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Health outcomes of occupational stress in passionate musicians

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A B S T R A C T

Becoming a professional musician is highly demanding and requires a deliberate practice that involves participation in a highly structured activity to improve performance and high levels of concentration. Musicians often begin to study music at a very young age, and their lives are subjected to constant pressure and prone to high levels of stress that may impact their well-being. The aim of this study is to identify the effects of occupational stress and deliberate practice on the performance anxiety of passionate musicians and on their degree of well-being. A total of 483 musicians completed questionnaires measuring their levels of occupational stress, passion, performance anxiety and wellness. The results indicated that gender, low control, high demands, overcommitment and obsessive passion are predictors of musicians' level of performance anxiety. Meanwhile, experiencing control, low demands, rewards, low overcommitment, harmonious passion and low obsessive passion contributed to the explanation for musicians' well-being. These findings show that occupational stress and passion, but not deliberate practice, are directly related with performance anxiety and with musicians' well-being.

Resultados de salud del estrés laboral en músicos apasionados

Palabras clave:
Estrés ocupacional
Músico
Pasión
Ansiedad escénica
Bienestar Occupational stress
Music
Passion
Performance anxiety
Well-being

R E S U M E N

Convertirse en músico profesional es muy exigente y requiere una práctica deliberada que implica la participación en una actividad altamente estructurada para mejorar el rendimiento y altos niveles de concentración. Los músicos a menudo comienzan a estudiar música a una edad muy temprana, y sus vidas están sujetas a una presión constante y son propensas a altos niveles de estrés que pueden afectar su bienestar. El objetivo de este estudio es identificar los efectos del estrés ocupacional y la práctica deliberada sobre la ansiedad de interpretación de músicos apasionados y sobre su grado de bienestar. Un total de 483 músicos completaron cuestionarios que miden sus niveles de estrés ocupacional, pasión, ansiedad por el desempeño y bienestar. Los resultados indicaron que el género, el bajo control, las altas exigencias, el compromiso excesivo y la pasión obsesiva son predictores del nivel de ansiedad de interpretación de los músicos. Mientras tanto, experimentar control, bajas exigencias, recompensas, bajo compromiso excesivo, pasión armoniosa y poca pasión obsesiva contribuyeron a la explicación del bienestar de los músicos. Estos hallazgos muestran que el estrés y la pasión ocupacional, pero no la práctica deliberada, están directamente relacionados con la ansiedad por la interpretación y con el bienestar de los músicos.

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Performing music at a professional level is among the most demanding disciplines in arts education. Musicians often begin their training at very young ages (Braden, Osborne, & Wilson, 2015), and they test the limits of their sensorimotor capacities and devote themselves to constant efforts to be ever faster and more expressive (Altenmüller & Ioannou, 2016). In the musical profession, psychological distress is prevalent, as it is related to the demands of the public and other musicians (Burin & Osorio, 2017). Occupational stress may affect musicians' well-being (Vervainioti & Alexpoulos, 2015). Some studies have also shown that women in this field experience greater demands and stress than men (Holst et al., 2012), in line with previous research examining the general population (e.g., Moncada, Llorens, & Sánchez, 2005). Nevertheless, there has been limited attention focused on the consequences of occupational stress in this population.

Additionally, according to Ericsson, Krampe, & Tesch-Römer (1993) musicians engage in intentional practice with their instruments to improve their performance, which may have a negative impact on their health (e.g., because of the appearance of muscle pain) (Burin & Osorio, 2017). However, deliberate practice is a form of formal practice that experts use to improve their performance, a fact that suggests some degree of self-regulatory skills (Bonneville-Roussy & Bouffard, 2015).

To our knowledge, no studies have focused on the combined effects of occupational stress and deliberate practice, two factors that may have consequences for musician's health. Therefore, this study has been conducted to explore the implications of both occupational stress and deliberate practice for musicians.

Music as a profession

Professional musicians deal with conditions of greater tension than other professionals, because they are forced to contend with irregular working hours, personal isolation, separation from their families (as most concerts take place at the weekend), the monotony of practice sessions and frequent travel (Kenny, 2006). In addition, professional musicians are subjected to intense demands at work, as from the very start of their careers they are expected to perform to perfection and to exhibit constant patience and dedication (Jacukowicz & Weyzyk, 2017). More specifically, musicians face considerable emotional demands (their exposure to assessment and criticism), cognitive demands (the need for constant concentration, memorization and improvement) and social demands (competition from other musicians). On top of the psychological demands they deal with, musicians also have a lack of control over a part of their livelihoods, as they tend to have little say over what pieces they play, especially when it comes to symphony orchestras, which are very hierarchical organizations (Halleland, Harris, Sornes, Murrison, & Ursin, 2009; Holst, Paarup, & Baelum, 2012).

Occupational stress theoretical models

Some of the most prominent theoretical models used to understand occupational stress are based on observing an imbalance between the demands placed on an individual by the occupational context and the individual's resources to meet these demands. The job demand-control model (Karasek, 1979) makes it possible to describe and analyze workplace situations featuring chronic stress factors, placing special emphasis on the psychosocial characteristics of the professional environment. It has become one of the most influential models on the relationship between work and health (Van del Doef & Maes, 1999). The chief sources of stress are located in two basic features of any given job: the psychological demands of the job (intellectual demands, amount of work and pressure) and the degree of discretion or control that an individual can exercise, both over his or her tasks (discretion as to how to carry out predetermined tasks) and over the skills involved (discretion as to what tasks to undertake, creativity with regard to what methods to use and where to apply them, the use and development of each individual's skills). When a workplace task features high levels of both demands and control, the result for workers consists of higher of degrees motivation, learning and personal growth (and thus increased productivity). However, workplace situations characterized by low levels of both demands and control can lead to lower motivation, the loss of previously acquired knowledge, or the learning of behavior patterns that are damaging to both the worker and the organization. When demands are high and workers' control over them is low, the resulting workplace situations are marked by high degrees of strain and stress. The model was later expanded (Karasek & Theorell, 1990) to include a third factor, that of social support. The term here refers to the moderating role that can be played by the support received from both colleagues and superiors. In other words, social support can help safeguard against the negative effects a demanding job can have on well-being. The greatest levels of stress emerge, then, in jobs with high demands and a lack of social support, although it remains true that more control can counteract the negative effects of high demands.

In broad terms, musicians may be exposed to high levels of demand along with limited opportunities to exert influence over their own work (low skill discretion). Added to this, a lack of social support and low job satisfaction could increase the chances of experiencing occupational stress.

Another prominent theoretical model that can be used to understand occupational stress is the effort-reward imbalance model (Siegrist, 1996). This model emphasizes the need for the rewards received by workers (money, prestige and opportunities for promotion) to be commensurate with the (extrinsic and intrinsic) efforts they make. This model also takes into account the phenomenon of overcommitment, exhibited by individuals who are excessive in their devotion to their workplace tasks, dedicating exaggerated degrees of effort to their jobs. According to this model, an imbalance between effort and reward can provoke prolonged reactions of social and psychological strain. Stress emerges when the efforts made by a worker are significantly greater than the rewards he or she receives in return. This sort of situation can be especially stressful for overcommitted workers. The effort-reward imbalance model has been applied in a range of different contexts and has proven to be a useful tool in the design of programs to prevent workplace stress (Siegrist & Li, 2017). Research has proven the importance of remuneration, job security and career progression. This renders artists vulnerable to occupational stress due to the imbalance between effort and reward (Willis, Neil, Mellick, & Wasley, 2019).

Both models represent important contributions to the literature on occupational stress. Taken together, they paint a more complete picture, given that the job demand-control model focuses on the characteristics of the job itself, while the effort-reward imbalance model looks more at what happens when the reciprocity principle inherent in labour relations is violated and examines the personal factor of excessive dedication to work. However, few researchers have applied the job demand-control model to musicians (e.g., Vaag, Giaever, & Bjerkeset, 2014), and we are not aware of any research that has used the effort-reward imbalance model to study musicians. In light of the scarcity of literature covering this topic and the need for empirical research that explores musicians' working environment and the links

between personal factors and musicians' occupational stress, our purpose is to combine the two models to map the psychosocial factors that influence musicians' mental health outcomes.

Deliberate practice

Meanwhile, in the context of the musical profession, deliberate practice seems to be a variable worthy of consideration (Bonneville-Roussy & Bouffard, 2015). Deliberate practice is defined as the intentional participation in highly structured activities that are created specifically to improve performance and that require high levels of concentration (Ericsson et al., 1993). These activities are not inherently enjoyable (Ericsson & Charness, 1994). In broad terms, these kinds of activities can be divided into two basic categories (Sloboda et al., 1996): i) technical exercises (scales, arpeggios, sight reading, etc.), which help musicians systematically improve technical aspects of their performance by exposing them to a wide range of problems that may occur in pieces of music in a given genre, even though the music produced in the exercises is not in and of itself of interest; ii) practice playing individual works of music, where the focus is on overcoming the specific technical and expressive problems posed by a given piece. Musicians risk burnout if they engage in deliberate practice for more than a certain amount of time each day, but they can complement this practice with other music-related activities (studying music theory, playing familiar pieces either alone or in groups, observing other musicians).

Passion and musical performance

Another potentially relevant consideration is the fact that musicians place great importance on their professional activity. Music is the driving force in their lives and an integral part of their identities. The predominant role they give to music coincides with Vallerand's definition of passion, set out in the Dualistic Model of Passion (Vallerand et al., 2003; Vallerand, 2015). In the terms of the model, passion is understood as going beyond mere interest in an activity, and it is defined not as a personality trait but as a special relationship that is forged with a given activity (Vallerand, 2015). The Dualistic Model of Passion is based on Self-Determination Theory (Ryan & Deci, 2017), and it assumes that people attempt to meet certain basic needs for autonomy, competence and relatedness. When people are passionate about an activity, they love it and devote their time and energy to it, taking it on as part of their identities. By this definition, several studies (Bonneville-Roussy, Lavigne, & Vallerand, 2011; Stenseng, 2008) have pointed to playing a musical instrument as a supreme example of an activity that awakens passion. Vallerand identifies two different types of passion, distinguished by the ways in which the activity in question has been incorporated into an individual's identity. Harmonious passion arises when the internalization of the activity as part of one's identity is autonomous, such that the activity and its results are experienced as in accordance with one's pre-existing values and self-concept. The activity is freely pursued, often for pleasure, and it results in positive experiences both during the time spent on the activity itself and afterwards, generating motivation to adapt and regulate oneself (Curran, Hill, Appleton, Vallerand, & Standage, 2015). Thus, when the person cannot participate in the activity at a given time, he or she is able to adapt to the situation and effectively engage in other activities, indicating a degree of flexibility (Vallerand & Verner-Filion, 2013). Obsessive passion, however, emerges from a more controlled internalization of the activity. Engagement in the activity is dependent on contingency factors such as feelings of acceptance, and the individuals exhibit a behavior pattern marked by a rigid commitment to participating in the activity. Consequently, although individuals may love an activity passionately, they feel obligated to participate in it more out of a need to prove something to themselves or to gain social approval. Thus, people with obsessive passion can experience uncontrollable impulses to engage in the activities that are important to them, and they are unable to stop themselves. This sort of passion takes up a disproportionate amount of space in the person's identity and controls the person's behavior, with some people experiencing negative effects (such as ruminations) or other behavioral changes during and after the activity (Curran et al., 2015). While it is true that this kind of obsession can sometimes lead to greater persistence and thus improved performance in the activity, it can also have the opposite effect, with a lack of flexibility making it impossible for people to achieve what they might otherwise be capable of in the activity. The persistent obsession with the activity that has caused this sort of passion can bring with it conflicts with other aspects of an individual's life. When a person is unable to engage in the desired activity, he or she experiences frustration, which in turn stands in the way of fulfilling participation in other activities. Both kinds of passion have been documented as part of performing music at the highest levels, as the most accomplished musicians tend to display high levels of both harmonious and obsessive passion and to meet the criteria to be considered passionate: they love music, devote a large proportion of their time to it and consider it a passion (Mageau et al., 2009). However, a recent study showed that while harmonious passion does positively predict higher degrees of life satisfaction in accomplished musicians, the same is not true of obsessive passion (Bonneville-Roussy, et al., 2011). In line with the positive effects of harmonious passion, Ascenso, Williamon, & Perkins (2017) suggested that the keys to effective musical performance are experiencing positive emotions, maintaining social relationships, adopting an identity as a musician, and working hard to achieve a broad perspective that takes in the field of music and other areas as well (in other words, being flexible). Others (Fernet, Lavigne, Vallerand, & Austin, 2014), suggest the effects of harmonious passion on professional efficacy and obsessive passion on emotional exhaustion.

Musical performance anxiety

Further, it should be noted that musical performances (both auditions and concerts) represent the core of musicians' professional activities, and that these occasions require a high degree of psycho-physiological activation. When they perform in these contexts, musicians are constantly being assessed, both on their technical execution and on their audience interaction, and the fact that they often lack the skills to confront these kinds of situations can provoke anxiety (e.g., Braden et al., 2015; Chanwimalueang et al., 2017). Several studies have focused on the area of musical performance anxiety in the years since Kenny (2011, p. 433) defined the phenomenon as "the experience of marked and persistent anxious apprehension related to musical performance that has arisen through specific anxiety-conditioning experiences." Kenny writes that this anxiety is manifested through combinations of symptoms that may be affective, cognitive (such as fear of failure or negative thoughts about the performance or about oneself), somatic (such as tremors in the extremities or the voice) or behavioral (such as avoidance or flight behaviors). Anxiety affects adult musicians and children and adolescents

alike (Boucher & Ryan, 2011; Zarza-Alzugaray, Orejudo, Casanova, & Aparicio-Moreno, 2018). Between 40 and 60 percent of professional musicians have seen their performance harmed by anxiety (Thomas & Nettelbeck, 2014; Zarza-Alzugaray et al., 2018). Beyond these effects on performance, there can be other negative consequences, as musicians tend to adopt coping strategies that are not very healthy, including the consumption of drugs and alcohol, sometimes causing not only poorer performance (Williamon, Aufegger, Wasley, Looney, & Mandic, 2013), but also bringing about an end to musicians' careers (McGinnis & Milling, 2005; Ryan & Andrews, 2009; Yoshie, Kudo, Murakoshi, & Ohtsuki, 2009).

Performing music and well-being

Performing music may allow musicians to experience feelings of flow and well-being (Croom, 2015). Researchers have also looked at the effects of musical performance, concluding that playing an instrument can improve subjective well-being through several different mechanisms: i) subjective experiences of pleasure, ii) an increase in social interaction, iii) the fulfilling of musical ambitions, iv) the ability to make music and v) a feeling of self-satisfaction thanks to musical progress (Perkins & Williamon, 2014). However, research on performing professions suggests that occupational factors may negatively affect actors' well-being (Robb, Due, & Venning, 2018). In the same vein, over the past 10 years a growing body of research has examined the relationship between playing music and well-being (e.g., Willis et al., 2019). Other authors (Ryff, 2014; Willis et al., 2019) suggest that a eudemonic conceptualisation of well-being may be a suitable framework for understanding the experiences of performing artists.

The present study

Thus, as discussed above, the job demand-control model indicates that in musical performance and the musical profession in general, occupational demands, workers' degree of control and the social support receive are all important factors (Jacukowicz, 2016), while the effort-reward imbalance model tells us that musicians, like other performing artists, expect the efforts they make to be recognized with commensurate rewards (Siegrist & Li, 2017). Prior studies have analysed the relationship between occupational stress and musical performance anxiety (Kenny et al., 2004), but they did not apply the widely recognized theoretical models presented here, which have established their relationship with the well-being of employees in other workplace contexts. Taken together, the two models account for a large proportion of the occupational and personal factors that have been identified as affecting musicians' well-being (Vervainioti & Alexpoulos, 2015; Willis et al., 2019). In addition, passion seems to play a defining role in the field of music and would seem to have both positive and negative consequences (Mageau et al., 2009; Bonneville-Roussy et al., 2011), and deliberate practice seems to be a variable that merits attention (Bonneville-Roussy & Bouffard, 2015).

Founded on the above framework, the aim of this study is to analyze the effects of occupational stress and deliberate practice on performance anxiety and well-being of passionate musicians. It is expected that higher rates of music performance anxiety will be associated with obsessive passion, lower levels of control, high demands, low levels of social support and overcommitment (H1). In contrast, it is expected that well-being will be associated with harmonious passion, deliberate practice, higher degrees of control, greater demands, social support and a balance between efforts and rewards (H2).

Method

Participants

Responses were collected from a total of 529 musicians, but 29 of them were excluded because they were incomplete. Also, 17 more participants (3.4%) were excluded because they did not meet the criteria for inclusion. The inclusion criteria called for passionate musicians of 16 years of age or older who were professional or those, whom enrolled in an academic program, but also were participating in bands or auditions professionally. In line of prior studies (e.g., Rip, Fortin, & Vallerand, 2006; Vallerand & Houlfort, 2003), only those participants who were highly passionate (those who scored 4 or above on the passion criterion scale described below) were included in the study (96.6%).

Of the 483 musicians who made up the final sample, 256 (56%) were men and their age ranged from 16 to 77 years old (mean= 32.67± 11.52 years). According their occupational level and the type of performing, more than a half were fulltime musicians and played on a group or band (see Table 1). Sampling was conducted between February 2015 and January 2016.

Table 1.
Frequencies of the sociodemographic and professional variables of the participants.

Variables	%
Gender	
Women	47%
Men	53%
Civil Status	
Single	52.6%
Married/couple	42.7%
Separate/divorced	4.8%
Occupational level	
Fulltime musician	57.1%
Part time musician	22.4%
Unpaid musical band	13%
Not working at all	3.9%
Others	3.5%
Type of performing	
Group/ band	56.5%
Group and soloist	17.4%
Soloist	10.1%
Not specified	15.5%

Measures

In addition to socio-demographic and professional data, we measure passion and occupational stress.

Measurement of socio-demographic and professional data. A socio-demographic and professional questionnaire were used to data. Collects data on gender, age, civil status, occupational level (fulltime musician, part time musician, unpaid musical band, not working at all, and others) and type of musical performance (group/ band, group and soloist, soloist, not specified).

Measurement of occupational stress. Occupational stress was measured with The Job Content Questionnaire (Karasek et al., 1998); adapted into a Spanish version by Escribà-Agüir, Más, & Flores, 2001), and the Effort-Reward Imbalance Questionnaire (Siegrist et

al., 1996), adapted into a Spanish version (Robles, et al., 2003). The Job Content Questionnaire is a 22-item scale that measures three dimensions: demands (e.g., "My musical activity requires very hard work"), control over one's work (e.g., "In my musical activity, I have the opportunity to develop my special skills") and social support (e.g., "My teacher/conductor is concerned about the well-being of the people he/she works with"). All the items are answered on a four-point Likert scale ranging from 1 (totally disagree) to 4 (totally agree). In our study, the internal consistency indices were α=.69 for demands; α=.72 for control and α=.87 for social support.

The Effort-Reward Imbalance Questionnaire is a 16-item questionnaire which measures three dimensions: effort (e.g., "I am often interrupted or bothered when doing my musical activity"), reward (e.g., "In my job, the opportunities for promotion to a higher position in my musical activities are scarce") and overcommitment (e.g., "Many days I wake up with problems associated with my musical activity on my mind"). The items are answered using a Likert scale that ranges from 1 (totally disagree) to 4 (totally agree). The internal consistency indices are as follows: α=.46 for effort; α =.77 for reward and α=.75 for overcommitment.

Measurement of deliberate practice. In order to assess deliberate practice, we have used an item taken from a study by Bonneville-Roussy & Bouffard (2015), which asks respondents to rate the statement "I practice with the specific objective of improving (practicing scales, technical exercises, perfecting difficult musical fragments, improving my technique and performance...)", on a seven-point Likert scale, ranging from 1 (never) to 7 (always).

Measurement of passion. The Spanish version (Chamarro et al., 2015) of the Passion Scale (Vallerand et al., 2003), was adapted to music (items mentioning activity were changed to read "activity as a musician"), and contains two six-item subscales, assessing harmonious and obsessive passion. A five-item criterion measures participants' degree of passion for their musical activities. Each item in this section is designed to assess a different criterion of the definition of passion (the extent to which the participant likes and feels passionate about the activity, as well as the time spent on the activity). All these subscales were answered using a seven-point Likert (from 1, strongly disagree to 7, strongly agree). Previous research has demonstrated the reliability and validity of the instrument (Chamarro et al., 2015; Marsh et al., 2013). In our study, the internal consistency indices were α=.83 for harmonious passion and α=.79 for obsessive passion.

Measurement of performance anxiety. For performance anxiety, the study used the subscale of the Kenny Music Performance Anxiety Inventory (Kenny et al., 2004), adapted into Spanish by Zarza, Orejudo, Casanovas, and Mazas (2015). This questionnaire originally consisted of three subscales: general vulnerability, context and early relationships and performance anxiety. This final subscale is made up of 11 items, (e.g., Before a concert, I never know if I will give a good performance) with respondents answering on a seven-point Likert scale ranging from 1 (totally disagree) to 7 (totally agree). The scale has an internal consistency of α = .87.

Measurement of psychological well-being. The Psychological Well-being Scale (Ryff, 1989) was used in an abbreviated Spanish adaptation (Díaz et al., 2006). It consists of 29 items and measures six dimensions of psychological well-being: self-acceptance (e.g., "In general I feel secure and positive about myself"), positive relations with others (e.g., "I know that I can count on my friends, and they know they can count on me"), autonomy (e.g., "I trust in my own opinions, even when they go against the general consensus"), environmental mastery (e.g., "I have been able to build a home and a lifestyle that I like"), personal growth and purpose in life (e.g., "I feel that over time I have developed a lot as a person"). All the dimensions are answered on a seven-point Likert scale ranging from 1 (totally disagree) to 7 (totally agree), and a well-being score is calculated via a sum of the scores on the subscales. This scale has an internal consistency of α = .89.

Procedure

The questionnaires were administered both in a paper format and online. The paper questionnaires were administered by the first author to teachers and students of the superior school of music who met inclusion criteria, and to members of professional bands, all of whom had signed informed consent protocols. The online questionnaire was distributed via a link that could be shared and forwarded by social network users, especially on Facebook and LinkedIn. Respondents were able to access the questionnaire after having read the informed consent document and having clicked on "I agree to participate." Users were asked to consent to the posting of information about the questionnaire on their profiles to attract more participants. This procedure is in compliance with the ethics rules set out in the 2013 Helsinki Declaration and its subsequent amendments and received the Research Ethics Committee's approval.

Statistical analysis

The data analysis was carried out using version 17.0 of the statistics program SPSS. The techniques used were as follows: (a) descriptive analysis, (b) analysis of variance (ANOVA) (c) correlation analysis and (d) hierarchical multiple linear regression using the "enter" method. Socio-demographic and occupational data, transformed into dummy variables, and passion dimensions, were entered in the first and second steps in order to control their effects. Then, the occupational stress and deliberate practice were entered as a third step. The measurements of performance anxiety and well-being were considered to be dependent variables.

Results

We conducted a preliminary data analysis (ANOVA) to enable us to determine if socio-demographic variables showed significant differences for the stress models, deliberate practice, anxiety and well-being variables. No significant differences were found for the dimensions of Effort-Reward Imbalance Questionnaire or for deliberate practice. However, some differences were found for the variables from the Job Content Questionnaire, performance anxiety and well-being. Specifically, for gender, women showed higher scores for social support than men (p = 0.031). Regarding type of performing, musicians who played in a group/band showed lower scores for the control dimension than soloists (p =0.048) and than musicians that played in a group and as soloists (p =0.001). Likewise, musicians who played in a group and as soloists showed higher scores for demands than musicians who played in a group/band (p =0.029) and than musicians that did not specify what type of performing they did (p =0.028). Regarding occupational level, fulltime musicians showed higher scores for the control dimension than unpaid musicians in bands (p =0.001), part time musicians (p <0.001), non-working musicians (p <0.001), and they got higher scores for the demand dimension than unpaid musicians in bands (p =0.001) and part time musicians (p =0.002).

Regarding performance anxiety, women had higher scores than men (p <0.001), and members of groups and soloist musicians showed lower scores than group/band musicians (p =0.008) and than musicians that did not specify what type of performing they did (p = 0.001). Finally, for the wellbeing dimension, married

musicians and those in relationships registered higher scores than single musicians (p = 0.001), and musicians who performed in a group and as soloists showed higher scores than group/band musicians (p = 0.038).

The descriptive variables are shown in Table 2, with the mean, standard deviation, range, asymmetry and kurtosis. The values of asymmetry and kurtosis are all between +/-1. The asymmetry values are all negative (less age and reward). The same happens with the values of kurtosis, which are all negative (less control, demands and social support). In general, the descriptive statistics show adequate consistency.

Most of the participants were found to be at least moderately passionate about music, and there was a predominance of harmonious passion over obsessive passion. Considering the ranges based on the means and standard deviations of responses provided for each of the variables (Table 2), it would seem that, regarding the demand-control model, musicians experience high degrees of demand, but they also exhibit high levels of control, meaning that they can actively take initiatives in their work (Siegrist, Li, & Montano, 2014). They also show a high degree of social support. Applying the effort-demand model, we found that their efforts are not rewarded to the extent that they would like and that overcommitment is prevalent. Deliberate practice is also predominant. We also found low levels of performance anxiety and high degrees of well-being.

Table 2.
Descriptive statistics.

Variables	*M* (*SD*)	Rank	Asymmetry	Kurtosis
1.Age	32.69 (11.58)	16-77	.60	-.34
2.Control	24.68 (3.10)	14-28	-.99	.64
3.Demands	18.18 (3.40)	6-24	-.50	.08
4.Social Support	28.38 (5.33)	9-36	-.78	.45
5.Effort	8.66 (1.94)	3-12	-.31	-.16
6.Reward	16.71 (4.67)	7-28	.09	-.63
7.Over-commitment	16.52 (4.20)	6-24	-.25	-.66
8. Deliberate Practice	5.20 (1.71)	1-7	-.74	-.38
9. Harmonious Passion	33.91 (6.29)	17-42	-.80	-.01
10. Obsessive Passion	24.56 (8.30)	6-42	-.24	-.63
11.Performance Anxiety	33.21 (13.42)	11-73	.59	-.20
12. Wellbeing	149.65 (23.90)	79-202	-.21	-.57

Note. (N = 483).

In terms of the correlation analysis, a moderate positive correlation was observed between overcommitment, demands, effort and obsessive passion (r > 0.40). There was also a positive but lower correlation, between rewards and social support. Deliberate practice was found to correlate positively (although to a smaller degree) with control, demands, overcommitment and obsessive passion. Harmonious passion showed moderate positive correlations with control, social support and rewards. Obsessive passion correlates negatively with rewards. Performance anxiety also showed a moderate correlation with overcommitment and a smaller correlation with demands. Finally, well-being was positively correlated with control, rewards and harmonious passion. A negative correlation was found between well-being and overcommitment (see Table 3).

Table 4 shows the results of the hierarchical regression analysis. The regression analysis for performance anxiety showed a significant predictive value for gender, being a group and soloist musician, harmonious passion (negatively) and obsessive passion, control (negatively), demands and overcommitment and (see Table 4). Taken together, these factors explained 26% of the variance in performance anxiety. Well-being was significantly predicted by harmonious passion and obsessive passion (negatively), control, and rewards. These factors explained 32% of the variance in well-being.

Discussion

The purpose of this study was to identify the effects of occupational stress and deliberate practice on the degrees of well-being and performance anxiety experienced by passionate musicians. It was hypothesized that musical performance anxiety would be associated with obsessive passion, lower levels of control, high demands, low levels of social support and overcommitment. Regarding well-being, it was expected to be associated with harmonious passion, deliberate practice, high levels of control, high demands, social support and a balance between effort and rewards.

In descriptive terms, our results suggest that a large percentage of musicians can be considered to be passionate about their profession, and more specifically that they tend more toward harmonious passion than obsessive passion. This suggests that musicians feel that their profession is part of their identities, which they enjoy it and do not do it out of a sense of obligation, and that playing music coexists in harmony with other parts of their lives. These results bear out the findings of other studies on musicians (Bonneville-Roussy et al., 2011) and on other artists, such as dancers (Chamarro, Martos, Parrado, & Oberst, 2011).

Regarding occupational stress, musicians report feeling largely in control of their professional activities, saying that they are able to

Table 3.
Correlation among the Variables.

Variables	1	2	3	4	5	6	7	8	9	10
1.Age										
2.Control	0.18**									
3.Demands	0.06	0.40**								
4.Social Support	-0.15*	0.10*	-0.04							
5.Effort	-0.11*	0.17**	0.56**	0.10*						
6.Reward	-0.11*	0.002	-0.27**	0.33**	-0.08*					
7.Over-commitment	-0.02	0.21**	0.51**	-0.02	0.48**	-0.22**				
8. Deliberate Practice	0.03	0.17**	0.13*	0.06	0.06	-0.01	0.21**			
9. Harmonious Passion	0.09*	0.30**	-0.05	0.22**	0.04	0.24**	-0.05	0.12*		
10. Obsessive Passion	-0.04	0.22**	0.40**	0.09*	0.38**	-0.16**	0.58**	0.24**	0.25**	
11.Performance Anxiety	-0.08*	-0.10*	0.17**	-0.02	0.12*	-0.10*	0.30**	-0.02	-0.06	0.25**
12. Wellbeing	0.13*	0.25**	-0.12*	0.13*	-0.06	0.26**	-0.21**	0.07	0.43**	-0.12*

Note. *= p < .05; **= p < .001;

Table 4.
Hierarchical regression analysis for performance anxiety and well-being.

	Performance Anxiety						Well-being					
Variables	R^2	ΔR^2	B	Beta	IC (95%)		R^2	ΔR^2	B	Beta	IC (95%)	
Step 1	0.10	0.08***	48.7		40.77	56.62	0.04	0.02	138.51		124.02	152.99
Gender				-0.22***						0.02		
Age				-0.01						0.07		
Civil Status				-0.06						0.05		
Type of performing												
Soloist				-0.06						-0.05		
Group/band				-0.07						-0.02		
Group and soloist				-0.16*						0.08		
Occupational level												
Fulltime musician				-0.07						0.12		
Unpaid music band				0.03						0.02		
Part time musician				0.07						0.01		
Not working				-0.06						0.05		
Musical studies level				-0.02						-0.02		
Step 2	0.19	0.17***	46.65		36.54	56.75	0.27	0.25***	90.48		73.51	107.45
Harmonious Passion				-0.14**						0.49***		
Obsessive Passion				0.31***						-0.25***		
Step 3	0.26	0.23***	50.49		36.06	64.93	0.32	0.29***	58.99		34.60	83.40
Control				-0.19***						0.19**		
Demands				0.17**						-0.09		
Social Support				-0.03						0.01		
Effort				-0.08						0.06		
Reward				-0.01						0.12**		
Over-commitment				0.23***						-0.10		
Deliberate Practice				-0.06						0.06		
	F=7.99***						F=10.90***					

Note. *= $p < 0.05$; **= $p < 0.01$; ***= $p < 0.001$; Gender: 1=women, 2=men

make decisions as to when and how to perform. As for the demands of the job, musicians exhibit scores slightly higher than the average for all professions. This combination of high levels of both demands and control places musicians in the category of "active workers" (Escribà-Agüir et al., 2001). Thus, according to the terms of the job demand-control model, the musicians in our sample do not seem to experience occupational stress. Additionally, they report receiving a high degree of social support from their colleagues and superiors. Being able to exercise discretion plays a role in fostering well-being and protecting against performance anxiety. However, according to the Siegrist model our participants did register high scores for effort and low marks for reward, indicating that they view their profession as highly demanding and the rewards they receive as insufficient. In other words, being a musician is stressful, as defined by this model (Siegrist, Li, & Montano, 2014). The moderately high scores registered for overcommitment point to the fact that many musicians devote themselves somewhat excessively to their work to try to meet the intense demands of the musical profession (Siegrist et al., 2014).

According the results of multivariate analysis musical performance anxiety was associated to lesser control over one's work, a greater tendency toward overcommitment, the perception of stronger demands, lower levels of harmonious passion and higher levels of obsessive passion, confirming our first hypothesis. Besides, these factors were most likely to affect women. In this sense, previous studies had also found women to be more likely to experience performance anxiety (e.g.,Thomas & Nettelbeck, 2014). Additionally, perform both on bands an as soloist, seem to be a protective factor. That may be because they are more able to perform adequately in different situations, feel comfortable and are less susceptible to audience's reactions. These factors make them less susceptible to experience musical performance anxiety (Burin & Osorio, 2017; Kenny, 2011).

Regarding passion, on the one hand, obsessive passion has been shown to be associated with greater negative effects and with anxiety (Curran et al., 2015; Vallerand & Verner-Filion, 2013), including some studies that specifically looked at musicians (Bonneville-Roussy & Bouffard, 2015). However, harmonious passion decreases musical anxiety, and consequently enhance well-being (Bonneville-Roussy and Vallerand, 2018). Additionally, it was found that lesser control over one's work, or in other words a lack of autonomy in the decision to play music, contribute to musical performance anxiety. These results are consistent with preliminary correlation analysis, showing that for musicians, experiencing demands is associated with greater effort and overcommitment as a coping strategy. Moreover, that strategy seems to be implemented in an obsessive, rigid and persistent way.

On the other hand, the results of our study, regarding stress factors, are aligned with the predictions of Karasek and Theorell's model (1990), who pointed out that the combination of high levels of demand, a low degree of control over one's work and a pattern of overcommitment can have negative consequences for workers. These results place the musical profession in the category of high-strain activities. These results also echo those of Holst et al. (2012), who found that symphony orchestra employees show high levels of commitment despite being subjected to great demands, often lacking the capacity to influence their own professional activities and receiving low levels of social support.

Otherwise, the results showed that in fact well-being was predicted by higher degrees of harmonious passion and lower

obsessive passion, higher degrees of control over one's work and the belief that one's rewards are a sufficient reflection of the efforts made. These findings partially confirmed our second hypothesis. The evidence that a combination of high levels of harmonious passion and low degrees of obsessive passion contribute to well-being is not new. Harmonious passion has been shown to predict well-being in a whole range of different activities (Curran et al., 2015, Vallerand, 2015), as the autonomous internalization of the activity as part of the person's identity leads to greater flexibility in the commitment made to the activity, which in turn fosters concentration and facilitates the individual's engrossment when engaged in it. Prior studies have shown this also to be the case for musicians (Bonneville-Roussy et al., 2011; Fernet et al., 2014). The results here are also consistent with the findings of Ascenso et al. (2017), who suggested that musical achievement was associated with factors such as a high degree of personal implication and the assumption of an identity as a musician (passion) and with hard work undertaken from a broad perspective (harmonious passion). Similarly, the literature has shown that high scores for obsessive passion are not associated with well-being (Rousseau & Vallerand, 2008), because musicians who experience obsessive passion tend to be driven by uncontrollable impulses to play, which may improve their performance but ultimately leads to decreased well-being. Thus, our results suggest they achieve greater well-being when their degree of obsessive passion is low.

In the face of the stressors described here, higher levels of control and discretion, along with greater social recognition, contribute to promoting health. These results are consistent with prior suggestions by Van der Doef and Maes (1999) and findings by Vervainioti and Alexopoulos (2015), who concluded that the well-being of musicians is threatened in large part because they tend to experience a lack of control and to be subjected to criticism.

Finally, although musicians score highly for deliberate practice, meaning that they practice specifically to improve their performance, the contribution of this activity to well-being is not relevant. This may be because, as Ericsson and Charness (1994) highlight, this sort of practice is not inherently enjoyable (nor inherently unpleasant). These results are at odds with the findings of Bonneville-Roussy and Bouffard (2015), but they may be understandable if we consider the potential risk of burnout when musicians engage in deliberate practice for more than a certain amount of time each day (Sloboda et al, 1996). According to Sloboda et al (1996), musicians should complement this deliberate practice with other music-related activities (studying music theory, playing familiar pieces either alone or in groups, observing other musicians). This combination could help them lower their levels of unpleasant feelings and, at the same time, it could contribute to greater flexibility, a basic component of harmonious passion.

Taken together, our results suggest that by using two theoretical models that focus on both the organizational aspects of work and on personal factors, we can get a more complete picture of the health outcomes of occupational stress.

Research limitations and implications

This study is limited by the use of both self-report and cross-sectional data. Future studies should attempt to include behavioral measures when possible, and they should employ longitudinal designs to explore the implications of occupational stress, deliberate practice and passion for musicians' health outcomes. Another limitation is that one dimension of the effort-reward questionnaire has very low reliability (α=0.46). Future studies could explore in depth the quality of the effort dimension and its implications for the effort-reward imbalance. A third limitation is that for deliberate practice only one item was used. Future studies should consider using a minimum of three or four items, as suggested by Lloret-Segura, Ferreres-Traver, Hernández-Baeza, & Tomás-Marco (2014). Notwithstanding, this study has many implications for research and practice in music education and occupational research.

In terms of practice, our results suggest that musicians benefit the most from being harmoniously passionate. Harmonious passion could be developed through practicing diverse music-related activities and combining them with other activities of everyday, gaining flexibility, a basic component of harmonious passion. In this sense, developing musical skills for playing in bands and, as soloist seems a promising way. Additionally, our results offer new suggestions for minimizing musical performance anxiety, which may be treated not only though professional treatment or early educational experiences (e.g., Boucher & Ryan, 2011), but also promoting control, reducing demands and limiting overcommitment. From a theoretical point of view, our results suggest that a view of both organizational and personal aspects of occupational stress may be considered. Future research should shed light on the role of those factors on the health of musicians.

Conclusion

Our study has made clear that occupational stress and passion, but not deliberate practice, are directly related with both performance anxiety and well-being in musicians. The musicians in this study scored below average when it comes to the appearance of maladaptive patterns connected with performance, specifically in the form of performance anxiety, a finding that coincides with their high scores for psychological well-being.

Our results suggest that musicians would be well served by striving to exercise control over their own musical decisions, to combine their musical activities with other parts of life (harmonious passion) and to obtain enough rewards for their work.

When it comes to performance anxiety, women, along with those focused on obtaining results and those most prone to overcommitment, are at higher risk of experiencing negative consequences.

However, our results show that musicians are better off under certain conditions (high harmonious passion and low obsessive passion), when they can exercise autonomy and to combine music with other activities. Therefore, it might be positive to attain working conditions that allow musicians to find a better balance between their professional activities and other parts of their lives.

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