

Medical Problems of Performing Artists

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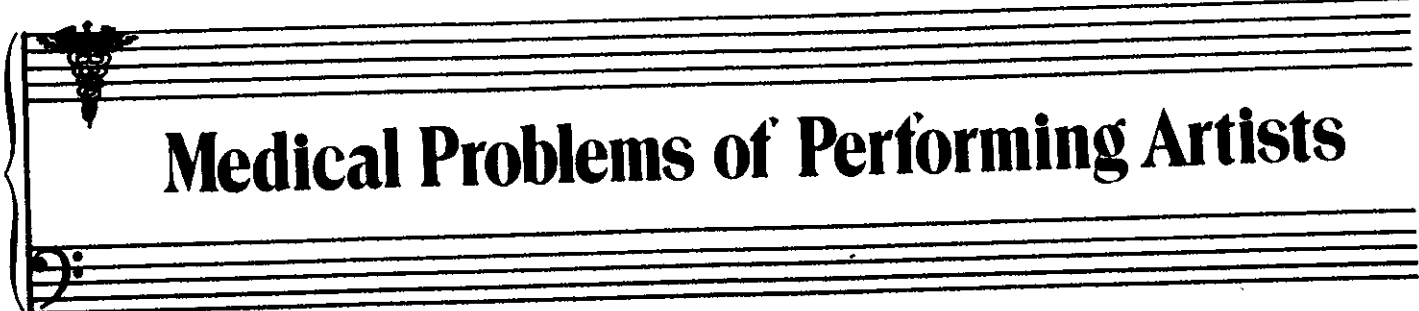
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Music Performance Anxiety Reconceptualized:

A Critique of Current Research Practices and Findings

Warren Brodsky, Ph.D.

Abstract—Over the past decade, performing arts medicine research initiatives have documented the phenomenon of music performance anxiety (MPA), highlighting the debilitating symptoms, etiology, dimensions, and efficacy of treatment procedures. These studies have used surveys, in-vivo laboratory studies, and intervention trials. However, a review of this reported literature illustrates that many have been poorly designed and implemented. The article critiques this literature on five fronts: definition of terms, assessment, sampling, epidemiology, and treatment. The article raises the question whether through diversity of conceptual theories, inferior sampling procedures, invalid screening criteria, and use of unreliable assessment measures, performing arts medicine practitioners and researchers may have been misinformed regarding their understanding of and ability to manage performance-related psychological problems of musicians. The author reconceptualizes MPA as pertaining to the music-performance career and occupation—as opposed to relating to personality deficiencies or residual inclinations and underlying psychopathology. Within this proposed context innovative diagnostic labels, assessment measures, clinical research procedures, and treatment interventions have been suggested. *Med Probl Perform Art* 11:88–98, 1996.

This article attempts to clarify and reconceptualize the psychologically based problems of musicians referred to as music performance anxiety (MPA), as well as delineate the global main effects of research efforts in this area. The

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text points to several methodologic procedures used by physicians and researchers that render this pool of data so diverse that the findings cannot blend into a single theory that might otherwise enhance our general understanding of MPA. A further result of these is that the main findings of several research studies may be skewed to such an extent that our ability to assess the severity of these conditions (based on documented research findings and case studies) has been compromised. Finally, this situation may be the explanation for why the development of treatment procedures to alleviate and manage the effects of MPA has not yet been broadly effective.

MUSIC PERFORMANCE-RELATED PSYCHOLOGICAL PROBLEMS

Although some physicians relate specific problems to particular art modalities depending on the “system most taxed,” most acknowledge that regardless of the art modality, all performers are also affected by the “general stresses related to having to perform under conditions of high adrenaline flow, anxiety, fatigue, social pressure, and financial insecurity” (p 48).¹ The majority of studies about music performance-related problems suggest that at least half of all orchestra players experience one problem that may threaten or actually end their careers as performers.² From a theoretical viewpoint, several authors^{3,4} believe that the medical problems of musicians can be seen and understood as pertaining either to those conditions and aberrations that are not specific to musicians but are detrimental to performance (such as arthritis or asthma), or to those that are exacerbated by performance-related behavior and more directly related to music making (such as carpal tunnel syndrome or performance anxiety). A comprehensive picture of the medical and psychological problems musicians face has been provided elsewhere.^{1,4-8}

One question that has continually concerned performing arts medicine is that of prevalence. The literature cites several studies^{9,10} that have attempted to show the prevalence of music performance-related problems. However, the largest study of professional orchestral musicians was the International Conference of Symphony and Opera Musicians (ICSOM) survey conducted by Fishbein et al.¹¹ According to this survey, which collected data from 2,212 respondents, 82% of the American orchestra musicians experienced medical problems; 76% stated that at least one medical condition was severe enough to affect and interfere with their performances, and 36% reported suffering from up to four independent problems.

The ICSOM survey offers a valid indication of the occupational health problems of professional orchestral musicians, a picture very much different than had been previously reported.¹² It is perhaps understandable that problems of the lower back (22%), neck (22%), shoulder (20%), and upper back (16%) would be the most prevalent problems reported by orchestral performers. However, it is rather worrisome that issues of mental health are also reported to be so common. The ICSOM survey reported that a fourth of all American orchestral musicians suffered from stage fright (24%), depression (17%), sleep disturbances (14%), acute anxiety (13%), and severe headaches (10%). Although further analysis¹³ and replication studies on smaller samples¹⁴⁻¹⁷ have not demonstrated fault with Fishbein et al.'s original findings, it is interesting to note that these reported levels are somewhat lower than those reported by British and Canadian studies. For example, James¹⁸ reported that 63% of two major British orchestras experienced performance anxiety, while Marchant-Haycox and Wilson¹⁹ found that 47% of British professional musicians suffered from performance anxiety. Further, a recent survey involving the Organisation of Canadian Symphony Musicians (OCSM) comprised of 19 major Canadian orchestras, reported that of 204 respondents, "most musicians (96 percent) reported experiencing stress related to performance" (p 71).²⁰

Though many authors might explain the prevalence of the above mental health problems of musicians by highlighting personality deficiencies and residual inclinations or vulnerabilities, there might be much more to be gained by exploring these issues within a career-based context. For example, Sternbach²¹ views the factors present in the lives of professional musicians as generating a "total stress quotient" well beyond what might be expected, and contributing to a lifestyle of overwhelming stress unique to the music profession. Research studies²² have conclusively linked stress and illness; psychosocial factors have been seen to influence the initiation of a disease or affect the course, severity, and prognosis of an illness, all long-established principles of psychosomatic medicine. One study,²³ which compared musicians and other occupational groups, found that musicians not only report the highest levels of job satisfaction, but also demonstrate the highest levels of exhaustion, stomachaches, headaches, and sleep disturbances. These findings are in line with the results of a Swedish study²⁴ that compared symphony musicians with those in six other occupations; symphony musicians and freight handlers had the highest blood

pressures at work—a fact that supports evidence of negative occupational effects on health. Further, Sternbach cites two studies that confirm the music profession to be particularly risky, one in which 60 types of workplace hazards and stressors of professional musicians have been documented, and the other quoting statistics attesting to the music profession's being among the "top five life-threatening professions," resultant in its members' fatality 20–22% sooner than the general population (attributed to coronary heart disease in almost 5% of mortalities). Finally, Wolfe²⁵ cited a study whereby the admission records of community health centers were reviewed, which pointed to musicians as among the "top five occupational groups most at risk for mental illness" (out of 130 vocations listed in the records).

It would seem, then, that mental health among musicians is a more than serious matter and that there is a great need for the performing arts medicine community to commit themselves and their resources to the promotion of a healthier occupational environment through education, as well as developing therapeutic interventions to manage stress and alleviate the effects of career stress and MPA.

MUSIC PERFORMANCE ANXIETY

The journal literature on MPA includes academic commentaries that highlight broad psychological perspectives,²⁶⁻³¹ as well as more specific studies that concentrate on a noteworthy area such as investigating the relationship between individual differences or personality characteristics and MPA,^{32,33} or exploring particular cognitive aspects of MPA.^{34,35} In addition, some authors have attempted to evolve a more formal theory of MPA as a context to organize and explain the various factors that influence one's level of performance anxiety.³⁶ While some clinicians³⁷⁻³⁹ have suggested general therapeutic strategies, several others^{29,40-46} use clinical vignettes to describe specific training and/or treatment procedures. Moreover, several questionnaire-survey studies^{12,16,20,25,32,47-52} and in-vivo jury-based laboratory performance studies⁵³⁻⁶⁰ have been documented. Finally, there have been a handful of empirical treatment intervention studies.^{56,61-67}

Although this diversity of approaches could have contributed to a general theory and conceptual understanding, which in turn could generate applied protocols for alleviating and managing performance anxiety, this has not been the case. Lehrer speculates that this problem might stem from the fact that "different measures in anxiety, and slight differences in approach in therapy procedures and/or subject populations, often produce very different results" (p 36).³⁰ Further, as the constructs of anxiety, stress, and tension also lack a standardized definition, these have often been subject to assessment by each experimenter's personal definition. Lehrer reiterates that in reality, very few studies about MPA have actually dealt with performance anxiety per se. With no conformity among the medical professional or research community concerning diagnostic criteria and research method-

ology, performing arts medicine does not seem to be closer today (than ten years ago) regarding the nomenclature of these symptoms, how to measure the degree or severity of symptomatology, or how to evaluate the incidence of MPA. Moreover, the researchers themselves appear to be confused and are inconsistent regarding the sample chosen to represent the music-performance vocation. Thus, a clear picture of cause, progression, and prognosis of MPA has not as yet surfaced; nor is there a consensus as to how treatment procedures should best be developed and tested.

Diagnostic Criteria: Differential

In the most comprehensive review of literature on MPA to date, Salmon⁶⁸ points out that the majority of authors use the terms *stage fright* and *performance anxiety* interchangeably. Though, in actual fact, all terms refer to the same unwanted feelings during performance, some have suggested that "stage fright" is simply the more popular layman's term for "MPA." Nevertheless, taking cues from the general psychology literature,⁶⁹ which differentiates between tension, anxiety, and fear, a few clinicians^{30,70,71} have outlined the existence of different forms of MPA as well as several subtypes of stage fright. Accordingly, if clinical research studies⁷² have effectively measured different components of anxiety such as cognitive and somatic dimensions, and therefore it has been suggested⁷³ that it would be beneficial to match treatment types with the predominant anxiety mode observed, then performing arts medicine might do well also to identify various subtypes of stage fright that could best be managed by specific kinds of interventions.

The accepted literature on MPA clearly shows that most researchers describe the psychologically based performance symptoms of musicians differently. The labels most popular in the literature include unidimensional classifications, such as: stage fright,^{44,74,75} performance anxiety,^{12,18,33,42,46,48,53,60,61,68,76,77} and MPA.^{25,35,48,51,52,54,56,62,63,65,67,78} Some, however, do not differentiate between these labels and use multidimensional umbrella classifications, such as: stage fright/performance anxiety,^{16,43,50,55,59,66,71,79,80} or stage fright/MPA⁴⁰. However, still others refer to their own unique classifications, such as: musical performance stress,⁶⁴ psychological stress of musicians,⁸¹ anxiety in musical performance,⁵⁷ career stress in musicians,²¹ and musicians' stress.²⁰

With only a few exceptions, all authors seem to be relating to the same symptomatology, regardless of semantic differences between these labels. Yet, three authors who have attempted to codify labels use *severity* as a criterion for differentiation. For example, Steptoe⁴⁹ described stage fright as severe anxiety among musicians, while Clark³ and Clark and Agras⁶¹ speculated on a relationship between MPA and social phobia, defining two severities of the disorder.

Discussing treatment approaches, Bourne⁸² points out that anxiety is a chronic state, whereas fear and panic are acute states that differ from the more generalized anxiety disorder. He concludes that the fact that a differential diagnosis can be confirmed reinforces the necessity of dealing with patients on as individual a basis as possible when em-

ploying therapeutic approaches. It might then be sensible for performing arts medicine to develop a new conceptual understanding of the psychologically based performance symptoms faced by all musicians. Perhaps this differentiation could reflect a continuum of experienced severity, as illustrated in Figure 1. For example, the different degrees of intensity could specify the type of disorder and hence dictate to some extent the intervention package needed to manage the condition. Differences between career stress, MPA, and stage fright could be based on the same criterion that differentiates anxiety from panic states, that is, resulting from either chronic or acute circumstances.

Some authors, such as Salmon,⁶⁸ believe that an exclusive focus on symptomatic anxiety in the performance context risks overlooking the potential impact of the many factors that heighten vulnerability, including cognitive, pedagogical, psychodynamic, skills-based, genetic, and biological components. This view reflects the currently in vogue conceptualization whereby musicians are seen beyond the context of the stage. The first researcher to adopt this concept was Steptoe,⁴⁹ who found that the domains of career stress and stage fright were not independent, and stated that clinicians need to consider them in conjunction with each other to bring forth a comprehensive approach to stress management for professional musicians. In light of this position, Salmon feels that the label *music performance anxiety (MPA)* is a better term than stage fright. Nevertheless, it is suggested here that a more fitting diagnostic label would be *music-performers' stress syndrome (M-PSS)*. By using an accepted format of medical nomenclature (akin to the DSM-IV or ICD-10 classifications), this newly proposed label could specify criteria such as intensity (intermittent, chronic, acute, limited, or severe), as well as utilize a series of extensions and suffixes indicating diagnostic codes (such as with/without associated performance anxiety or stage fright). The existence of a more generic classification—*performers' stress syndrome (PSS)*—might be welcome in light of recent research^{19,83} demonstrating that a more common set of stressors and anxieties are experienced by all performing artists, regardless of modality. Therefore, the designated prefix (M-PSS [music], D-PSS [dance], or T-PSS [theater]) could account for modality-specific idiosyncrasies.

Diagnostic Criteria: Assessment

It might be argued that the previous discussion about correctly labeling performance-related anxiety reactions of musicians is superfluous and relates only to semantics. However, it is doubtful whether issues about evaluation and assessment of severity could be seen as mere semantics. Clark's enlightening assumption about the "magnitude of performance anxiety" is a welcome reprieve from the more popular but deficient conceptual and clinical presumptions about MPA as "pathological," akin to mental health disorders necessitating psychiatric interventions. Clark's feeling is that "as performance anxiety of some degree is nearly a universal experience for performers, it is sometimes difficult to determine if it is of a sufficient magnitude to warrant

FIGURE 1. Continuum of psychologically related problems of professional musicians.

treatment" (p 30).³ It is *paramount* that some conceptual framework be brought forward for use by researchers and therapists whereby musicians who are experiencing the normal everyday "healthy" aspects of stress and anxiety that are intrinsic to the profession can be differentiated from those musicians who are severely debilitated.

In the literature on MPA, two types of instruments have been used consistently; those that specifically assess MPA (or some aspect of it) and those that assess the more general psychological aspects of anxiety, personality, or mental health. In the main, the assessment of MPA has been through original measures constructed for a specific study. Though these have served doctoral candidates, or are the result of university-based medical research teams, most have not gone through the rigorous psychometric testing required to be validated, and only a few have had exposure beyond the original studies. The measures found in the literature include: *Adaptive Anxiety Scale (AAS)/Maladaptive Anxiety Scale (MAS)* by Wolfe²⁵ (also used by^{51,52,66}); *Expectations of Personal Efficacy Scale for Musicians (EPESM)* by Kendrick et al.⁶³ (also used by⁵⁶); *Motivation for Performers Questionnaire (MFPQ)* by Wolverson and Salmon⁷⁸; *Music Performance Anxiety Questionnaire (MPAQ)* by Lehrer et al.⁴⁸; *Music Performers Allocation of Attention Questionnaire (MPAAQ)* by Wolverson and Salmon⁷⁸; *Music Performance Anxiety Scale* adapted by Wolfe²⁵ from the PPAS⁶⁷; *Music Student Survey* by Dews and Williams⁴⁷; *Music Threat Index* adapted by Tobacyk and Downs⁶⁰ from the Threat Index; *Performance Anxiety Inventory (PAI)* adapted by Nagel et al.⁸⁴ from Spielberger's State-Trait Anxiety Inventory (STAI)⁸⁵ (also used by^{65,77,79,80}); *Performance Anxiety Questionnaire* adapted by Cox and Kenardy⁵⁵ from the Cognitive-Somatic Anxiety Questionnaire and PAI⁸⁴; *Performance Anxiety Questionnaire (PAQ)* by Wesner et al.¹⁶; *Performance Anxiety Self-Statement Scale* by Kendrick et al.⁶³ (also used by⁵⁶); *Performing Musician's Coping Inventory (PMCI)* by Wolfe⁵²; *Personal Report of Confidence as a Performer (PRCP)* adapted by Kendrick et al.⁶³ from Report of Confidence as a Performer by Appel, who originally adapted the questionnaire from the Report of Confidence as a Speaker (also used by^{53,56,61,62,64}); *Piano Performers Anxiety Scale (PPAS)* by Sweeney and Horan⁶⁷; *Self-Report of Confidence* by Abel and Larkin⁵³; and *Self-Statement Questionnaire* by Steptoe and Fidler⁵⁰ (also used by⁶¹). In addition, the details of measures used in some studies^{12,18,20,54,77} have not been specified at all.

Regarding the evaluation of general psychological properties, various instruments have been used, including: Borkovec's Autonomic Perception Questionnaire, Burns Anxiety Inventory, Eysenck Personality Inventory (EPI), Lehrer-Woolfolk Cognitive-Somatic Anxiety Questionnaire (LWCSAQ), Newark's Irrational Belief Question-

naire, Rational Behavior Inventory (RBI), Social Phobia and Anxiety Inventory (SPAI), Spielberger's Test Anxiety Inventory (TAI), and Subjective Stress Scale. However, Spielberger's STAI⁸⁵ has been by far the most extensively used assessment in the literature.^{48,50,53-57,59,61,63,65,66,77-79} It should be pointed out that in some of these cases, STAI has also been used as the *primary measure* of MPA. However, there is controversy regarding the appropriateness of STAI as a tool for psychological evaluation concerning the effects of MPA among musicians. For example, Lehrer⁸⁶ found that only 36% of anxiety during a performance appears to be related to state-trait anxiety, or even amenable to measurement through Spielberger's inventory. It is then warranted to question the use of Spielberger's STAI to assess MPA to begin with.

Perhaps consideration should be given to a new generation of measures to replace those assessment instruments that support an exclusive focus on *anxiety* with those that apply a more multidimensional outlook on *stress*. One such measure is the *Derogatis Stress Profile (DSP)*.⁸⁷⁻⁸⁹ The DSP is conceptually based and constructed on the "interactional theory of stress" as described by Lazarus and Folkman.⁹⁰ Along these lines, several specific measures have been developed to assess career stress and MPA, such as: *Appraisal of Music Performers' Stress (AMPS)* adapted by Brodsky⁹¹ from the Musician's Questionnaire⁹²; *Music Performance Stress Survey (MPSS)* developed by the Arts in Medicine Research Program at the University of Louisville⁹³; and *Orchestra Musicians Survey* adapted by Brodsky⁹¹ from the Maslach Burnout Inventory.⁹⁴ This new generation of measure does not focus on particular anxieties of the stage performance, but assesses the musician within the context of a performance-based career and environment, which are particularly stressful.

Diagnostic Criteria: Sampling

Regarding sampling criteria, some authors such as Wolfe²⁵ consider all musicians to be equal candidates regardless of age, gender, professional status, career stage, years of study, instrument, or musical genre. Nevertheless, strong evidence suggesting otherwise is offered by Steptoe and Fidler,⁵⁰ who found significant differences between professional, amateur, and student musician groups. Moreover, in a later study, Steptoe⁴⁹ demonstrated that professional orchestra musicians report significantly different sources of stress than do even the most advanced music students. The top four stressors reported by professional musicians were separation from family (43%), irregular hours (45%), monotony of rehearsals (43%), and traveling (42%); while the top four stressors reported by students were uncertainty about future employment (80%), professional competition with colleagues (51%),

back-stabbing by colleagues (42%), and irregular hours (20%). Thus, if MPA is to be extrapolated from the performance arena and placed within the context of the lifestyle of professional performing musicians, then little if any benefit is gained by conducting research including music students. It is ironic that some authors such as Brotons believe that "up to the present the focus of interest among researchers has been on professional musicians, their performance situations . . . [and] the effects of different treatment interventions, . . . [while] few studies have been conducted with music students" (p 66).⁵⁴ In actual fact, a major number of studies about MPA have involved music students—albeit in their role as if professional musicians. Described by Robson⁹⁵ as a *convenience sample*, this procedure of choosing the nearest and most convenient persons as participants is regarded as a deficient experimental method. Although widely used by performing arts medicine researchers, this method of sampling does not produce representative findings. One must question whether, as a result, our general understanding of MPA (as based on interpretation of findings from studies that have used music students or premier/elite soloists) has been distorted and had further biased more recent research. Only one author addressed this issue. Wolfe⁵¹ speculated that if certain types of players experience performance anxiety differently, they might also employ different coping strategies; so that in retrospect, Wolfe questioned whether by recruiting a large heterogeneous population, her use of inferential statistics might have been inappropriate.

The research populations described in the literature of MPA include homogeneous populations, such as professional orchestra musicians,^{18,20,76,77,81} professional pianists,^{40,44} professional string players,^{12,41} and undergraduate music majors or conservatory students.^{42,43,47,53–58,60,62,66,67,79} In addition, several studies have used heterogeneous populations, such as professional and amateur pianists,⁶³ professional and student orchestra players,^{49,74} professional and student singers,⁵⁹ professional and student soloists,⁴⁸ professional, student, and amateur orchestra players,^{50,80} and university music majors and faculty,¹⁶ as well as a potpourri of professional and amateur orchestra players, popular musicians, soloists, pianists, and vocalists.^{25,51,52,64,78} Finally, in one study⁶¹ the sample recruited is not specified at all.

Among the sampling procedures used by performing arts medicine researchers are some that may have biased the findings of otherwise even the most refined and controlled studies. The setting of *pathological entry criteria* (such as having to score well above the norm on a test of anxiety) as criteria for subject inclusion in research samples—that are meant to be representative—is disturbing. First, *subpathological* levels of MPA are still bothersome, if not downright debilitating, to most musicians. Screening out the more functional musicians actually disenfranchises most musicians from the benefits of performing arts medicine research. Second, if Lippin is correct in his assumption that performing arts medicine is "one of several growing human performance specialties including Occupational Medicine and Sports Medicine, which seek to understand and provide health care . . . in the context of a given human endeavour . . . [and] ad-

dress issues of normal healthy people . . ." (p 5),⁹⁶ then the least appropriate individuals to be recruited for performing arts medicine research would be those who score as *cases* on screening procedures. Though few studies have used randomly selected research samples, in the majority of studies the subjects were self-referred, after which all those musicians who appeared to be functioning and coping with the daily stresses and anxieties of the profession were *screened out*; a practice used consistently among intervention studies.^{56,61–67} Recognizing the problem with the current sampling procedures, Wesner et al.¹⁶ state that there would have been more value in comparing impaired with unimpaired musicians rather than comparing impaired musicians with nontreatment, wait-list, or placebo groups. In an effort to correct this situation, Brodsky⁹¹ conducted a clinical trial intervention study whereby a sample of everyday normal working symphony professional orchestra musicians were solicited as a homogeneous population; screening procedures were used to ensure this homogeneity by ensuring levels of mental health within the accepted norms representative of the general population. If performing arts medicine intends to link the performance-related medical problems of musicians to an occupational setting (as opposed to a psychiatric one), then studies involving ordinary coping-as-best-as-possible everyday working musicians are warranted.

Research-based Epidemiology

The literature about the psychological anxieties of musicians has been extensively reviewed by Salmon,⁶⁸ who concludes that all the previous terms for this phenomenon should be discarded and replaced by a single label—*music performance anxiety (MPA)*. While Salmon describes MPA as a loosely correlated constellation of physiologic, behavioral, and cognitive variables, some consideration is also due other conceptual perspectives of MPA. For example, Wolfe⁵² views MPA as a cluster of traits that are both positive and negative in nature and effects, and Brandfonbrener^{97,98} views MPA as the manifestation of psychological problems that cannot be discussed in isolation but where each symptom must be evaluated within the context of the individual's psychological makeup. Nevertheless, the effects of MPA seem to be very apparent, and include physical, behavioral, cognitive, and emotional manifestations. It should be pointed out that the publication of prevalence of these manifestations is only a fairly recent phenomenon, perhaps explained by noting that musicians have historically attempted to disguise all of their pains, injuries, and illnesses. Sternbach²¹ highlights that musicians perceive that they should not be too candid about their injuries and anxieties, because if their admissions were passed on to the management or conductor, the consequences might be very grave. As a result of this situation, several researchers, such as Hiner et al.,¹² found that the atmosphere among musicians has been less than conducive to investigative studies on prevalence. Moreover, as some clinicians³⁹ point out, until very recently musicians who experienced extreme difficulties were frequently referred to psychotherapists who viewed performance anxiety

as a reflection of fundamental and underlying emotional conflicts, and were thus identified as mentally ill—an attribute not necessarily looked on favorably by musicians or orchestra managements.

Various forms of nonpharmaceutical treatments for MPA have been tried by musicians. While some methods imply direct action in an attempt to change the “troubled transaction” through the alteration of environmental demands or one’s self-capacity, other approaches attempt to regulate the emotions and responses associated with stress through managing tension and thus minimizing distress.⁹⁹ Reviewing the list of methods musicians have used to alleviate and manage MPA, Lehrer et al.⁴⁸ point out that it is currently more in vogue for physicians to prescribe and refer musicians to “coping therapies” than long-term analytically oriented psychotherapy. The coping therapies and methods for MPA, as documented by several authors,^{20,39,40,55,66,70,100–102} include: Alexander or Feldenkrais body techniques; aerobic exercise; anxiety management training; attention-focusing techniques; autogenic training; cognitive behavioral therapy; cognitive restructuring; cognitive systematic desensitization; development of interests and hobbies outside the realm of music; exposure to performance-related situations; goal imaging; hypnotic suggestion; imagery; massage; meditation; mental rehearsal; mind control; music preparation; muscle tension and finger temperature biofeedback; nutrition therapy; positive self-statements; prayer; relaxation training; self-hypnosis; stress inoculation therapy; systematic rehearsal; and yoga. Clearly these coping and managerial practices posed by practitioners for the use of musicians have been influenced by findings from research initiatives as reported in the professional literature. In general, the research studies about MPA have taken on three design formats. These are: (1) questionnaire surveys; (2) in-vivo laboratory and adjudicated performance studies; and (3) intervention trials.

The first set of studies—the questionnaire surveys—have attempted to provide information about musicians in a collective effort to widen theoretical and conceptual understandings of MPA by highlighting the effects, process, prognosis, and treatment interventions. While some studies assess the prevalence of MPA,^{12,16,20} or attempt to develop assessment measures,^{16,25,48,51} others focus on probable correlations between MPA and specific personality factors.^{25,52,91} While some studies investigated the principal components of MPA,^{25,48} others explored the particular cognitive processes involved with such stressors and/or cognitive coping mechanisms.^{20,47,49–52} Finally, one study²⁵ explored distinct adaptive/maladaptive aspects of MPA.

The second set of studies required musicians to perform in laboratory conditions, or in front of a jury-based audience in a performance hall (usually a conservatory final semester examination). Many researchers seem to think that the use of performance circumstances enables them to test theories directly in vivo, accessing the “actual” performance-related behavior themselves. These studies have tested individual aspects of MPA such as anticipatory perceived tension,⁵³ level of threat,⁵⁸ exaggerated irrational beliefs,⁶⁰ and the facilitating/debilitating components of anxiety.⁵⁷ Other stud-

ies have used this format to evaluate the extent to which levels of tension and/or arousal affect the quality of music performances.^{53,58,59} However, the most outstanding use of the in-vivo research approach has been to evaluate differences between performance situations, such as a comparison of levels of anxiety during rehearsal sessions vs ensemble performances vs solo recitals,⁵⁵ playing alone vs performing in front of an audience,⁵⁶ and performing under conditions of open-field-of-vision vs double-blind conditions.⁵⁴ Finally, a few studies^{53,54} have used this format to test and/or correlate MPA self-report measures with psychophysiologic indicators of anxiety.

Research-based Clinical Trials

A third set of studies used in in-vivo paradigm to evaluate the effects of exposure to training techniques or coping methods on performance-related behavior. These studies, which have been referred to as *intervention studies*, evaluate the efficacy of a clinical approach by assessing the immediate effects of outcome as well as the durability of effects at follow-up; subjects are required to perform at least twice—once prior to the prescribed course and once after it has concluded. However, variations do exist and performances during the prescribed course, or in follow-up procedures, are also commonly found. Further, some intervention studies do not involve in-vivo performances at all. With the exception of two studies,^{44,80} all studies in this set have involved more than 20 subjects assigned to different treatment conditions or comparative control groups. Moreover, every intervention study published in the literature on MPA has used strategies and techniques of cognitive-behavioral therapy either separately or combined with or in comparison with other therapies. These studies include: an examination of the therapeutic effects of cognitive systematic desensitization and self-directed mastery training,⁴⁴ a comparison between the effects of cognitive-behavioral therapy and behavioral rehearsal as coping methods,⁶³ an evaluation of both separate and combined effects of cue-controlled relaxation and cognitive restructuring as coping methods,⁶⁷ an investigation of heart rate and perceived skill on anticipatory performance fear,⁶² an appraisal of therapeutic packages constructed of progressive muscle relaxation, cognitive therapy, and biofeedback training components,^{65,66} an evaluation of both separate and combined therapeutic effects of a beta-blocking agent and cognitive-behavioral therapy,⁶¹ and an examination of the combined therapeutic effects of a therapeutic package of rational emotive therapy supplemented with hypnosis.⁸⁰ Finally, two intervention studies^{64,76} evaluated the efficacy of music therapy as an intervention and treatment environment for musicians suffering from performance-related anxieties.

With only minimal variations, all intervention studies in the literature implemented a seven-stage design. The studies have: (1) recruited many subjects; (2) screened out all the more functioning musicians; (3) held in-vivo preperformances with collection of T1 multidimensional data [including (a) self-report assessments; (b) behavioral measures

such as a performance error count, and/or codifying observable signs of anxiety; and (c) physiologic measures such as heart rate, electrocardiography, and/or galvanic skin response]; (4) assigned subjects to treatment(s) and/or control group(s); (5) implemented interventions; (6) held in-vivo postperformances with collection of end-of-therapy T2 multidimensional data; and (7) held in-vivo follow-up performances with collection of T3 multidimensional data. Nevertheless, there are several noticeable differences among the intervention studies concerning length of exposure, the therapeutic agents involved, and manualization.

The first issue concerns length of exposure. Though a few studies have implemented interventions lasting between three and five weeks, the majority of studies have exposed subjects to experimental treatment and training procedures for six weeks or more. Although some researchers may believe that sufficient length of clinical exposure or *optimal exposure* is simply speculative and that precise findings about therapeutic effects involving length of exposure cannot possibly be conclusive, results from psychotherapy outcome research studies¹⁰³⁻¹⁰⁵ have indicated otherwise. Thus, for example, although two studies^{63,67} have been very similar in content and total contact hours, the fact that one offered treatments once a week for two hours over a three-week period, while the other offered treatments spread out over a full six-week period, can account for some of the variance regarding the differences between them. Further, no conceptualization of the follow-up testing interval can be seen in research designs; T3 testings have been implemented at four, five, six, and nine weeks postintervention. There is every possibility that lack of optimal exposure and/or an insufficient follow-up interval among several intervention studies^{61,62} is the core reason for inconclusive research findings.

Another issue concerns the therapeutic agent. While a few studies⁶⁴⁻⁶⁷ have used outside agents as raters, principal therapists, or cotherapists, most interventions under investigation were executed by the principal researcher. While some researchers⁶⁶ identify exclusivity of a principal therapist as a limitation and/or weakness of an intervention study, psychotherapy outcome research studies^{106,107} suggest that using several therapists or counselors to execute different components of a therapeutic protocol is not simply a problem of *inter-rater reliability*. Indeed while some current outcome research studies might equate the therapist as an *error variance*, psychotherapy research authorities such as Lambert¹⁰⁸ have demonstrated that the individual therapist is significantly more important to the treatment process and outcome than are the particular therapy techniques involved. Thus therapists and counselors are in fact an integral part of the change process. Therefore, empirical investigations comparing active treatment groups would do best using one therapist for all subjects to minimize nonspecific variances between groups.

The final issue concerns the use of standardized treatment procedures. For example, while some researchers⁶⁶ may conclude that execution of intervention sessions according to a structured format is a weakness of clinical in-

vestigation studies, other researchers^{63,67} have favored the use of manuals in their treatment procedures. The use of *treatment manuals* in comparative outcome research has been investigated by Hoffart,¹⁰⁹ who concludes that using a *protocol* increases internal validity and acts as a safeguard that specific replicable treatments are offered. Further, Hoffart has demonstrated that standardization of treatment can enforce the relationship between research design, therapy model, psychological orientation, and therapeutic practices. Thus, interventions using therapeutic templates and/or treatment manuals are guaranteeing conformity to an empirical research methodology for use in clinical trials.

The general research findings of the intervention studies can be summarized briefly. Although the few clinical trial intervention studies reported in the literature have been less than consistent in areas concerning diagnostic criteria and conceptualization, assessment measures, recruiting and sampling, length of exposure and follow-up, therapeutic agents, and use of procedural manuals, nevertheless, all of the studies seem to point to the overall effectiveness of a therapeutic approach based on cognitive-behavioral therapy to ameliorate the effects of MPA. The demonstrated approach uses the combined components of cue-controlled progressive muscle relaxation, breathing awareness, cognitive restructuring, behavioral rehearsal, and imagery. This approach has been shown to be significantly more effective than either musical analysis training, wait-list, or nontreatment control group conditions. Further, this approach has been demonstrated to be a more effective intervention than either placebo or beta-adrenergic-blocking agents. In addition, there seems to be some evidence that this approach is more efficient in demonstrating treatment effects after six weeks or more of exposure. These appear to be the only consistent findings in the literature on MPA.

And what are the implications? As clinical trial intervention studies have demonstrated that therapeutic counseling is effective in managing performance-related anxieties of musicians, it would seem, then, that musicians have clear avenues for mediation. However, the reality of the situation is that musicians do not seem to be utilizing these treatments. For example, the ICSOM survey indicated that 40% of musicians who reported stage fright to be a severe problem had used a "prescribed medication" as a coping method (with a 92% success rate), while 25% had used "psychological counseling" (with a 60% success rate) (p 6).¹¹ These findings about the use (or *nonuse*) of psychological counseling are similar to those reported by other studies.^{16,18,61} Perhaps musicians view psychotherapy or counseling methods as less effective than pharmaceuticals. Or, perhaps counselors and psychologists are perceived as foreigners or outsiders who really do not understand music and musicians. For example, Dews and Williams⁴⁷ reported that musicians tend to prefer to seek other friends, teachers, and family members to deal with the problems of performing, while professional counseling help was seen as a last resort. In the recently published OCSM survey,²⁰ counseling and psychotherapy were not even listed among the coping strategies utilized to reduce anxiety for Canadian symphony mu-

sicians. Another possibility is that musicians are not aware how to manage the stresses and anxieties of their profession. Sternbach speculates that "many musicians do not know that most types of performance anxiety can be successfully treated with a combination of chiefly cognitive and hypnotic approaches" (p 287).²¹ However, another possibility is that traditional psychotherapeutic treatment is simply not understood by musicians, nor do they perceive counseling to be applicable to their situation. Salmon and Meyer reported that many musicians seeking psychological help at their clinic stated that they expected to be "subjected to a merciless dissection of their musical performance skills [as] they imagine the therapist to be someone who observes them without regard for the musical qualities of what they are doing" (p 138).¹⁰¹ Perceptions as these may be prevalent among musicians and influence their decisions regarding treatment preference. No matter how many intervention studies demonstrate the effectiveness of cognitive-behavioral therapies over pharmaceutical and "recreational" drugs and alcohol, these may be more attractive because they require less effort, are easier to schedule, and seem to be financially more palatable to musicians than psychotherapies.

Since cognitive-behavioral therapies have clearly been demonstrated to be effective, it seems unwarranted to investigate new therapeutic approaches instead of investing research efforts into *repackaging* therapy with musicians in mind. One possibility is to supplement therapeutic conditions with music itself—referred to as *music-enhanced therapeutic regimens*. This approach is not a fresh avenue or challenge to therapy, but has in fact been employed successfully in many studies directed at the reduction of stress and tension. Music-relaxation techniques promote mental and psychosomatic health by affecting the level of adrenal corticosteroids or *stress hormones*, as well as the neuroendocrine transmitter system.¹¹⁰⁻¹¹⁷ Studies on the use of music as a component of stress management treatments have investigated the efficacy of music types,^{118,119} and have compared outcome differences between subject-selected music vs therapist-selected music.^{120,121} In addition, several studies¹²²⁻¹²⁴ have explored the efficacy of treatments supplemented with music compared with other more standard stress-management techniques, including: autogenic training; autonomic conditioning; biofeedback; distraction imagery; focused imagery; progressive muscle relaxation; and sitting quietly. Ironically, it may be that the last people to receive some benefit from the therapeutic value of music may be the musicians themselves.

The general use of music to reduce stress and anxiety among musicians has been reviewed by Brodsky and Sloboda,¹²⁵ who conclude: (1) that the use of music may be influential in reducing anxiety associated with music performance; and (2) that by using music-enhanced therapeutic environments, particular stress-evoking interactions and events related to music performance may surface, enabling the therapist to more efficiently identify performance-related problems and attempt to solve them. Brodsky and Sloboda cite theories indicating that music-based therapy is a logical treatment for musicians whose own belief systems support its efficacy. Accordingly, when one considers that

most musicians have been involved with music from a very early age, it is apparent that they are aware of the influence it has had on their personalities and in shaping their lives. In addition, by virtue of witnessing the reactions of others to their music performances, musicians must be aware of the "power of music" and certain "therapeutic effects." Therefore, musicians might more readily be able to relate and commit themselves to a therapeutic environment supplemented with music; feeling most comfortable with music-enhanced therapeutic regimens because they combine verbal and nonverbal communication.

A review of the published literature on treatment of stress or anxiety of musicians with music provides only two citations.^{64,76} In addition, these studies offer little empirical evidence that music-based therapy is in fact more effective for musicians than other treatments; these researchers did not compare active interventions or identical treatments, where one condition comprised the therapeutic environment supplemented with music or music activities, while the other condition comprised the same therapeutic environment but without music.

With this specific research goal in mind, Brodsky⁹¹ conducted a clinical trial intervention investigation designed and implemented specifically for professional symphony orchestra musicians, with the musician-participants randomly assigned either to an experimental music-enhanced psychotherapy treatment group or to a traditional verbal psychotherapy treatment group. This design has been corroborated by Borkovec,¹²⁶ Schroeder and Dush,¹²⁷ and Shapiro,¹²⁸ who review several outcome studies that compared two or more active treatment groups, rather than treatment vs wait-list, nontreatment, or placebo groups. Shapiro concludes that "such comparative studies provide a concurrent opportunity to compare the content or process of the two treatments, which may help to identify the ingredients within each treatment, and to find out just how different or similar these may be in the methods under comparison" (p 166). By using a *dismantling strategy*, as suggested in therapy evaluation studies to compare active treatments, Brodsky found that music-enhanced therapies were seen to be just as effective as traditional counseling. However, Brodsky and Sloboda¹²⁹ point out that further post-hoc analyses of the data indicate the existence of intra-subgroup differences based on personality or other predisposing factors, which demonstrate the efficacy of specific therapeutic regimens for certain musicians. In addition, there seems to be evidence of qualitative effects of these different therapies, which, while not reflected in the psychometric outcomes, appear to affect the overall quality of the therapeutic experience and/or the nature of the therapist-musician interaction.

CONCLUSION

The field of performing arts medicine has arisen out of a growing awareness that musicians are in need of specialized medically related services to enhance their abilities and en-

able them to reach their potentials within the art form and to deal with the problems from which musicians suffer related to their occupations and lifestyles. This awareness highlights the urgency for clinicians and musicians to perceive the specific stresses and anxieties involved in music performance as occupational or career-based, and not exclusively limited to experiences of the stage. Though research initiatives have documented the phenomenon of MPA through surveys, in-vivo laboratory studies, and intervention trials that highlight the debilitating symptoms, etiology, dimensions, and efficacy of treatment procedures, these have frequently been poorly designed and implemented. There is every possibility that diversity of conceptual theories concerning stress and anxiety, inferior sampling procedures, inept screening criteria, and use of assessment measures that are unreliable and invalid have led performing arts medicine practitioners and researchers down the wrong avenues. As a result, our understanding and ability to treat the performance-related psychological problems of musicians have been left behind the other advancing aspects of the young profession.

In general, the research efforts of the past ten years have been able to clearly demonstrate only that cognitive-behavioral therapies are an effective treatment strategy, both alone and in various constellations. Specifically, they have been found to be more efficient than medications in developing confidence and decreasing anxiety. Nevertheless, while more than a fourth of musicians report that they are affected by issues of mental health, the predominantly used coping method still seems to be substance-related such as recreational drugs and alcohol, although various types of prescription medication, including beta-adrenergic-blocking agents, are reportedly used frequently. Psychological interventions have been tried by approximately a fourth of musicians with MPA¹¹⁻²⁰; however, these have been perceived as a less successful strategy. Thus, it seems warranted to consider new methods (such as enhancement of the traditional psychotherapy environment) so that counseling interventions might be seen as more applicable by musicians. Though a few studies have attempted to demonstrate the efficacy of music-enhanced therapeutic environments for musicians, these have not yet reached a reasonable level of empirical inquiry. Nevertheless, this direction seems to have great potential and warrants a more specific research design and methodology to point to new directions for applied interventions.

The literature reviewed in this paper provides a clear picture illustrating the state of MPA research. This perspective allows us to take a step back and see the limitations of the current research literature. The field of performing arts medicine is at a crossroads—the birth pains have long since passed, as has the infancy stage. We have matured through childhood and adolescence. We have come now to a period that necessitates an evaluation and, perhaps, reconceptualization. Today, more than ever, we need to inaugurate research standards and practices that will enable performing arts medicine to move forward and develop further as a mature medical subspecialty based on reliable and replicable

empirical findings. This is the only way that performing arts medicine can improve its clinical services offered to performing musicians, enabling them to realize their peak performance potentials.

DEDICATION

The author dedicates this article to Peter F. Ostwald, MD, who passed away in June 1996. Dr. Ostwald was a pioneer in formulating the interaction between music, medicine, psychiatry, and psychological development. Peter was a personal example of interdisciplinary competence, an active artist-scientist, theoretician-clinician, and academician-researcher. His prolific writings not only have been imbedded in the minds of today's practitioners, but serve as a guiding light for all future clinicians of performing arts medicine. Dr. Ostwald strived to conceptualize, clarify, and reconceptualize those issues that have led to his great contributions not only in the fields of medicine, neuroscience, psychiatry, and psychobiography, but specifically to the fields of music therapy, music psychology, biology of music making, and performing arts medicine. Peter was a master scholar and mentor to all of us. He will be greatly missed.

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