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Health Anxiety Instead of Performance Anxiety Among Opera Singers

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ABSTRACT

Opera singers experience certain work strains; they work as soloists, depend highly on their vocal functioning and have to exhibit a consistent level of superior performance throughout a long career. The literature also shows that they report increased levels of hypochondriasis and extensive concern about vocal functioning and somatic impairment. Data from a previous study (Sandgren, 2002) were further explored to better understand the opera singers' preoccupation with vocal functioning. The aim of the study was to explore if psychological and voice-related variables would be related to concepts of performance anxiety and health anxiety. The results indicated that psychological and voice-related variables were significantly associated with performance anxiety among professionally well-established opera singers (n=49) in Sweden. Moreover, it appears as if significant aspects of health anxiety can be found among opera singers; they worry about being affected by a somatic impairment (that will be harmful for vocal functioning), their reassurance-seeking behavior by regularly taking a few tones to check their vocal functioning and visiting caregivers. Coping strategies were not associated with performance anxiety or health issues. The present study extends the body of knowledge on performance anxiety by suggesting that opera singers, with the voice as core instrument, suffer from a particular type of health anxiety that is related to performance anxiety.

I. INTRODUCTION

Performance anxiety is a debilitating psychological state among artists that occurs before and during a performance. The state might be severe enough to impair or end a professional career. The literature on performance anxiety is rather sparse, although it is a common and debilitating experience for 15-67 percent among musicians (Steptoe, 2001; van Kamenande et al., 1995; Wesner et al., 1990) and 35 percent among performing artists such as singers, dancers and actors (Marchant-Haycox & Wilson, 1992). Some authors describe performance anxiety as a type of social anxiety characterized by the fear of negative evaluation of others (Wilson & Persson, 2002), public self-focus and concern over mistakes (Gorges et al., 2007) as manifested on four levels, i.e. physiological, behavioural, cognitive and emotional level (Steptoe, 2001).

Debilitating performance anxiety causes impairment in a single area for example performing on stage in front of an audience (Powell, 2004). Paradoxically, performance anxiety occurs in a task that the individual is highly committed to. In addition, the individual has high expectations to succeed well with the task and fears being scrutinized by others. Some individuals harbour an imposter syndrome believing they will fail and be found out as incompetent, although they are talented and knowledgeable (Lazarus & Abramovitz, 2004).

A. Work strains among opera singers

In an explorative interview study with well established opera singers (Sandgren, 2002), the aim was to capture the problems that opera singers have to cope with related to their professional career. Interestingly, the opera singers did not bring up the issue of performance anxiety in the interviews. Instead, the most spontaneously mentioned subject was worry about others' reactions to their achievements. The reactions of significant others were both desired and feared. Many of the singers found themselves being "constantly exposed" to the risk for receiving negative criticism from the audience and significant others. The singers also expressed an ambivalent attitude towards positive evaluations. A male opera singer put into words his dependence of others' positive validation described both as a psychological problem and a work strain (s. 13):

> "To regard the positive reactions of my achievement as recognition and validation of my ambitions will make me feel secure, but one can become too dependent and demand even more recognition all the time; sexually, artistically or whatever. Everything you do is being judged, that is the whole idea of it: you have really tried to do your best on stage, so afterwards you expect an evaluation. This is what you get used to, you have been taught to react this way."

In addition to worry about negative evaluation, the opera singers expressed concerns about vocal indisposition. Vocal indisposition is an inability to sing satisfactorily or not at all and was explained by the opera singers to be caused by somatic problems such as colds or allergies. If indisposed, they would not able to perform at a high vocal level and would fail to meet their own and others' expectations with risk of losing their credibility as professional opera singers. As a consequence, they engaged in various health promoting strategies in order to protect their voice from colds or avoiding pubs or cafés where they would use their talking voice incorrectly due to complex acoustics. Their choice of health promoting strategies was often based on highly individual assumptions regarding the effect of these preventive measures to for example use herbal products, engage in physical training or avoid public transportations where there could be a risk to be contaminated by a cold.

Similar findings on instrumentalists indicate that they also use a wide range of strategies with the aim to decrease the influence of performance anxiety (Langendörfer et al., 2006). Musicians might use any coping strategy they believe will reduce the anxiety, even if the strategy will not be efficient enough to do so (Steptoe, 2001). Common methods include muscle relaxation, breathing techniques, reading and distraction prior the performance. Singers, like musicians, might carry out rituals on the day of the performance such as

eating particular food, remaining silent or insisting on a certain time schedule for various activities (Sandgren, 2002). However, care of vocal functioning is of major importance, as opera singers completely depend on the vocal functioning for their livelihood throughout a very long career. With respect to the outstanding demands of vocal quality and endurance, it can be assumed that "professional singers are the Olympic athletes of the voice world" (p. 229, Sataloff, 1999).

The findings on illness worry and fear of negative evaluation among opera singers raised questions if opera singers might experience another form of performance anxiety compared to musicians. Both musicians and opera singers worry that they will not succeed in performing well enough, although they engage in coping strategies for different reasons; musicians make efforts to decrease the influence of anxiety on performance, whereas opera singers make efforts to protect their voice from somatic illness that might impair their performance. Performance anxiety has been assessed by its various components (affect, cognition, behavior, physiology) (Steptoe, 2001) and is significantly associated with social anxiety and perfectionism (Gorges et al., 2007), personality dispositions such as state and trait anxiety (Kenny et al., 2004; Kokotsaki & Davidson, 2003), but thus, research has not studied indicators of illness worry or bodily preoccupation that might be of central importance for singers as they use their body as the instrument on stage.

B. Aspects of health anxiety

Dancers, like singers, use their body as their core instrument. Both singers and dancers have reported hypochondriasis (Marchant-Haycox & Wilson, 1992) that is traditionally defined as a somatoform disorder in DSM-IV (American Psychological Association, 1994) with the main feature of "a preoccupation with fears of having, or the idea that one has, a serious disease based on a misinterpretation of one or more bodily signs or symptoms". The heightened focus on their body among dancers was explained by dance-technical reasons (Gray & Kunkel, 2001). One reason behind this heightened bodily preoccupation might be the singers' and dancers' daily focus and training with their core instrument.

Singers give evidence of a heightened sensitivity and concern for their vocal health (Sapir et al., 1996; Sandgren, 2002) and can report voice problems of no known medical reason (Phyland et al., 1999). The characteristics of illness worry might lead the individual to seek medical, rather than psychological, consultation (Longly et al., 2005). Common voice problems might be vocal fatigue (Kitch & Oates, 1994) and upper respiratory problems (Eller et al., 1992). Opera singers visited a physician on average 4.7 times and other medical caregivers 4.8 times during the last 12 months (Sandgren, 2002). One singer visited the physician 40 times and another singer visited other caregivers 25 times. However, the opera singers' worry about somatic impairment should also be considered from another angle. To be a singer is a high-risk occupation for voice problems due to a risk for injury because of the demanding ways they use their voice (Verdolini & Ramig, 2001; Williams, 2003).

More lately, the conceptualization of hypochondriasis is under debate, and new classifications are suggested under the name of health anxiety disorder. More attention has been directed towards the marked and persistent somatic distress and care-eliciting behavior based on a biopsychosocial model where the significance of intrapersonal and interpersonal relations are accounted for (Noyes et al., 2008). In the case of opera singers, four common criteria for the reconceptualized frame work of health anxiety might correspond to their bodily preoccupation; a) their preoccupation and fear of having a somatic impairment, b) reassurance-seeking behavior by taking a few tones to check the vocal functioning several times a day or by visiting caregivers, and c) their preoccupation can cause impairment in occupational functioning, and d) the distress and illness behavior are not associated with any psychiatric disorder. The framework for health anxiety disorder has five features according to Noyes et al. (2008). The most important feature is distress and preoccupation with physical symptoms and/or impairment. Secondly, the individual displays an illness behavior. Thirdly, the distress and illness behavior interfere with physical, occupational or interpersonal functioning. Other features concern the chronic duration of symptoms and that the symptoms are not related to other psychiatric disorders.

Health anxiety has been associated with interpersonal aspects in terms of attachment insecurity in clinical (Asmundson et al., 2001) and non-clinical (Cox et al., 2000) samples. The anxiety occurs as a reaction due to qualities in how a person relates to other persons. Individuals with attachment insecurity tend to be dependent of others' approval, i.e. to receive a positive view and display a tendency to seek reassurance. This kind of preoccupied attachment style is associated with symptom reporting, use of medical care and negative affect. Although attachment styles have not been studied among artists, it is of interest to highlight this aspect, as the artists strive to perform their best and hope to receive recognition from others. The performance could be regarded as an interpersonal process between the singer and the audience.

It should be added that researchers acknowledge the significance of personality traits for health anxiety. In particular neuroticism has been associated with health anxiety. Researchers suggest (Feist, 1998, Sandgren, 2009) that intrapersonal, and not interpersonal aspects of neuroticism are significant for health anxiety in non-clinical samples. Artists in general are characterized by elevated levels of neuroticism as shown in a meta-analysis (Noyes et al., 2003), yet only a few studies report elevated levels of neuroticism among singers (Marchant-Haycox & Wilson, 1992), female students in vocal studies (Kokotsaki & Davidson, 2003), male opera students (Wearden et al., 2006) and elite operatic choristers (Kenny et al., 2004). It can therefore be argued that health anxiety cannot primarily be a manifestation of high neuroticism among opera singers.

In this article, data from a previous study (Sandgren, 2002) were investigated, as the concept of health anxiety disorder has been developed (Noyes et al., 2008). The new concept of health anxiety appears to be highly relevant for the particular illness worry, coping strategies and intrapersonal anxieties found among opera singers. It might be possible that how opera singers express their preoccupation with their vocal functioning, i.e. as health anxiety disorder, and worry about the opinions of significant others is related to performance anxiety. Therefore, in the present study, associations between performance anxiety and fore-mentioned variables were investigated. Moreover, the variable worry about disapproval was selected for a closer investigation, as it is associated with health anxiety and as its conceptual resemblance with aspects of performance anxiety,

social anxiety and preoccupied attachment style. The sample was divided in two groups lower and higher level of worry about disapproval, and group differences were explored for psychological and somatic variables.

II. METHOD

The data material in the present study was obtained from a combined qualitative and quantitative study (Sandgren, 2002). The questionnaire was based on the interview data and aimed to investigate particular problems related to the professional life of opera singers. The questionnaire covered demographic data, psychological and somatic problems, health promoting strategies, specific operatic experiences (such as worry about vocal indisposition, worries about opinions of significant others, health concerns, seeking assurance) and performance anxiety. In the current study, quantitative data on performance anxiety, psychological and voice-related variables from the questionnaire were further investigated.

A. Participants

The sample consisted of 49 professionally well established opera singers (n=26 women, n=23 men) (Table 1). Most singers (44%) were in the age range of 31-40 years. Two thirds of the singers were married and one out of two singers had children. Seven singers did not fill in civil status.

The majority of the women were sopranos (41%) and the majority of the men were tenors (22%). Most singers were professionally active; 27 singers were freelancing and 20 singers were permanently employed at an opera house. Permanent employment is a position that exists at Swedish opera houses and means that an individual is employed until retirement. Seven of 20 individuals with permanent employment indicated that they were also freelancing in Sweden and/or abroad.

B. Procedure and material

The criterion for selecting participants was that the individual had to be a professionally active and well established as an opera singer. The participants were recruited by contacting persons in executive positions in the opera world, and a list of addresses to 79 individuals was compiled. The questionnaire was sent to the home addresses of the participants. No reminder was mailed. As the opera singers were public persons, caution was especially taken to ensure confidentiality and anonymity. The opera singers were not asked to fill in their exact age, but within an age range in the questionnaire. In this way, it would not be possible to identify an individual from data on vocal pitch and age. Response rate of the questionnaire was 62 percent. Around 32 percent of the population of professionally active opera singers in Sweden participated according to statistics from the Swedish Union for Theatre, Artists, and Media (personal communication, 2001).

Performance anxiety was assessed by utilizing a measurement on occurrence of performance anxiety (Wesner et al., 1990). The measurement was tailored to match the experiences of opera singers. The items measured situations where performance anxiety might be debilitating, physical symptoms, cognitions, negative impact of performance anxiety and methods to cope with performance anxiety. The participants answered to what extent they had experienced performance anxiety on a 5-point Likert scale (0=not at all, 4=very much).

Somatic symptoms were assessed by 22-item checklist including for example voice fatigue, stomach problems, ulcer, and migraine. The participants answered to what extent they had experienced somatic problems on a 5-point Likert scale (0=not at all, 4=very much) during the last 4 weeks.

Psychological symptoms involved 4 items assessing signs of depression; anxiety, tiredness, concentration difficulties, and hopelessness. Another three items addressed acting out symptoms; high consumption of alcohol, food or drugs. Two items addressed doubts about the artistic competence; difficulties to perform as well as one can and doubts about one's artistic ability. The participants answered to what extent they had experienced the psychological variables on a 5-point Likert scale (0=not at all, 4=very much) during the last 4 weeks.

Table 1. Demographic characteristics of opera singers.

Variables	Frequency n	Percentage %
Gender		
Women	26	53
Men	23	47
Age range		
21-25 years	3	6
26-30 years	8	17
31-35 years	11	22
36-40 years	11	22
41-45 years	7	14
46-50 years	5	10
51-55 years	3	6
56-60 years	1	2
Family status		
Married	32	65
Partner	4	8
No partner	6	12
Having children	22	45
Vocal pitch		
Soprano	20	41
Mezzosoprano	5	10
Mezzo/alto	1	2
Tenor	11	23
Baritone	9	18
Base	1	2
Base/baritone	2	4
Employment status		
Permanent empl.	20	41
Freelancer	27	55
Student	2	4

Health promoting strategies were assessed by 17 items including use of herbal products, homeopathic products, vitamins or garlic; avoidance behavior such as not going by bus or subway, visiting smoky premises or premises with high sound level, to drink alcohol, contact with persons with a cold or similar, to take taxi instead of public transportation; to engage in physical training, jogging, yoga, relaxation exercises or mental training, to have a good night's sleep. The participants answered to what extent they used the various health promoting strategies on a 5-point Likert scale (0=never, 4=always).

Particular operatic experiences were assessed by 27 items including health anxiety (examples 'The focus for my health concerns is how the voice functions', 'To be sick is very tearing for my psychological well-being, 'I am good at taking care of me when I am sick'); vocal testing behavior (examples 'When I awake in the morning, I immediately test the voice to feel how the voice is', 'I test the voice several times a day to see if the voice is there'), worry about disapproval ('I worry that people around me will not like my performance', 'It does not matter how well I perform, I feel that I cannot live up to the expectations that others have on me', 'I am afraid of not being good enough', 'Bad reviews goes right into the heart and do not leave my thoughts'), competence based self-esteem (examples 'If the voice does not function well, my self-esteem plummets', 'The profession as an opera singer means that your whole person is being judged', 'It is difficult for me to listening to a singer that is better than me', 'Even if I get good critics, I seldom feel content'), seeking assurance (examples 'If nobody says anything about my performance, I believe that my performance was poor', 'I constantly seek confirmation', 'It is very important that someone comments on my performance afterwards). The participants indicated to what extent they agreed on the items on a 5-point Likert scale (0=do not agree at all, 4=agree completely).

C. Data analysis

The scales ranged 0-4 for performance anxiety, worry about opinions of others', worry about vocal indisposition, psychological and somatic symptoms, particular operatic experiences and health promoting strategies were transformed to the range of 1-5 for further analyses. In order to reduce data on performance anxiety and the fore-mentioned variables, a series of factor axis analyses with oblim rotation was conducted. Concerning performance anxiety, the factor analyses failed to create coherent dimensions. The items were instead summarized in five variables; PA Situation (7 items) covering various situation where performance anxiety might occur; PA Physical symptoms (12 items); PA Cognitions (12 items); PA Methods (3 items) covering the use of methods to reduce the negative influence of performance; and PA Negative impact (2 items) covering the extent of negative impact from performance anxiety. The few items concerning psychological symptoms were summarized in 3 variables and labelled 'Depression' (4 items), 'Doubts about one's ability (2 items), 'Acting out symptoms' (4 items). Next, factor axis analyses were performed and the following variables were created.

For items measuring particular operatic experiences, two factors accounted for 35.1% of the variance. The factors were labelled 'Worry about disapproval' (11 items) and 'Worry about vocal indisposition' (6 items) and selected for further analyses (see under 'Measurements' for the specific items included).

For somatic symptoms, two factors accounted for 29.6% and were labelled 'Voice-related problems' (6 items, hoarseness, coughing, colds, voice fatigue, noodles, pulmonary infection) and 'Muscle skeletal problems' (3 items, muscle tension, neck problems, back pain).

For health promoting strategies, five factors accounted for 63.9% of the variance. The factors were labelled HP Self-control techniques (5 items, mental training, relaxation techniques, yoga, meditation, homeopathic products), HP Avoid public premises (3 items, avoid premises with high sound level and smoke, avoid alcohol), HP Health products (3 items, use of health products, vitamins, do jogging), HP Mixed strategy (3 items, have a good night's sleep, eat garlic, avoid persons with colds or similar) and HP Avoid public transportations (3 items, prefer taxi over public transportations, avoid going by bus, engage in physical training).

Pearson's correlations between the variables were calculated. Next, the sample was divided in two groups (lower and higher levels of worry about disapproval). The mean (M=2.83, SD=1.03) of worry about disapproval was used as cut-off score. Univariate analyses (ANOVAs) were conducted for differences in the variables between groups (lower (n=25) and higher (n=24) level of worry about disapproval).

III. RESULTS

C. Correlations between performance anxiety and other relevant variables

Table 2 presents Pearson's correlations between performance anxiety, worry about disapproval, worry about vocal indisposition, psychological and somatic symptoms, and health promoting strategies. Significant positive correlations were found between the various items of performance anxiety (r=.58-.74, p<.01) with the exception for items measuring the use of methods to prevent performance anxiety. Moreover, facets of performance anxiety were significantly correlated with depression (r=.38-.65, p<.01), doubts about one's ability (r=.43-.67, p<.01), worry about disapproval (r=.51-.80, p<.01), worry about vocal indisposition (r=.32-.51, p<.01), muscle skeletal problems (r=.38, p<.01).

It should be added, that two significant correlations were found between methods for preventing performance anxiety and health promoting strategies, namely self-control techniques (r=.64, p<.01) and avoiding public premises (r=.31, p<.05).

The variable of worry about vocal indisposition (involving indicators of testing the vocal functioning, health anxiety and decreased psychological well-being when sick) were significantly associated with a number of psychological variables; depression (r=.36, p<.01), acting out symptoms (r=.48, p<.01) and worry about disapproval (r=.49, p<.01). Significant correlations between worry about vocal indisposition and health promoting strategies were not found.

In addition, opera singers' worry about vocal indisposition (involving indicators for testing the vocal functioning, health anxiety and decreased psychological well-being when sick) was significantly associated with a range of psychological variables; depression (r=.36, p<.01), acting out symptoms (r=.48, p<.01), doubts about one's ability (r=.46, p<.01) and worry about disapproval (r=.49, p>.01). Significant correlations between worry about vocal indisposition and health promoting strategies were not found.

Table 2. Means (sd), F-values for performance anxiety and other relevant variables in groups of lower (n=) and higher (n=) level of worry for disapproval.

Variables	Performance anxiety				
	1	2	3	4	5
Performance anxiety					

1. Situation	-				
2. Physical symptoms	.60#	-			
3. Cognitions	.61#	.74#	-		
4. Methods	.16	.20	.27	-	
5. Negative Impact	.58#	.72#	.73#	.18	-
Psych. symptoms					
Worry about disapproval	.64#	.50#	.67#	.00	.54*
Doubts about ability	.43#	.50#	.67#	.00	.54#
Worry about indisposition	.44#	.30*	.51#	.20	.32#
Depressive symptoms	.42#	.44#	.65#	.18	.38#
Acting out	.22	.27	.29	-.14	.21
Somatic problems					
Voice problems	.28	.09	.20	.07	.30*
Muscleskeletal problems	.29	.38#	.27	.18	.29
Health promoting strategies					
Self-control techniques	-.13	.04	.12	.64#	.29
Avoid public prem.	-.02	.06	.03	.31*	.02
Health products	.13	-.15	.02	.26	-.05
Mixed strategy	-.10	-.28	-.09	.23	-.28
Avoid public transp.	-.07	-.01	-.07	.27	-.05

*) p<.05, #) p.<.001

D. The signification of interpersonal relations

Table 3 presents means, standard deviations, F-values and power estimates for performance anxiety, worry about disapproval, worry about vocal indisposition, psychological and somatic symptoms and health promoting strategies in two groups of opera singers.

Univariate analyses (ANOVAs) indicated that opera singers with higher levels of worry for disapproval differed from opera singers with lower levels on performance anxiety in various performance situations ($F(1,45) = 20.528$, $p<.001$, $d=.993$), physical symptoms ($F(1,47) = 21.199$, $p<.001$, $d=.985$), cognitions ($F(1,45) = 48.185$, $p<.001$, $d=1.000$) and its negative impact ($F(1,45) = 17.739$, $p<.001$, $d=.985$). Individuals reporting more worry for disapproval had higher levels of performance anxiety compared to individuals reporting less worry for disapproval. Significant differences between the groups were also found for depression ($F(1,46) = 29.667$ $p<.001$, $d=1.000$), acting out symptoms ($F(1,45) = 4.057$, $p<.05$, $d=.505$) and doubts about one's ability ($F(1,47) = 21.448$, $p<.001$, $d=.995$). Depression, acting out symptoms and doubts were significantly more prevalent among those with more worry for disapproval compared to those with less worry.

IV. CONCLUSION

The aim of the study was to understand the conceptualization of performance anxiety among opera singers. Opera singers report increased concern for vocal functioning and somatic problems (Sandgren, 2002), but lower levels of performance anxiety. Still, they worried about possible disapproval from significant other for their performance. The question arose if opera singers have another kind of performance anxiety that resembles health anxiety.

The main findings of the present study is that performance anxiety are significantly associated with voice-related and psychological variables. Although the level of performance anxiety is relatively moderate for opera singers, performance anxiety was related to anxieties such as fear of vocal indisposition (i.e. illness worry), worry about disapproval and doubts about one's abilities.

In the present study, of methodological concern is the use of exploratory factor analysis on a small sample size. Moreover, due to previous problems with understanding and conceptualizing the opera singers' vocal preoccupation in the study by Sandgren (2002), new findings regarding health anxiety disorder were published (Noyes et al., 2008) and inspired to re-investigate the data material.

Table 3. Means (sd), F-values for performance anxiety and other relevant variables in groups of lower (n=) and higher (n=) level of worry for disapproval.

Variables	**Lower level of worry** m (sd)	**Higher level of worry** m (sd)	**F-value**
Performance anxiety			
Situation	1.82 (.54)	2.47 (.44)	20.528#
Physical symptoms	1.53 (.35)	2.05 (.41)	21.199#
Cognitions	1.77 (.50)	2.80 (.47)	48.185 #
Methods	1.53 (.51)	1.49 (.57)	.095
Negative Impact	1.50 (.60)	2.29 (.67)	17.739#
Psych. symptoms			
Worry about disapproval	1.72 (.78)	3.08(1.24)	21.448#
Worry about indisp.	2.59 (.92)	3.47 (.82)	12.521#
Depressive symptoms	1.65 (.54)	2.77 (.86)	29.667#
Acting out	1.34 (.43)	1.56 (.29)	4.057*
Somatic problems			
Voice problems	1.67 (.63)	1.73 (.77)	.081
Muscleskeletal probl.	2.10(1.01)	2.30(1.05)	.462
Health promoting strategies			
Self-control techn.	2.07(1.07)	1.72 (.73)	1.458
Avoid public prem.	3.49(1.01)	3.22 (.90)	.930
Health products	2.63 (.99)	2.65 (.87)	.009
Mixed strategy	3.33 (.85)	3.25 (.87)	.098
Avoid public transp.	1.97 (.71)	1.52 (.55)	6.039*

*) p<.05, #) p.<.001

Even if the results show that the level of performance anxiety was moderate, most singers were engaged in methods to reduce its negative influence, yet with no effect. Similar associations between coping strategies and their poor effects among instrumental musicians have previously been reported (Langendörfer et al., 2006; Steptoe, 2001).

In a study about elite operatic choristers (Kenny et al., 2004), occupational stress made a separate contribution to the quality of working life. Just as the opera singers worried about others' opinions about their performance and threats to vocal functioning, the opera choristers were also very concerned with role ambiguity, for example how they were evaluated. The choristers were sensitive to the physical working environment, for example the level of dust, noise and inappropriate heat and cold. It seems as if having the voice as core instrument and means of displaying artistic skills has psychological effects in

terms of increased anxiety regarding possible threats to exhibiting the same skills.

Results indicated that opera singers with higher levels of worry for disapproval reported higher levels of performance anxiety and other psychological variables compared to opera singers with lower levels of worry for disapproval. This means that the higher level of worry about intrapersonal aspects the individual had, the more worried he or she was about vocal indisposition and suffered from depressive and acting out symptoms. No differences between the two groups of opera singers were found for the use of health promoting strategies with the exception of avoiding using public transport.

The opera singers reported relatively low levels of voice impairment. The result on low self-reported level of voice problems refutes previous studies showing high prevalence of voice problems among professional singers (Verdolini & Ramig, 2001; Williams, 2003). In addition, voice problems were moderately associated with worry about vocal indisposition and with only one facet, the negative impact of performance anxiety. These unexpected results might be due to the use of different measurements and needs to be further investigated.

The sample of the current study was unique. It was possible to come in contact with a large part of the professionally active and well established opera singers. Most singers were working in Sweden and abroad. Altogether 33 percent of the population of opera singers in Sweden was estimated to have answered the questionnaire. As the opera singers were public persons, precautions were particularly taken to ensure anonymity and confidentiality with the result that the response rate was high.

Three limitations should be pointed out. The measurements used were specially constructed for the current study. Obviously, the present study needs to be replicated with validated measurements of performance anxiety and health anxiety. Secondly, the sample consisted of a highly selected group. The opera singers were working on a very high artistic level and a majority of them were professionally established both in Sweden and abroad. It is possible that these very well-established opera singers might have certain characteristics that distinguished them from opera singers working on national level only. Thirdly, the study used a correlational design that tells us very little about the processes that underlie the associations between performance anxiety and worry about vocal indisposition.

The results of this study serve to extend previous research on the nature of performance anxiety for opera singers. The associations between performance anxiety and psychological variables such illness worry, doubts about one's abilities and worry about disapproval point out that opera singers suffer from a certain health anxiety related to their professional activity. This characteristic of heightened health concerns among opera singers is suggested to be an expression of work strains due to the dependence of maintaining and demonstrating a very high level of singing ability in front of an audience during a long career.

The results of the current study suggest that the reactions and symptoms of performance anxiety might be extended in time and cause impairment in the daily life of opera singers. This was revealed in that opera singers appear to constantly worry about vocal indisposition and also to take measures to prevent somatic impairment. Their emotional, cognitive, behavioral and physiological states appeared to be reactions on the coming moment when they are expected to and also wish to excel in their artistic skills on stage in front of an audience. It appears as if the characteristic of having the voice as a core instrument makes the opera singers particularly vulnerable for the exposure to others' evaluation of their performance and may result in illness worry. Future studies are encouraged to examine the opera-specific facets of performance anxiety.

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