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# Music Performance Anxiety: Origins, Phenomenology, Assessment and Treatment

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The essence of music performance anxiety is captured in the poignant words of the song, 'Stage Fright' by The Band:

See the man with the stage fright  
Standin' up there to give it all his might  
He got caught in the spot light  
And when he gets to the end  
He wanna start all over again

Now deep in the heart of a lonely kid  
Suffered so much for what he did  
They gave this cowboy his fortune and fame  
Since that day, he 'ain't b'in the same

I got fire water on my breath  
And the doctor warned me I might catch my death  
Said you can make it in your disguise  
Just never show the fear that's in your eyes

And as he says that easy phrase  
Take him at his word  
And for the price that the poor boy pays  
He gets to sing just like a bird

Your brow is sweating and your mouth gets dry  
Fancy people go drifting by  
The moment of truth is right at hand  
Just one more nightmare you can stand.

The experience of performance anxiety as described in this song is no stranger to the majority of those whose brief is to perform in front of others. In many ways, as Shakespeare asserts, life itself is a performance—'The world's a stage, and every man plays his part'—but for some, centre stage or centre court is a threatening and frightening place to be, and playing one's

part is made difficult by the experience of unwanted emotions, thoughts and behaviours. Like Antonio in Shakespeare's *Merchant of Venice*, one's part may be sad and unrewarding.

Performance anxiety is the general term for a group of disorders that affect individuals in a range of endeavours, from test-taking, mathematics performance, public speaking and sport,<sup>1</sup> to the performing arts of dance, acting and music.<sup>2</sup> Females are two to three times more likely to experience anxiety than males,<sup>3</sup> and this relationship appears to hold for music performance anxiety (MPA) where studies demonstrate that females have significantly higher MPA than males,<sup>4</sup> although this relationship is more complex in children.<sup>5</sup>

This article explores the origins of MPA, possible theoretical explanations for its development and the characteristics of those who might be vulnerable to experiencing high levels MPA. An examination of its occurrence in child, adolescent and adult musicians will follow to show that MPA is no respecter of age, experience or performance setting. The article concludes with an overview of assessment and treatment of this condition.

### How Does Music Performance Anxiety Develop?

Very young children rarely experience the type of performance anxiety that afflicts older people. On the contrary, young children love to perform, love an audience and seem blissfully unaware of any flaws in their 'performance.' How do many of us undergo the transition from 'Mummy, look at me, aren't I clever?' to 'Please don't ask me to perform; I know that I will make a mess of it and embarrass myself.' This transition is due to a combination of factors, the most important of which are our innate temperament, the increasing cognitive capacity and self-reflective function that develops through childhood and adolescence, the type of parenting and other interpersonal experiences that we have, our perception and interpretation of the world around us, our technical skill and mastery, and specific performance experiences that may have positive or negative outcomes.

<sup>1</sup> A.J. Elliot and H.A. McGregor, 'Test Anxiety and the Hierarchical Model of Approach and Avoidance Achievement Motivation,' *Journal of Personality and Social Psychology* 76 (1999): 628–44; M.H. Ashcraft and M.W. Faust, 'Mathematics Anxiety and Mental Arithmetic Performance: An Exploratory Investigation,' *Cognition and Emotion* 8 (1994): 97–125; L. Merritt, A. Richards and P. Davis, 'Performance Anxiety: Loss of the Spoken Edge,' *Journal of Voice* 15 (2001): 257–69; H.K. Hall and A.W. Kerr, 'Predicting Achievement Anxiety: A Social-cognitive Perspective,' *Journal of Sport and Exercise Psychology* 20 (1998): 98–111, and S. Hanton, S.D. Mellalieu and R. Hall, 'Re-examining the Competitive Anxiety Trait-state Relationship,' *Personality and Individual Differences* 33 (2002): 1125–36.

<sup>2</sup> R.A. Tamborrino, 'An Examination of Performance Anxiety Associated with Solo Performance of College-level Music Majors,' *Dissertation Abstracts International* 62.5-A (2001): 1636; G.D. Wilson, *Psychology for Performing Artists*, 2nd ed. (London: Whurr, 2002); D.R. Deen, 'Awareness and Breathing: Keys to the Moderation of Musical Performance Anxiety,' *Dissertation Abstracts International* 60.12-A (2000): 4241, and C.A. Ryan, 'A Study of the Differential Responses of Male and Female Children to Musical Performance Anxiety,' *Dissertation Abstracts International* 63.7-A (2003): 2487.

<sup>3</sup> American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders*, 4th ed. (Washington, DC: American Psychiatric Association, 1994); P.M. Lewinsohn, I.H. Gotlib, M. Lewinsohn, J.R. Seeley and N.B. Allen, 'Gender Differences in Anxiety Disorders and Anxiety Symptoms in Adolescents,' *Journal of Abnormal Psychology* 107 (1990): 109–17.

<sup>4</sup> J.L. Huston, 'Familial Antecedents of Musical Performance Anxiety: A Comparison with Social Anxiety,' *Dissertation Abstracts International* 62.1-B (2001): 551; M.S. Osborne and J. Franklin, 'Cognitive Processes in Music Performance Anxiety,' *Australian Journal of Psychology* 54 (2002): 86–93; L.M. Sinden, 'Music Performance Anxiety: Contributions of Perfectionism, Coping Style, Self-efficacy, and Self-esteem,' *Dissertation Abstracts International* 60.3-A (1999): 0590.

<sup>5</sup> Ryan, 'Study of the Differential Responses of Male and Female Children.'

Barlow's model of anxiety is useful in aiding our understanding of performance anxiety in general, and MPA in particular.<sup>6</sup> His model proposes an integrated set of triple vulnerabilities that can account for the development of an anxiety or mood disorder. These are:

- i. a generalised biological (heritable) vulnerability;
- ii. a generalised psychological vulnerability based on early experiences in developing a sense of control over salient events; and
- iii. a more specific psychological vulnerability whereby anxiety comes to be associated with certain environmental stimuli through learning processes such as respondent or vicarious conditioning.

Barlow argues that genetic predisposition and sensitising early life experiences may be sufficient to produce a generalised anxiety or mood (depression) disorder.<sup>7</sup> However, the third set of vulnerabilities appears necessary to produce focal or specific anxiety disorders such as panic disorder or specific phobias. For example, social evaluation may be accompanied by heightened somatic sensations that become associated with a perceived increase in threat or danger. In the case of young performers who are high in trait anxiety (the expression of the generalised biological vulnerability), who come from home environments in which expectations for excellence are high but support for achieving excellence is low (generalised psychological vulnerability), exposure to early and frequent evaluations and self-evaluations of their performances in a competitive environment (specific psychological vulnerability) may be sufficient to trigger the physiological, behavioural and cognitive responses characteristic of music performance anxiety. Anxiety may be triggered by conscious, rational concerns, or by cues that trigger, unconsciously, earlier anxiety-producing experiences or somatic sensations. Once triggered, the person shifts into a self-evaluative attention state, in which self-evaluation of perceived inadequate capabilities to deal with the threat, in this case the imminent performance, is prominent. The attention typically narrows to a focus on catastrophic cognitive self-statements that disrupt concentration and performance. In this respect, MPA may share commonalities with social anxiety, and its extreme form appears similar to social phobia. One could argue that the conditions under which one performs, that is, the degree of social evaluative threat perceived by the performer, is the defining feature of social phobia. Those perceiving most threat are likely to experience the greatest anxiety, and those who are most anxious are more likely to perceive performance conditions as more threatening.

In the music research literature, MPA is commonly viewed as a constellation of three interactive yet partially independent factors: cognitions, autonomic arousal, and overt behavioral responses.<sup>8</sup> There is empirical support for this three-factor model of music performance anxiety. Craske and Craig demonstrated greater response synchrony among high trait, compared to low trait anxious performers, particularly when performing in a

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<sup>6</sup> D. Barlow, 'Unravelling the Mysteries of Anxiety and its Disorders from the Perspective of Emotion Theory,' *American Psychologist* 55 (2000): 1247–63.

<sup>7</sup> Barlow, 'Unravelling the Mysteries of Anxiety.'

<sup>8</sup> M. Craske and K. Craig, 'Musical-performance Anxiety: The Three-systems Model and Self-efficacy Theory,' *Behavior Research and Therapy* 22 (1984): 267–80; R.J. Lederman, 'Medical Treatment of Performance Anxiety: A Statement in Favor,' *Medical Problems of Performing Artists* 14.3 (1999): 117–21; P. Salmon, 'A Psychological Perspective on Musical Performance Anxiety: A Review of the Literature,' *Medical Problems of Performing Artists* 5 (1990): 2–11.

stressful situation involving evaluation of their performances by expert judges.<sup>9</sup> Low anxious individuals experienced elevated heart rate but not cognitive or behavioural symptoms in the performance condition when compared to a 'warm-up' baseline condition in contrast to high anxious individuals who experienced elevations in all three areas. High levels of self-reported performance anxiety were also related to lower levels of confidence.

However, researchers are in dispute regarding the nature of this interaction. Zinn, McCain and Zinn argue that performance anxiety is primarily a psychophysiological event where the autonomic nervous system initiates and maintains MPA.<sup>10</sup> Alternatively, Kirchner maintains the symptomatic aspects of MPA are activated by the perception of threat by the performer, and not the autonomic nervous system.<sup>11</sup> Wilson describes threat perception as an interaction of three variables that play important roles in the experience of distressing anxiety: the performer's constitutional and learned tendency to become anxious in response to situations of social stress (trait anxiety), the degree of task mastery, and the degree of situational stress, where high anxiety is more likely to be experienced in situations where social or environmental pressures are high.<sup>12</sup> In a recent test of the relative roles of cognitions, emotions and somatic arousal in predicting MPA in adolescent musicians, Osborne, Kenny and Holsomback found that trait anxiety and gender were the best predictors of MPA but that negative cognitions occurring during a 'worst performance' experience added further significant variance to the prediction of MPA.<sup>13</sup>

Theorising in the area of test anxiety and academic competence provides further support for the role of cognitions in exacerbating and maintaining performance anxiety. Three similar processes are considered relevant to examination performance: cognitive-attentional processes (for example, worry, task-irrelevant thinking, negative self-preoccupation), cognitive skills (study habits) and self-efficacy or the exercise of human agency (how a person influences his/her thoughts, behaviours, goals, and outcomes). In a simultaneous test of these three theories, Smith, Amkoff and Wright found that cognitive-attentional processes accounted for most of the variance in both performance on tests and test anxiety, but that both cognitive skills and self-efficacy measures added additional unique variance.<sup>14</sup> These findings suggest that multi-modal interventions are needed to address the multiple difficulties experienced by test anxious individuals. These formulations are directly relevant to our understanding and treatment of music performance anxiety.

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<sup>9</sup> Craske and Craig, 'Musical-performance Anxiety.'

<sup>10</sup> M. Zinn, C. McCain and M. Zinn, 'Musical Performance Anxiety and the High-risk Model of Threat Perception,' *Medical Problems of Performing Artists* 15 (2000): 65–71.

<sup>11</sup> J.M. Kirchner, 'A Qualitative Inquiry into Musical Performance Anxiety,' *Medical Problems of Performing Artists* 18 (2003): 78–82.

<sup>12</sup> Wilson, *Psychology for Performing Artists*.

<sup>13</sup> M.S. Osborne, D.T. Kenny and R. Holsomback, 'Assessment of Music Performance Anxiety in Late Childhood: A Validation Study of the Music Performance Anxiety Inventory for Adolescents (MPAI-A),' *International Journal of Stress Management* 12.4 (2005): 312–30.

<sup>14</sup> R.J. Smith, D.B. Amkoff and T.I. Wright, 'Test Anxiety and Academic Competence: A Comparison of Alternative Models,' *Journal of Counseling Psychology* 37.3 (1990): 313–21.

### The Role of Perfectionism in Performance Anxiety

Music performance requires a high level of skill in a diverse range of skill areas including fine motor dexterity and co-ordination, attention and memory, aesthetic and interpretative skills. To achieve prominence requires the attainment of near perfection demanding years of training, solitary practice, and constant, intense self-evaluation. Barlow's definition of anxiety, which incorporates a 'sense of uncontrollability ... a state of helplessness ... because *one is unable to obtain desired results or outcomes*,<sup>15</sup> has much in common with the definition of perfectionism given by Frost, Marten, Lahart and Rosenblate that 'excessive concern over making mistakes, high personal standards, perception of high parental expectations and high parental criticism, the *doubting of the quality of one's actions*, and a preference for order and organization.'<sup>16</sup> Perfectionism as a personality trait has been poorly evaluated in musicians. Mor, Day, Flett and Hewitt investigated this trait in forty-nine professional classical musicians.<sup>17</sup> They found that performers with higher personal standards of perfection ('I must work to my full potential at all times') and social standards of perfection ('The people around me expect me to succeed at everything I do') experienced more debilitating anxiety than those performers who did not score highly on these items. Another study, conducted by Sinden, assessed the Frost PE on a sample of 138 university-level instrumental music students and reported a significant relationship between dimensions of perfectionism (high concern over mistakes, high doubts about actions and low personal standards) and performance anxiety.<sup>18</sup> In a subsequent study, Kawamura, Hunt, Frost and DiBartolo found that maladaptive perfectionism was related to a social/trait/worry factor.<sup>19</sup>

One would expect that for elite performers, there would be a close relationship between anxiety and perfectionism. In a study of operatic chorus artists, Kenny, Davis and Oates found that perfectionism was associated with trait anxiety and MPA.<sup>20</sup> Although perfectionism was highly correlated with the *Kenny-Music Performance Anxiety Inventory* (K-MPAI), it did not add to the prediction of K-MPAI in the regression analysis after the influence of state and trait anxiety, and solo and choral musical performance anxiety were considered.

### Who Suffers from Music Performance Anxiety?

It is not difficult to imagine that most performers, by the very nature of their profession, would be affected by the 'general stresses related to having to perform under conditions of high adrenalin flow, anxiety, fatigue, social pressure, and financial insecurity.'<sup>21</sup> Sternbach described

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<sup>15</sup> Barlow, 'Unravelling the Mysteries of Anxiety' 1259.

<sup>16</sup> R. Frost, P. Marten, C. Lahart and R. Rosenblate, 'The Dimensions of Perfectionism,' *Cognitive Therapy and Research* 14 (1990): 449–68; 449.

<sup>17</sup> S. Mor, H.I. Day, G.L. Flett and P.L. Hewitt, 'Perfectionism, Control, and Components of Performance Anxiety in Professional Artists,' *Cognitive Therapy and Research* 19 (1995): 207–25.

<sup>18</sup> Sinden, 'Music Performance Anxiety.'

<sup>19</sup> K.Y. Kawamura, S.L. Hunt, R.O. Frost and P.M. DiBartolo, 'Perfectionism, Anxiety, and Depression: Are the Relationships Independent?' *Cognitive Therapy and Research* 25 (2001): 291–301.

<sup>20</sup> D.T. Kenny, P.J. Davis and J. Oates, 'Music Performance Anxiety and Occupational Stress amongst Opera Chorus Artists and their Relationship with State and Trait Anxiety and Perfectionism,' *Journal of Anxiety Disorders* 18 (2004): 757–77.

<sup>21</sup> P. Lehrer, N. Goldman and E. Strommen, 'A Principal Components Assessment of Performance Anxiety among Musicians,' *Medical Problems of Performing Artists* 5 (1990): 12–18 at 12.

the working conditions of professional musicians as generating a 'total stress quotient' that far exceeds that observed in other professions.<sup>22</sup> However, since not all performers suffer the same degree of MPA, or indeed report the same levels of occupational stress, individual differences in a range of psychological characteristics are likely to account for variations in the degree to which musicians experience symptoms. However, no category of performer is exempt from the experience of MPA. Whether a child, adolescent or adult musician, whether amateur or professional, experienced or inexperienced, solo or ensemble, instrumentalist or singer, performers of all types and ages may suffer from MPA.

#### *Child Musicians*

Little attention has been paid to MPA in children, although several studies have acknowledged that children experience anxiety in other performance-evaluative contexts such as sport and test-taking.<sup>23</sup> The presence of MPA in children was first identified incidentally by Simon and Martens, whose study's main focus was sports performance anxiety.<sup>24</sup> In the course of their study of 749 nine- to 14-year-old boys that compared anxiety in test, sport and musical activities, the greatest anxiety was reported by boys performing solo on a musical instrument. Performing with a band was responsible for the highest anxiety among group activities, including team sports. Recently, Ryan has assessed the prevalence and symptoms of MPA in child musicians, and found that many children display similar constellations of physical and physiological symptoms of MPA as adult musicians and that performance anxiety was negatively correlated with self-esteem and performance quality.<sup>25</sup> MPA experience in child musicians has also been shown to increase with audience size and perceived importance of the performance, a relationship also frequently observed in research with adult musicians.<sup>26</sup> In one study, Ryan assessed performance anxiety in 173 children in grades three through to seven.<sup>27</sup> Children

<sup>22</sup> D.J. Sternbach, 'Musicians: A Neglected Working Population in Crisis,' *Organizational Risk Factors for Job Stress*, ed. S.L. Sauter and L.R. Murphy (Washington, DC: American Psychological Association, 1995) 283–302 at 284.

<sup>23</sup> P.O. Fleege, R. Charlesworth, D.C. Burts and C.H. Hart, 'Stress Begins in Kindergarten: A Look at Behavior during Standardized Testing,' *Journal of Research in Childhood Education* 7 (1992): 20–6; R. Hembree, 'Correlates, Causes, Effects, and Treatment of Test Anxiety,' *Review of Educational Research* 58 (1988): 47–77; R.G. Kass and J.M. Gish, 'Positive Reframing and the Test Performance of Test-anxious Children,' *Psychology in the Schools* 28 (1991): 43–52; M.W. Passer, 'Fear of Failure, Fear of Evaluation, Perceived Competence, and Self-esteem in Competitive-trait-anxious Children,' *Journal of Sport Psychology* 5 (1983): 172–88; T.K. Scanlan and R. Lewthwaite, 'Social Psychological Aspects of Competition for Male Youth Sport Participants: I. Predictors of Competitive Stress,' *Journal of Sport Psychology* 6 (1984): 208–26; J.A. Simon and R. Martens, 'Children's Anxiety in Sport and Nonsport Evaluative Activities,' *Journal of Sport Psychology* 1 (1979): 160–69; R.E. Smith, F.L. Smoll and N.P. Barnett, 'Reduction of Children's Sport Anxiety through Social Support and Stress-reduction Training for Coaches,' *Journal of Applied Developmental Psychology* 16 (1985): 125–42; P. Terry, L. Coakley and C. Karageorghis, 'Effects of Intervention upon Precompetition State Anxiety in Elite Junior Tennis Players: The Relevance of the Matching Hypothesis,' *Perceptual and Motor Skills* 81 (1995): 287–96; and S. Zatz and L. Chassin, 'Cognitions of Test-anxious Children under Naturalistic Test-taking Conditions,' *Journal of Consulting and Clinical Psychology* 53 (1985): 393–401.

<sup>24</sup> Simon and Martens, 'Children's Anxiety in Sport.'

<sup>25</sup> C. Ryan, 'Exploring Musical Performance Anxiety in Children,' *Medical Problems of Performing Artists* 13 (1998): 83–88; C. Ryan 'Gender Differences in Children's Experience of Musical Performance Anxiety,' *Psychology of Music* 32 (2004): 89–103.

<sup>26</sup> A. LeBlanc, Y.C. Jin, M. Obert and C. Siivola, 'Effect of Audience on Music Performance Anxiety,' *Journal of Research in Music Education* 45 (1997): 480–96.

<sup>27</sup> C. Ryan, 'Experience of Musical Performance Anxiety in Elementary School Children,' *International Journal of Stress Management* 12 (2005): 331–42.

completed the trait-and-state form of the *State-Trait Anxiety Inventory* for Children during a regular school day, and the state form again on the day of a major school concert. Results indicated that state anxiety was significantly higher on the day of the school concert, and was related to children's level of trait anxiety.

#### *Adolescent Musicians*

The realisation that MPA may manifest in childhood and adolescence, just like other anxiety disorders, necessitated the development of a robust measure of MPA for this age group.<sup>28</sup> This measure, *Music Performance Anxiety Inventory—Adolescents* (MPAI-A), is discussed later in this article. It was used to assess the degree of MPA experienced by high-school aged musicians attending Australian high schools specialising in the performing arts. It was also validated on a younger sample of eighty-four 11- to 13-year-old band musicians from the United States of America.<sup>29</sup> As predicted, girls scored higher on the MPAI-A than boys; and those in the 14–19 age group showed the highest levels of MPA of the three age groups assessed. This study concluded that those who aspired to become professional musicians showed the lowest levels of MPA.

#### *Orchestral Musicians*

Several international reviews of MPA among professional orchestral musicians indicate that the phenomenon is widespread and problematic.<sup>30</sup> For example, the International Conference of Symphony and Opera Musicians National US survey distributed to forty-eight orchestras (2212 respondents) reported that 24% of musicians frequently suffered stage fright, defined in this study as the most severe form of MPA, 13% experienced acute anxiety, and 17% experienced depression.<sup>31</sup> A Dutch study found that 59% of musicians in symphony orchestras reported performance anxiety severe enough to impair their professional and/or personal functioning.<sup>32</sup> James, in a survey of fifty-six orchestras, found that 70% of musicians reported that they experienced anxiety severe enough to interfere with their performance, with 16% experiencing this level of anxiety more than once a week.<sup>33</sup>

#### *Operatic Chorus Artists*

A recent study indicated that MPA is not limited to orchestral musicians, showing that members of opera choruses are also prone to high levels of performance anxiety. In the first study of its kind, Kenny, Davis and Oates found that scores indicating high trait anxiety, as measured by *Spielberger's State Trait Anxiety Inventory* (STAI), were approximately three times (at 50%) more prevalent among opera chorus artists than among the normative sample for the test (15%).<sup>34</sup>

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<sup>28</sup> J.H. Kashani and H. Orvaschel, 'A Community Study of Anxiety in Children and Adolescents,' *American Journal of Psychiatry* 147 (1990): 313–18.

<sup>29</sup> See Osborne, Kenny and Holsomback, 'Assessment of Music Performance Anxiety.'

<sup>30</sup> A. Steptoe and H. Fidler, 'Stage Fright in Orchestral Musicians: A Study of Cognitive and Behavioral Strategies in Performance Anxiety,' *British Journal of Psychology* 78 (1987): 241–49.

<sup>31</sup> A.H. Lockwood, 'Medical Problems of Musicians,' *New England Journal of Medicine* 320 (1989): 221–27.

<sup>32</sup> J.F.L.M. van Kemenade, M.J.M. van Son and N.C.A. van Heesch, 'Performance Anxiety among Professional Musicians in Symphonic Orchestras: A Self-report Study,' *Psychological Reports* 77 (1995): 555–62.

<sup>33</sup> I. James, 'Western Orchestral Musicians are Highly Stressed,' *Resonance: International Music Council [France]* 26 (1998): 19–20.

<sup>34</sup> Kenny, Davis and Oates, 'Music Performance Anxiety.'

The strong association between trait anxiety and MPA found in student musicians appears to be prevalent even among experienced, elite, professional operatic chorus artists.<sup>35</sup> Reaching an acknowledged level of excellence through selection into a prestigious opera company did not appear to protect against the heightened experience of (trait) anxiety. Perhaps living and working in an environment of constant social evaluative threat—the chorus artists in this study were required to re-audition for their place in the opera chorus every year—may heighten musicians' anxiety. Alternatively, it may be that musical giftedness and higher trait anxiety are related in some way that needs further explanation.

### How is Music Performance Anxiety Assessed?

A review of the English-language research literature identified twenty MPA self-report measures, developed for specific research projects with college and/or adult musicians. Most measures were generic (that is, not specific to any musical instrument), although some were specifically created for pianists (for example, the *Piano Performance Anxiety Scale*) and string players (the *Stage Fright Rating Scale*). Most of these scales assess MPA as an enduring quality in a player's musical performances (that is, as a characteristic or trait of the individual), while others assess MPA in the performing context (for example, *Music Performance Anxiety Questionnaire* [MPAQ], the *Performance Anxiety Self-statement Scale* [PASSS] and the *State Emotion Questionnaire* [SEQ]). Spielberger's *State-Trait Anxiety Inventory* state subscale is often used in conjunction with these music performance anxiety specific scales to assess both enduring anxiety (trait anxiety) and anxiety that occurs in the performance situation under particular conditions (state anxiety).<sup>36</sup>

Many of the available MPA scales are adaptations of existing anxiety measures. For example, Appel's *Personal Report of Confidence as a Performer* (PRCP) was adapted from Paul's *Personal Report of Confidence as a Speaker*;<sup>37</sup> Cox and Kenardy's *Performance Anxiety Questionnaire* (PAQ)<sup>38</sup> was adapted from Schwartz, Davidson and Goleman's *Cognitive-Somatic Anxiety Questionnaire*,<sup>39</sup> and the *Performance Anxiety Inventory* (PAI); the PAI was based on Spielberger's 1980 *Test Anxiety Inventory*,<sup>40</sup> and the *Achievement Anxiety Test Scale*<sup>41</sup> was modified by Sweeney and Horan and by Wolfe into the *Adaptive—Maladaptive Anxiety Scale* (AAS-MAS).<sup>42</sup> The most recent scale,

<sup>35</sup> L.H. McCoy, 'Musical Performance Anxiety among College Students: An Integrative Approach,' *Dissertation Abstracts International*, 60.4-A (1999): 1059.

<sup>36</sup> C. Spielberger, *Manual for the State-trait Anxiety Inventory* (Palo Alto, CA: Consulting Psychologists, 1983).

<sup>37</sup> G.L. Paul, *Insight vs. Desensitization in Psychotherapy: An Experiment in Anxiety Reduction* (Stanford: Stanford UP, 1966).

<sup>38</sup> W. Cox and J. Kenardy, 'Performance Anxiety, Social Phobia, and Setting Effects in Instrumental Music Students,' *Journal of Anxiety Disorders* 7 (1993): 49–60.

<sup>39</sup> G.E. Schwartz, R.J. Davidson and D.J. Goleman, 'Cognitive and Somatic Processes in Anxiety,' *Psychosomatic Medicine* 40 (1978): 321–28, cited in Cox and Kenardy, 'Performance Anxiety, Social Phobia.'

<sup>40</sup> Cited in J.J. Nagle, D.P. Himle and J.D. Papsdorf, 'Cognitive-behavioural Treatment of Musical Performance Anxiety,' *Psychology of Music* 17 (1989): 12–21.

<sup>41</sup> R. Alpert and R.N. Haber, 'Anxiety in Academic Achievement Situations,' *Journal of Abnormal Social Psychology* 61 (1960): 207–15.

<sup>42</sup> G.A. Sweeney and J.J. Horan, 'Separate and Combined Effects of Cue-controlled Relaxation and Cognitive Restructuring in the Treatment of Musical Performance Anxiety,' *Journal of Counselling Psychology* 29 (1982): 486–97; M.L. Wolfe, 'Correlates of Adaptive and Maladaptive Musical Performance Anxiety,' *Medical Problems of Performing Artists* 4.1 (1989): 49–56.

the *Kenny Music Performance Anxiety Inventory* (K-MPAI)<sup>43</sup> was constructed to specifically address each of the components of Barlow's emotion-based theory of anxiety disorders.<sup>44</sup> Only the K-MPAI, PRCP and PAI assess all three components—cognitive, behavioural and physiological—that are now commonly believed to comprise MPA and other anxiety disorders.<sup>45</sup> Five of these scales were reproduced in full in the journals in which they were published to facilitate future research (K-MPAI; *Musician's Questionnaire*; PAI; PAQ-Cox and Kenardy, and PAQ-Wesner, Noyes and Davis).<sup>46</sup> Factor analytic studies have been reported on the MPAQ, AAS-MAS and *Trait Anxiety Scale*.

A critical review of the psychometric data on these scales presented in the articles was conducted using criteria adapted for self-report measures from McCauley and Swisher's review of language and articulation tests.<sup>47</sup> This review indicated that subject numbers in the various research studies were small (between 20 and 53). Although Wesner, Noyes and Davis had the largest sample size (302) and described their sample thoroughly, they provided no results other than percentages for gender, age group and category of musician (that is, impaired/unimpaired) who endorsed various symptoms of MPA.<sup>48</sup> This evaluation procedure also indicated that the reporting of basic psychometric properties such as internal and external reliability for these scales was limited or absent. Internal reliability refers to the extent to which a measure is consistent within itself, that is, that all items are measuring the same construct or psychological factor. External reliability refers to the extent to which a measure varies from one use to another. This is assessed using the test-retest method, involving testing the same person again over a period of time on the same test to determine whether they obtain similar scores on both testing occasions. Very few of the tests reported tests assessing internal or external reliability. No single measure satisfied all the criteria, although the K-MPAI met most of the criteria and reported the best psychometric properties.

Ryan and Maroon developed research-specific measures to assess MPA in younger musicians, but neither presented any data on their psychometric properties.<sup>49</sup> Only one self-report measure of MPA for child or pre-tertiary adolescent musicians has been published in the public domain. This is the *Music Performance Anxiety Inventory—Adolescents* (MPAI-A). Data from 381 elite young musicians aged between 12 and 19 was used to investigate the factor structure, internal reliability, construct and divergent validity of the MPAI-A. Construct

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<sup>43</sup> Kenny, Davis and Oates, 'Music Performance Anxiety.'

<sup>44</sup> See Barlow, 'Unravelling the Mysteries of Anxiety.'

<sup>45</sup> D.H. Barlow, *Anxiety and its Disorders: The Nature and Treatment of Anxiety and Panic*, 2nd ed. (New York: Guilford Press, 2002); L. Hardy and G. Parfitt, 'A Catastrophe Model of Anxiety and Performance,' *British Journal of Psychology* 82 (1991): 163–78; P.J. Lang, M. Davis and A. Ohman, 'Fear and Anxiety: Animal Models and Human Cognitive Psychophysiology,' *Journal of Affective Disorders* 61.3 (2000): 137–59; T.L. Morris, 'Social Phobia,' *The Developmental Psychopathology of Anxiety*, ed. M.W. Vasey and M.R. Dadds (New York: OUP, 2001).

<sup>46</sup> Cox and Kenardy, 'Performance Anxiety, Social Phobia'; R.B. Wesner, R. Noyes and T.L. Davis, 'The Occurrence of Performance Anxiety among Musicians,' *Journal of Affective Disorders* 18 (1990): 177–85.

<sup>47</sup> R.J. McCauley and L. Swisher, 'Psychometric Review of Language and Articulation Tests for Preschool Children,' *Journal of Speech and Hearing Disorders* 49 (1984): 34–42.

<sup>48</sup> Wesner, Noyes and Davis, 'Occurrence of Performance Anxiety.'

<sup>49</sup> Ryan, 'Exploring Musical Performance Anxiety in Children'; M.T.J. Maroon, 'Potential Contributors to Performance Anxiety among Middle-school Students Performing at Solo and Ensemble Contests,' *Dissertation Abstracts International* 64.2-A (2003): 437.

validity is demonstrated when the scale successfully measures the psychological factor of interest, in this case, MPA. It is evaluated using statistical methods that show whether a common factor can 'explain' the pattern of results underlying several measurements using different observable indicators. One such method is internal reliability or consistency that is assessed using Cronbach's alpha. The closer the value approaches to 1.00, the higher the internal consistency. Cronbach's alpha for the full measure was 0.91. Another statistical method, factor analysis, identified three factors which together accounted for 53% of the variance in the items (that is, the ability of one item or factor to predict another item or factor on the test). The first factor, *Somatic and Cognitive Features*, accounted for 43% of the variance. The majority of items loading on this factor consisted of those describing the physical manifestations of performance anxiety immediately prior to, and during a performance. Two items related to worry and fear of making mistakes. The second factor, *Performance Context*, accounted for 6% of the variance, and described the preference performers have for either solo or group contexts and the nature of the audience. The third factor, *Performance Evaluation*, contained items relating to the evaluation that both the audience and performer may make of a performance, the consequences stemming from those evaluations (particularly when a mistake is made), and difficulty concentrating in front of an audience when performing. This factor accounted for 3% of the variance. Construct validity was demonstrated by significant positive relationships with social phobia (measured using the Social Phobia Anxiety Inventory,<sup>50</sup> and trait anxiety (measured using the *State Trait Anxiety Inventor*).<sup>51</sup> The MPAI-A demonstrated convergent validity by a moderate to strong positive correlation with an adult measure of MPA. Discriminant validity was established by a weaker positive relationship with depression, and no relationship with externalising behaviour problems. It is hoped that the MPAI-A, as the first empirically validated measure of adolescent musicians' performance anxiety, will enhance and promote phenomenological and treatment research in this area.

### How is Music Performance Anxiety Treated?

Kenny, Davis and Oates, and Kenny conducted the first comprehensive, systematic reviews of available treatment studies for music performance anxiety.<sup>52</sup> Although the field is not well developed and much more work needs to be done, we can draw some conclusions about which treatments are more likely to have a beneficial effect on anxious musicians.

#### *Cognitive, Behavioural and Cognitive-Behavioural Interventions*

Behaviour in any situation is determined by a combination of thoughts, feelings and past and present behaviours. Three groups of therapies—behavioural, cognitive and cognitive-behavioural—are all based on the same principles, but use the available therapeutic techniques in different amounts. Behavioural therapies focus primarily on changing the dysfunctional

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<sup>50</sup> D.C. Beidel, S.M. Turner and T.L. Morris, 'A New Inventory to Assess Childhood Social Anxiety and Phobia: The Social Phobia and Anxiety Inventory for Children,' *Psychological Assessment* 7 (1995): 73–79; D.C. Beidel, S.M. Turner and T.L. Morris, *Social Phobia and Anxiety Inventory for Children (SPAI-C)* (North Tonawanda, NY: Multi-Health Systems Inc., 1998).

<sup>51</sup> Spielberger, *Manual for the State-trait Anxiety Inventory*.

<sup>52</sup> See Kenny, Davis and Oates, 'Music Performance Anxiety and Occupational Stress'; D.T. Kenny, 'A Systematic Review of Treatment for Music Performance Anxiety,' *Anxiety, Stress and Coping* 18.3 (2005): 183–208.

behaviours that arise when people feel anxious. One of the main targets of behavioural therapies for anxiety disorders is excessive muscle tension, which is treated with deep muscle relaxation training and systematic desensitisation, a procedure in which the person is encouraged to imagine the feared or anxiety-provoking situation in graded steps, called the fear hierarchy, until they can visualise the situation without experiencing the muscle tension that used to accompany the visualisations. Once the fear hierarchy has been mastered in the therapist's office (imaginal desensitisation), people are encouraged to apply their new skills in the actual, anxiety-provoking situation (called 'in vivo' desensitisation).

Cognitive therapy is more concerned with changing faulty thinking patterns that give rise to maladaptive behaviours, such as excessive muscle tension, avoidance of the feared situation, or impaired performance. In this therapy, people learn a skill called cognitive restructuring, which is a process whereby negative, unproductive, catastrophic thinking is replaced with more rational, useful ways of understanding their problem situations. Based on changed thinking patterns, people are often able to re-assess or re-appraise their feared situations in ways that make dealing with those situations more manageable.

Cognitive Behavioural Therapy (CBT) is a combination of behavioural and cognitive interventions aimed at changing negative thinking patterns and behaviours. CBT is focused and directive, usually of short duration and is action-oriented, that is, it is not solely a 'talking therapy'—it relies on the client's record-keeping, active participation, application and evaluation. Behaviour therapy (BT) and CBT are the most researched of all psychological interventions, and to date, are considered the most effective treatments for a range of psychological disorders, especially depression and anxiety.

Behavioural treatments (cue-controlled relaxation training, systematic desensitisation, behaviour rehearsal) appear to be at least minimally effective in the treatment of MPA but currently there is no consistent evidence indicating the superiority of any one type of behavioural intervention. No conclusions can be drawn at this time about the usefulness of cognitive interventions alone in the management of MPA because of the lack of robust studies. The evidence for improvements in MPA following CBT is quite consistently positive,<sup>53</sup> although further studies with larger samples and less reliance on self-report measures would be useful. One should remember that treated performers may not achieve a level of anxiety similar to that experienced by those who do not suffer from the condition, even after treatment.

#### *Combined Interventions*

A number of studies have examined the effect of combining treatment approaches; for example, counseling and relaxation, or behavioural, cognitive-behavioural, and biofeedback techniques. Currently, there is little evidence to suggest that combined treatment approaches achieve greater improvements in MPA than single treatments, but further research in this area is needed.

#### *Other Interventions*

The Alexander Technique is an educational process in which the student learns a set of skills that result in lessening of the areas of tension in the body, so that movement becomes easier and less effortful. The aim is to cultivate a more natural alignment of head, neck and spine that has associated with it qualities of balance, strength and coordination. The method aims to

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<sup>53</sup> For a detailed review, see Kenny, 'A Systematic Review of Treatment.'

teach conscious and voluntary control over posture and movement and to undo involuntary muscle tension. The Alexander Technique is a method for eliminating unwanted muscular patterns or habits that interfere with smooth performance. For a performer, the technique is a method for using kinaesthetic cues, the sensations of tension, effort, weight and position in space, in order to organise one's field of awareness in a systematic way.

Despite the enthusiasm with which this technique is marketed to performing artists, only one study to date has assessed the therapeutic effect of the Alexander technique on MPA. Valentine, Fitzgerald, Gorton, Hudson and Symonds gave one group of music students fifteen lessons in the Alexander technique, while a control group received no lessons in the technique.<sup>54</sup> The treatment group showed improvement in musical and technical quality, and an increase in positive mood scores, while controls showed the opposite pattern of results. The treatment group also showed a decrease in anxiety and an increase in positive attitude to performance. These findings suggest that the Alexander technique may improve the quality of performance and mental state of the performer, and may help to modulate increased variability of heart rate under stress. However, the study had a weak design and we cannot be confident in the findings. Given the lack of good studies on Alexander technique in treating MPA, any conclusions must at this stage be tentative.

Another possible intervention is biofeedback, however, there is currently no good evidence indicating that biofeedback reduces MPA.<sup>55</sup>

Montello and Montello, Coons and Kantor assessed the effect of a twelve-week music therapy intervention on freelance musicians suffering from MPA.<sup>56</sup> The intervention consisted of musical improvisation, three musical performances in front of an audience, awareness techniques and verbal processing of anxiety responses. Participants became significantly more confident as performers and less anxious than waiting-list control subjects after music therapy intervention. This form of therapeutic intervention was recommended as a way of reducing performance anxiety by helping musicians to:

1. become more aware of the underlying dynamics of performance anxiety;
2. experience unconditional acceptance and support in a safe group environment;
3. bond with their music-selves;
4. transform anxiety through creativity (reparation); and
5. bond with others in the spirit of musical community.<sup>57</sup>

Despite the small sample size, this study was methodologically strong, and included subjects with severe MPA. Music therapy warrants further consideration as a treatment for music performance anxiety for professional musicians in the light of these positive findings.

<sup>54</sup> E. Valentine, D. Fitzgerald, T.J. Gorton, J.Hudson and E. Symonds, 'The Effect of Lessons in the Alexander Technique on Music Performance in High and Low Stress Situations,' *Psychology of Music* 23 (1995): 129–41.

<sup>55</sup> H.V. McKinney, *The Effects of Thermal Biofeedback Training on Musical Performance and Performance Anxiety*. PhD thesis, University of Northern Colorado, 1994; J.J. Richard Jr, 'The Effects of Ericksonian Resource Retrieval on Musical Performance Anxiety,' *Dissertation Abstracts International* 55.2-B (1992): 604.

<sup>56</sup> L. Montello, 'Utilizing Music Therapy as a Mode of Treatment for Performance Stress of Professional Musicians,' *Dissertation Abstracts International* I-A (1989): 50/10; L. Montello, E.E. Coons and J. Kantor, 'The Use of Group Music Therapy as a Treatment for Musical Performance Stress,' *Medical Problems of Performing Artists* 5 (1990): 49–57.

<sup>57</sup> Montello, Coons and Kantor, 'Use of Group Music Therapy' 49.

Only one study has assessed the therapeutic effect of two fifty-minute sessions of hypnotherapy on music performance anxiety (MPA).<sup>58</sup> A significant reduction in MPA was found for the treatment group, but not the control group, and a further significant reduction was found at six-month follow-up. Stanton's findings suggest that hypnotherapy may be effective in the treatment of MPA, but further methodologically superior studies are required.

Only one study examined the effects of meditation,<sup>59</sup> that is, a self-regulatory practice designed to 'train attention in order to bring mental processes under greater voluntary control' on music performance anxiety.<sup>60</sup> There was only very modest support for the role of meditation in reducing performance anxiety. Interestingly, there were no significant differences between the groups on measures of cognitive interference (mind wandering, intrusive thoughts) that the meditation intervention specifically addressed. Currently, there is no evidence indicating the use of meditation in the treatment of MPA.

Lehrer and Nubé have both published comprehensive reviews of the impact of beta-blockers on music performance anxiety,<sup>61</sup> and a brief overview of other drugs, such as anxiolytics (that is, anti-anxiety) and antidepressants has been provided by Sataloff, Rosen and Levy.<sup>62</sup> Accordingly, only a brief summary of drug interventions will be provided in this article and the interested reader is referred to these earlier papers for a more comprehensive review.

Beta-blockers have become increasingly popular among performers in recent years. For example, in a survey of 2122 orchestral musicians conducted by Lockwood, it found that 27% used propranolol to manage their anxiety prior to a performance; 19% of this group used the drug on a daily basis.<sup>63</sup> Performers prefer beta-adrenoceptor blocking agents to anxiolytic drugs (for example, diazepam) because of their reduced impact on central functions such as mental alertness and cognitive function.<sup>64</sup> Beta blockers appear to be most effective for those musicians who report primarily somatic manifestations of their anxiety (for example, palpitations, hyperventilation, tremor, trembling lips, sweating palms, etcetera)<sup>65</sup> and less effective for those experiencing more cognitive or psychological effects, such as low self-esteem, social phobias, or generalised 'free floating' anxiety.<sup>66</sup> However, there is no clear indication that such drugs

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<sup>58</sup> H.E. Stanton, 'Reduction of Performance Anxiety in Music Students,' *Australian Psychologist* 29 (1994): 124–27.

<sup>59</sup> J. C.-W. Chang, *Effect of Meditation on Music Performance Anxiety*, EdD thesis, Teachers College, Columbia University, 2001, *Dissertation Abstracts International*, AAT 3014754.

<sup>60</sup> R. Walsh, 'Phenomenological Mapping: A Method for Describing and Comparing States of Consciousness,' *Journal of Transpersonal Psychology* 27 (1995): 25–56.

<sup>61</sup> P.M. Lehrer, 'A Review of the Approaches to the Management of Tension and Stage Fright in Music Performance,' *Journal of Research in Music Education* 35 (1987) 143–53; J. Nubé, 'Beta-blockers: Effects on Performing Musicians,' *Medical Problems of Performing Artists* 6 (1991): 61–68.

<sup>62</sup> R. Sataloff, D.C. Rosen and S. Levy 'Performance Anxiety: What Singing Teachers Should Know,' *Journal of Singing* 56 (2000): 33–40.

<sup>63</sup> Lockwood, 'Medical Problems of Musicians.'

<sup>64</sup> Lockwood, 'Medical Problems of Musicians.'

<sup>65</sup> G.A. Gates, J. Saegert, N. Wilson, L. Johnson, A. Shepherd and E. Hearne, 'Effect of Beta Blockade on Singing Performance,' *Annals of Otolaryngology, Rhinology and Laryngology* 94 (1985): 570–74; I. James and I. Savage, 'Beneficial Effect of Nadolol on Anxiety-induced Disturbances of Performance in Musicians: A Comparison with Diazepam and Placebo,' *American Heart Journal* 108 (1984): 1150–55.

<sup>66</sup> Lehrer, 'Review of the Approaches to the Management of Tension.'

improve judge ratings of quality of performance,<sup>67</sup> although a more recent study found it did improve performance quality,<sup>68</sup> but not self-reported anxiety,<sup>69</sup> or stage fright ratings.<sup>70</sup> There are potential difficulties with drug withdrawal and unwanted side effects. Symptoms that have been reported in at least 10% of users include bradycardia, hypotension, cold extremities, gastrointestinal upset, sleep disturbance and muscle fatigue.

It is unlikely that any further studies of drug effects on MPA will be undertaken because ethical standards for research are much more rigorous than they were thirty years ago when these studies were conducted. This is a pity given the high usage of drug therapies by anxious musicians.

This brief review of treatment for music performance anxiety indicates that there is considerable scope for the development and evaluation of appropriate interventions. Many of the studies reported in this review constitute the only studies of their kind for the treatment genre (hypnotherapy, biofeedback, meditation, Alexander Technique and music therapy). Interventions leading to an improvement in performance quality are most desirable, since they will have a self-reinforcing, confidence-enhancing effect on future performances, obviating the need for further treatment.

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<sup>67</sup> C.O. Brantigan, T.A. Brantigan and N. Joseph, 'Effect of Beta Blockade and Beta Stimulation on Stage Fright,' *The American Journal of Medicine* 72 (1982): 88–94; Gates et al., 'Effect of Beta Blockade on Singing Performance'; I.M. James, W. Burgoyne and I.T. Savage, 'Effect of Pindolol on Stress-related Disturbances of Musical Performance: Preliminary Communication,' *Journal of the Royal Society of Medicine* 76 (1983): 194–96.

<sup>68</sup> P.L. Berens and J.D. Ostrosky, 'Use of Beta-blocking Agents in Musical Performance Induced Anxiety,' *Drug Intelligence and Clinical Pharmacy* 22 (1988): 148–49.

<sup>69</sup> Brantigan, Brantigan and Joseph, 'Effect of Beta Blockade and Beta Stimulation on Stage Fright'; Gates et al., 'Effect of Beta Blockade on Singing Performance.'

<sup>70</sup> K. Neffel, R. Adler, L. Käppeli, M. Rossi, M. Dolder, M. Käser, H. Brugesser and H. Vorkauf, 'Stage Fright in Musicians: A Model Illustrating the Effect of Beta Blockers,' *Psychosomatic Medicine* 44 (1982): 461–69.