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Music of the Night: Performance Practitioner Considerations for Enhancement Work in Music

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Abstract

While the domains of music and sport performance share many convergences, performance psychology and enhancement training is less common in music. Consequently, practitioners such as sport psychologists or psychotherapists are increasingly being employed to work with musicians. Successful collaboration between disciplines might be particularly beneficial as the domain of music performance is rife with psychological, physical and systemic challenges for which appropriate support structures are often lacking. Accordingly, this paper aims to contribute to effective interdisciplinary communication by reviewing a selection of common socio-cultural and systemic issues in music performance that might broaden practitioners’ contextual knowledge of musicians. While this paper is not meant to be a comprehensive review of all available research, we have included ample references to direct readers towards relevant material on the topics being discussed. In addition, we propose that practitioners who are interested in working with musicians apply a positive, culturally-sensitive, evidence-based and holistic approach when translating and communicating psychology principles to musicians. We provide suggestions as to how this might be achieved and also emphasize the importance of exploring a range of methods, prioritizing practicality and introducing performance enhancement training accurately. In doing so, we suggest that practitioners avoid focusing solely on performer wellbeing, theoretical delivery formats or limited psychological skills strategies.

Keywords: musicians, conservatoire, performance psychology, holistic
Introduction

As the journal title infers, sport psychology (arguably the more advanced discipline, but certainly the oldest of the performance enhancement disciplines) is spreading its influence into other domains. Accordingly, this paper aims to highlight specific challenges present in the environment of music performance. Having considered these challenges, we subsequently offer possible suggestions for practitioners from other support disciplines interested in enhancement work with musicians. In doing so, this paper aims to contribute to practitioners’ understanding of musicians, their domain and cultural milieu. Such information may be useful in broadening the existing knowledge base that informs psychologists' decision-making processes and intention for impact, both of which ultimately affect intervention success (Martindale & Collins, 2005).

Musician/performer-researchers have highlighted the positive effects of sport psychology on music performance (e.g., Bellon, 2006; Hawkes, 2015; Olevsky, 2012; Thomson, 2014). Yet, while awareness of psychological interventions may exist, tuition in and knowledge of how to deploy performance-enhancing skills is often missing (e.g., Byo & Cassidy, 2008; Hays 2002). Notably, music is at an earlier stage of development in its research, education, practice and performer acceptance of performance science (Hays, 2012) and does not yet have a robust applied literature base to draw from. Consequently, professional training in performance psychology coaching for music performance is a novel development. Thus, in the current shortage of music specialists, psychologists from other disciplines such as sport may be the most appropriate source for performance enhancement.

Such a decision, although convenient, may hold some problems however. An understanding of domain-specific challenges in their cultural context is often overlooked, yet is key to effectively
communicating performance psychology, especially to a domain that is new to the concept (cf. Willmott & Collins, 2015). Despite the many convergences that make sport psychology applicable to music performance, specific divergences exist that should be considered to optimize existing methods and facilitate effective knowledge transfer (Hays, 2012; Nordin-Bates, 2012).

Reflecting these concerns, we will firstly outline the prevalence and specifics of psychological and physical problems in music, while also exploring musicians’ cultural milieu. Next, we explore the impact of inadequate developmental support and coaching structures - factors which also differentiate musicians from athletes and which generate further challenges for intervention design and deployment. Finally, we discuss the implications of these considerations for performance psychology training for musicians. We propose an evidence-based and culturally-informed holistic approach, for which suggestions and examples will be presented.

**Prevalent Issues and Barriers to Progress**

**Psychological and Physical Challenges**

Performance demands in music and sports share common ground. For instance, extreme commitment, early specialization, social isolation, training volume, identity foreclosure, coaching relationships, burnout, injury, psychological pressure, expertise, talent, deliberate practice, motivation, flow, perfectionism, and stigmas of psychological interventions occur in both domains (Hays, 2002; Nordin-Bates, 2012). In addition, aspects often considered “unique” to performing arts such as creativity, emotional expression and communicative audience relationships can also be present in aesthetic sport disciplines. While athletes and musicians are likely to suffer comparable challenges, however, there are distinguishing characteristics in
musicians and their environments that deserve attention. Notably, challenges are in part enabled by cultural beliefs and customs that exist in musical learning and performance milieus.

Music is rife with instances of psychological and physical issues that are currently not widely and appropriately addressed in training (e.g., Chesky, Dawson & Manchester 2004; Weller, 2010). For instance, prevalent conditions include psychopathology, injury (particularly overuse; Kenny & Ackerman, 2009) and poor health habits (e.g., Panebianco-Warrens, Fletcher & Kreutz, 2014). Musicians also appear reluctant to seek professional help, preferring advice from peers and teachers regarding matters beyond their expertise (Williamon & Thompson, 2006).

Furthermore, incidences of mood and anxiety-related disorders are high, of which the most commonly reported is Music Performance Anxiety (MPA - for a review, see Kenny, 2011).

Music task demands may add to the perceived pressure and exacerbate MPA (Hays & Brown, 2004). These demands often require a combination of temporally precise fine motor execution, memorization of pre-determined, lengthy and complex material, and the effective communication of technical proficiency with novel musical insight. In addition, possible differences in application of psychological skills (Nordin-Bates, 2012), coping (Poczwardowski & Conroy, 2002; Wolfe, 1999), personality (Kemp 1996), goals (Hays & Brown, 2004; Lacaille, Whipple & Koestner, 2005; Lacaille, Koestner & Gaudreau, 2007), perceptions of anxiety (Papageorgi, Creech & Welsh 2013; Gill, Murphy & Rickert, 2006), psychopathology (Mula & Trimble, 2009), identity (e.g., Ivaldi & O’Neill, 2001), confidence (Sinden 1999), learning cultures (Burt-Perkins, 2013) and systemic differences impact the occurrence of common issues and further distinguish music from sport.

For instance, available literature does not reflect a robust sense of confidence and control in
musicians, who typically appear low in confidence and high in anxiety (e.g., Nordin-Bates, 2012; Sinden, 1999; Talbot-Honeck & Orlick, 1998). Views of performance “depending on the day” or “nerves being outside of their control” are not uncommon (e.g., Ivaldi & O'Neill, 2000).

Cognitive factors that may raise anxiety levels include one's reaction to lack of control, unrealistic perfectionism and perceptions of low probability of success (Kenny, 2011; Lehrer 1987). As limited training exists (Osborne, Kenny & Cooksey, 2007; Osborne, 2014; Patson & Waters, 2015) for teachers or students to appropriately address such issues, MPA is typically accepted and quietly left unresolved (Wilkinson, 2005). Although research has started to address perfectionism in early music training (Patson & Osborne, 2015), unrealistically perfectionistic strivings may often be present. These might be exacerbated by digitally perfected recordings that leave performers and audiences alike with physically unattainable mental representation of pieces (Hays & Brown, 2004; Kruse-Weber & Parnutt, 2014).

As MPA appears widespread, it has been researched extensively (see Kenny 2011) yet predominantly through a pathological rather than a positive psychological lens (Nordin-Bates, 2012). Thus, research has mainly produced intervention studies aimed at ameliorating symptoms of MPA rather than positive performance enhancement. Of concern, and despite many positive outcomes of these interventions (Kenny, 2011), it seems musicians are not using psychological strategies as their primary coping source. However, risky coping methods such as beta-blockers and alcohol are commonly reported (e.g., Chesky & Hipple 1999; Fishbein et al., 1988; Steptoe, 1989). Indeed, use of beta-blockers is even occasionally promoted by leaders (Tindall, 2004). In addition, such drugs are passed around without prescriptions and are easily obtained in music environments (Dunkel, 1990).
The topic of beta-blockers is controversial in music and may often divide opinion. It is beyond the scope of this article to delve deeply into all facets of the matter, however, it is worth pointing out some considerations for practitioners. Naturally, there may be considerable differences between the type of substances used and musicians’ circumstances and motives for doing so. However, it is worth pointing out that potentially harmful performance enhancing drugs (PEDs) are freely circulated in musical settings and that this has repercussions. This posits several questions worthy of consideration. Might drug-use not negatively affect performer health? Should drugs such as beta-blockers continue to be considered “acceptable” despite healthier psychological treatment options being available? Although beta-blockers might seem to enhance technical performance, they might also give rise to lackluster performance. Are beta-blockers then worth the risk? Are they even in line with the purpose of music if they can dampen the energetic buzz of a performance? Are the ethics observed in music towards the use of beta-blockers justifiable? Does music’s acceptance towards beta-blockers cause healthier methods to take a backseat in favor of “quick fixes”? How does knowing you owe a performance to a drug affect feelings of self-efficacy and cognitive reconditioning? Particularly at risk are musicians who are not taking such drugs under medical supervision. Unfortunately, this may well be due to the lack of appropriate introduction and instruction on how they can use healthier coping methods such as psychological strategies, exercise and healthy lifestyle habits. Although covert drug use (total across performance and social) might be comparable between musicians and athletes, music’s lenient attitude towards PEDs stands in contrast to the attitude strived for in sports (e.g., Douglas 2007). In sports, PED use is heavily sanctioned by society, media and leaders in the field. In musical environments, however, attitudes towards PEDs appear
lax, duty of care is neglected and dysfunctionality is sometimes even glorified within the industry (e.g., Novick & Steen, 2014). Thus, practitioners are likely to be faced with an anxiety-ridden culture that is also lenient towards the use of performance enhancing substances – two aspects that will likely impact content and conduct of the intervention.

Finally, and despite the number of successful intervention studies in the literature, practical training in music performance enhancement techniques is somewhat sparse. Initiatives are developing globally (e.g., Chesky, et al., 2004; Liertz, 2007) yet even more proactive and integrated approaches are called for by researchers and students alike (e.g., Atkins, 2009; Parncutt, 2007; Weller, 2010). Furthermore, although a growing body of research demonstrates the benefits of performance psychology in music (e.g., Braden et al., 2015; Osborne, 2013; Osborne, Greene & Immel, 2014), institutions appear reserved towards change. Teachers appear reluctant to incorporate science, and academic work is reduced to allow as much time as possible for practice (Parncutt & Williamon, 2005; Weller, 2010) as performers often consider everything that is not practice as “a waste of time” (Brown, 2012). Consequently, initiatives, if available, can often be mostly theoretical and lacking in practicality and systematic delivery (e.g., lecture or workshop formats are typical - Weller, 2008). Although clearly well-intentioned, such theoretical formats appear to lack traction with student-performers (Brown, 2012) and do not accurately reflect performance psychology training. Indeed, structured, systematic and comprehensively interdisciplinary training that practically communicates the tools necessary to optimize physical and psychological functioning (rest, hydration, nutrition, conditioning, psychological skills, etc.) is uncommon.

Consequently, at least in the environments with which we are familiar, performance science is
often considered an academic subject with little direct applicability. These limited views are, perhaps, understandable given the common lack of implementation. However, they also pose an additional challenge to practitioners who will need to appropriately introduce to an audience that is new to performance psychology.

In continuation of the previous point regarding the pathological focus of music psychology research, it is worth considering the limited availability of research focusing on psychology for performance. The latter focus distinction is made to differentiate between the 3 evolutionary stages of a support science (Collins & Kamin, 2012); namely, psychology 1) through, 2) of, and 3) for, performance. The first two stages are primarily concerned with generating scientific publications relating to aspects of the parent (1) or a subject-specific (2) sub-discipline rather than focusing on the implications of applied performance science and producing findings that are directly applicable to performers (Winter & Collins, 2015). As evolution through these stages is approximately sequential, the field of music performance research would appear to be only recently progressing onto the third phase. Combined with the comparative lack of fine motor control research essential for music (Collins, 2013), practitioners have little practical musician-specific research to draw from. They will also need to understand that limitations present in music performance environment are also due to music being at an earlier evolutionary stage in which practical research and its applied practice are not yet the established norm. Thus, demonstrating the field-applicability of performance psychology within practical constraints while taking into consideration attitudes towards key constructs (e.g., anxiety and substance use) may be an essential component to successful, especially institution-based, interventions.

Beliefs as Barriers
Task demands, inadequate support structures, limited research and biopsychosocial interactions (relating to biochemical, physiological, psychological, social and cultural factors; Ray 2004) impact the occurrence of the aforementioned problems. Yet problems are also rooted in cultural norms that have ignored scientific advances and upheld questionable beliefs regarding talent and practice (e.g., Hays, 2012; Weller, 2008). Cultural beliefs might impact musicians' willingness to engage with more adaptive means of practice and performance preparation and execution. This occurrence is not unique to music and can also be observed in subcultures of sports (e.g., Wilmott & Collins 2015).

For instance, MPA appears to be perceived as ubiquitous, inevitable and not simple to control (Gill, Murphy & Rickert, 2006; Hays 2002; Ivaldi & O’Neill, 2001). As appropriate support structures are perceived lacking, such perceptions may underpin common dysfunctional behaviors. They might, for example, contribute towards disbelief in performance psychology as the concept of gaining control over performance might seem novel. Similarly, the stereotype of the tormented artist and “suffering for one's art” is common. This not only encourages dysfunctional behaviors but also prevents musicians from seeking help (Quarrier 1993). Indeed, science itself may seem incompatible with artistry and be eschewed (Hays, 2012). Additional barriers may be caused by beliefs that “a talented person learns by just doing it”, that “music is ethereal and unquantifiable”, that “the current tradition is successful due to technical advancements in playing as compared to century X” and that examples exist of “experts who have not used science to become excellent.” Similarly to sports (“X does it so therefore so should I”; Collins, 2014), role models may be used to justify behaviors.

As mentioned earlier, musicians are not societally expected to be excellent role models and
their potential 'artistic' dysfunctionality is even occasionally glorified (e.g., Novick & Steen, 2014). Thus, surmounting the barriers created by role models who dispatch ill-considered advice or who may even be unaware of the implicit knowledge they possess and strategies they actually deploy, poses an additional challenge. Despite this, experts who openly discuss the deployment of (sport) psychology (e.g., “Pianist tells of adding sports psychology to his repertoire”, 2014) and more efficient practice habits (e.g., Auer, 2003; Davis, 2005; Leinsdorf, 1999) do exist. However, such behaviors do not seem common practice as beliefs in talent and practice volume persist. Given the recency of relevant research in this area (e.g., Osborne, 2013; Osborne et al., 2014) the concept that psychology might serve to achieve one's own maximum performance potential has yet to enter the culture. Appropriate communication and demonstration of how performance psychology fits into and supports this spontaneous and artistic image of music making is therefore key to impact.

Developmental Support and Coaching Structures

Cultural beliefs are reflected at various hierarchical levels in music education. The current lack of appropriate developmental support and coaching structures is, in part, encouraged by conservative beliefs held in education, even in the presence of potential practical and financial constraints. Music institutions play a pivotal role in development as musicians typically study formally from an early age until young adulthood. Hence, such establishments are a key location to introduce performance science to musicians. It is therefore relevant for practitioners to not only understand the institutional impact on belief systems and attitudes, but also issues in the institutional structures which may inform potential future collaborations. For instance, major barriers to progress in musical development are affected by a) the belief that musical excellence
results from inherent talent coupled with practice volume, b) the lack of training for teachers and c) disregard for talent development. We will subsequently review these key aspects.

3 Talent Identification

The belief in inherent talent is enshrined in music’s selection and examination procedures, which are, in turn, based on presented merit and a momentary demonstration of performance achievement (Bennet & Stanberg, 2006). Unfortunately, such performance “snapshots” cannot reliably predict future performance (MacNamara & Collins, 2009). Thus, the focus remains solely on talent identification and performance skill, with little consideration for developmental potential (Carey, 2010). Reflecting this belief, the importance of talent development (TD) has not received the same attention as it has in sports and appears for many to be a novel concept. Instead, a musician is expected to “be talented”, absorb information regarding technique and musicality during music lessons and autonomously engage in unsupervised practice (Evans, 2015; Miksza, 2011; 2015; Quarrier, 2013). Content and systematic delivery of lessons may also be highly varied, unstructured and contradictory (Baughman 2014; Gaunt, 2007) as “performer-teachers” (Huhtanen, 2004; Mills, 2006) fit teaching commitments around their own performance career schedules. As such, conservatoires could appear to prioritize maintaining themselves and their prestigious staff (Carey, 2010) over maximizing student development. Notably, talent conversion markers (i.e., what percentage of entrants actually make it - an increasingly common outcome measure in sport) are nowhere to be seen.

Practice

Similar to sports, beliefs in high practice volume persist. Yet, as adequate knowledge of optimal lifestyle and training habits to support such intense activity is missing and practice is
unsupervised, striving for high practice volume may carry particularly detrimental consequences.

As music education and psychology research point out (Bonneville-Roussy & Bouffard, 2015; Evans, 2015; Mikza, 2011; 2015), exploring ways of increasing practice *quality* in music is a crucial need. Musicians’ “more is better” notion (Quarrier, 2013) seems unfounded as practice gains were found to decrease after two hours with little additional benefit after four (Welford, 1968). Of course, relating not to mere quantity spent practicing but rather, to qualitative differences in practice activities, deliberate practice *can* predict outcome (Duke, Simmons & Cash, 2009; Platz, Kopiez, Lehmann & Wolf, 2014; Williamon & Valentine, 2000). For instance, research shows that components such as self-regulation, self-efficacy, planning, motivation, effort and evaluation impact deliberate practice quality in music (Bonneville-Roussy & Bouffard, 2015; Ericsson, Krampe & Tesch-Romer, 1993). However, the specifics of what *exactly* constitutes optimal music practice have not been as thoroughly researched in music as in sports. Only total duration estimates exist, which have included suboptimal practice behaviors rather than actual duration of qualitative activities linked to deliberate practice (Platz et al., 2014).

Thus, existing positive correlations between practice quantity and performance outcome are questionable. Hence, practitioners will have little domain-specific literature to draw from and will likely have to explore ways of improving practice content while working with musicians' inclinations towards high volume practice. Doing so is especially relevant as optimal practice is not always discussed in lessons (e.g., Kostka, 2002). As mentioned earlier, some students may be aware of efficient practice behaviors, but may not know how to deploy these skills (see Byo & Cassidy, 2008; Miksza 2011; 2015).

**Coaching Structures**
In music education there is an apparent tendency to focus on technique and musicality rather than the specifics of practice content and performance preparation (Zenker, 2004). In increasing contrast to sports, teachers are appointed on the basis of performer prestige and are not necessarily trained in pedagogy, nor do they have coaching-style support structures available to them (Carey & Grant, 2014). This leads to the common problem of experience-based tuition, which draws mostly from the teacher's instrument-specific knowledge. This often leads to “teaching as the teacher was taught” (Carey & Grant, 2014). Such “pedagogical inertia” (Schulman, 2005) continues, allowing outdated principles to be passed on and scientific advances to be ignored.

The lack of pedagogical training may also complicate teachers' ability to explicitly communicate implicit or tacit knowledge they might be unaware of. The latter issue has also been explored in sports coaching (e.g., Nash & Collins, 2006). It is equally relevant to music as this lack of awareness of knowledge might impede teachers from communicating what it was exactly that they did that lead to their excellence. Together with beliefs in inherent unquantifiable talent, this may prevent expert knowledge from being disclosed to students. This is relevant to practitioners as they may be the ones to communicate the characteristics necessary to achieve excellence in music but will have to do so in harmony with advice given by the revered teacher. The latter point should be considered as conservatoire tuition follows the authoritative master-disciple model in which the teacher holds a position of power and the student is a passive recipient of knowledge (Carey & Grant, 2014). This model is comparable to authoritative, coach-athlete relationships still observed, but also increasingly questioned, in sports cultures. It also poses similar issues such as loyalty to the coach and the boundaries of the relationship (e.g.,
Burke, 2001). Such a model can be both positive and negative to aspects of performance (Carey & Grant, 2014).

Implications for Performance Psychologists

Given the training climate in music, the application of performance psychology faces many challenges. Some musicians may be open-minded towards, and instantly receptive of, sport psychology. Some may be well-informed already and deliberately seek out help from a practitioner. Thus, substantial individual differences may exist between musicians regarding their knowledge of psychology. Likewise, variations may exist in the settings practitioners are required to work in (e.g., private sessions, compulsory sessions as part of a curriculum, general workshops at orchestras etc.). Hence, practitioners should also be prepared for musicians who may have reservations towards interventions originating from another domain (e.g., Hays, 2012; Hawkes, 2015). Therefore, based on the information we have reviewed thus far, we suggest that practitioners deploy a culturally-sensitive and holistic approach that 1) considers the impact of domain-specific challenges and divergences, 2) constantly explores how to communicate information in a culturally appropriate manner, 3) effectively demonstrates what performance psychology training entails for musicians, and, 4) explores the deployment and optimization of a wide range of available methods. These include lifestyle habits and the development of key psychological characteristics. In support of this stance, we will subsequently offer suggestions as to how this might be achieved.

Introducing Performance Psychology

Dialogue between music researchers and teachers is key yet not common (Renshaw, 2004). Consequently, many performers have an incorrect idea of what performance psychology training
entails. Hence, a key task for practitioners might include introducing performance psychology accurately and demonstrating its field-applicability in a culturally appropriate manner. This is relevant as it appears that the term “music performance psychology” is used inconsistently, referring to theoretical research, coaching and counseling-based initiatives. Hence, no accurate reflection of what goes on in performance psychology training, as it is known in sports, is offered. Thus, demonstrating that it is neither “talk therapy for troubled musicians” nor “academic” is crucial. To achieve this, examples of step-by-step, practical approaches that might be used to inform interventions for music performance enhancement have been offered by several authors, including Brandon and Ivans, (2009) and Greene (2012a). Both training paradigms have been explored by Osborne et al. (2014) and Braden et al. (2015) respectively.

A key point to explain, and a way of phrasing it, is perhaps to communicate that performance psychology serves to assist musicians in executing their musical skills successfully under high stress conditions. It might also be useful to point out that performance science does not seek to alter musicians’ artistry but rather, to support it, allowing their art to be communicated with as little interference from negative effects as possible. Musicians need to know that their technique and musicality will not be harmed and that conventional music lessons can co-exist in harmony with performance psychology training.

**Considering Cultural Challenges**

**Terminology and phrasing.**

Understanding music’s learning culture, milieu, language and systemic hierarchy can render credibility and flexibility to the practitioner. Furthermore, musicians appreciate empathic practitioners who individualize their approaches and have domain-specific knowledge (Guptill,
A key component to successful and culturally-sensitive communication is the appropriate use of terminology. The importance of word choice is not only important for effective knowledge transfer. For instance, literature on pre-performance priming shows that words may also have a psychological impact that can improve or deteriorate performance outcome (e.g., Ashford & Jackson, 2010). It is therefore important to avoid phrasing that might invoke negative associations in musicians.

In aesthetic performance disciplines especially, the artistic identity is central. For instance, even though musicians are “small muscle athletes” (Quarrier, 2013), similarities with athletes may not seem compatible with musicians' worldview (Hays 2002; 2012). Accordingly, terminology should be used appropriately and contextual intelligence should be maintained (Hays 2002; 2012). This might avoid invoking aversion to “sport-based methods”, which might be viewed as irrelevant or even a threat to musicians' artistic identity and interpretations. Beliefs such as “if I become mentally tough I might become less emotional in my music” or “if I exercise I might get a bulky physique and no longer look like an artist” may circulate. Hence, care should be taken not to encourage these misconceptions through poor phrasing and choice of terms. Also, labeling skills with terminology such as “periodization” might not resonate well with musicians as the culture has not yet been introduced to such terms and musicians might feel subjected to a “training protocol for athletes”. Although periodization might be used similarly in music as in sports, it might for instance be introduced as a long-term planning method for maximal skill development and performance preparation, thereby explaining the principles in terms that artists can relate to. This could also be achieved by term exchange; using “resilience” instead of “toughness” (Hays, 2012; Osborne, 2013), “flow” instead of “in the zone” and
avoiding terms such as “enhancement” which might not fit the purpose of art (Nordin-Bates, 2012). Similarly, phrasing as “be strong for your art” rather than “toughen up”, “be disciplined to do X for the sake of your art despite feeling Y” or “do what it is right for your music, not what is easy for you”, may better capture the essence of how psychology can support music without posing a threat to artistic pursuits and identity.

**Working with the culture.**

Working with potentially engrained socio-cultural beliefs in any domain can pose specific challenges that require modification of content and delivery of existing interventions. Therefore, exploring ways of introducing gradual, incremental change in congruence with the existing norms might be most suitable (Weller, 2004). When offering solutions to musicians, it is worth considering the position of the respected teacher and the tradition that is deemed successful (Carey, 2010; Parncutt & Williamon, 2005). Rather than discounting existing teacher advice, alternative approaches might best be introduced carefully to allow performance psychology to co-exist in harmony with existing music lessons.

Also within this context, phrasing in congruence with socio-cultural beliefs and self-schemata may be impactful. For instance, “forget talent, let's focus on enhancement” might resonate less well than “there are things musicians can do to make their skills better regardless of how talented they are”. Or “quit drug use now” might be communicated as “we know strategies that have produced the same results as drugs and might lead to even better performance” or “let us explore ways to make the success of your performance attributable to you rather than a pharmaceutical drug”. Another option is using existing beliefs to your advantage. For instance, “if an artist must suffer then why not suffer adaptively?” - the argument being that intense exercise, planning and
discipline for the sake of your art can surely induce some “suffering” as well? Similarly, changing habits feels uncomfortable, yet “might a true artist not be willing to do anything to improve one's art and performance?” An additional approach might be to integrate positive characteristics associated with artists such as open-mindedness and versatility; for example, “should an artist not be open-minded and draw from as much useful knowledge as possible, regardless of where this knowledge comes from?”

Musicians (like some athletes) might use examples of role models who did not receive performance psychology training to question the validity of the intervention. In this instance, practitioners might point out that there is research documenting how expert musicians make use of advanced strategies and health behaviors, albeit occasionally without being explicitly aware of it and labeling their activities in scientific terms (e.g., Bellon, 2006; Talbot-Honeck & Orlick, 1998). For instance, highly skilled musicians employ different psychological strategies such as planning, self-regulation and evaluation than average musicians (Araujo, 2015). Experts also exhibit more knowledge of health responsibility than music students (Rickert, Barrett & Ackermann, 2015). Such arguments might be used to demonstrate to performers that examples of negative role models should not be used to justify dysfunctional behaviors. Simultaneously, they may also point out how performance psychology can be used to analyze and teach the characteristics that typify elite performers.

Another aspect worthy of consideration, especially given the high injury rates, is the striving for high practice volume. As it is an engrained part of the culture, a gradual approach that explores more efficient and effective ways of skill development by improving practice content might be beneficial. This might be achieved via using random, mental, or combination practice
and increasing variation, self-regulation, conditioning and focus (see Wulf & Mornell, 2008). Of course, deliberate practice (DP) should be prioritized over “mindless repetitive practice”, which can be sustained for long periods of time. Musicians may not have been explicitly instructed on how to make use of DP in their training. Practitioners could therefore beneficially teach the characteristics of DP (intentional, repetitious, focused on performance improvement, designed according to the performer's current skill level, combined with immediate feedback and not inherently enjoyable). Such quality of practice, underpinned by appropriate environmental support, motivation and effort, is the crucial determinant of expertise (Ericsson et al., 1993).

Such options for increasing quality might be better received than sudden reductions in duration.

**Considering divergences.**

**Fine motor control.**

In contrast to sport disciplines that involve untimed continuous movements, music performance consists of discrete rhythmic actions that adhere to regular cycles of timed events (Janzen, Thompson, Ammirante & Ranvaud, 2014). Furthermore, such discrete motor actions are often maintained over long periods of time as concerts may last for hours. Thus, musicians may often *continuously exert* fine muscles over *long durations* of time. Although sport science has a robust research base in exploring gross motor action, research on fine motor control is comparatively lacking (Collins, 2013). The difference between the execution of fine and gross motor tasks and its implications should be considered.

Available literature shows a high incidence of upper body injuries in musicians (e.g., Bejjani, Kaye & Benham, 1996). Consequently, musicians may have an increased sensitivity in the body parts they use for playing (Chan & Ackermann, 2014; Watson, 2009, p. 74). This might carry
implications on several levels. For instance, the fear of hurting the body in the slightest may impact musicians’ engagement in physical activity, even if this may offer considerable prophylactic and health benefits. This might best be considered when recommending exercise regimens or conditioning exercises that require use of musicians’ hands and fingers. Therefore, careful, gradual introduction to such concepts may be necessary to avoid injury (e.g., Chan & Ackermann, 2014). This is also relevant as musicians’ overused body parts may respond heavily to the smallest, seemingly insignificant additional physical load. If additional load is inappropriately induced on already excessively trained tissue, the risk of injury is increased. This can have detrimental effects on fine motor control, subsequently compromising psychological wellbeing (Fry, 1986; Watson, 2009).

**Health habits.**

In contrast to sports, the importance of physical conditioning, deployment of psychological skills and adherence to health-promoting behaviors is not well-established in music. This is unfortunate as many prevalent psychological and physical ailments might be ameliorated by deployment of adaptive strategies and lifestyle habits (e.g., Chan & Ackermann, 2014; Kenny & Ackermann, 2009). A major point to consider is that many musicians may not have yet realized that care in these areas is not optional but *essential* to achieve their *maximum* performance potential. Therefore, when communicating the importance of the latter point, adaptive behaviors such as appropriate planning, exercise, nutrition and rest might best be related to their direct utility for musical practice and performance. Practicality, procedural knowledge and real-world application, for example in the form of performance simulation, are key (Greene, 2002; Williamon, Aufegger & Eiholzer, 2014). For instance, instead of generally promoting
cardiovascular exercise, one might point out that cardio can be used to invoke the symptoms associated with performance, such as high heart rate, stress, sweat and fatigue. This creates an opportunity for musicians to practice deployment of psychological skills during “a simulations” of physical “performance” stress while simultaneously making their “heart and body stronger to support a more unimpeded expression of their art”. Such phrasing might resonate better with musicians than “use combination training”. In addition to increased activity, adequate recovery might also be a novel addition to musicians' routines, and they might benefit from understanding how inadequate recovery may lead to e.g., injury, decreased alertness and muscle fatigue and ultimately result in suboptimal practice and performance. In contrast, adequate rest and sleep can improve stamina and motor skill consolidation (Allen, 2013; Simmons & Duke 2006; Simmons, 2012) so musicians can benefit more from the time invested in practice and increase both practice and performance quality. Likewise, due to musicians’ tendencies towards high practice volume, any activity that is not directly perceived as traditional practice may be viewed as a waste of practice time (Brown, 2012). In this instance, pointing out the relevant benefits of exercise to musicians (e.g., alertness for practice, psychological discipline, stronger body to support practice, stronger heart for performance, contribution to “good stage looks” etc.) could help to better facilitate the communication of adaptive lifestyle habits and strategies so that these are not perceived as “sport” but as performance preparation methods to support art.

**Goals & coping styles.**

Musicians tend to strive towards subjective and personal goals rather than a quantifiable “personal best” (Hays, 2002; Talbot-Honeck & Orlick, 1998). Their goals tend to be intrinsic (Lacaille et al., 2005; 2007) and they appear to have a tendency towards using emotion-based
coping styles (Wolfe, 1990; Poczwardowskyi & Conroy, 2002). Winning is generally not a main goal unless to secure a position or future performance engagements. Instead, communication of personal artistry with and pleasing of the audience is strived for (Hays, 2002; 2012).

Such subjective goals make specific goal setting complex (Hays & Brown 2004). As systematic coaching to improve on performers’ specific weaknesses is often lacking, sport psychologists might make use of performance profiling or goal attainment scaling to focus on personal progress rather than assigning numbers to performances (Nordin-Bates, 2012). In order to determine which specific skills might need improving in musicians, questionnaires such as the Performance Skills Inventory (Greene, 2013) and Psychological Characteristics for Developing Excellence Questionnaire (PCDEQ; MacNamara & Collins, 2011) might also be employed.

Regarding coping styles, it is worth considering that emotionality has been linked to length of musical training and trait emotional intelligence (e.g., Petrides, Niven & Mouskounti, 2006). While practitioners might respect that emotionality and emotion-based coping might be deeply engrained in the musician and focus on strengthening preferred coping styles, the training of alternative responses (e.g., problem-, appraisal-focused, use of adaptive behaviors) can help to expand musicians’ coping arsenal beyond emotional and maladaptive coping. A variety of coping skills are necessary and the knowledge of when to use which response depending on context, is paramount.

Memorization & MPA.

Memorized performance positively affects communication with the audience (Ginsborg, 2004; Williamon, 1999) -a major goal for musicians. Often material is pre-determined, lengthy and complex. Therefore, anxieties related to memorization may underpin a large proportion of the
prevalent MPA (Hays & Brown, 2004; Killagh, Thompson & Morgan, 2015). Practitioners might for instance incorporate robust memorization strategies such as mental practice (Bernardi, Schories, Jabusch, Colombo & Altenmueller, 2013), structural analysis, performance cues (Chaffin, Demos & Crawford, 2009) and decision-making responses (Kruse-Weber & Parncutt, 2014) to recover from and prevent lapses and build confidence (for a review of music memorization strategies, see Chaffin, Logan & Begosh, 2008; Mishra, 2004; 2011).

Proposed Holistic Approach

Perceptions of arousal.

Research in music has predominantly applied a pathological lens, often viewing arousal and anxiety as predominantly negative and focusing on alleviation of MPA symptoms (Nordin-Bates 2012). Hence interactions between MPA, biopsychosocial factors and task demands have been left largely unexplored (Nordin-Bates, 2012). Therefore, practitioners should take care not to copy the pathological perspective from available literature but rather, adopt a more positive psychological lens. They should consider the impact of biopsychosocial interactions and contextual demand.

A debatable assumption often circulated in music is that high physical arousal may not be as advantageous for musicians because fine motor control tasks do not allow for a similar expression of adrenaline as gross motor tasks do (e.g., Bellon, 2006; Greene, 2002). This preoccupation with arousal down-regulation is not necessarily beneficial however, as ideal anxiety for optimal performance depends on the performer, level of physical exertion required to play the instrument, emotionality and situational demand (Hanin, 1997; Osborne et al., 2014; Wesner, Noyes & Davis, 1990).
Consequently, while relaxation strategies certainly have their place in the mental skills toolkit, musicians might also benefit from exploring the *entire* repertoire of psychological skills and physical conditioning. For instance, treating MPA as a distraction and focusing on directing attention to task-relevant thoughts rather than symptoms might be a beneficial alternative (Connolly & Williamon, 2004; Nordin-Bates, 2012). Another might be to foster mentally resilient attitudes towards anxiety and encourage a proactive attitude that encourages musicians to distance themselves from symptoms and “transcend their body to focus solely on their art” or “use the fear to their advantage”. This might be useful, as a state of true relaxation is unlikely to be reached (or even desirable) before performance (e.g., Greene, 2002; Hays & Brown, 2004).

More recent evidence-based therapies for MPA, such as Acceptance and Commitment Therapy, and performance enhancement approaches, such as Mindfulness-Acceptance-Commitment (Gardner & Moore, 2001) have adopted a more neutral perspective of anxiety. These approaches encourage acceptance of anxiety symptoms and teach recipients to apply flexible and adaptive behaviors. Both have shown beneficial effects on musicians and might be used to inspire future interventions (Juncos & Markman, 2015; Steyn, 2013).

Music performance heavily recruits small muscle and simultaneously produces high cognitive load. Although musicians (as with expert sports athletes) make performance appear like an effortless low impact activity, the cardiovascular demand should not be underestimated; heart rates may fluctuate between 100 and 173 bpm for durations of 20-60 minutes (Clark, Holmes, Feeley & Reffing, 2011; Morgenstern, 2005; Service, 2012). This intensity should be considered as musicians who experience performance as highly intense and exerting would likely find a sole focus on relaxation to be of limited use. As performance intensity varies intermittently, an option
might be to explore the use of high intensity interval or resistance training and acute versus steady state exercise which have shown benefits for musicians when used purposefully (e.g., Ackermann, Adams & Marshall, 2002; Wasley, Taylor, Backx & Williamon, 2012). Training suggestions for gradually introducing musicians to physical exercise are for instance offered by Taylor & Wasley (2004).

**Pillars of performance.**

Given the training climate in music, the fundamentals underpinning excellence in performance such as appropriate lifestyle habits, psychological characteristics, practice quality and performance preparation, may be suboptimal. For instance, concepts such as resilience, growth mindset, grit and self-control (Dweck, 2006; Duckworth, Petersen & Matthews, 2007) are crucial psychological characteristics needed to achieve excellence across performance domains, including music (e.g., MacNamara & Collins, 2009; Talbot-Honeck & Orlick, 1998).

Key to success, especially in young developing performers, is the presence of Psychological Characteristics for Developing Excellence (PCDEs) which include commitment, focus, distraction control, imagery, realistic performance evaluations, quality practice, goal setting, coping, planning, organizational skills, self-awareness (MacNamara, 2011) and, specific to musicians, creativity, spontaneity, and flexibility (Talbot-Honeck & Orlick, 1998). For instance, self-discipline was identified by musicians as the major factor that would lead to better practice habits (Byo & Cassidy, 2008). In addition, motivation, self-regulation and self-determination have shown crucial impact on practice and performance outcome (Bonneville-Roussy & Bouffard, 2015; Evans, 2015; McPherson et al., 2016; Miksza, 2011; 2015). Neglecting such physical and psychological fundaments in favor of isolated strategies to remedy symptoms of
MPA seems an incomplete approach to music performance enhancement and might inadequately address underlying factors that contribute to its symptoms. Consequently, it is worth considering that symptoms may also be a consequence of suboptimal psychological and physical skill development and performance preparation. Therefore, the application of a holistic approach that explores the development of performance-facilitating psychological characteristics and lifestyle habits in conjunction with a range of available methods and strategies might provide a better alternative to address common challenges in music. These pillars of performance are fundamental and should be considered throughout the proposed holistic framework.

Possible Recommendations.

A possible strategic starting point to a more holistic approach might be to introduce long-term, detailed planning akin to periodization, and encourage the identification of specific technical, musical and performance goals. Training solutions to common issues such as building stamina or strengthening the body to endure practice demands, could be embedded into this plan. Within this context, exploring how tapering might be used to prevent injury and maximize recovery to peak for a performance as well as how some expert musicians use it (e.g., Talbot-Honeck & Orlick, 1998; Thomson, 2014) can be a valuable strategy. Modifications such as reduction of tapering time (e.g., days instead of weeks and the 48-hour “muscle recovery rule”; Quarrier, 1993) might be explored to accommodate the difference in physicality. Psychological skills might be trained in conjunction with physical preparation in a similar periodized manner (see Holliday et al., 2008 for practical suggestions). Periodized training programs systematically vary volume and intensity to maximize performance gains. Training is organized in such a way that peak performance is likely to occur at a specific time (e.g., competition). Periodized
psychological training cycles can similarly progress from an education and acquisition stage of psychological strategies and skills, to their practice, automation, implementation, and performance (Holliday et al., 2008). This allows for psychological skills to be practiced and automated by the time a crucial event occurs.

Similarly to sports, performance opportunities involving low perceived threat (e.g., playing in informal settings) might be incorporated to gradually build towards important events and offer opportunities for goal and performance progress evaluation. Music experts' use of “simulation concerts” has already been documented (e.g., Talbot-Honeck & Orlick, 1998; Williamon et al., 2014). This also demonstrates that error-free learning is not necessarily advantageous and that using past errors to inform and improve the next performance can help musicians realize the true extent to which they are in control. This is relevant as the misconceptions that 'practice makes perfect' and “good performance just happens” still circulate, which may impede musicians from realizing which factors contribute to performance success and how they might gain control over these.

Accordingly, an emphasis on building robust self-confidence and self-efficacy as in sports (Liertz, 2007; Thomas, Lane & Kingston, 2011) might be necessary as self-confidence affects perceptions of anxiety and control (Kenny, 2011; Lehrer, 1987). In line with the suggested biopsychosocial approach, MPA might be addressed by Hanin's (1997) Individual Zone of Optimal Functioning model which accounts for individual differences in the emotion-performance relationship (as was explored by Osborne, 2016a and Osborne et al., 2014).

In similar fashion, Barron (1972) suggested that ego strength, defined as resilience, self-control, adaptive coping and wellbeing, determines whether traits result in healthy or
pathological creativity (Nordin-Bates, 2012). Psychological training aimed at improving such ego strength components can thus be crucial to musicians. For instance, Osborne (2013) found that resilience training decreased MPA, failure avoidance, self-sabotage and disengagement and improved self-belief, planning, persistence, and control over success in musicians.

Building psychologically resilient attitudes towards anxiety and practicing how to apply a focus on task execution while distancing oneself from personal feelings of anxiety can be another powerful tool to improve emotional communication and expression (Nordin-Bates, 2012). After all, “what do the performer's feelings of anxiety have to do with the emotion of the piece that is to be conveyed?” Task-relevant focus is, hence, not a rejection of emotionality but rather, a focus on task-appropriate emotionality which could be achieved via attentional control training similar to those deployed in sports. The application of appropriate focus might be especially relevant to musicians due to their tendency to focus “inward” and often on their symptoms of MPA (Gill et al., 2006). Thus it might be worth teaching musicians the potential benefits of applying an external focus (e.g., focusing on the effect of a movement rather than the execution). External focus has shown similar benefits in both sports and music (Wulf, 2013). Furthermore, attention allocation might be a mediator in experiences of MPA (Kageyama, 2007). In addition, attentional focus can be used for the purposes of more effective motor skill development in music (see Wulf & Mornell, 2008). A holistic multisensory self-focus (see Carson & Collins, 2015) might also be explored to teach musicians on what and how to focus their attention during an established skill. For instance, expert musicians have been found to focus on thoughts related to physicality, confidence and task-relevant cognitions during performance (Buma, Bakker & Oudejans, 2014), alternating between conscious versus automatic
and internal versus external focus, depending on need.

In addition, exploring the use of performance cues (Chaffin et al., 2009; Winter, MacPherson & Collins, 2014) mood words, temporally-structured cues (MacPherson, Collins & Morriss, 2008), trigger words (Broomhead, Skidmore, Eggett & Mills, 2012) and analogies might resonate well with musicians as the concept of using words, metaphors and analogies (e.g., character markings in a piece) is already known to them. These cues and words could also enhance emotional expression (Woody, 2002).

While most music performance is a closed task, with the exception of improvisation, decision-making and error-management training could be used similarly to other disciplines involving closed aesthetic tasks (Kruse-Weber & Parncutt, 2014), especially in the context of memorization.

Imagery is a commonly used strategy for various purposes in music, including the development of emotional expression, psychological and physical skills (see e.g., Clark, Williamson & Aksentijevic, 2012). Although imagery use appears common, it is an undeveloped skill in music (Haddon 2007). This might be addressed by teaching musicians how to use advanced imagery models such as PETTLEP (Holmes & Collins, 2001). PETTLEP is an acronym in which each letter refers to a component that should be taken into consideration when implementing imagery interventions. Respectively, the letters stand for: Physical, Environment, Task, Timing, Learning, Emotion and Perspective. All these aspects should be considered in order for the imagery exercise to resemble the performance situation as closely as possible. The application of the PETTLEP model has already shown promise in musical settings (Folvig, 2011; Wright, Wakefield & Smith, 2014).
When incorporating self-talk, however, it is important to match intensity to activity and content (Hatzigeogiadis, Zourbanos & Theodorakis, 2007) and also, the cultural context (Peters & Williams, 2006). This is relevant as prestigious institutions draw performers from varying cultural backgrounds, creating a second cultural layer to consider in addition to the more general “western classical music” culture with its typical differences in goals and motivational constructs.

As these possibilities suggest, there is much greater scope for exploration of transferrable strategies than is currently deployed. Music performance is demanding enough to potentially benefit from such a range of approaches available from sport psychology and practitioners should therefore not be afraid to explore these within a holistic framework that considers the communication of adaptive lifestyle habits, practice and performance preparation and psychological skill development in a culturally-sensitive manner.

Conclusion

The domain of music performance is rife with various psychological, physical and institutional challenges for which adequate support is limited or in its early stages of development. Furthermore, performance psychology as it is used in sports for the purpose of performance optimization is not widely known to musicians. Hence, performance psychologists are increasingly being employed to work within a domain that shares similarities but also exhibits key differences to sports. The impact of music's unique socio-cultural environment may pose challenges that are worth considering when planning successful interventions. Issues pertaining to divergences between sports and music such as fine motor skill development, memorization, artistry, identity, coping styles, goals, motivational constructs, lifestyle habits, and
perceptions of MPA are some of the prevalent areas that might be consequential. Accordingly, future research might explore musicians' underlying beliefs related to dysfunctional behaviors as well as the gaining of positive control and experiencing of positive change. In addition, the extent to which positive behaviors are valued and whether and to what extent musicians would commit to participating in progressive initiatives might render valuable knowledge.

Considering the implications of such challenges, this paper proposed deploying a culturally-informed holistic approach to music performance psychology training that incorporates a range of training methods and takes into account lifestyle habits, psychological skill development and explores the appropriate phrasing and communication of such knowledge. We hope this information might be of use to practitioners when communicating, translating and optimizing existing performance enhancement methods from the sports domain to music performance. We invite further research and discussion on the topic should the views presented be deemed inaccurate or incomplete.
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