenario, the audience member could make his/her motivation clear by audibly complaining about the performance quality while exiting the concert space. In such a case, reconstrual of the meaning of the audience member's exit would be less malleable. Instead, reconstrual would need to focus on aspects of the situation that *are* unknown. This could include seeing the one person's reaction as indicative of indigestion or other personal difficulties which have predisposed the person to negativity. Equally, the choice of remaining audience members to stay in their seats could be used as evidence that the opinion of one is not shared by the majority.

The second category of reappraisal techniques, called goal repurposing, focuses not on mental explanations of facts, but instead "involves changing which goals the construal is compared to" (Uusberg *et al.*, 2019, p. 272). For example, a musician with the goal of a flawless technical performance may feel frustration and anxiety at being unable to attain it. Goal repurposing here could involve choosing instead to aim for communicating something beautiful to the audience, a goal more easily within the musician's resources. When situations are measured against different goals, they offer different meanings. The musician with the goal of communication will not take technical errors as a sign of immediate failure, whereas one with a goal of flawlessness would. Figure 17 illustrates reappraisal through reconstrual and repurposing.

Figure 17 - Reappraisal through reconstrual and repurposing.



Source: Elaborated by the author (2023)

Implementing reappraisal must of course be guided by purpose or long-term aims. Whether one chooses to adopt reappraisal rather than another strategy, or within reappraisal whether one focuses on reconstrual or repurposing, will depend on what is most important or valued by the individual.

Eight examples of reappraisal techniques for MPA will be discussed in this section: anxiety defusion, anxiety acceptance, anxiety curiosity, stress redefined as a resource, adopting a growth mindset, self-declared readiness, gratitude and process-oriented goals. These are pictured in Table 18. The table also labels strategies as to whether they accomplish reappraisal through situational reconstrual or through repurposing of goals.

Table 18 - Reappraisal strategies

Reappraisal strategy	Accomplished through:
Anxiety defusion	Reconstrual
Anxiety acceptance	Reconstrual
Anxiety curiosity	Reconstrual
Stress redefined as a resource	Reconstrual
Adopting a growth mindset	Reconstrual /Repurposing
Self-declared readiness	Reconstrual
Gratitude	Reconstrual
Process-oriented goals	Repurposing

Source: Elaborated by the author (2023).

Reappraisal as a category of strategies is antecedent focused, since it interferes before the emotional response is generated. It can be engaged in preventatively, in the cultivation of stable, long-term appraisals (also called mindsets), and also in reaction to a current emotion which one chooses to regulate, modifying subsequent appraisals and cycles of emotion generation. Theoretical explanation and application of these strategies is discussed here, but more about actual implementation of strategies will be discussed in Section 3.3.

2.9.1 Anxiety defusion

The first reappraisal strategy to be examined, defusing with anxiety, means distinguishing between the anxiety itself and ability to think *about* the anxiety. Before learning to “step back and observe” emotions (Harris, 2006, p. 6), our consciousness remains fused or what Kegan (1982) calls “embedded” in them. Kegan references Piaget’s studies of early child development and highlights the following progression, where “the child is gradually moving from being subject to its reflexes, movements and sensations, to *having* reflexes, movements and sensations” (p. 30).

This movement from a position of subjection to a position of possession is what happens with defusion. “Growth always involves a process of differentiation, of emergence from embeddedness, thus creating out of the former subject a new object to be taken by the new subjectivity” (Kegan, 1982, p. 31). Richard Schwartz (2001) instructs that “the more you notice—step back from—rather than become or identify with your thoughts and emotions, the more you relax into being the ‘you’ who is not your thoughts and emotions” (p. 36). This opens space for reappraisal.

Cornell (1996) recommends a technique for practicing this differentiation through viewing emotions as part, not all, of the inner experience:

If you find yourself saying, ‘I am [anxious],’ try changing that to ‘*Part of me* is [anxious],’ or ‘I *have* an [anxious] feeling,’ or ‘I’m *aware of something* that feels [anxious]. Now the [anxious] feeling becomes something you can be *with* instead of feeling all over, because it’s part of you, not all of you” (p. 17).

This is reconstrual through “being in a relationship with your inner experience,” or being “*with* your feelings, not *in* them” (p. 16).

David (2015) stresses the utility of “finding a label for emotions...reducing hugely painful, murky and oceanic feelings of distress to a finite experience with boundaries and a name” (p. 62). She emphasizes the need to not only identify the feeling, but to label with “nuanced vocabulary” (p. 63). This can create what Ellsworth (2013) calls “a reassuring sense of control” over what was before an “undefined emotional malaise” (p.127), in effect, augmenting the perception of resources and diminishing demands. Naming feelings has been shown to “disrupt the affective responses in the limbic system that would otherwise occur in the presence of negative emotional [triggers],” (Lieberman *et al.*, 2007, p. 6), a change which reflects a shift from threat to a challenge appraisal. Talking to yourself in the third person also promotes defusion and can reduce emotional activity in the brain in as little as one second (Moser *et al.*, 2017). Also beneficial is gaining distance through adopting “the perspective of a fly on the wall peering down on the scene” and endeavoring to “understand why your ‘distant self’ is feeling the way it is” (Kross, 2021, p. 132).

Defusion quantifies, contains, defines and differentiates emotional response from the self who appraises it. The construal moves from “I’m anxious and out of control” or “this is too much for me,” to “I am *having* a feeling of anxiety, because my appraising brain thinks my resources are not up to current demands.” Defusion helps the individual identify personal resources, a self or consciousness larger than the emotional response, which can observe, examine and understand

the response. As a result, feelings of control or power within the situation are strengthened, because the demands become distinct and quantified rather than overwhelming, and additional personal resources are located to deal with these demands (the consciousness which observes). Defusion is an essential strategy, as regulation is only possible after distinguishing emotional response from the appraisal which created it, but it requires cognitive activity, so practicing it preemptively to automate its execution is vital. Examples of how to integrate defusion into musical practice are offered in Section 3.3.1.

2.9.2 Anxiety acceptance

Anxiety is an intrinsically unpleasant or uncomfortable emotion, so resistance or suppression is a common reaction. The problem with resistance to negative emotion is that it has been shown to intensify rather than eliminate undesired feelings (Blackledge; Hayes, 2001; Kashdan, 2010), transforming a normal and transient emotional experience into an augmented and prolonged one, or even a disorder. Greater resistance to unwanted internal experience has been associated with “amplifie[d] anxiety symptomatology,” and appraisals of “perceived uncontrollability” producing “more panic symptoms” (Kashdan, 2005, p. 1302).

Such consequences can be sidestepped if anxiety is accepted rather than resisted. Acceptance involves increasing “distress tolerance,” or the “degree to which an individual tolerates the experience of any of the following families of negative emotions: sadness, fear, anger and disgust (Clen *et al.*, 2011, p. 151). It involves no longer labelling anxiety as “aversive, threatening, or harmful,” something with which we cannot “effectively cope,” and instead seeing it as a temporary negative emotion we are willing to experience (Ibid., p. 153). Harris (2006) calls this turning off the “struggle switch” and instructs clients to observe where the sensation of anxiety is felt within the body, to “notice the edges of it, the shape of it, the vibration, weight, temperature, pulsation,” and subsequently “make room for it...allow it to be there, even though [we do] not like it or want it” (p. 7).

Acceptance is reconstrual which keeps anxiety from magnifying itself by helping us recognize it as temporary, normal, and endurable, even though unpleasant. As such it reduces the perceived situational demands and improves perception of coping capacity (resources). Anxiety acceptance is modeled in Section 3.3.2 of the following chapter.

2.9.3 Anxiety curiosity

Anxiety curiosity begins with reconstruing anxiety not as an enemy which obstructs valued goals, but as a potentially beneficial messenger. It means recognizing that “everything inside you,” including negative emotions like anxiety, “wants to save your life” (Cornell apud. Brenner; Letich, 2022). Curiously approaching feelings, knowing they are not enemies but allies which evolved to promote our survival, allows us to “focus on and get to know the parts that protect [us],” to metaphorically have a relationship and a conversation with our feelings (Schwartz, 2001, p. 22). It means understanding that strong feelings are a “signal that something very important is wanting to have our attention, wanting to be heard” and understood by the conscious brain (Cornell, 1996, p. 52). Nagel (2017) sees that in the case of MPA specifically, “disguised emotions and cognitions typically surface as symptoms” (p. 35), so curiosity about these hidden messages behind MPA symptoms is therapeutic, especially in cases where “rational approaches and musical instruction do not produce positive results” (p. 65).

David illustrates how feelings contain information that can be useful in figuring out what matters to us, what we value. Questions like “What’s the...function...What is the purpose of this emotion? What is it telling you? What does it get you? What’s buried underneath?” can be helpful for distilling the information or message within anxious feelings (2016, p. 64). Cornell (1996) favors “conversing” directly with the feeling, asking how it (the feeling) feels from its point of view, what makes it so anxious, and what it needs. This conversational method reinforces the concept of relating to feeling as an entity separate from consciousness (defusion), while seeking to learn from and even comfort it in an attitude of friendly or parental connectedness.

Approaching and questioning feelings in this way can bring up images and events from the past, telling a story of experiences, perhaps in childhood, when a threat was detected, and anxiety was adopted as a coping mechanism (Schwartz, 2001; Cornell, 1996; Nagel, 2017). In such cases, Cornell (1996) offers the assurance that the feeling “will change, after you have heard its message” (p. 99). Schwartz (2001) advocates seeing feelings as “manifestations of inner personalities that have been forced into extreme roles by events in our lives” (p.19). When we separate consciousness from feelings, and approach them with kindness and curiosity, seeing them as well-intended members of our inner “family,” our consciousness is enabled to “actively

interact” with feelings in “creative and healing ways” (p. 38). Schwartz describes helping clients through this process, and witnessing significant change in extreme negative feelings, which he calls “parts,” after simply being heard by consciousness, which he calls “Self:”

...the reaction of the parts to finally feeling understood...was as if they had been trying to tell their stories for many years but couldn't get through. All they seemed to need was for the person's Self to understand what happened and to appreciate how bad it was. Once that had taken place, many of these parts immediately transformed. Clients reported that their image and experience of the part changed. It was as if a part had released a burden that, like a computer chip or curse, had been governing its existence (p. 89).

When feelings are not triggered from the past, they may communicate information about what is important in the present. In asking “what’s the function” of a feeling, we can uncover something personally meaningful or valuable in the present that may need to be addressed by change or action on our part. The feeling is revealing a problem that is important to us, as well as recommending a course of action to resolve the problem. We approach with curiosity to gain information from the feeling, then evaluate that information with our higher thinking powers to consider the best response (David, 2015).

For example, a feeling of anger when someone cuts you off in traffic on your morning commute may contain underlying information that getting to work on time is important to you. Your emotion of anger may be recommending a course of action such as cutting off the other driver in return, but understanding the function of your anger, or the information it contains about what you value (getting to work on time), can help you consciously choose a course more suited toward addressing your values: you may choose to leave earlier the next morning in order to have plenty of time to get to work even if traffic is congested. Specific examples of how to implement this type of information gathering in a music performance setting are offered in Section 3.3.3 of the following chapter.

Feelings which are “not buried too deeply” can be treated with self-help strategies such as those outlined here, but “if a painful thought or feeling is buried very deeply in the unconscious, one typically cannot bring it into consciousness without some assistance,” and professional therapeutic help may be needed (Nagel, 2017, p. 64).

An attitude of curiosity toward anxiety is a reappraisal of anxiety as a well-intentioned messenger rather than a threat, whether approached alone or with professional help. Such

reconstrual reduces perceived situational demands, changing old foes into protective friends which may have useful advice. With curiosity instead of resistance to anxiety, the unpleasant symptoms are no longer amplified with threat perception, but instead a challenge mindset is cultivated, with anxiety as a resource to help meet demands, rather than an enemy.

2.9.4 Stress redefined as a resource

Ginsborg (2019) asserts that “feelings, cognitions, behaviors and fight-flight symptoms so often associated with performance...anxiety” can be interpreted in a more neutral manner, not as anxiety but as performance “arousal,” or, more positively, as performance “excitement” (p.1). Reappraising anxiety as excitement has in fact been shown to improve performance in the domains of singing, public speaking, and math (Brooks, 2013). Many professional musicians view performance anxiety as beneficial because it can produce a “hyped up, excited feeling...helps achieve mental focus and alertness beneficial to performing, and it can provide an extra source of inspiration, which might not occur in a non-performance situation” (Roland, 1994, p. 27). This attitude is what researchers call “having a stress-is-enhancing mindset” rather than a “stress-is-debilitating mindset,” and helps subjects produce “more adaptive emotional, cognitive, and neuroendocrine responses” in response to threat (Crum *et al.*, 2017, p. 4).

Stress, defined as “the nonspecific response of the body to any demand for change” (Seyle apud Jamieson *et al.*, 2018b, p. 245), is an inescapable part of living, and even more so when pursuing desired goals. Since truly the only “complete freedom from stress is death” (Seyle apud Jamieson *et al.*, 2018b, p. 245), escaping stress is unrealistic and counterproductive, especially in music performance. Rather than automatically equating “stress with distress” (Jamieson *et al.*, 2018b, p. 245), stress can be viewed as enhancing, or as a “functional *coping resource* that aids performance” (Jamieson *et al.*, 2018a, p. 33). This appraisal switch has been associated with a greater sense of personal control in the face of adversity, less perceived distress, increased approach motivation for work-intensive tasks, heightened engagement, and better performance (Ibid.).

Viewing anxiety in performance as arousal and excitement, as a resource and not a threat, which sharpens focus and raises energy to meet demands, is a beneficial reappraisal tool that makes resources seem more abundant and facilitates a challenge response in the body.

2.9.5 Adopting a growth mindset

A growth mindset is encapsulated in the saying “there is no such thing as failure, only feedback” (Buswell, 2006, p. 128). People with growth mindsets see abilities, including performance, as something that can be acquired, learned and developed. Mistakes and failures are expected in the process of acquiring a skill, and seen as a learning opportunity, rather than indicative of innate limitation or lack of talent (Dweck, C. S.; Chiu, C.; Hong, Y., 1995). Where this mindset is not already active, it can be cultivated through “repeated patterns of reappraisal” that “contribute to durable change in knowledge structures such as beliefs, goals, and identity” (Uusberg *et al.*, 2019, p. 278). In other words, practicing reappraisal of failures as feedback can make such reappraisals automatic and durable, changing bedrock beliefs. This happens because “using reconstrual repeatedly in similar situations can over time change the default mental models that are initially selected as the most probable explanations of available information” (Uusberg *et al.*, 2019, p. 273). This involves both reconstrual and repurposing, as it means seeing mistakes as resources and adopting goals which accept learning and failure in a process of growth. Threat perception in performance is lessened when failure is seen as instructive, as something which can spur progress toward long-term goals, rather than as an obstruction.

Gallwey (1974) advocates exercising what he calls “non-critical attention” in cultivating a growth mindset, in which mistakes are observed for information but without judging them as good or bad. Instead, he proposes that “a natural learning process” which “operates within everyone—if it is allowed to” becomes active when we “let go of the old process of *correcting* faults,” and instead “trust” that the unconscious mind, given enough experience, learns with every attempt at skill cultivation (p. 41). Instead of reacting with anxiety to mistakes, this mindset trusts the unconscious mind to learn naturally, efficiently and dependably. In the case of practicing tennis performance, Gallwey maintains that

Every time you hit a ball, whether correctly or incorrectly, the computer memory of Self 2 [the unconscious mind] is picking up valuable information and storing it away for future use. As one practices, Self 2 refines and extends the information in its memory bank...It remembers every action it makes and the results of every action...so the important thing...to remember is to allow the natural learning process to take place (p. 53).

Applying this mindset to music performance helps frame mistakes, even on stage, as helpful rather than harmful. It means seeing them as part of a natural learning process in which the unconscious brain collects information about executing a physical skill in changing conditions and learns to adaptively adjust to changes and challenges. Such reframing lessens the perception of threat, since errors are seen as helpful and informative, with a process of naturally improving at work through all information gathered.

2.9.6 Self-declared readiness

A form of reconstrual available on the day of performance that can shift appraisal from threat to challenge is the strategy of mentally declaring readiness. Musicians can have difficulty shifting from a problem-solving focus in earlier preparation to the mindset of being fully prepared and ready to perform. Over-attention to aspects that need improvement, while useful for preparing complex repertoire involving sequences of challenges, can be detrimental for challenge appraisals in the moment of performance. There is always more that could be done, and musicians can have difficulty letting go of the last-minute scramble to “fix” additional problems, leading to the carry-over of that mindset onto the stage. With a hyper-focus on musical and technical issues that have not yet been completely resolved (focus on demands), it can be more difficult to view these demands as surmountable with available resources during performance.

Mentally declaring readiness on the day of performance entails declaring that remaining problems to be fixed are irrelevant and one is ready to convey music to the audience, viewing current preparation as sufficient for a satisfactory performance. This type of readiness is determined not by minute assessment of progress in respect to difficulties surmounted, but rather according to the calendar: when the date of the concert arrives, the repertoire is ready and needs no further touch-up. This is in essence a mental declaration that current resources, incomplete as they may be, are up to the demands of the present concert, a conscious shift to a challenge rather than a threat outlook. Methods for implementing this type of self-declaration are discussed in Section 3.3.5.

2.9.7 Gratitude

Dr. Robert Emmons, a psychology professor at U.C. Davis, has conducted extensive studies examining the psychological effects of gratitude training, showing that “a person who experiences gratitude is able to cope more effectively with everyday stress, [and] may show increased resilience in the face of trauma-induced stress” (2011, p. 12). These findings have significance for the domain of music performance anxiety, as they provide evidence for the link between gratitude and the development of a challenge mindset.

“Gratitude is not simply a form of ‘positive thinking’ or a technique of happy-ology,’ but rather a deep and abiding recognition and acknowledgment that goodness exists under even the worst that life offers.” (Ibid., p. 9). Here Emmons reveals the psychological workings underlying thankfulness, showing it as an exercise where signs of safety (e.g. “goodness”) are actively sought out, even in situations which are filled with threat (“the worst that life offers”). Safety is found in appraisals that resources are adequate for demands, rather than threatened by them. Gratitude is an exercise in searching for evidence of the resources present to meet demands, as well as reframing demands to seem less threatening. Emmons recommends creating and maintaining this state through keeping a gratitude journal, thus establishing “the daily a habit of paying attention to gratitude inspiring events.”

The power of this tool is one that can be harnessed by musicians, not only to shift appraisals of threat in moments of acute performance anxiety, but also as a long-term discipline for practicing challenge-leaning appraisals and increasing general resilience in the face of stress. More on specific implementation of this strategy is discussed in Section 3.3.6.

2.9.8 Process oriented goals

Setting goals which focus on process rather than outcome, or prioritize the journey rather than the result, is one way to reappraise through repurposing. Rather than focusing on an outcome such as winning a competition, inspiring admiration in audience members, or executing a perfect recital, musicians can choose goals which prioritize process. Such goals orient toward implementable actions, strategies, and habits to improve skills and artistry. Examples include having a goal to practice a certain number of hours per week, conveying specific emotions or

storytelling during practice and performance, or listening and synchronizing with co-performers on stage.

Wilson and Roland (2002) find that goals focused on process are more attainable than those which prioritize outcome. With process goals, individuals are more likely to feel their resources meet demands, resulting in the goal being pursued and attained rather than abandoned (approached rather than avoided). Outcome oriented goals often focus on results over which an individual has little or no control. Winning a competition, for example, is not a decision left to the performer, but is in the hands of the judges. Even the goal of playing a perfect recital may be influenced by aspects over which performers have little command (lighting quality, instrument quality, audience silence, etc.). Process goals, on the other hand, orient the individual toward her/his own sphere of control and focus on actions which the individual can choose to implement. Selecting goals over which an individual has autonomy produces a diminished sense of demands and bolstered sense of resources, resulting in challenge rather than threat appraisals. Implementing process-oriented goals on a personal level is discussed in Section 3.3.7.

2.10 RESPONSE-FOCUSED STRATEGIES

The final family of strategies, response-focused strategies, come late in the emotion generation process and are applied once an emotional response has already been generated. These strategies focus directly on the physiological components of emotional response. The goal here is not to modify the situation, attention or cognitive perception, but to create signals in the body which manipulate (not suppress) the body's somatic response and transmit soothing communication to the brain.

Korb (2015) explains that “if the brain gets signals from the body that it should feel calm (for example, you're taking long, slow breaths) or happy (you're smiling and holding your head high), then it's more likely to feel calm and happy” (p. 141). Appraisals are not directly changed by response-focused strategies but are heavily influenced by them, through messages or sensations generated in the body that communicate to the brain that all is well. These physical manipulations often take minimal cognitive control to execute and can be accessible in times when emotion intensity is high. They are useful for calming the body and brain to the point where higher processing powers can come back online for MPA management. Five response-focused

strategies are discussed here: controlled breathing, panoramic vision, relaxation techniques, chemical manipulation, and movement, shown in Table 19.

Table 19 – Response-focused strategies

Strategy category	Sample strategies
Response-focused	<ul style="list-style-type: none"> • Controlled breathing • Panoramic vision • Relaxation techniques • Chemical manipulation • Movement • Prosodic Music

Source: Elaborated by the author (2023).

2.10.1 Controlled Breathing

Controlled breathing exercises have been shown to be an effective strategy for managing maladaptive MPA (MacAfee; Comeau, 2020), perhaps because “the pattern and depth of breathing have direct physiological impact on oxygenation level, heart rate, ventilation, and blood pressure” (Balban *et al.*, 2023, p. 1). Dana (2018) explains that “slower breathing, prolonged exhalation, and resistance breathing increase parasympathetic activity... while rapid breathing, irregular breathing, and sharp inhalation or exhalation increase sympathetic activity” (p. 135).

Deep breathing exercises which use shorter inhalations and longer, slower exhalations (also called sighing) have been shown to be more effective at increasing positive affect and reducing physiological arousal than other types of controlled breathing, such as box breathing (equal inhale, hold, and exhale ratios) and hyperventilation with retention (longer inhales and shorter exhales (Balban *et al.*, 2023). In addition, nasal breathing triggers synchronized electrical activity in key brain areas and “affects the CNS [central nervous system] differently than mouth breathing...which has implications for stress management and treatment of anxiety” (Balban *et al.*, 2023, p 1). Incorporating nasal breathing and long, slow exhalations into practice and performance is one way of quickly calming an anxious somatic response, influencing cognitive

appraisals from the bottom up. Implementation of controlled breathing in practice and performance will be discussed in Section 3.4.1.

2.10.2 Panoramic vision

Neuroscientist Andrew Huberman has studied the effects of threat on vision, and found that, in addition to consequences in heart rate and breathing, a sense of threat causes significant alterations in visual focus. “The pupils dilate...Your field of vision narrows. You see one thing in sharper relief, and everything else becomes blurry. Your eyeballs rotate just slightly toward your nose, which sets your depth of field and focus on a single location.” (Huberman apud Wapner, 2020). Huberman clarifies that the eyes are not just connected to the brain, but are actually part of the brain itself, or part of the central nervous system, since “during development, the eyes are part of the embryonic forebrain.” Because of this integration into the CNS, visual exercises can have a deep and immediate effect on somatic symptoms. The act of engaging the eyes in “panoramic vision,” or “keep[ing] your head still...dilat[ing] your gaze so you can see far into the periphery—above, below and to the sides of you” in effect deactivates the “mechanism in the brain stem involved in vigilance and arousal. We can actually turn off the stress response by changing the way that we are viewing our environment, regardless of what’s in that environment” (Huberman apud Wapner, 2020).

This is an easily accessible exercise for musicians to engage in moments of anxiety. While we cannot directly control digestion, heartbeat, and many other autonomic processes, breathing and visual focus are two processes governed by the autonomic nervous system that can be consciously controlled whenever we choose to do so. Practicing panoramic vision is a quick and useful tool for autonomic regulation that musicians can access at any moment. As with breathing, this can be used in moments of anxiety, and as part of a regular routine aimed at practicing somatic response-calming.

2.10.3 Relaxation techniques

Relaxation techniques are commonly used among performing musicians as a calming, response-oriented strategy for MPA (Roland 1994). These include both routinized and formal

approaches such as Alexander Technique or autogenic training, as well as individualized methods like stretching, “massage or simply lying down on the floor thinking relaxing thoughts” (Ibid., p. 30).

One prevalent relaxation technique which can be utilized in the green room is progressive muscle relaxation. Nagel (2017) describes this technique as follows:

Tense one muscle at a time and then release it (do one side of the body and then the other) starting with your feet and working up the body to your legs, torso, arms, and face. Hold each muscle tightly for a count of 4 and release tension all at once. When tensing, focus your attention on that tense muscle. When relaxing the muscle, focus attention on the relaxed muscle. Notice and feel the difference between tense muscles and relaxed muscles. Take your time and pay attention to each muscle group (p. 22-23).

Consciously engaging and relaxing all muscle groups in the body can be a powerful mechanism to trigger a sense of calm in the appraising brain. Nagel emphasizes the importance of practicing “breathing and relaxation exercises regularly, as one practices an instrument, for the exercises to become effective when needed to deal with anxiety” (Ibid.). Individual relaxation methods can be explored for their effectiveness ahead of time, so that musicians can readily implement bodily relaxation in moments of high emotion intensity.

2.10.4 Chemical manipulation

Chemical manipulation for modifying bodily response includes medications, supplements and substances which have a calming effect on the body. Beta-blockers are one commonly used medication taken to reduce physical symptoms of MPA on stage like hand tremors or fast heart rate (Kenny, 2011). Understanding that beta-blockers and other medications do not directly alter appraisals but only alter the situation being appraised is important, because musicians who do not understand this often create a psychological dependency on the drugs (Nagel, 2016). Such performers address physical symptoms without directly dealing with the appraisal which produces them, which includes physical as well as emotional and psychological components. The performer on beta-blockers may appraise the situation as more manageable because his/her hands are not shaking for example, which in turn may in turn alter psychological and emotional symptoms, but can end up feeling dependent on the drug to produce a challenge rather than threat appraisal.

Dependence is dangerous, as it limits regulation flexibility. If beta-blockers or other substances are used, they should be used with a consciousness of their *indirect* influence on the appraisals which produce MPA and should not be relied on exclusively for altering appraisals. Instead, they should be seen as only one tool in a large toolkit of means to flexibly adapt to changing circumstances. As detailed previously, the most adaptive individuals use a variety of means and do not depend on any favorite strategies, but instead are wise to the truth that changing circumstances demand custom-fit strategy combinations, and no one strategy is optimal in every circumstance.

Kenny, Driscoll and Ackermann (2014) found that a significant subset of musicians rely on alcohol to manage performance anxiety. While alcohol does have a calming effect on the nervous system, it has short-term detrimental effects on memory, reaction time, and fine motor skills, and consequently can negatively affect performance quality (West, 2004; Chait; Perry, 1994). Additionally, recent studies show that even light and moderate alcohol consumption is associated with thinning of the cerebral cortex, brain atrophy and neuronal loss (Morris *et al.*, 2019; Daviet *et al.*, 2022). Short-term benefits of alcohol-induced calm for performance may come at the risk of long-term diminished cognitive resources. While alcohol may powerfully affect immediate appraisals of demands and resources, its total effect may result in diminished control over appraisals generally.

2.10.5 Movement

Beyond the general benefits of regular exercise as a situation modifying technique discussed in Section 2.7.5 (p. 99), exercise can be used as a focused, response-oriented strategy immediately before performance. Wasley and Taylor (2002) found significant reductions in MPA when performance was preceded with twenty minutes of exercise. Movement is an important part of many professional musicians' pre-performance routines, including "stretching, warm-up exercises, yoga, finger exercises, the Alexander Technique" (Roland, 1994, p. 30).

Cross-lateral movements, which "cross the body's midline and use both sides of the brain in concert" (Hannaford, 2005, p. 131) such as crawling, walking, skipping, Tai chi, and Yoga, consciously activate "the sensory and motor cortices of each hemisphere of the cerebrum" (p.

133) and “the entire motor coordination system” (p. 134). This activation interferes with the threat response

...by bringing the system into coherence, and assisting focus, learning and memory...consciously [drawing] attention to the motor cortex of both frontal hemispheres and away from the survival centers in the reptilian brain, thus decreasing adrenalin production. (Ibid., p. 134).

Engaging in cross-lateral movements mechanically forces brain resources away from threat-response areas and toward centers which control motor coordination in the cortex, thus dampening the threat response. When such exercises are done “slowly, it requires more fine motor involvement and balance, consciously activating the vestibular system and the frontal lobes” (Ibid., p. 131).

Movements which stimulate the vestibular (balance) system in the inner ear have the added advantage of actuating the neural capacities of “locomotion, discrimination of speech and language, coordination of vision with movement” (Ibid., p. 169). All of these abilities rely on the correct operation of the vestibular system, which is developed in the first fifteen months of life and forms the “entryway” or foundation for development of conscious brain functions from that point onward (Ibid.).

Consequently, exercises like Yoga which stimulate both balance and cross-limb coordination can act as a type of reset button, switching the brain from threat survival mode to stimulated cortex mode, where hand-eye coordination and higher cortical processes are accessible. Although this stimulation of the brain from the body does not directly change appraisal, it influences appraisal by sending the appraising brain messages that prioritize coherence and cortical processes over threat protection. When such exercises are performed immediately before going on stage and when anxiety is elevated, they work to focus bodily resources on movement, fine motor coordination, and cognition, and away from the fight-or-flight reptilian brain. See Section 3.4.2 for specific examples of how to implement the use of movement as a response-modifying strategy.

2.10.6 Prosodic Music

Stephen Porges (2010) has made a study of certain features of music which trigger a safety or threat response in the autonomic nervous system (ANS) via the middle ear muscles,

“reflect[ing] adaptive strategies associated with our phylogenetic history” which have been “hard-wired into our nervous system” (p. 1). Porges explains that threat or defense responses were present in ancient reptiles and served as important survival strategies. Reptiles have a middle ear structure which is only sensitive to “lower frequencies, due to a dependence on bone conduction.” This “rumble of low frequency sounds” alerts the animal to possible dangers in the environment and triggers a defense response (Ibid., p. 2).

Porges explains that mammals share this sensitivity to low frequency sounds and consequent threat response, but in contrast to reptiles, mammals also developed a sensitivity to higher frequencies through adaptively evolving a detached middle ear bone structure which can (under the right circumstances) dampen the low frequency sounds to hear the range of the human voice. He explains that this evolutionary step not only allowed mammals to communicate in a range which reptiles could not perceive but allowed for social interactions between mammals “related to nursing, reproduction, interactive play, and being able to be calm in the presence of another” (Ibid., p. 5). Porges further explains that “prosocial behaviors cue others that the environment is safe,” and are associated with that state where hypervigilance is no longer necessary, and mammals are safe to focus on cooperative interactions (Ibid.).

Porges (2017) asserts that these “hard-wired” reactions to sounds in different ranges (low frequency triggers defense, human voice associated with safety) consequently influence our autonomic state when listening to music. Music composed of “melodic themes that [duplicate] the vocal range of a mother soothing her infant, while limiting the contribution of instruments that [produce] low-frequency sounds” will trigger feelings of safety and connection associated with the absence of predators and the safety of a mother’s arms (p. 267).

Based on these principles, Porges has developed a therapy regimen which he calls the Safe and Sound Protocol, in which the participant listens to computer-altered vocal music for forty-five minutes or one hour a day, for five consecutive days. The music used is filtered to minimize low frequency and very high frequency sounds and emphasize sounds in the range of the human voice. This allows the participant to “exercise” the neural regulation of the middle ear muscles which, when engaged and functioning properly, work to “dampen low frequency,” defense-triggering sounds, “facilitating the extraction of human voice from background sounds” (2014). In developing this protocol, Porges theorized that exercising the middle ear’s capacity to tune into the human voice and tune out low frequencies would, in effect, also exercise the subjects’ capacity to autonomically regulate for social engagement, or in other words, regulate out of a threat toward a safety response.

The Safe and Sound Protocol has been tested on patients with autism-spectrum disorders and shown to be effective in reducing hypersensitivities to “auditory, visual, tactile and digestive stimuli” (Heinrich, 2019, p. 169) and increasing spontaneous social behaviors (Porges, 2014).

Musicians can apply this theory to their advantage by making a personal collection of “regulating” works which can be played (or listened to) to trigger a sense of safety in the autonomic nervous system. A mother’s singsong, soothing sounds to her infant are called vocal prosody, and many instrumental works seek to melodically imitate both the maternal range and prosodic vocalizations. Works which de-emphasize bass and highlight melodies can be used to help musicians trigger feelings of safety before performances or during practice/rehearsal sessions. Additionally, prosodic works can be built into concert programs, allowing performers to expose themselves to the effects of prosodic music while on stage. As with other response-oriented strategies, this strategy is one which indirectly influences appraisals by triggering a sense of calm in the body, something which in turn can make challenge appraisals more easily accessible to the brain.

2.11 CUSTOM STRATEGY SEQUENCES

Individual strategies from the four families discussed each have moments they are uniquely suited for. Adaptive strategy implementation involves using long-term values and situational possibilities to orient selection of not only individual strategies, but sequences of strategies that will propel the individual toward desired aims amid continuously changing circumstances.

Sequences should include proactive, high cognitive load strategies that are put into practice long before performance, and incorporated into daily music practice routines, so that they become as automatic and fluid to execute as any physically difficult technical passages in the music. Even response-oriented exercises can be practiced daily while emotion intensity is low, so that the enactment of them is familiar and routine. As performance approaches and anxiety levels rise, medium cognitive load strategies can be used to help keep appraisals of resources ahead of demands. During performance itself when anxiety is high, automated and low cognitive load strategies will be most useful for fostering the challenge mindset.

Emotions are processes, meaning that emotion generation is ongoing as the generation loop iterates. *Situations* are perceived (according to *attention*) and evaluated (*appraised*), producing a *response*, which response modifies the *situation* being *attended* to, and

appraised, and *response* is modulated as the loop continues to cycle. Regulation efforts which interfere at one of these points in the generation process have the potential to modify the appraisal directly or indirectly, which in turn will modify the response.

For example, a musician feeling performance anxiety in the green room, indicating that an emotion generation cycle has already been completed and culminated in a response, may then use a combination of controlled breathing exercises and yoga to induce a calming response in the body. This bottom-up bodily calm changes the situation which will be appraised in the next iteration of the emotion generation cycle, and the musician may subsequently find it easier to appraise his/her resources as robust enough for the demands of going on stage.

Sometimes reaching the desired appraisal and response “might require only a few iterations, resulting in fast and automatic emotion regulation,” and other times “it may take multiple action stages to find and successfully deploy a regulation strategy, leading to slower and more effortful emotion regulation” (Yih *et al.*, 2019, p. 44). Preparing for variable eventualities in performance involves conscientious regular practice of effortful strategies so that they become easier, an awareness of constantly varying levels of emotion intensity, and the ability to match strategies to emotion intensity levels at each iteration of emotion generation, until the desired appraisal and response (challenge rather than threat) is reached.

To illustrate, a musician’s strategy sequence may involve integrating present-focused practicing (p. 98), process-oriented goals (p. 98), controlled breathing (p. 112), and a growth mindset (p. 108) into repertoire preparation from beginning stages while emotion intensity is low, so that these strategies become easy and automatic. As the performance nears, the musician may note that her/his anxiety levels rise, so implementing new high-cognitive load strategies may be avoided at this point, in favor of medium cognitive load strategies, such as reframing anxiety as excitement (p. 107). The day of the concert, anxiety levels may be very high, so appropriate strategies would be those which require little cognitive activity, like anxiety defusion through third-person self-talk (p. 103), relaxation exercises (p. 113), and a restful pre-performance routine (p. 95). Calming activities such as these may bring anxiety levels down to the point where adequate cognitive powers are accessible for implementing the strategies of task-oriented thinking (p. 98) and mindfulness (p. 98) during the performance. This may keep the appraising brain away from a focus on future threats and fill it instead with information about resources and approach-oriented goals, cultivating challenge appraisals. Additionally, strategies practiced

throughout the preparation process like controlled breathing and cultivating a growth mindset may be easy to access even at relatively high emotion intensity levels during performance.

Developing strategy sequences relies in part on classifying which strategies are low, medium, and high cognitive load, in order to match these with varying emotion intensity levels. Actual cognitive load of strategies will vary from person to person, based on individual factors including experience, practice, health, psychological development and others. Strategy sequences should be experimented with on an individual basis, but general principles provided by the appraisal theory as discussed in this chapter can help guide and orient experimentation. Chapter 3 will offer personal examples of actual implementation of strategies discussed in Chapter 2.

CHAPTER 3: MODELLING THEORY-ORIENTED MPA REGULATION

This chapter examines the process of moving from theory to practice, of applying appraisal theory oriented MPA management within a natural environment and real-life situations. Gross (2015a) emphasizes the importance of “translat[ing]..general stratg[ies]...into tactics that are appropriate to the specific situation one is in...of developing creative new ways to translate our understanding of emotion regulation processes into interventions” (p. 15-20). Effective MPA management is “embedded in regular...practice in a natural learning environment” (Huang; Yu, 2022, p. 132), and it is this embeddedness that the examples offered in this chapter seek to illustrate.

Ray *et al.* (2016) find that many musicians who know about MPA management strategies have difficulty applying this knowledge “por falta de orientação específica” (p. 316).¹¹ While it would be impossible for a written dissertation to give specific and exhaustive orientation to individual musicians, it is possible to offer examples of how theory application can be accomplished. Bandura (1997) calls this modelling, or offering “vicarious experiences,” something which can strengthen an individual’s belief in their own power and capacity to effect change (p. 86). It is with this in view that I offer personal examples of strategy implementation. Strategies from the previous chapter from each category (situation, attention, appraisal, response), will be “modelled” with details regarding how I have applied them. As mentioned in the introduction, these examples are not presented to illustrate the *only* or the *best* way to implement strategies, but rather as examples of how one musician puts theory into practice. It is hoped that this will make implementation of theory guided MPA regulation easier and more imaginable for the reader. Table 20 summarizes the strategies that will be modelled in this chapter.

¹¹ “for lack of specific orientation.”

Table 20 - Sample strategies from each strategy family to be modelled.

Strategy category	Modelled strategies
Situation Selection Situation Modification	<ul style="list-style-type: none"> • Choosing graded challenges • Manipulating the performance environment • Desensitization through exposure • Pre-performance routine • Healthy lifestyle
Attention allocation	<ul style="list-style-type: none"> • Desired outcome focus • Mindful practicing
Reappraisal	<ul style="list-style-type: none"> • Anxiety defusion • Anxiety acceptance • Anxiety curiosity • Adopting a growth mindset • Self-declared readiness • Gratitude • Process-oriented goals
Response	<ul style="list-style-type: none"> • Controlled breathing • Movement

Source: Elaborated by the author (2023).

As explained in the Methodology chapter, these implementation methods were developed through stages of exploratory research that included both unsystematic, unconscious and largely intuitive practical research during my first four decades of performing, and a subsequent phase of conscious practical experimentation based on appraisal theory principles gleaned from formal literature inquiry. Bibliographic research engaged in for the purpose of this dissertation served not only to retrospectively orient intuitive MPA strategies I had developed previously, helping offer a unifying theory capable of explaining why such methods worked well for me, but also provided a framework for conscious, theory-based experimentation for expanding old techniques and developing new ones.

As this chapter highlights my own methods developed from lived experience, the tone is necessarily less formal and more individual, in the style of a personal account. It is hoped that this firsthand description will vivify the modelling of strategies offered here and give musicians a practical example of how techniques from the previous chapter can be implemented in real-world situations.

3.1 IMPLEMENTING SITUATION SELECTION AND MODIFICATION

3.1.1 Choosing graded challenges

As discussed in Section 2.7.1, choosing graded challenges is an indirect appraisal-altering strategy which aims at selecting situations that will be easier to appraise as challenges instead of threats. For me this involves recognizing that the moment of performance and the stress it produces will severely restrict my cognitive processing power, considering that emotion intensity is usually high for me during performance. I need to be careful to limit the demands that I'll need to appraise on stage, otherwise the energy it takes to see high demands as a challenge instead of a threat may be beyond my reach, resulting in debilitating MPA.

Repertoire that has not seasoned within my brain and body to the point where technical execution becomes unconscious and second nature takes more cognitive resources to execute, as well as greater cognitive energy to appraise as manageable on stage. High cognitive demands usually equal maladaptive MPA in my experience. I reduce cognitive demands on stage by estimating the total time (weeks/months) it will take for the technical execution of specific repertoire to become physically automated, such that I can play it without consciously and effortfully controlling my hand movements, and schedule concerts in a way that allows time for this automation to happen comfortably and naturally.

When I plan several months to prepare programs of new and difficult repertoire, I have found this allows time for the technical aspects of the music to become second nature and automatic, even when under stress. Part of this time-calculated preparation includes scheduling practice performances, so that I can accustom my brain to the consequences of increased arousal. I usually find that the first practice performance of new repertoire produces more cognitive inhibition than subsequent performances. Usually after three or four practice performances, my nervous system is familiar enough with playing the repertoire under pressure of observation that it no longer triggers such extreme emotional intensity. The challenge of the final performance consequently feels manageable after this point.

If the total time I will have to prepare for a specific concert is short, I grade this challenge by choosing repertoire I have performed often and recently. Technical comfort and automation have already been achieved previously in most cases when I repeat repertoire, and the memory, movement sequences, and structural comprehension are already stored on an unconscious level.

The robustness and accessibility of these unconscious stores are influenced by how many times I have performed the repertoire, and how recently I have performed it. But I generally find that revisiting pieces I have played before affords me a level of technical and musical comfort even when preparation time is limited.

When anticipating an unusually high-stress performance that I expect will especially tax my capacity for challenge appraisals, I prepare (when possible) by performing the repertoire several times at least one year in advance. I then put the program away for a time and get it out again six months before the final performance to work on it intensively once again. This affords optimal automation of the technical and musical aspects of the piece(s) for me, and I often find that sections which strained me during the initial practice and performance phase become fluid and comparatively effortless when I revisit the repertoire after putting it away for a period. When pieces are thus inserted into my unconscious brain thoroughly over time, my conscious, cognitive resources are freed to deal with difficulties such as heightened anxiety levels, and I can more easily do the work of appraising expected and unexpected performance variables as challenges rather than threats.

I am also careful to limit the number and concentration of concerts annually to an amount that doesn't overburden my physical and emotional resources. I program breaks in my performing schedule and refuse concerts that would demand so much preparation time that regular exercise, rest, and recreation would be compromised. I have found that when I stress my physical and emotional capacities with an imbalanced lifestyle, my ability to consistently generate challenge appraisals during performances becomes hampered.

These techniques help me avoid situations that are especially difficult to appraise as challenges and select instead situations where demands are kept manageable in comparison to my resources. They are indirect methods for cultivating challenge appraisals but make it significantly easier for me to view my resources as up to demands.

3.1.2 Manipulating the performance environment

Exercising control over the performance environment is, as discussed in Section 2.7.2, a way to manipulate the performance situation to minimize perception of demands and maximize perception of resources. One way I have used environment manipulation to influence appraisals

during performance is by choosing, where available, a stage-lighting arrangement which makes it difficult or impossible for me to see the audience. When the audience is dark and all lights focused on me, I am not aware of audience reactions which disturb my appraisals of challenge, because I cannot see any facial expressions or even clearly identify audience members. This helps facilitate keeping my attention on the music, rather than on audience reactions. The effect on my appraising brain makes the audience seem more distant and less real, almost like I am playing in a private space before imaginary audience members. Concert attendees who fidget, sleep, or leave early don't disturb my focus, because I am not aware of such behaviors.

Where this specific lighting scheme is not an option, I manipulate the situation by playing without my glasses or contacts. Since I am near-sighted, playing without glasses means I can see the piano clearly but nothing beyond that. In a chamber music setting, I can see fellow musicians well enough to catch cues but cannot see the audience with enough detail to sense their reactions to the performance. By limiting the information available to me in the situation, I make focusing on music-making easier, and eliminate evidence which might trigger threat appraisals based on equivocal audience response.

I also manipulate my immediate physical environment by prioritizing clothing which is appropriate but comfortable and unrestrictive. The exposure of the stage and knowing that all eyes will be on me can easily trigger threat appraisals, so I take time selecting clothes in which I feel confident, but which also soothe rather than torture. For me this generally means avoiding high heels and tight attire. I also stay away from any clothes which could distract my concentration, such as flappy sleeves or tight shoulder seams that restrict full arm movement. Selecting my immediate bodily environment to be one which triggers a physical sense of comfort, protection and support gives my appraising brain feedback which strengthens my sense of control and ability to handle demands.

3.1.3 Desensitization through exposure

As outlined in Section 2.7.3, desensitization entails purposeful exposure to stressors so that they become predictable and familiar. Uncertainty often heightens a sense of threat, but repeated exposure to a given stressor not only makes it more familiar, diminishing uncertainty (Jamieson *et al.*, 2018), but also tends to increase the intrinsic pleasantness of the stressor (Ellsworth;

Scherer, 2003). These effects influence appraisals, diminishing perception of demands and fortifying perception of resources.

My preferred method for desensitization to performance is scheduling multiple concerts of the same repertoire. For me the ideal number of repeat performances is at least five, and I find ways to schedule private concerts, house concerts and other low-profile presentations in preparation for any high-stress event. I have been through this process enough to be able to predict that the initial performance will require more cognitive energy than subsequent ones, as I deal with the unfamiliarity, uncertainty, and nervousness of presenting pieces for the first time. I can also predict that with each following performance I will feel progressively less threatened by demands and have more cognitive “leftover” resources for focusing on the music.

In cases where multiple performances are not possible, the next-best option for me is to record run-throughs of the repertoire several times, preferably with video, which formalizes rehearsals enough to trigger some nervousness. Knowing I will watch and evaluate the recording afterwards helps simulate to some extent the dynamic of a watching public.

I also find it tremendously helpful to schedule a private practice session in each venue before concert day, especially the final venue where the high-stress event is scheduled, as it gives me a chance to familiarize my nervous system with the lighting, acoustic, and feel of the room, as well as the responsiveness and quality of the piano. When I feel familiar with how the instrument will respond and how to produce desired sounds in the performance space, I am able to walk on stage with a greater sense of control and less dread of unpredictable factors that await me.

Another favorite tactic of mine for desensitizing is to play with commercial recordings of my repertoire. I do this by using headphones and turning up the volume to the point where I cannot hear myself very well, playing along with the recording while hearing the recorded artist(s) more than myself. This is especially helpful for repertoire that involves other players, such as chamber music or concertos with orchestra. Often the number of rehearsals I have with other players involved is few enough that complete comfort and familiarity with the other parts cannot be achieved through presential rehearsal alone. By repeatedly playing with recordings, I reach the point where I can hear and expect all instrument lines and how they interact with mine, and grasp the overall concept and effect of the music in its entirety (not just from the point of view of my part alone). It is one thing to accomplish this through score study, which offers a theoretical understanding, or even by only *listening* to recordings, which engages the ears and

mind but does not involve the body in action. It is quite another thing to do this while playing *with* a recording, which involves not only the mind but all playing muscles and multiple senses (sound, touch, sight), cementing the musical concept and experience of the work on a much deeper, unconscious and intuitive level. I make a point of playing with several different recordings to become more familiar with varied interpretations, and better prepared for new and unpredicted things my colleagues may do in performance.

I even find this tactic helpful for solo performance, as it forces me to run through the repertoire in ways I had not thought of, and the result is always a deepened concept of the form and impact of the music in its totality. Self-forcing to keep up with a recording is its own type of performance simulation. I often find that sections which troubled me or caused technical grief almost magically improve after I play with a recording that I admire. This happens, I believe, because in sections where I was bogged down in the details, stuck down among the “trees” so to speak, I am suddenly forced to hear and play in a new way and with new gestures and direction to accompany the recording. I begin to see the “forest” or larger view of the problematic section. Thinking and hearing it in a new way changes my experience of the terrain, both mentally and physically.

I view the transition from preparation to performance as a transition from micro-focus to macro-focus, a transition from a hyper fixation on individual problems to a synthesis and contextualization of those problems within an overall concept transmittable in a single play-through. This action of “zooming out” subsumes details within a larger idea and experience, which can be shared with the audience. Playing with recordings helps simulate this aspect of the performance experience for me and accelerates this transition from small to large view, making the act of the final performance more familiar and practice-able ahead of time.

I also use visualization as a desensitization tool in preparing for performance situations, by imagining myself in an upcoming concert and envisioning signs of safety surrounding me. I imagine the pleasure of sharing the music with audience members who are stirred into feelings of enjoyment and flow through the act of listening and engaging with the music; I imagine myself being able to execute the sounds, shapes, and phrases I create mentally; I imagine the energy of unity created by many people focusing on a common activity.

Each of these desensitization techniques are methods I have arrived at for exposing myself repeatedly to aspects of the performing experience that are not present in a normal practice

session. As they each target different elements of performance, I find that I achieve the most desensitization when I can use all of them at some point during the preparation process. Nothing simulates a high-stress, high-profile concert perfectly except that performance itself, but working on becoming comfortable and familiar with many aspects of a high-stress performance helps diminish feelings of uncertainty. As stated before, elements which become more familiar become less threatening and even more enjoyable (intrinsically pleasant), so the systematic conversion of performance features from unfamiliar to predictable helps (indirectly) enhance my perception that resources are adequate for demands on stage.

3.1.4 Pre-performance routine

Having a relaxing pre-concert routine is a situation modifying technique that helps me feel calmer and more in control on performance day. In order to maximize my energies for appraising the demands of performance as manageable, I make it a practice to reduce other demands as much as possible. This involves avoiding any other appointments or responsibilities on concert day, including cooking or housework. I plan a nap (if possible) and ample time to bathe and dress slowly and methodically, as well as time to drive unhurriedly to the concert space and arrive early, avoiding haste and rush of any kind. Exercising on the morning of the concert helps with overall alertness and energy while at the same time producing relaxing after-effects, as does taking a cold shower.

For reasons that will be outlined further in Section 3.3.5, I make it a point to avoid intense or fast practice or rehearsal on concert day, preferring instead a simple 30-minute session in the concert venue itself to slowly (re)familiarize myself with the piano's sound and key action for producing various tone colors. If playing with other performers, I take special effort to make all interactions supportive and encouraging so that a positive mood is cultivated among players as much as possible. In the green room I engage in meditation, breathwork, and yoga moves to feed my appraising brain with relaxing feedback from my body. More specifics about my breathwork and yoga techniques will be offered in Sections 3.4.1 and 3.4.2.

This collection of calming practices for performance day do not directly determine whether I will experience harmful MPA but make it easier for me to appraise my resources as sufficient for demands and produce a challenge appraisal. Such pre-performance routines help modify my

concert-day situation so that demands are kept as low as possible, and resources cared for, cultivated, and maximized. With the situation thus manipulated, I find it easier to view my resources as adequate for the demands ahead.

3.1.5 Healthy lifestyle

The importance of cultivating a healthy lifestyle as a means to modify situational demands and resources appraised in performance situations was outlined in Section 2.7.5, with special focus on sleep, diet and exercise practices.

An additional lifestyle practice that I have made a priority of implementing is what Gordon (2021) calls “breaking the high alert habit” (p. 106), or discontinuing the custom of living a busy, rushed, pressured, and stressed lifestyle. Gordon laments that “for many of us, living in a constant state of high alert has become the new normal,” and points to a recent study showing that worldwide, 35 percent of people report living with high levels of daily stress. In the U.S., the number of highly stressed is 55 percent (Ibid.). He emphasizes the importance of “recognizing behaviors that are needlessly putting your brain on high alert” (Ibid., p. 109) and reducing them as much as possible. Such behaviors are a common part modern life, with its typical barrage of notifications and news reports that overstimulate our primitive brains calibrated for primitive times. Reducing daily high-alert triggers can benefit by lowering, over time, overall autonomic sensitivity to pain, fear, and other danger signals. This “keep[s] your brain in a calmer state,” shifting the nervous system toward sensing signs of safety, and reducing needless overstimulation and alarm (Ibid., p. 109).

Gordon especially recommends being mindful of the defense and stress-hormone-inducing effects of cell-phone notifications, social media, and worrisome news reports, and advocates reserving time daily to reduce or turn off technological alerts and relax from the autonomic vigilance it triggers.

I have implemented efforts to “break the high-alert habit” for the last three years by avoiding daily news reports, preferring instead to seek them out only occasionally. To reduce my constant attention to cell-phone notifications, I have removed social media apps from my phone, forcing myself instead go through the extra step of typing in the web address of social media sites when I want to access them. This affords the advantage of preventing me from receiving

notifications in real time and preventing the constant vigilance that notifications trigger. It also adds one more action to the process of being able to access social media, making it more involved and a little less effortless to check, with the result that I do not do it reflexively now, but instead only when I consciously choose it. An additional trick I employ for reducing time and attention spent on my cellphone is putting it in grayscale mode instead of color. Time on the phone affords much less inherent pleasure when pictures are in black and white. I find this reduces its attractiveness for me to a surprising degree, thereby freeing me from the hypervigilance and hyperstimulation that habitual checking and scrolling induces.

These practices, in addition to prioritizing sleep, good diet, exercise, and recreation, all help as situation-modifying strategies, resulting in a default daily experience of greater health and calm. This allows me to approach performances with increased resources of mental clarity and resilience and reduces the physical demands that a high-stress lifestyle places on my body, making it easier on stage to appraise my resources as hefty and ample for meeting stressors.

3.2 IMPLEMENTING ATTENTION ALLOCATION

3.2.1 Task-oriented thinking

Task-oriented thinking is an attention allocation strategy that, as discussed in Section 2.8.1, helps keep the appraising brain from focusing on threats and avoidance-oriented goals, and instead remain preoccupied with resources and approach-oriented goals.

While all normal humans at times experience what is called *state anxiety*, or anxiety as a transient emotional state, those with *trait anxiety* are people for which anxiety is a more stable aspect of their personality (Kenny, 2011). As someone with trait anxiety myself, my natural default is a mental focus on dangers, risks and things that could go wrong in performance. This translates to a preoccupation with avoidance goals, or mistakes I want to avoid but feel afraid I might not succeed in avoiding. Learning to focus my attention on desired rather than undesired outcomes has been a conscious and effortful process.

I have developed a personal method for training my attention to focus on approach-motivated goals that involves mentally creating what I would like to hear and maintaining this mental creation one step ahead of physical execution. I base this imagining and executing on

Timothy Gallwey's (1974) concept, explained in *The Inner Game of Tennis*, of "letting" rather than "making" physical execution happen.

Gallwey puts forth the idea of a Self 1, the "conscious ego-mind" (p. 54), and a Self 2, "the physical body, including the brain, memory bank...and the nervous system" (p. 50). He emphasizes the tendency for Self 1 to try and control Self 2 and judge its performance of new movement skills. He notes, however, that if the conscious mind tries to control the muscles involved in a movement, "it will inevitably use muscles that aren't needed" and impede the effectiveness and of the movement (p. 51). Self 2, however, is capable of performing movement tasks with unconscious efficiency. For this reason, it is necessary that Self 1 trust Self 2's capacities: as Gallwey explains, "if your body knows how to hit a forehand, then just *let it happen*; if it doesn't, *let it learn*" (p. 53).

He highlights the sophistication, competence, and inner intelligence of the body which learns with "childlike ease" from both correct and incorrect movements, storing information from every attempt (p. 50). Gallwey explains that Self 1 is best employed by imagining the outcome it would like to produce and then allowing Self 2 to realize this imagined production, without Self 1 controlling or interfering in the realization process. Thus the mind is kept busy with executive activity (imagining what you would like to create), while the body is charged with realizing this vision, without further management or interference from the conscious mind.

My own mind (Self 1), with its natural tendency toward anxious imagination of threats (trait anxiety), will naturally fixate on fears and worries unless I give it another absorbing task. My practice of imagining phrases just as I would like to hear them, and then allowing my body to produce those imagined sounds, is enough to keep my Self 1 occupied with creating musical ideas, while trusting my body (Self 2) to be capable of realizing this imagination. This keeps my attention focused on information which tends to make challenge appraisals more likely (resources and approach-oriented goals), and keeps attention away from threats, fears, and avoidance-oriented goals. I find the activity of imagining a sound and then allowing my body to create it to be an intensely pleasurable process.

As mentioned before, my emotions are usually so intense during performance that high cognitive load activities are impossible for me. If I have not consistently practiced desired-focus techniques with the specific repertoire I am performing, it is not something I can do on stage.

From the very beginning stages, my MPA preparation involves methodically practicing all repertoire in a way that exercises this creative, mind-ahead-of-fingers capacity.

I do this by playing very slowly initially, rehearsing through entire movements but slowing each gesture and phrase down to the point where I can imagine and mentally “hear” what I want it to sound like before I produce it. As I play through repertoire under tempo, I may come across moments when my fingers are unable to produce what I internally hear. I resolve this by slowing things down even further, imagining note by note and phrase by phrase and “allowing” my body to produce the phrase contour, dynamic and tone that I have imagined. When my body succeeds, I move on. If I have difficulty succeeding, I slow down even more. I not only imagine how I would like the phrase to sound, but how I would like it to feel in my hands, shoulders, and arms, by picturing relaxed and pleasant execution.

I do this exercise (creating mentally always just one step ahead of executing physically) while playing repertoire completely through from beginning to end, because it is the best way for me to simulate the on-stage demand for constant looking ahead in readiness for what’s next, rather than looking behind in frustration at mistakes that just occurred. Practicing repertoire in small target sections or gestures does not help me develop this skill, because focusing on small spots involves intense repetition and doesn’t rehearse the mental ability to constantly see ahead to the next new creative goal. Most of my practicing of new repertoire involves this slow practice of contextualized technical and musical problems—contextualized because movements or large sections are played in their entirety, instead of divided into small sections. The problems are anticipated ahead of time, as I keep my mind one step ahead of my hands, and I continually imagine how I would like the notes to sound and feel before I play them.

With time and practice my ability to produce what I imagine, as well as my ability to imagine before I produce, becomes possible at faster and faster speeds. When I have built up my capacity to focus on desired sounds, phrases, and shapes in this way from the beginning of a piece to the end, from slow speeds to performance tempo, I find it possible to do the same on stage without tremendous effort. Keeping my focus on creation and desired outcomes directs my attention during performance toward goals and away from worries and fears, which helps me stay in challenge-appraisal mode rather than slipping into threat.

3.2.2 Present-focused practicing

As discussed in 2.8.2, focusing on the present is an attention allocation strategy that can indirectly prevent harmful MPA appraisals, since anxiety is a future-focused emotion, not one produced “when you are fully immersed in the now” (Korb, 2015, p. 46). Maintaining attention in the present disrupts anxiety by disallowing the mind to wander to impending worries and fears and filling it instead with present sensations. As a strategy which requires conscious cognitive focus, it must be practiced in order to make it less effortful and more easily accessible when under the pressure of performance.

My preferred method of present focus is what Dana (2018) calls savoring, a practice which increases awareness of “micro-moments” of pleasurable experience present in every day, though we usually pass through them without conscious focus (p. 200-201). Dana sees this as originating from our “negativity bias,” which in the interest of survival left us “biologically wired to pay more attention to negative events than positive ones and...often miss the...[pleasant] moments that coexist with moments of ...[unpleasantness]. Things like seeing a friendly face, hearing a soothing sound, or noticing something enjoyable in the environment go unnoticed” (Ibid., p. 111). Becoming more aware of these available pleasures, which Dana calls “glimmers,” helps magnify their effects, stimulating our nervous system to lengthen and deepen our enjoyment response.

When clients hold a glimmer in their awareness for a longer period of time, the experience deepens and the story that accompanies it comes to life. When you recognize the micro-moment of a glimmer, you feel the spark of your ...[relaxation] system. Just as sparks can be used to ignite a fire, glimmers can be turned into the deeper experience of a glow. With a glimmer, you pause just long enough to acknowledge that ... [an enjoyable] moment is happening in the flow of your day. With a glow, stop and celebrate...Take time to soak it in and give it deeper meaning. (Ibid., p. 112)

Savoring in musical situations magnifies enjoyment in the conscious awareness. I have experienced calming and increased pleasurable effects through savoring the contour of a beautiful melody I am practicing, enjoying the touch of my fingers on the keys, or enjoying the light reflecting through the window on the wall of my practice room. In performance situations I have savored the pleasure of engaging in musical dialogue with a chamber music partner and enjoyed the acoustic in the hall. Savoring as a pre-concert routine is helpful for fostering a sense of safety

in the moments leading up to a performance and can include focusing on the pleasure of a hot shower, of dressing slowly and methodically, of applying makeup and skin lotion.

Dana recommends making savoring a regular practice by finding one moment to savor each day and increasing that number as it becomes easier. The savoring effect is magnified further by keeping a savoring notebook, looking back at the end of each day to find savoring moments that went unnoticed, and sharing savoring moments with a friend.

My method for integrating savoring into performing begins with practicing mindfully, directing my attention *while in the act of playing music* to enjoyable physical sensations I am experiencing in the present moment. While more generic meditation practice can be helpful, I find meditation at the instrument to be more powerful at simulating the performance experience and reducing the cognitive load for entering a mindful state on stage.

Practicing present-savoring at the piano for me means focusing on the reassuring contact between my fingers and the keys, feeling the give and elasticity of my finger pads as I weigh into the key surfaces. It means consciously enjoying the pleasant feeling of a loose and flexible wrist, of relaxed shoulders, and focusing on the sweet aural sensation of producing a beautiful phrase contour or a beloved melody. It means relishing harmonies, the build of a crescendo, the relaxation of a ritardando, and synchronizing my breath with phrase shapes. It means, in short, being alive to the pleasurable of making music, and hearing the music I make. Savoring sensations while playing music in the practice room increases my awareness of aspects of the experience to savor as I perform.

I take this mindful savoring seriously and incorporate it into my practicing from the very beginning of learning a new piece of repertoire. It is not something I tack on at the end of a preparation process, but something I do consciously from stage one. In a typical practice session, I often have a savoring warm-up to begin with where I simply play slowly and focus on enjoying sensations of touch, sound, and sight. Once my savoring mode is switched on, I carry it with me as I engage in the musical and technical goals of my practice session, so that it is always running in the background. Savoring during practice makes it something reachable for me on stage, where otherwise it would be impossible. As I keep my focus on the present, anxiety-producing appraisals have little room to form. My attention is filled instead with present physical sensations to enjoy. I find myself able to observe the act of performing with greater equanimity, attention, and pleasure, without my mind running toward worries and “what-ifs”.

3.3 IMPLEMENTING REAPPRAISAL

3.3.1 Anxiety defusion

Anxiety defusion, as outlined in Section 2.9.1, is the practice of becoming conscious of the difference between being and having, of recognizing that emotions are only part and not all of your inner experience. “I am afraid” becomes “I am having a feeling of fear.” With defusion, individuals perceive that it is possible to both feel anxiety and think about the anxious feeling at the same time. This opens space for reappraisal, since the consciousness that can think about the feeling is capable also of thinking about the appraisal which produced the feeling.

Exposure to the idea of defusing from my nervousness or anxiety during performance, as discussed on pages 102-104, led me on a journey of learning how to practice such objectification. As with most areas, to be good at doing something on stage, I discovered I needed to become good at it off stage. This began with exercising a third-person, ‘watching’ perspective in the practice room, observing as if from a distance my feelings, my thoughts, my physiological changes, my bodily responses as I played, as advocated by Kross (2021).

I found it helpful to first learn to classify generally whether my nervous system at each moment was in a state of desiring connection or protection. David states succinctly that, “at its most basic level – and other than being frozen to the spot in fear – animal behaviour consists of two options: ‘approach’ or ‘avoid’” (2016, p. 120). I asked myself as I sat down to practice, “am I feeling in this moment like approaching and connecting with my bodily sensations, the piano itself, the repertoire, my colleagues, the project as a whole, etc.? Or is my instinct more to avoid and protect?” If I determined my general feeling was one of protection, I looked further to classify which protective pattern I was experiencing, either active defense (fight, flight, freeze), or passive (withdrawal). I found questions like the following helpful for distinguishing my defensive feeling in the moment: “do I feel driven to act or to shut down? If active, do I feel aggressive (fight) or more inclined to quickly escape (flight)? Do I feel immobilized in a need to evaluate and assess with minute detail the extent of the threat around me (freeze)? Or do I feel more passive, with an urge to curl up, withdraw and shutdown?”

Becoming quick at classifying whether I was feeling impetus toward connection or protection, and when protective whether I felt active or passive, was the first step toward observing feelings and thoughts that lay behind my instinct to approach or avoid, as well as

noticing how my internal connection/protection meter fluctuated over the course of a practice session. I noticed that I might begin my practice session feeling threat/protection as I confronted new difficult repertoire, but as I divided it into sections and tackled individual problems, I began to feel like approaching the challenge. I noticed when my brain wandered to worry about an upcoming performance, noticed the moments when a mistake in practice would trigger a chain of anxious thoughts about erring similarly on stage. I started to be aware how often my thoughts in practice were a “rehearsal” of possible catastrophes in future concerts, imagining the experience of memory slips, of hands being unable to negotiate a particular passage with clarity and precision. With time I recognized that, while practicing technically difficult passages, my breathing would race, my jaw would tighten, as I tried to negotiate the acrobatics fearfully and in an attitude of “I might not make it, this is an almost impossible passage.”

I worked on becoming more sensitive to the tension in my arms and shoulders and how these corresponded with feelings of alarm about upcoming difficult passages. I began to detect that when feeling agitated or uneasy during practice, my body language would reflect a physically protective attitude, my back rounding and hunching forward, head bowing, shoulders tensing, jaw clenching, all body movements becoming more jagged and rigid. I also noticed my feelings of triumph and thrill when a phrase came off just as I imagined it, observing the consequent flexibility and agility of my arms and hands in moments where I felt enjoyment, relish, and savoring of the sounds. I noticed that with these feelings of pleasure my body would adopt a more expansive and open stance, sitting tall, head up, eyes up, shoulders down, breathing long.

The exercise of observing and being attentive to my feelings, thoughts and bodily reactions during practice began to make defusing with emotions before and during performance more accessible. I became aware of aspects of my experience influenced by anxiety on concert days, noticing ways in which my whole organism tended to switch toward protective mode: I’d become unusually impatient with traffic; rehearsals with fellow musicians on concert day felt invasive and perturbing, like predictions of catastrophes about to happen on stage; my hands became sweaty; my attention was difficult to focus; eating felt like a bother and a nuisance; any task which required attention or methodical work felt alarming, like a distraction from the crucial task of facing imminent threat.

With conscious practice I gained some distance from my own nervousness on stage and noted that it was generally most extreme at the beginning of each program, and less intense during the second half. I observed my fragmented attention, jagged hand movements, flitting fears of audience members' evaluations, all with a measure of curiosity. I began to expect and even to predict my anxiety-triggered thoughts, feelings and bodily reactions, knowing this was part and parcel of the concert day package.

Such practice in defusion allowed me to classify and quantify, to understand the outline and the details of my own anxious reactions, to see them as no bigger or smaller than they actually were, and to recognize there was in fact a great deal of predictability in my body's response to stage fright. Instead of feeling out of control, my anxiety became identified and contained as only *part* of my experience performing. Comprehending this helped me feel less overwhelmed by anxiety sensations and gave me a position from which to consider how my anxiety response could be understood and managed by another part of me, the part which observes.

Anxiety defusion acts directly on my performance appraisals by making demands seem more predictable, measurable, and comprehensible, increasing my sense of certainty and control. It also makes resources seem stronger, helping me identify a part of my mind that can objectify and measure my emotional experience.

3.3.2 Anxiety acceptance

Anxiety acceptance is a direct appraisal-modifying technique which, as outlined in 2.9.2, reduces perception of demands by increasing "distress tolerance," or the ability to tolerate the intrinsic discomfort of anxiety (Clen *et al.*, 2011, p. 151). Where resistance tends to prolong and amplify anxiety symptomology, acceptance avoids this outcome by viewing anxiety as normal and transitory. Acceptance reduces perception of demands from uncontrollable to endurable and amplifies perception of coping resources.

Acceptance is linked with expectation for me, and I have come to expect anxiety symptoms to appear as I approach an important performance, especially when performing repertoire which I have never performed before. I already know I will have sweaty palms, jittery attention, a jumpy feeling in my arms, and difficulty thinking in terms of large musical shapes. I

accept that, especially the first time I perform a certain piece, these symptoms will be there, but I remember they are nothing to be alarmed about, because they are normal and expected.

I remember that the next time I perform the same repertoire, the symptoms will be less intense. I remember that my symptoms vary according to the importance I place on a performance and the newness of the repertoire, and that a certain amount of anxiety is something I must wade through and experience. I observe that as I increase familiarity with repertoire, venue, audience, and the feeling of exposure in performing, these symptoms become less severe. I accept that anxiety is part of an unavoidable path toward familiarity. Focusing on the “why” behind my motivation to perform helps me view anxiety symptoms as something I am willing to experience while doing what is important to me.

I implement acceptance and disarm resistance by expecting anxiety to manifest, and by being willing to experience it. With acceptance, the sense of threat diminishes because I begin to perceive the demands of the situation as unpleasant but temporary, necessary and manageable. I begin to see that the experience of anxiety in a first performance changes (lessens) my anxiety in subsequent performances, simply because I have become more familiar with the demands of performing the repertoire, and thus serves a constructive function. When the demands of a situation (anxiety symptoms) are seen as beneficial in the long run, they then can be perceived as resources rather than demands. Reduced demands and bolstered resources help me access challenge appraisals.

3.3.3 Anxiety curiosity

Anxiety curiosity, explained in Section 2.9.3, is about recognizing that intense feelings often originate in unconscious “parts” of ourselves which want “to be heard” by the conscious brain (Cornell, 1996, p. 52), and can carry a message about either past trauma or present values. Being curious about the message behind an anxious feeling reduces resistance to it, sidestepping amplification of anxiety symptoms by seeing anxiety as a resource (a protective messenger which may have useful advice), rather than an enemy.

Approaching an anxious feeling with curiosity about its hidden message is a high cognitive load activity, and not one I can do while in the heat of the feeling itself, either before or during a performance. Instead, I perform systematic post-analyses of performance anxiety

situations, in which I investigate what a recent experience can teach me. Although this may seem like riding off the back end of a donkey, never being able to catch up to situations as they come, I find that consistently analyzing recent experiences yields insights that stay with me and carry over to the future, making subsequent performances progressively more manageable. Uusberg *et al* (2019) call this “reactive reappraisal” which “occurs when the goal to change emotion is formed during late cycles of emotion generation, or even only once the emotion has already subsided” (p. 272). Though in one sense this type of reappraisal is reactive, it is also proactive because it is used to prevent a future emotional response and interfere before the next emotion generation cycle fully iterates. I offer a few observations arrived at through post-performance analysis to demonstrate how this practice has resulted in benefits for later performances.

Post-concert anxiety curiosity has brought me realizations both about past traumas and about what is important to me in the present. “Questioning” anxiety directly in the way detailed by Schwartz and Cornell in the previous chapter has helped me recognize that music performance played a role in my childhood thirst for attention, being raised in a family of six children where parental care was divided among many. Gabor Maté outlines that for children, attention from parents is felt as both protection and connection, and a fight for attention feels to the child like a fight for survival itself (2003).

In asking my performance anxiety questions like Cornell (1996) recommends, as if it were a separate entity, a friend needing to be understood, questions like “what things look like from its perspective” and “what makes it so anxious,” I found my anxiety “answered” in the form of certain images from my early years. I remembered times when I felt lost in the crowd of siblings, when I felt it was difficult to be noticed, valued or heard. On the other hand, I remembered one-on-one time spent with my mother as she practiced with me, took me to lessons, competitions, performances, of the attention she displayed by sewing concert dresses for me, of the time my grandparents spent listening to and praising my practicing, of the special trips and tremendous effort they made to be present at important performances, and of the concert gifts they bought me. I remembered my grandparents’ verbose praise of my talents to anyone who would listen, of the special place I occupied among all the grandchildren as the musical wonderchild. These images communicated how I had viewed praiseworthy performance, as a principal resource for securing attention from caregivers, equated in my childish brain to connection and protection, and thus critical (so I thought) for my very survival in a large family.

The images transmitted the essence of my childhood perspective on music performance: if I did not perform in way that impressed, I would lose my claim to this vital parental attention and be existentially vulnerable. Though such a realization sounds unreasonable from an adult perspective, these images helped me recognize that to the dependent child I used to be, the conclusion of existential threat felt serious, real, and looming.

Cornell's (1996) assertion that the feeling "will change, after you have heard its message" (p. 99) has held true for me here. Once I realized that a portion of my performance anxiety stemmed from an unconscious childhood conclusion about the connection between impressive performance and personal survival, I was able to consciously couch that childhood view within a more mature adult perspective. Although I may have felt that attention equaled survival as a child, as an adult I know that my survival is not compromised if others around me are inattentive or unimpressed. I know that although a good performance can be satisfying in and of itself, it does not determine whether I will be worthy of basic resources for survival. Simply becoming conscious of my childhood perspective and situating it within an adult viewpoint has diffused the threat and left me freer in subsequent concerts. Although this particular anxiety has surfaced again at times, having done the past work of becoming conscious of it leaves me capable of seeing it for what it is, even in the heat of the moment. I am able to objectify and "comfort" it in the greenroom or even on stage.

The second type of realization, that of recognizing present values I hold, has also resulted from personal post-concert analysis sessions. In asking myself, "what am I anxious about?" I have uncovered the following worries: if I don't perform well, I'll lose future opportunities which will compromise my financial security, I'll lose opportunities for growth and opportunities to collaborate with inspiring musicians, I'll lose the funds and reasons to travel that concerts currently provide for me. Investigating the function behind my anxiety, as David (2016) recommends, has helped me perceive that anxiety comes when something I value feels threatened. My anxiety tells me that financial security is important to me, as is learning from and being inspired by colleagues, having opportunities for growth, and opportunities to travel (visiting loved ones who live faraway, getting to know new places). Understanding what I value helps me investigate the many avenues available to work toward things that are important to me.

For example, since financial security is important to me, I found time to brainstorm other ways I could realistically make a living if performing goes sour, helping me feel secure that my

bases are covered even in the worst-case scenario. Knowing that I value learning from other musicians helps me look for ways to maximize available opportunities, including watching concerts and listening to recordings, and shows me that performing with colleagues is not the only avenue I have for pursuing this goal. Understanding that growth is valuable to me spurs the search for interesting challenges that surround me, including those beyond the field of music. Knowing that discovering new places and visiting those I love is a priority gives me incentive to investigate ways to make this possible, even if concerts no longer provide the means.

Rehearsing these possibilities and perceptions consciously has made it easier to create space between my values and my anxiety on stage. I am able to recognize that the function of my performance anxiety points me toward things that are important to me, and that there are ways I can work toward these values even if this particular concert doesn't go well. With less riding on the moment, my sense of threat onstage diminishes to the point where I feel challenged but not overwhelmed.

3.3.4 Adopting a growth mindset

Accepting anxiety as normal, unavoidable, and tolerable is connected to fostering a growth mindset, to keeping in view that the path toward familiarity, comfort, and mastery involves mistakes and a graded path from more anxiety to less over time. As explained in 2.9.5, adopting a growth mindset is possible through repeatedly practicing the appraisal that mistakes offer useful learning and benefit can occur even from painful or negative experience. This outlook reframes appraisals of mistakes and “bad” performances as part of a normal process of improvement, as experiences which provide growth and learning.

Performing with a growth mindset for me means accepting I will make mistakes, and even have a bad performance now and then, but with every experience I am building familiarity with performing and progressing toward comfort. I like to modify the saying that “pain is weakness leaving the body” for music performance, so that it reads instead, “mistakes are weaknesses leaving my performance.” I remember that each mistake is information for my learning brain, in that way that learning to ride a bike involves countless falls until the mind and body learn to balance and move in that context. I see each performance as a necessary steppingstone toward better performances in the future, and as part of a natural and beautiful process of unfolding,

involving many unfinished and imperfect stages along the way, as expressed by this quote from Gallwey (1974):

When we plant a rose seed in the earth, we notice it is small, but we do not criticize it as “rootless and stemless.” We treat it as a seed, giving it water and nourishment required as a seed. When it first shoots up out of the earth, we don’t condemn it as immature and underdeveloped; nor do we criticize the buds for not being open when they appear. We stand in wonder at the process taking place and give the plant the care it needs at each stage of its development. The rose is a rose from the time it is a seed to the time it dies. Within it, at all times, it contains its whole potential. It seems to be constantly in the process of change; yet at each state, at each moment, it is perfectly all right as it is (p. 37).

To the extent that I diminish demands and strengthen personal resources by taking a growth view, I am less disturbed and anxious about errors that happen on stage and am able to contextualize them within a story of development and growth. Mistakes are not a sign that my resources are insufficient, but instead are seen as resources themselves, necessary steppingstones on the path toward better performance.

3.3.5 Self-declared readiness

Mentally declaring readiness to perform is a strategy, as discussed previously in 2.9.6, that helps shift appraisals by viewing resources as sufficient for demands on performance day. Instead of focusing on what is still imperfect or unfinished in preparation, a viewpoint is adopted which sees current preparation as enough and adequate for performance.

I implement this strategy by refraining from extensive rehearsal or intense practice on performance day, declaring to myself that I am ready without these. If I engage in serious rehearsal, I have difficulty shifting out of the mindset which fixates on what still needs to be done. When I have practiced or rehearsed on performance day in a way that includes playing music up to tempo, this inevitably includes moments when I make a mistake or falter technically somehow. At such moments it is hard to avoid fearing that I will make these same mistakes during the performance, and a cycle of threat appraisals begins. However, if I refrain from playing concert repertoire up to tempo and restrict myself to simply warming up with slow practice, waking up my muscles with comfortable, slow and relaxed movements, it is easier to adopt the view that I am ready for the concert and only need to get blood flowing to my fingers before I begin.

I find that even at the cost of forgoing additional practice, I need to declare my readiness through *not* practicing more than 30 minutes on performance day, in order to cultivate the appraisal that my resources are ready for the demands of performance. For me, having facilitative MPA helps more than any advantage last minute rehearsal affords. For the 30 short practice minutes I do allow myself, I often play repertoire that I will not perform that day. This allows me to warm up my fingers and get comfortable with the piano without triggering any worries which mistakes in the run-through of concert repertoire would trigger. Such actions make it easier for me to sustain an appraisal that all is ready, and the performance will be good enough. It becomes easier to feel that my job is to stop preparing and start enjoying what I have worked hard to prepare. With a focus on sufficiency and savoring, my appraisals stay more easily anchored in challenge as I formally enact the declaration that my current resources are equal to the demands of today's performance.

3.3.6 Gratitude

The importance of active gratitude as a powerful direct method for cultivating challenge appraisals was discussed in 2.9.7, where gratitude was described as a practice of mentally seeking for and identifying evidence that resources are ample for dealing with demands, as well as reframing demands as less threatening.

Since 2020 I have taken seriously Emmons's (2011) research which finds that cultivating this state can be effectively done through keeping a gratitude journal. I use this practice both for habitual gratitude cultivation on a daily basis, and for acute gratitude-driven reappraisal immediately before performances when anxiety has already taken hold.

Employing a daily practice of writing a gratitude paragraph, where I identify both things that I am grateful I have and things I am grateful I do not have, has been extremely helpful in shifting my default initial, unconscious appraisals away from threat and toward challenge, on a general scale. As referenced previously, Uusberg *et al.* (2019) highlight the benefits of repeatedly practicing "patterns of reappraisal" to create "durable change in knowledge structures such as beliefs, goals, and identity" (p. 278). This essentially creates a new and lasting mindset from conscious repeated individual reappraisal actions, changing which "mental models" are reflexively "selected as the most probable explanations of available information" (Ibid., p. 273).

I have found that daily reappraisal practice through writing a gratitude paragraph has trained my brain to perceive signs of safety more readily and automatically in daily situations. While this practice required a great deal of mental effort and felt unnatural in the beginning, over time it has become both easier and pleasurable, now forming part of my daily morning health routine, as personally helpful for facing daily stressors as adequate sleep and exercise. Developing a gratitude mindset in this way, where it was not active before, has worked noticeably for me as a strategy for prevention of debilitating MPA.

In addition to the long-term, mindset-based improvement I have experienced in challenge appraisals, gratitude practice has been helpful in regulating debilitating MPA in moments it has been triggered despite mindset improvements. Regular gratitude practice has made it easier to regulate harmful MPA and form challenge appraisals when my cognitive resources are hampered by anxiety before and during performances. My appraisals have more easily shifted away from focus on high and uncontrollable demands toward evidence that resources surround me, and demands are not as bad as they might look. When I have experienced threat appraisals beginning to form and spiral immediately preceding performance, I have found the act of physically writing in my gratitude journal to be effective at “manually” changing my perspective in a matter of minutes from threat to challenge.

Additionally, when I have perceived a feeling of threat present during practice sessions, taking a break to write a gratitude paragraph has helped reset my perspective so that challenge appraisals and their associated metabolic advantages are operating while I work. This has also helped me train my brain to associate a challenge mindset more easily with the specific repertoire I am preparing.

Thus, implementing active gratitude through writing in a gratitude journal daily, as well as in moments of active anxiety, has been a personally useful strategy both for prevention and treatment of MPA. Habitual daily gratitude writing has helped me develop a more stable, lasting gratitude mindset, preventing debilitating MPA from being activated in situations where it had been common for me to experience it before. Using gratitude writing in moments of acute threat perception has also been helpful to regulate harmful MPA after it has been triggered and has shifted my appraisals toward challenge and primed for facilitative MPA on stage.

3.3.7 Process-oriented goals

As outlined in Section 2.9.8, setting process rather than outcome-oriented goals is a direct tool for reappraisal which changes situational meaning by changing the goals it is compared to (goal repurposing). Process goals prioritize the journey rather than the result and focus on implementable actions and habits rather than outcomes. Since process goals are concerned with what one does control (actions) rather than on what one does not control (outcome), these goals diminish perceived demands and bolster perceived resources, producing challenge rather than threat appraisals.

I implement process-goal setting both in preparing and performing repertoire, as it is useful at all stages. Focusing on the outcome of learning a certain piece of repertoire by a certain date can feel overwhelming and discouraging (threat appraisal), but I dismantle this feeling of overwhelm by setting goals to spend a certain amount of *time* working on the repertoire each day, a goal more easily within my control (challenge appraisal). I make process goals to specify *how* I will practice during this time, such as implementing my technique of creating the music mentally one step ahead of my hands and focusing on present sensations to savor, as well as other tools like metronome practice, playing with a commercial recording, etc. My process goals focus on the when, what and how of specific actions I will take during practice time, rather than on the outcomes of those actions.

Process goals are especially helpful for me in performance, as they help shift my focus from uncontrollable to controllable elements in the situation. Rather than trying to elicit a positive response from the audience (outcome), I focus on caring about those present and sharing what I have prepared (implementable verb actions). Instead of trying to play the repertoire perfectly (outcome), I make it my goal to implement strategies for attentional deployment that I have rehearsed in the practice room, and to notice things to be grateful for in the experience. These verb actions are more attainable than outcomes which depend on people and things I do not control. Focusing on goals which emphasize my autonomy and sphere of influence in performance situations helps me more easily form challenge appraisals and keep demands within perceived reach of my resources.

3.4 IMPLEMENTING RESPONSE MODIFICATION

3.4.1 Controlled Breathing

The benefit of controlled breathing for indirect anxiety treatment through bottom-up, physical response manipulation was discussed in Section 2.10.1. Signs are sent to the brain that the situation is manageable through exercising voluntary control of an autonomically-governed system, manually changing the quick or shallow breathing patterns typical in anxiety states to slow, deep ones. This produces calming bodily sensations, especially patterns which prolong exhalations in relation to inhalations (Balban *et al.*, 2023). Slow breathing which emphasizes long exhalation activates the parasympathetic nervous system, calming the bodily threat response (Dana, 2019) and changing the situation being appraised by sending the brain messages that the body is relaxed.

Like any controlled physical exercise, conscious slow breathing requires a certain amount of cognitive energy to execute until it becomes well practiced. For this reason, I find controlled breathing practices to be most helpful when they become an integral part of playing music, not something I have to intentionally think about or add as an afterthought. I do get anxious before a performance, but I find that my anxiety peaks during the first half of a concert, and that is the moment when I most need the response-modification available from deep breathing. I can't deeply breathe along with everything else I am managing on stage unless I have integrated breathing exercises into every aspect of my repertoire preparation.

From the very beginning stages when learning new music, I consciously match my breath with phrase endings and beginnings, inhaling deeply before starting a phrase and then either singing the melody along with my fingers or simply exhaling during the length of the phrase. The goal is to incorporate long exhalations into the execution of the repertoire, and this method helps me not only control breathing, but also feel the shape of the phrases on a visceral level, giving me the sense that I can push them around and manage them as easily as I manage my breath.

Figure 18 offers a visual example of how I practice controlled breathing in the opening phrase of Schubert's B-flat Piano Sonata, D. 960. I inhale deeply before the phrase begins (marked in red) and sing, hum, or simply exhale (marked in light blue), following the contour of the phrase, until the next inhalation.

Figure 18 - Breathing exercises in Schubert's Sonata in B-flat major, D. 960

The image displays a musical score for Schubert's Sonata in B-flat major, D. 960, specifically focusing on breathing exercises. The score is presented in four systems, each with a piano accompaniment in the bass clef and a vocal line in the treble clef. Red arrows labeled "inhale" indicate the start of new phrases. Blue curved lines labeled "Sing/hum/controlled exhale" span across the vocal phrases, indicating the duration of the breath. The first system includes the marking "pp ligato". The second system includes "pp" and "tr". The third system includes "pp".

Source: Modified by the author from Schubert, 1970, p. 264.

I prioritize audible singing or humming early in the preparation phase, so as to make my breathing patterns intentional and easily trackable. Humming has the advantage of increasing nitric oxide production in the nasal sinuses (Weitzberg; Lundbergand, 2002) and activating the parasympathetic nervous system (Trivedi *et al.*, 2023). I find it produces an immediate soothing effect in my body, so I prefer it over singing when I feel tense for any reason. Later in the preparation process I change my audible singing/humming patterns to less-audible simple exhalations, as if I were singing but without activating my vocal cords, since I don't want to cultivate extra noise-making as part of what I do unconsciously in performance.

When preparing repertoire where phrases are longer than manageable breath cycles, I add short recovery inhalations as needed, but continue the effort to exhale for the majority of the phrase.

Whenever I have a passage that is particularly difficult technically, I find I often tense my jaw in worry as I play it. These jaw-tightening passages get special breath treatment in the practice room, usually with a quick and deep preparation inhalation, and then an exhalation as I play the passage, with a conscious pursing of my lips in an “o” shape to create resistance, allowing me to breathe out slowly during the entire duration of the passage. Not only does the “o” shape force my jaw out of clenched tension, but the long resistance exhale triggers relaxation in my arms, hands, and shoulders, and makes the passage easier to execute. Practicing these techniques every day as I prepare repertoire makes them automatic and unconscious on stage, and response modification through controlled breathing simply becomes part of playing the music.

As a teenager I vividly remember sitting in the second row watching pianist Andre Watts perform a concerto in unworried, ultra-focused, creative ecstasy despite the pressure of thousands of spectators. I felt amused and surprised to discover how much he sang, hummed, and grunted along with his phrases. Little did I know the biological benefits behind such a practice, which certainly helped him foster a challenge response in his autonomic nervous system: by making slow exhalations (singing) and resistance breathing (grunting) part of his performance, he primed his nervous system for creative focus, soothing and regulating the threat response. I have since watched other famous performers with similar habits, and I suspect that singing, audible breathing and grunting are integrated into their practice routines, whether they do it consciously or not.

In addition to integrating controlled breathing into repertoire preparation and execution, I use breathing exercises in the green room to mechanically produce calming signals in my body and make it easier to appraise performance demands as something I can handle. My favored pattern is a four second inhale through the nose and a six to eight second exhale either through the mouth with pursed lips in an “o” shape, or through the nose with audible resistance added. I use these breathing patterns daily to induce bodily calm whenever I feel stressed, not by taking a break and focusing solely on breathing, but by breathing with a six or eight second, pursed-lip exhalation *while* doing whatever I am engaged in, such as driving in heavy traffic, dealing with another person who is stressed, solving a scheduling problem, etc. This helps me practice reflexively pairing parasympathetic breathing patterns with stressful activities and makes it easier to do the same when the stress originates from music performance.

These methods for automating long exhalations in conjunction with stress-inducing situations both on and off stage, and for integrating controlled breathing into repertoire preparation and execution, have helped me access the benefits of slow breathing for both the prevention and (indirect) regulation of debilitating MPA.

3.4.2 Movement

Using movement as a response-modifying strategy immediately preceding performance was outlined in Section 2.10.5. The benefits of cross-lateral movements (coordinated interaction between the left and right sides of the body which cross the body's midline using opposite hand and foot movements) were emphasized for their utility to indirectly change appraisals. Such movements can be used to mechanically manipulate the brain into mental focus on coordination, balance, fine and gross motor skills, and sensory integration, rather than on threat perception (Hannaford, 2004). Likewise, movements which stimulate the vestibular or balance system actuate neural capacities for mobility and hand-eye coordination (Ibid.), and thus can redirect bodily resources toward cortical processes in moments when threat appraisals are taking blood flow away from the prefrontal cortex¹²

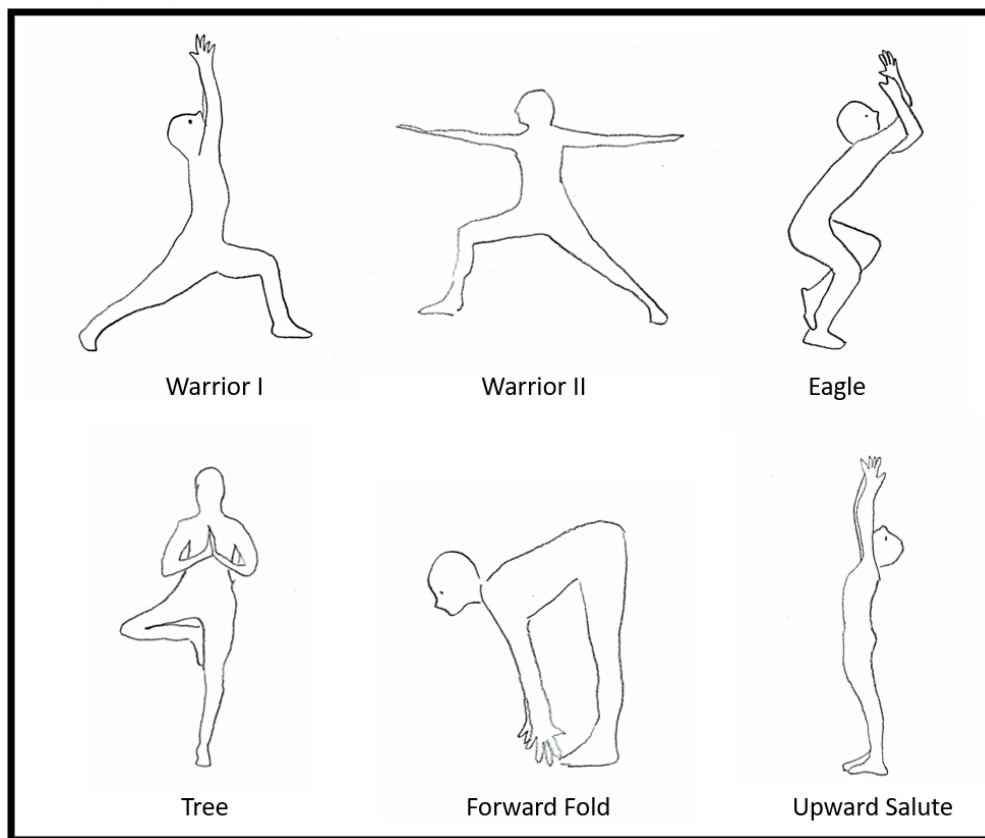
Before I began doctoral research and learned about the importance and utility of such movements for MPA regulation, using cross-lateral balancing movements as part of a pre-concert routine was demonstrated for me by a colleague. While other ensemble members did last-minute musical spot-practice of the concert repertoire backstage, this former chamber-music partner rarely touched his instrument except to tune, and instead often spent his green-room time engaged in Tai-Chi routines, complete with vocalizations, that involved balancing and cross-lateral movements of fully extended limbs. Although at the time I credited this strange behavior to a personal fetish, I later learned to appreciate his tactics for their utility in MPA prevention and regulation after learning the scientific basis behind them.

I have since incorporated the use of specific cross-lateral balancing exercises and postures, usually done together with controlled breathing, as part of my immediate pre-concert routine. For the green room, I favor yoga postures including the tree, eagle and the warrior poses (done first

¹² See Table 9 on p. 50 for a summary of metabolic effects of the threat response, including reduced blood flow to the brain

with one leg up or forward and then done again in a mirrored stance, with the other leg up or forward), along with slowly transitioning back and forth between the upward salute and the forward fold. These are poses I can do without a mat and can usually do in performance clothing. When slowly rising from the forward fold to the upward salute, I let my eyes lead the movement and make the transition from looking down to looking up just slightly ahead of my head movements, as using the eyes in this way especially stimulates the vestibular system (Hannaford, 2005; Anderson; Newport, 2015). These yoga poses are shown in Figure 19.¹³

Figure 19 - Yoga Poses for the Green Room



Source: Elaborated by the author, 2023.

The eagle pose, similar to a movement Hannaford (2005) calls “hook-ups,” is a balancing posture with one elbow on top of the other and palms facing, with one leg on the ground and the other leg wrapped around the supporting leg, as shown in Figure 19. She promotes this “complex

¹³ Additional pictures and explanations of these standard yoga poses can be accessed online at: <https://www.yogabreezebali.com/blog/yoga-poses/>

crossover action” for its activation of “the sensory and motor cortices of each hemisphere of the cerebrum, especially the large area devoted to the hands” (p. 133). This is one reason I especially prioritize the eagle pose before going on stage. Along with other “complex balanced configuration[s]” such as the other yoga poses shown in Figure 19, Hannaford describes the eagle pose (or her modified version of this pose called “hook-ups”) as capable of “decreasing adrenaline production” and “stopping the survival reaction” by triggering the brain to give priority “to the motor cortex of both frontal hemispheres and away from the survival centers in the reptilian brain” (Ibid., p. 134). This, she describes, brings “the system into coherence...assisting focus, learning and memory” (Ibid.).

I also engage in the cross-lateral, balancing movement which she calls the Cross Crawl, where one walks in place using the arms to cross over ascending knees. In cross-crawling, when the left knee comes up, the right elbow is touched to the left knee. When the right knee comes up, the left elbow touches the right knee. Hannaford explains benefits of this movement as follows:

By touching the right elbow to the left knee and then the left elbow to the right knee, large areas of both brain hemispheres are being activated simultaneously. Cross Crawling is like consciously walking, which facilitates balanced nerve activation across the corpus callosum...This simple movement is elegant in activating full brain function and major diffusion into the frontal lobes (Ibid., p. 131-132).

I prefer to do this movement very slowly, as this “requires more fine motor involvement and balance, consciously activating the vestibular system and the frontal lobes” (Ibid., p. 131).

Using these balancing, cross-lateral poses and movements just before going on stage is one more tool in my toolbox for modifying an anxious response and indirectly priming for a challenge appraisal. These movements use the body to force my brain away from threat perception and toward focus on coordination, balance, sensory integration, and fine motor control. It is a useful method for activating the frontal lobes and both brain hemispheres in moments when a threat response is triggering reduced blood flow to these areas. With greater blood flow restored to cortical areas of my brain, challenge appraisals are made more accessible.

3.5 CREATIVE STRATEGY IMPLEMENTATION

Individualized implementation of strategies, as in the examples offered in this chapter, is arrived at through theory-based experimentation on a personal basis. Internal and external

circumstances vary constantly, so what must be prioritized above certain favorite methods is the capacity to experiment and creatively develop custom-made solutions to ever-changing situations. As a reminder of principles discussed in Section 2.1, “the predominant use of any type of coping strategy can be debilitating” (Cheng and Chueng, 2005, p. 860), so adaptive implementation of strategy sequences is based on “awareness of what a situation requires and an ability to organize and prioritize strategies that ‘fit’ the situation rather than relying on dominant, default strategies” (Kashdan, 2010, p. 12).

Likewise essential to the experimental process is an “ongoing sensitivity to internal and external feedback about the relative success or failure of [experiments]...as well as the ability to shift away from a behaviour that is clearly not working” (Bonnano, 2013, p. 153). Theory-based experimentation relies on an exploratory mindset which not only tries varied possible implementation methods, but also tracks the degree to which application efforts are helping at directly or indirectly cultivating challenge appraisals.

Ideas offered by models, by individuals who have developed personally effective ways to implement MPA regulation strategies, offer a launching point for others to imagine how practical experimentation is done, and what applied theory can look like. The examples in this chapter are one illustration of how appraisal theory can guide in the generation of personal methods and tactics for MPA management.

CHAPTER 4: EXPLORATORY RESEARCH JOURNAL

The following text is a sample of journaling engaged in during the conscious practical exploration phase of research for this thesis. The writing and charting contained here were performed in the service of systematic reflection, recognizing patterns, and registering results of experimentation as I explored implementing theory-oriented performance-enhancing strategies. This text covers journaling related to seven concerts, a recording session and a radio broadcast (plus an additional two preparatory concerts), separated into four musical projects. The first three projects (six concerts, recording session and radio broadcast) took place between August 2019 and March 2020. During this phase of my research, I was focused on flow theory and its interaction with MPA. For this reason, the reflections from these projects contain specific references to my success or failure at achieving flow during the performances, and my observations about flow level and its interaction with the presence or absence of debilitating MPA. See page 23 in the Methodology chapter for a definition of flow and description of the phase of my research focused on this phenomenon.

A three-year performing hiatus following these three projects ensued, due to the pandemic and a period of severe illness from Covid-19. The final project, concert number seven, was performed in April 2023 after I was once again well enough to manage the rigors of public performance. While the first three projects happened early in my research process and reflections focused on flow theory, the fourth and final project happened late in the research process, after I had already written a great deal of my thesis, and thus reflects a more evolved stage of research based on an understanding of earlier research synthesized with an in-depth focus on appraisal theory concepts.

Each artistic project in this report served as a private laboratory in which I was able to experiment with various performance strategies and test their effectiveness personally. The experiences were opportunities to learn by trial and error and develop methods for strategy implementation, as well as to discover which methods of implementation were more effective than others for me personally.

The individual project reports are organized in the following manner: 1) a brief description of the events in each project, including repertoire, dates and locations; 2) a more detailed journaling account of the preparation and performance process for the project, discussing challenges,

strategies tried, perceived successes or failures, and take-aways; 3) a table charting and summarizing the principal data from the experience.

MUSICAL PROJECT 1

Table 21 – Description Musical Project 1

Description	Tour of 2 concerts and radio broadcast as pianist of the Adanvi Trio, Festival Internacional Rio Cello 2019, Rio de Janeiro, Brazil.
Program	Clara Schumann: Trio in G minor for piano and strings, op. 17 30' Heitor Villa-Lobos: Trio no. 2 for piano and strings 32' Paul Schoenfield: Café Music 17' Total duration: 79'
Locations	(1) Casa Museu Eva Klabin, Rio de Janeiro, RJ Date: 08/15/2019 (2) Espaço Guiomar Novaes, Sala Cecília Meireles, Rio de Janeiro, RJ Date: 08/16/2019 (3) Broadcast on Rádio MEC FM, Teatro Dulcina, Rio de Janeiro, RJ Program: Paul Schoenfield Café Music (duration: 17') Date: 08/19/2019

Source: Elaborated by the author (2020)

Journal Musical Project 1

The Rio Cello Festival project was challenging for several reasons. Although the cellist and I had played with our violinist in a few concerts the previous year, the 2019 project involved more extensive and complex repertoire than we had done together before. Rehearsal time was limited, with only two weeks to work together once the violinist arrived from Germany, where he resides.

My individual preparation included training for months before finally being able to rehearse with the full trio. This type of project, with high pressure and limited time, often makes flow entry difficult for me, and I find the preparation process is the key for making access to flow on stage possible.

The most challenging work was the Trio n. 2 by Villa-Lobos: impressionist, a work of great scale, extremely complex rhythmically and musically, which requires crucial decisions so that instruments can be individually highlighted or placed in the background. The composition has

brilliant moments as well as long passages in which the musical interpretation makes all the difference in the success or failure of the work. Because it is such a grand-scale composition, boredom for listeners, overall coherence, and architectural form are crucial issues. The project involved not only technical preparation, but negotiation, respect, and the ability to step outside of my individual concerns and challenges and listen to my colleagues.

We had two weeks of intense rehearsals and two small concerts in Santa Catarina before traveling to Rio. Our first community concert was at UDESC and the second at Escola de Música Harmonia. Both preliminary concerts helped with my initial experimental attempts at flow entry under the pressure of nervousness and the newness of the repertoire. These two “practice” performances in lower-pressure, more casual environments paved the way for me to be able to reach a new level of comfort and focus on sound production during the first concert which took place at the Rio festival itself, in the Muséu Eva Klabin. During the second Rio concert, at the Espaço Guiomar Novaes, I felt that we reached a more satisfactory level of communication between the musicians and with the audience. With this second Rio performance I was pleased to discover that my preparation during the previous months, first alone and then in the preparatory concerts, readied me to focus on sounds, forms, architecture, communication, response and creation in the moment of this performance.

The radio broadcast was a final opportunity to test strategies with new stressors. It was scheduled for the end of the festival and so I was unable to play the piano during the week leading up to it, except during the two previous performances. It was not possible to warm up or rehearse before the concert, and the stress of knowing that many were listening besides those physically present in the theater, together with the pressure of being asked to participate in an interview after the performance, were overwhelming. The presentation turned out reasonably well, but principally it was a chance to feel the effects of extreme adrenaline without the benefit of certain pre-performance strategies available to me in the other presentations, such as significant practice time in the days before the concert, warm-up time alone and as a group on concert day, and time to become familiar with the venue’s piano before going on stage. In addition, even though interviews are often part of a performing musician’s required tasks, in my case, knowing the interview would immediately follow the concert heightened my anxiety during the concert tremendously. I feel more comfortable and better equipped for musical performance than for public speaking, especially when public speaking must be done in a second language.

These factors contributed to an overall uncomfortable experience during the radio broadcast. Anxiety was high, and I felt my performance was hampered.

Table 22 is an attempt at classifying both my level of harmful anxiety and the extent to which I felt I was able to enter flow in each concert, and to relate these to strategies implemented and challenges faced. The ratings are between 1 and 10, 1 being the lowest and 10 being the maximum.

Table 22 - Data Summary Project 1

Concert (Location)	Level of harmful anxiety 1-10	Flow rating 1-10	Strategies Implemented	Learning and Observations
UDESC (preparatory concert)	5	4	<ul style="list-style-type: none"> • Focus on the sensation of sounds I am producing. • Think forward to what is coming next, not backwards to what just happened. • Allow time to dress calmly, deliberately, and unhurriedly before the performance. • Meditation in the green room before the concert. 	<ul style="list-style-type: none"> • Concentration on musical objectives is extremely difficult during the first performance of a new program. • Dressing slowly helps me feel more in control on concert day and is a mental declaration that I am ready to perform (prepared for the challenge). • Meditation before going on stage helps me feel clear and less panicked about upcoming stress.
Escola de Música Harmonia (preparatory concert)	6	4	<ul style="list-style-type: none"> • Focus on sounds and creation. • Try to stay present in the moment and not compare this experience to other occasions. 	<ul style="list-style-type: none"> • Having to talk with people before I go on stage raises my anxiety level significantly. • Mental focus is harder for me when there is no stage which separates performers and audience. • Cold room temperatures are a disturbing factor and make concentration difficult. • A tiring commute before the concert leaves me with less mental capacity for intense focus. • Difficulty setting up the recording machines heightens my debilitating anxiety level. • A room with a bad acoustic makes flow entry more difficult. • When fellow performers are nervous and playing stiffly, my anxiety level goes up too. • A bad piano makes everything more difficult, including flow entry.
Museu Eva	5	5	<ul style="list-style-type: none"> • Meditation in the green 	<ul style="list-style-type: none"> • A cramped stage space and

Klabin (RJ)			<p>room.</p> <ul style="list-style-type: none"> • Avoid talking to anyone before the concert • Greater effort to focus on sonority and creation during the concert. 	<p>problematic piano make concentration on sonority and creation more difficult.</p> <ul style="list-style-type: none"> • Not speaking to anyone before going on stage helps my focus and sense of readiness. • The third performance of the same repertoire feels more comfortable and harmful anxiety is less.
Espaço Guiomar Novaes (Sala Cecilia Miereles, RJ)	4	8	<ul style="list-style-type: none"> • Arrive early and reserve plenty of time in the concert hall prior to the performance to increase familiarity and comfort with the space. • Take time to calmly adapt to the sound/acoustic of the piano in the hall, exploring possibilities of sound-color, keyboard touches, and varied dynamics. • No group rehearsal immediately before the concert (mentally declare that we were ready to perform and done rehearsing). • 4th performance of the same program (repeated performance). • Wear very comfortable clothing and allow time to dress calmly and slowly ahead of time. • Consciously interact only in positive and supportive ways with my fellow performers immediately before the concert. • Focus on creativity, shapes and sounds I want to produce, and communication with my colleagues. 	<ul style="list-style-type: none"> • Taking time to familiarize myself with the room and the instrument helps augment my sense of control. • An excellent piano which provides easy manipulation of sounds, dynamics and difficult passages raises my level of comfort and makes flow entry easier. • No group rehearsal right before the concert helps me avoid that sense of last-minute scramble and fear about whether I am ready or not. • Being able to play the same repertoire in multiple concerts reduces harmful anxiety and helps me enter flow. • Comfortable clothing helps me feel supported rather than restricted, and makes me feel better protected against the vulnerability of going on stage. • Interacting with my colleagues in positive ways before the concert gives me the sense we are all on the same team and will support each other in this stressful endeavor, increasing a sense of control and readiness. • Bright and focused stage lighting helps tremendously with my mental focus and ability to enter flow, as it makes the audience invisible and all I can see is my colleagues and our instruments. • The presence of a large audience can sharpen my focus and help with flow entry, but only when I feel very prepared.
Radio broadcast and interview (Rádio MEC, Teatro Dulcina, RJ)	9	3	<ul style="list-style-type: none"> • Think forward, not about what just happened. • Aim at doing my best, and decide my best will be good enough even if it is flawed. • Focus on overcoming obstacles. 	<ul style="list-style-type: none"> • Without my relaxing pre-concert routine, I feel incapable of flow entry. • The pressure of knowing I have a live interview after the concert increases my anxiety to almost uncontrollable levels. • Not having the chance to play any

				<p>piano for several days before a performance raises my anxiety levels and I feel challenged above my capacities.</p> <ul style="list-style-type: none"> • Flow entry is almost impossible when my harmful anxiety levels are high.
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Source: Elaborated by the author (2020)

MUSICAL PROJECT 2

Table 23 - Description Musical Project 2

Description	Tour of 3 concerts and recording of press-videos as pianist of the Avery Ensemble, Utah, USA		
Program	Bohuslav Martinu: Quartet for Piano and Strings no. 1, H. 287	23'	
	Johannes Brahms: Quartet for Piano and Strings no. 2 in A major, op. 26	48'	
		Total duration: 71'	
Locations	<p>(1) Dumke Recital Hall, University of Utah, Salt Lake City, UT Date: 1/30/2020</p> <p>(2) Springville Museum of Art, Springville, UT Date: 2/2/2020</p> <p>(3) Provo City Library Ballroom at Academy Square, Provo, UT Date: 2/3/2020</p> <p>(4) Recording of three press-videos, Springville Art Museum, Springville, UT Date: 2/4/2020</p>		

Source: Elaborated by the author (2020)

Journal Musical Project 2

This was my first project with new Avery Ensemble colleagues on violin and viola, who had recently joined our quartet to replace two of our longtime former quartet members. I was unfamiliar with these new members' playing, performing and rehearsing styles. The prospect of playing with the violinist was especially daunting, as she is a former member of a famous quartet in Berlin, and an acquaintance of Isaac Stern himself. I felt the need to impress and work well with both new players, as the project would serve as a test drive for the new quartet. It was a very different dynamic than the previous group. The violinist is firm, persistent and decisive, and it was sometimes difficult to feel license to disagree. It was challenging to learn to understand both

of their communication styles while playing, as they are each very spontaneous. The violinist also demands a lot of visual communication, requiring me to take my attention away from the score as much as possible.

My personal preparation began months before, but the quartet as a group had an extremely short time to prepare, with only three rehearsal days before our first performance. Efficiency was paramount. We had to plan our time meticulously to be able to work through the entire repertoire, which included not only the concert repertoire but excerpts from various additional works for the videos. I mainly focused on learning to assimilate as much information as possible during rehearsals, while trying to tolerate my high adrenaline levels. We had a concert in a private house before our first public concert, which helped us practice performing the program in front of an audience. The next three concerts were progressively easier in terms of flow and stress levels, the last being the most comfortable and expressive.

The video shoot added the pressure of recording, the need to get an error-free version, and the need to look perfect visually—all additional stressors beyond those of a simple live performance. The museum rental, the price of the videographer, and our limited recording hours put pressure on our ability to complete the project within the allotted time without errors or problems. I was especially impressed with the violinist’s ability to diffuse tension during the recording process and create a positive atmosphere of support and confidence in each person's abilities. Her attitude was essential in allowing small moments of flow during the recordings and helped us to minimize the damage caused by nervousness. Table 24 is a summary of strategies and observations from this project:

Table 24 – Data Summary Project 2

Concert (Location)	Level of Harmful Anxiety 1 -10	Flow rating 1-10	Strategies Implemented	Learning and Observations
University of Utah, Salt Lake City, UT, USA	8	5	<ul style="list-style-type: none"> • Concentrate on what is possible and within my control. • Focus on visual and musical communication with my colleagues. • Believe that things will be ok even if I make mistakes. 	<ul style="list-style-type: none"> • Perceived high levels of (harmful) anxiety in all group members, which surprised me. • Realized I need to offer support and encouragement to others to reduce group anxiety levels and raise my own chances of feeling

				<p>flow.</p> <ul style="list-style-type: none"> • Communication is difficult when we are not very familiar with each other as a group, and more preparation time is needed to be able to feel comfortable.
Springville Art Museum, Springville, UT	7.5	6	<ul style="list-style-type: none"> • Be creative with sound qualities and actively respond to the sounds others create. • Concentrate on the musical shapes and architecture I want to portray. • Accept and explore acoustic possibilities. 	<ul style="list-style-type: none"> • Two previous performances (U of U and an informal house concert) gave us an increased level of comfort on the third. • A rich and reverberative acoustic raises my comfort level considerably, giving me a feeling of license, protection against risk, and less vulnerability to errors. • The two previous factors have more influence on my flow entry than the advantages afforded by an excellent piano (the piano in Springville was inferior to the piano at the U of U).
Provo City Library, Provo, UT	4	8	<ul style="list-style-type: none"> • Enjoy the music. • Concentrate on what I love about the present moment. • Express, respond, and communicate musically. 	<ul style="list-style-type: none"> • Having done previous performances helped tremendously. On this 4th time anxiety was less of a distraction, I felt more free, and I was able to enter flow easily and focus on communicating with and responding to my colleagues.
Video recording session: Springville Art Museum, Springville, UT	8	3	<ul style="list-style-type: none"> • Focus on believing the outcome of the recording session will be positive. • Concentrate on expression as much as possible, with high attention to detail and a conviction that I can play well enough. • Accept my limitations instead of feeling afraid of them. 	<ul style="list-style-type: none"> • Consciousness of being visually recorded raises my (harmful) anxiety level. • Recording on a tight budget (resulting in very limited recording time) makes me feel exhausted and desperate, and it's harder to concentrate on creating. • Anthea's positive attitude assuaged our harmful anxiety and made a stressful experience more fun.

Source: Elaborated by the author, 2020

MUSICAL PROJECT 3

Table 25 - Description Musical Project 3

Description	Piano soloist with the Camerata Florianópolis, 'Concerto Homenagem aos 250 anos de Ludwig van Beethoven,' Florianópolis, SC, Brazil
Program	Ludwig van Beethoven: Concerto for piano and orchestra no. 4 in G Major. Duration: 36'
Locations	Teatro Ademir Rosa, Centro Integrado de Cultura, Florianópolis Date: 3/12/2020

Source: Elaborated by the author (2020)

Journal Musical Project 3

This project presented notable challenges for me for two main reasons: first, I was asked to solo with the orchestra just a month before the concert date, giving me a shorter and more intense preparation time than any other solo performance I had ever done; second, I have focused mainly on chamber music since 1994, and have done relatively little solo work over the last nearly thirty years. This was an unusual experience for me, trying to prepare something so rigorous within a few weeks. I focused on comfort during practice hours, and on experimenting with musical sounds and colors, to train my ability to focus on creation even under stressful conditions. I significantly increased my daily practice time in order to prepare my hand muscles for quick, expressive and competent control. Fortunately, I had performed the first movement of the concerto many years before, and some "historic deposits" in my memory helped in the preparation process. The second and third movements were new to me, however.

After reaching a level of technical and mental comfort with the music, I concentrated on listening to and playing with recordings by several different pianists, in an effort to increase my familiarity with the orchestral part and with the form of the concerto as a whole. I found some especially inspiring recordings and was able, by playing along with the CDs, to learn from these recordings and practice interpretive aspects such as musical direction, phrasing and temporal flexibility.

Although I had the work memorized, I felt extremely insecure about the idea of playing without the score, something I've done very little in the last twenty years. To my dismay, I found that anxiety during the dress rehearsal resulted in unexpected memory mistakes and increased my stress levels to the point where I was unable to access flow or control my musical expression. I

made a last-minute decision to use the score on stage, prioritizing my comfort and security over the tradition of playing from memory. It was a little difficult to play with a physical score after having practiced without it. On the day before the concert I had to put large, easy-to-grab tabs on certain pages and do last-minute rehearsal of sequences and moments for page turns.

Unfortunately, it didn't occur to me that I needed to prepare an encore until a few days before the concert. This meant that only minimal comfort could be achieved with whatever work or piece I chose. I chose a simple and beautiful Etude by Chopin and did my best to find comfort in doing it in the few days still available.

The performance itself was extremely stressful. I entered a level of panic I hadn't felt since I was 16, when I performed as soloist with the Utah Symphony. The short period of preparation (one month) was the main reason for this: I didn't have time for the music to sink deep into my subconscious, and many of the gestures and technique were still raw and immature. Flow entry was practically inaccessible at this level of anxiety. I managed to carry off the performance with a herculean effort and had a few small moments of almost-flow, but at a huge cost to my body. I believe this large metabolic expenditure weakened my defenses and contributed to my susceptibility to Covid-19 and its sequelae, from which I was unable to completely recover for three years. Table 26 summarizes the experience.

Table 26 - Data Summary Project 3

Concert (Location)	Level of Harmful Anxiety 1 -10	Flow rating 1-10	Strategies Implemented	Learning and Observations
Teatro Ademar Rosa, Florianópolis, Brazil	9	2	<ul style="list-style-type: none"> • Look for maximum possible comfort with technique and music during practice sessions. • Play with various recordings to absorb musicality, gestures, and direction from various artists. • Focus on sound production and shapes I want to create. • Dedicate many hours to practicing daily to develop strength and muscular dexterity. • Accept what is possible within the circumstances, believing the result will be good even if it is less than ideal. 	<ul style="list-style-type: none"> • 1 month to prepare a concerto is too short a time: even when physically possible, it's not enough time to attain a level of subconscious comfort where technical issues don't require heavy cognitive engagement. • My harmful anxiety reaches extremely unpleasant levels when my familiarity and subconscious comfort with the repertoire are low. • Flow is almost impossible under these conditions. • Strategies implemented made it possible for me to (roughly) prepare the concerto in one month and pull off the performance, but the experience was terrifying, unpleasant, and the metabolic cost was high.

Source: Elaborated by the author, 2020.

MUSICAL PROJECT 4

Table 27 - Description Musical Project 4

Description	Concert as pianist of the Avery Ensemble, Connecticut, USA
Program	Wolfgang Mozart: Quartet for Piano and Strings no. 2 in E flat major, K. 493 26' Johannes Brahms: Quartet for Piano and Strings no. 2 in A major, op. 26 48' Total duration: 74'
Locations	Trinity Episcopal Church, Hartford, CT Date: 4/21/2023

Source: Elaborated by the author (2023)

Journal Musical Project 4

This concert came after three years of severe illness, during which time I was often unsure whether I would ever have the health to perform again. The three years entailed not only physical suffering, but a mental grappling with what seemed a potentially permanent loss of stamina not only for performing but even for consistent practicing. Once I had health and energy restored after going through such a long, harrowing period, the opportunity to perform once again felt like a miraculous gift, and I was endowed with a perspective I had never had before. Rather than feeling concern about how my performance could affect my reputation and career, a concern which had always been present to some degree in previous engagements, I was instead amazed and grateful for the intricate underlying systems in my body which were robust, balanced, and functioning well enough to allow me to be active. I felt amazed at the processes at work in each audience member's body, which allowed them to be present at the concert. My principal sensation was consciousness of how precious it all was, from the ability to practice consistently, to the capacity to rehearse long hours as a group, to the stamina for executing an entire program on stage.

Given this perspective, my goals were different than in any previous performance. I wasn't interested in being admired or in having my career bolstered by contacts in the audience. The superior quality of the performance was not my goal. What was important was savoring and sharing the preciousness of it. The interpretive ideas of my fellow quartet members became opportunities to experience a delightful new way of feeling the music, rather than something which potentially threatened my own "ideal" concept of the piece. Rehearsing itself, instead of being a grind, was a beautiful opportunity to create together. Commuting to the venue and setting up the concert space was work that felt purposeful and exciting, rather than irritating. The number of audience members made no difference to me, I only wanted to share with those present, whoever they might be.

This difference in goals affected my appraisals of the stressors involved. It meant that my evaluation of the situational demands, and my resources for meeting them, were different than in performances previous to my illness. With goals related not to bolstering and protecting my ego or career, but instead to savoring/sharing the preciousness of the moment, the demands seemed less threatening or difficult to attain. Savoring the moment demands effort at awareness and

gratitude, something well within my reach. Sharing demands focus on creation, beauties in the music worth sharing, and love for the audience, all things within my locus of control. The goal of being admired, however, demands perfection and brilliant execution, a nearly impossible feat. In addition, the goal of being admired by others attempts control over things beyond my personal agency, such as audience member's assessments and reactions. Hence the goal of being admired had frequently resulted in a high sense of threat in previous performances, leading to debilitating MPA. This time, however, with more accessible goals and a sense that my resources were up to the demands of the situation, I experienced virtually no debilitating MPA. Instead, my focus was sharpened, and my capacities felt enhanced by what I would call, based on my research since 2020, facilitative MPA (this is related to what I called my "flow rating" in earlier projects). I was entirely absorbed in creating and sharing the music and felt control and capacity above my norm.

There was a moment or two, however, when the strategy of savoring hampered performance, when my exhilaration at playing beloved music became intense. At these moments tears started to well up in my eyes, and I lost focus briefly and fumbled in my execution. This prompted the realization that I should back away slightly from savoring and concentrate more intently on sharing and creating. This helped lessen the intensity of emotion to the point where I could keep cognitive focus on creating music, not just enjoying it, though savoring remained operational and helpful as a background goal. This experience afforded the interesting discovery that high emotion intensity could hamper my cognitive capacities even when the emotion in question was a *positive* one. I previously only had experience with intense *negative* emotions harming my performance capacities.

My goals of sharing and savoring were operational from the first moments I started practicing for the concert, and so were infused in the experience of my entire preparation process, rather than tacked on at the last minute. I felt that this clipped the source of harmful MPA generation that I had experienced in the previous concerts outlined in this appendix. I also used this concert to test a few new physical strategies, such as yoga and deep breathing in the green room, as well as performing without my glasses or contacts, so as to blur the audience and limit my focus to immediate surroundings and the world of sound. Overall, this concert was thoroughly enjoyable and even ecstatic for me, and in this way was a polar opposite experience to my previous concert in 2020.

Table 28 summarizes strategies and conclusions from this performance. Please note that the column which in previous projects I had labeled “flow rating,” I have here changed to “level of helpful MPA.” As explained earlier, the concerts in 2019-2020 were performed early in my research process when I was focused principally on flow psychology, hence the flow rating label. As this last concert happened much later in my research process (2023), my charting reflects an evolution in theoretical perspective. What I had previously conceived as flow level, I here frame as facilitative MPA. The two concepts have much in common, and some key links between the two are discussed in Section 1.6 (p. 57-59). Although specialists in flow psychology may point out ways in which there is not complete overlap between the two concepts, it is sufficient for me that my own personal concept of “flow rating” as I used it in the charting of previous concerts is analogous to “facilitative MPA” as I use the term in this dissertation.

Table 28 - Data Summary Project 4

Concert (Location)	Level of Harmful MPA 1 -10	Level of Helpful MPA 1-10	Strategies Implemented	Learning and Observations
Trinity Episcopal Church, Hartford, CT, USA	1	9	<ul style="list-style-type: none"> • Savor the preciousness of the chance to prepare, rehearse, and perform. • Focus on sharing the beauty of the music and creating its execution. • Yoga moves in the green room. • Abdominal breathing in practice, rehearsal, green room and performance. • Rehearse and perform without glasses or contacts so I can't focus on anything far away. 	<ul style="list-style-type: none"> • Savoring and sharing beauty were goals which allowed me to enjoy the process from beginning to end and focus on things within my control, instead of on things beyond my control. It diminished my sense of threat and helped me feel my resources were up to the demands of the situation. • Yoga, abdominal breathing, and playing without glasses all helped me calm nervousness and maintain cognitive focus on my goals of sharing and savoring. • Savoring too intensely can interfere with cognitive focus.

Source: Elaborated by the author (2023)

SUMMARY

The journaling included in this chapter serves as a demonstration of the intentional, theory-oriented practical exploration as described previously in the Methodology Chapter (p. 27). It illustrates my systematic examination of personal attempts at theory implementation, involving reflection on and refining of existing strategies through theoretically guided experimentation, as well as exploring new theory-based strategies.

Each of the musical projects listed offered a unique set of challenges and opportunities for experimentation. From the initial focus on flow theory and its interaction with MPA in the Rio Cello Festival to the final project with the Avery Ensemble after a three-year hiatus, this journaling served as a vehicle for consciously tracking and evaluating my experiences and observations. As a sample of my reflective process, it offers a glimpse into my evolving research journey.

These projects and subsequent reflections enabled me to experiment with diverse performance strategies and gauge their efficacy firsthand, giving me a chance to acquire insights through trial and error. As stated previously, it does not encapsulate the entirety of my conscious experimentation but is meant simply as a communicable sample of the process.

CONCLUSION

The appraisal theory of emotion is a useful tool in understanding and guiding MPA regulation, as it can help provide answers to key management questions, such as: (1) What are the contributing factors to maladaptive and adaptive MPA? (2) How is facilitative MPA cultivated? (3) Given the breadth of MPA strategies available, how can musicians choose strategies appropriately matched to performance variables in constant flux? and (4) How can musicians implement appraisal-theory-based strategies in real-world situations?

Appraisal theory helps with the first question by clarifying that maladaptive and adaptive MPA both stem from a cognitive (though often unconscious) appraisal of the situation, as discussed in Chapter 1. Although emotions based on appraisals evolved to make species more adaptable to changes in the environment, and often work well to help organisms adapt to these changes, the mechanism of emotion generation can also trigger maladaptive responses. Music performance anxiety, like other emotions, can be adaptive or maladaptive. Appraisal theory clarifies that the first and central contributor to helpful or unhelpful MPA is mental appraisal, or the meaning assigned to the situation by the individual.

Appraisal theorists further illuminate what contributes to both kinds of MPA by outlining the criteria which the brain uses to make appraisals. In situations like music performance which produce stress, stemming from demands which require change that will either tax or exceed personal coping resources (Lazarus, 1991), appraisals are based on how resources compare to situational demands. When personal resources look sufficient for demands, a challenge appraisal is generated, but when demands seem to outstrip resources, a threat appraisal is produced. Maladaptive MPA results when demands are seen to exceed resources to meet them. Adaptive MPA, on the other hand, is generated when resources are seen to equal or exceed situational demands. Where threat appraisals motivate avoidance of the stressor and metabolically hamper cognitive performance, challenge appraisals motivate approach of stressors and facilitate cognitive performance (see Table 9, p. 50).

It follows then, that the answer to the second question, how adaptive MPA is cultivated, lies in manipulating appraisals so that resources seem up to demands. Emotion regulation researchers anchored in appraisal theory have offered models of the emotion generation process which illuminate how appraisals are changed—how interference at one or more points in the

generative process changes emotions, and how this regulating interference can be performed intentionally.

Models based on this research, like Gross's process model of emotion, serve as a useful tool in MPA regulation, because they clarify both the problem and how to solve it, illustrating in a memorable way how emotions are produced and how to change them. Using Gross's process model can increase awareness for musicians that regulating MPA involves directly or indirectly manipulating appraisals of demands and resources. With challenge appraisals as the goal, appraisals of demands and resources can be modified directly through reappraisal strategies, or indirectly through strategies which target situation, attention allocation, or response. The act of categorizing individual MPA strategies according to which of these four families they belong to helps clarify how (directly or indirectly) such strategies act upon appraisals. Various strategies from these four families (situation, attention, appraisal, and response) were presented and described in Chapter 2, Sections 2.7 through 2.10.

The third question, addressing how musicians should choose strategies to appropriately match constantly changing performance variables, is answered in several ways by models rooted in appraisal theory. Gross's steps for strategy selection shown in Table 14 (p. 80) illustrate that strategy selection should be guided by personal goals/values (what is most important to the individual), and with a consciousness of circumstantial possibilities. Identifying long-term values sets the stage for overall threat reduction and directs regulation priorities by making resources seem more abundant and demands less daunting, and by organizing the inner chaos of conflicting desires. This allows for building effective and energy-efficient strategy sequences that will propel the individual toward desired goals amid continuously changing demands.

Along with identifying values, sensitivity to contextual limitations, especially the cognitive limitations that high emotion intensity triggers, is another foundational strategy for orienting the selection process. Cultivating an awareness of the ebb and flow of emotion intensity and practicing the ability to match strategies to anxiety levels as they fluctuate is crucial. The number and range of strategies accessible even at high emotion intensity levels can be increased through conscientious regular practice of effortful strategies. Appraisal theorists maintain that even when cultivating challenge-leaning appraisals requires significant cognitive effort initially, these appraisals and strategies to facilitate them can become automatic and even effortless with repetition. The limitations imposed by reduced cognitive resources during high-emotion-intensity

events can be dealt with by putting proactive, high cognitive load strategies into practice long before performance, incorporating them into daily music practice routines, so that they become easy and familiar. Automated and low cognitive load strategies are important for promoting a challenge mindset when emotion intensity is high on stage. Adaptive regulation involves creating goal-oriented sequences of strategies, where awareness of emotion intensity is cultivated, and high cognitive load strategies are consistently rehearsed during low-emotion-intensity periods, increasing their automation. In this way, difficult strategies become easier and accessible even when emotion intensity rises.

Beyond sorting strategies according to regulation families, MPA variables can also be matched to the four points in the emotion generation process (situation, attention, appraisal, response) of Gross's process model. This action makes it easy and clear to match variables with strategies which address them, as variables related to a particular family are most appropriately treated with strategies from that same family. Sorting strategies according to the four key families also helps define *when* strategies should be implemented, as it clarifies which strategies are proactive or antecedent, and which are reactive or response-oriented.

Appraisal theory-based research shows how adaptive emotion regulation involves creating sequences of strategies which are custom-fit to individual circumstances. The challenge of doing so is made easier with a theoretical framework which identifies unifying principles to organize and orient the selection process.

The fourth question, focusing on how musicians implement strategies in real-world situations, entails creative experimentation based on an undergirding of appraisal theory concepts. Understanding the theory helps orient this exploratory stage. The process of moving from theory to practice, of applying appraisal theory oriented MPA management within a natural environment and real-life situations, involves creative experimentation "embedded in regular...practice in a natural learning environment" (Huang; Yu, 2022, p. 132). Although practical implementation must be explored on an individual basis, Chapter 3 highlights personal examples of my efforts at application, to model how creative conversion of strategies into tactics can be explored. Modelling, or "vicarious experiences," can strengthen an individual's belief in their own power and capacity to effect change (Bandura, 1997, p. 86). The methods I have developed for implementing MPA regulation strategies were offered in Chapter 3 as models to facilitate practical experimentation for others, by showing what applied theory can look like.

Although MPA regulation is difficult, appraisal theory reduces the difficulty of regulation by organizing existing literature on MPA strategies into an integrative framework, illustrating the conditions in which certain strategies work well and why. Models based on the theory also can guide the process of strategy selection, offering principles which orient the complex process of matching strategies to circumstances. The theory provides a clear, principle-oriented structure which can also guide the stage of creative experimentation, where methods for implementation of strategies are explored and developed. In this way, appraisal theory makes more understandable, more practical, and easier the task of developing personal strategy sequences adapted to individual, real-world circumstances.

Directions for future research on integrating appraisal theory with MPA regulation could include articles offering further modelling of how appraisal-theory-oriented strategies can be implemented on a personal basis in real-world situations. A next step for empirical research could be the development of studies which teach musicians regulation skills within an appraisal theory context, and analyze whether performance is enhanced, and whether facilitative MPA is increased. Specific studies or experiments could be conducted testing the effect of challenge or threat mindsets on MPA, important because most published performance-related experimentation on challenge and threat to date has focused on sports or academic performance, rather than music.

It is hoped that this initial examination of appraisal theory's implications for the understanding of music performance anxiety, and for orienting MPA regulation, strategy selection, and strategy implementation, as well as the exploratory personal application of appraisal theory-based strategies offered here, will convince researchers that further empirical research is merited.

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