

Tuning in on motivation: Differences between non-musicians, amateurs, and professional musicians

Psychology of Music
2019, Vol. 47(6) 864–873
© The Author(s) 2019
Article reuse guidelines:
sagepub.com/journals-permissions
DOI: 10.1177/0305735619861435
journals.sagepub.com/home/pom



Alva Appelgren¹, Walter Osika^{2,3,4},
Töres Theorell^{5,6}, Guy Madison⁷ and
Eva Bojner Horwitz^{2,3,5} 

Abstract

The drive to learn and engage in music varies among individuals. Global motivation to do something can be intrinsic, for example, the joy and satisfaction in an activity. But motivation behind our action can also be extrinsic, such as the desire for fame, status or increased financial resources. The type of motivation probably influences to what degree individuals engage in musical activities. In this study, we examined the associations between the level of musical engagement and self-rated global motivation, factoring in age and sex, in a sample of 5,435 individuals. Musical engagement ranged from no music activity to amateurs and professional musicians. We found that intrinsic motivation increases with level of music activity and that motivation differs depending on sex, with females scoring higher on intrinsic motivation than males. Such differences may be considered in adjusting the forms of support offered to young musicians in music education. The phenomenon of motivation is complex, and we have highlighted areas that require further investigation, but this study has elucidated some differences in motivation types found in men and women, and between non-musicians, amateurs and professional musicians.

Keywords

Motivation, music, personality, sex differences, self-compassion

¹Pär Lagerkvists gata 6, Stockholm, Sweden

²Department of Clinical Neuroscience, Karolinska Institutet, Sweden

³Center for Social Sustainability, Institution of Neurobiology, Care Sciences and Society, Karolinska Institutet, Sweden

⁴Northern Stockholm Psychiatry, Stockholm, Sweden

⁵Department of Music, Pedagogy and Society, Royal College of Music, Stockholm, Sweden

⁶Stress research Institute, Stockholm University, Sweden

⁷Umeå University Umeå, Sweden

Corresponding author:

Eva Bojner Horwitz, Royal College of Music, SE 115 91 Stockholm, Sweden.

Email: eva.bojner-horwitz@kmh.se

This study sought to identify how motivation may differ in people who choose to become professional musicians, those who remain engaged at an amateur level, and those who are not engaged in playing music. We paid attention to two key factors in examining motivation to play at the different levels: degree of music engagement and gender.

People who engage in creative activities, such as music, do so with a range of different motivational drives that are interlinked and that vary over time, such as striving to improve practical skills, striving to attain personal or professional success, and motivation derived from enjoyment experienced from the activity. But is there a distinctive form of motivation that is more common among those who decide to pursue music as a career, as compared to those who choose to practise music at an amateur level? If so, we propose that it may be of help to teachers to examine this distinctive form of motivation since it may lead to the early identification of potential future musicians and more effective coaching of such students. The extant body of literature has not shown whether or not professional musicians are driven by a different combination, or balance, of motivational drives as compared to amateur musicians or non-musicians. That is, whether motivation varies across the spectrum of music engagement. One might hypothesise that striving to become better at playing music would feature strongly among the motivational drives of professional musicians, but there is a lack of research supporting such a conclusion, and even the claim that there are differences among the motivational traits of professional musicians as compared to non-musicians or amateurs. This study sought to develop our knowledge about the possible connections between a person's level of music engagement and the forms of motivation that drive that engagement.

For professional musicians, there is a blurred line between an intensive but healthy engagement with their work, leading to excellent proficiency, and the overcommitment that may sometimes be a necessary part of their work, but which also increases the risk of stress. Whilst it has been observed that stress is a prominent feature of professional musicians' lives, severe stress leading to burnout can result in the inability to engage in music practise at all (Holst, Paarup, & Baelum, 2012; Jacukowicz, 2016). In identifying the pervasive stress in professional musicians' lives, it becomes important to consider the phenomenon of burnout and any factors that may help identify how to alleviate it. Maslach and Leiter (2017) identify a set of different strategies that can be used to alleviate burnout; choice of such strategy may be facilitated by understanding the key motivation of the individual.

In the substantial body of research on motivation, one measure used is the Global Motivation Scale (GMS), which is administered by questionnaire and is composed of subdivisions that address such factors as joy, sense of purpose, self-judgement and valuing the opinion of others (Guay, Mageau, & Vallerand, 2003). Individual motivation scores from the GMS questionnaire can thus depict the degree to which a person is driven by intrinsic or extrinsic motivation, and whether this relates to engagement in a particular task or characterises that person's motivation in general. Intrinsic motivation describes the drive based on one's own interest in performing the task. Extrinsic motivation describes the drive to perform a task because there is an association with a particular outcome, separate from the fulfilment of the action required of the task (Deci, Koestner, Ryan, & Cameron, 2001; Covington & Müller, 2001). The experience of a high degree of intrinsic motivation, also known as a "flow" state, is proposed to generate a number of beneficial effects on wellbeing including a reduction in burnout and associated depressive symptoms (Mosing, Butkovic, & Ullén, 2018). Based on their use of the GMS, Guay et al. argue that the intrinsic and extrinsic aspects of motivation may be further subdivided according to their motivational drives: joy, value, sense of purpose, self-judgement as well as the opinions and amotivation of others (Guay et al., 2003).

Other studies have investigated intrinsic motivation in relation to musicians: McPherson, Osborne, Barrett, Davidson, and Faulkner (2015) found that students' experiences of studying music were affected by the ability to choose to study and practise types of music that one is interested in, and that students of music reported a higher sense of usefulness, interest, and attached greater importance to music than non-music students. Furthermore, investigating flow and music practise, Butkovic et al. showed that intrinsic motivation is positively correlated with hours of training (Butkovic, Ullén, & Mosing, 2015). Extensive training is a necessity for the aspiring professional musician (Ericsson, Krampe, & Tesch-Römer, 1993) but extensive practise in music has been associated with the trait perfectionism. Stoeber and Eismann (2007) regard perfectionism as strongly related to motivation, effort, achievement, but also distress. They investigated the level of perfectionism among 146 young musicians in the age range of 13–20 years and found that striving with a sense of perfectionism was associated with higher intrinsic motivation (fun and enjoyment) and identified motivation (that is, extrinsic motivation linked to one's goals). The authors found that perfectionism was associated with higher levels of effort, which manifested in a greater number of practise hours and higher levels of achievement (measured by grades and awards), but also that perfectionism was associated with an individual's negative response to indicators of imperfection (self-judgement and other people's opinions). This correlated with reporting higher degrees of distress and anxiety. Thus, the study suggests that perfectionism can result in both positive effects, such as the experience of higher intrinsic motivation, and negative ones in the impact that it may have on psychological wellbeing resulting in increased anxiety and distress.

Certain factors have been determined to inform whether or not a person will decide to progress to a career in music, such as starting to play at a young age, self-selection of instrument, attending music classes and gender. With regards to gender, some findings in the literature point to potential gender differences in motivation: men, overall, were found to be more likely to continue their engagement with music as compared to women (Theorell, Lennartsson, Madison, Mosing, & Ullén, 2015). Young female musicians have been found to be more likely to attribute their failures to internal factors as compared with their male counterparts (Asmus, 1986), and McPherson et al. (2015) found that women scored slightly higher than men in reporting a sense of importance and usefulness from learning music. From such studies, it is not yet clear whether there are true gender differences in the type of intrinsic motivation experienced by musicians, or indeed if motivation is determined by other factors, for example work difficulty, age and the stability of their work. Such studies do, however, highlight gender as a potentially important factor when studying career motivation: differences in interest, usefulness as well as reactions to failure may have an impact on the decision to engage in music as professional or amateur. It is important that we better understand the factors upon which decision-making about music careers is predicated, in order for music students to be better supported, especially with regard to promoting equality of opportunity in the industry.

From the discussion of the literature, we derived two key factors in our exploration of how motivation might vary among individuals: level of music engagement and gender. Our guiding research questions were therefore:

1. Does motivational drive differ by level of music engagement?
2. Does motivational drive differ by gender?
3. Is there an interaction between gender and level of music engagement?

Method

Participants

Data were collected from a web survey sent out to a cohort of approximately 32,000 twins, a cohort in the Swedish Twin Registry. Twins have served as a useful sample for data in previous studies of motivation (for example, Mosing, Madison, Pedersen, Kuja-Halkola, & Ullén, 2014). The twins selected were born between 1959 and 1985 as part of what is known as the STAGE cohort (see Lichtenstein et al., 2006 for further details). As we were interested in associations on a phenotypic level we controlled for relatedness: one twin from each pair was randomly selected in order to avoid the bias of similarity of data from individual twins. In addition we added to our sample any incomplete pairs, that is, pairs in which only one of the two twins had participated. This resulted in a sample of 5,435 individuals: 2,305 men and 3,130 women. The participants were between 27 and 54 (mean age = 41.02 years, $SD = 7.81$). The study was approved by the Regional Ethics Review Board in Stockholm (Dnr. 2011/570-31/5, 2011/1425-31, 2012/1107/32).

Music engagement: Creative achievement questionnaire (CAQ) – subjective levels of musicianship

The level of music engagement was measured using a music subscale from the creative achievement measure referred to in the present study as CAQ music (Carson, Peterson, & Higgins, 2005; Theorell et al., 2015). For details about the survey procedure, see Theorell et al. (2015). This questionnaire is a self-report measure of different creative achievement domains. The participants rated their own level of music engagement using a seven-graded scale answering the question: “How engaged are you in music?”: 1 = “I am not at all engaged in music”, 2 = “I am self-taught and do music privately but I have never played, sung or showed my music to others”, 3 = “I have had lessons in music, but I have never played or sung for others or showed my music to others”, 4 = “I have played or sung, or my music has been played at concerts where I live, but I have not been paid for this”, 5 = “I have played, sung or my music has been played at concerts where I live and I have been paid for this”, 6 = “I am a professional musician” and 7 = “I am a professionally active musician and I have been reviewed and written about in media both in my country and internationally, and/or I have got at least one prize or award for my musicality”. The participants were categorised into one of three groups for the two-way between-subject analysis of covariance (ANCOVA) according to their answers: 1 = non-musicians rating themselves 1 ($n = 3,195$), 2 = amateurs, who rated themselves 2–4 ($n = 1,007$) and 3 = professional musicians who rated themselves 5–7 ($n = 1,233$).

Motivation

Motivation was measured using a Swedish version of the GMS, as discussed earlier in this paper (Guay et al., 2003; Ullén, Harmat, Theorell, & Madison, 2016). The scale ranges from intrinsic motivation to amotivation and consists of six subscales in total: intrinsic (motivated by joy, satisfaction), integrated (motivated by following one’s own values), identified (motivated by aim and purpose), introjected (motivated by avoiding guilt or anxiety), external (motivated by other people’s opinions) and amotivation (not motivated by anything). There were three questions for each category resulting in a total of 18 questions. We also added two related items that we considered relevant to the pursuit of being a musician, namely status (motivated by

Table 1. Motivation index scores depending on Creative Achievement Questionnaire CAQ, music and sex.

	Motivation index				
	<i>M</i> (<i>SD</i>)	<i>df</i>	<i>F</i>	<i>p</i>	η^2
CAQ music		2	27.1	<.001	.01
None	42.4 (25.9)				
Amateur level	46.5 (25.4)				
Professional level	48.6 (24.0)				
Sex		1	48.7	<.001	.005
Males	41.2 (24.3)				
Females	47.04 (26.1)				

prominence) and money (motivated by the extrinsic reward money), measured by one question each. The participants responded by ratings from 1 = *Do not agree at all* to 7 = *Completely agree* for each item. The scale ranges from intrinsic motivation to amotivation (if excluding the two additional measures of status and money). We used both the individual subscales and a so-called motivation index, which describes the individual's global self-determination. It was calculated by summing the six scales after weighting them from 3 to -3: intrinsic = 3; integrated = 2; identified = 1; introjected = -1; external = -2; and amotivation = -3, as suggested by Vallerand and Bissonnette (1992). Note that this instrument measures global motivation, not motivation specifically related to music.

Statistical analysis

Statistical analyses were conducted in IBM SPSS Statistics version 24 (SPSS Inc., Chicago, IL, USA). All statistical tests reported were two-tailed at an alpha level of .01 if not otherwise indicated.

A two-way between-subject ANCOVA was used to analyse the effects of music engagement, coded in three levels (non-musician, amateur or professional musician) and sex (male/female) on our dependent variable motivation (using our motivation index described above), with age as a covariate where effect size is reported with partial eta square (η^2).

Descriptive data of the motivation score means and standard deviations are displayed for men and women for the total motivation index as well as for all subscales. We calculated Cohens's *d* and η^2 depicting the sex differences for each subscale.

Results

Motivation index

There was a main effect of level of music engagement on total motivation, measured with the motivation index, $F(2, 5433) = 27.14, p < .001, \eta^2 = .01$. There was also a main effect of sex on total motivation, $F(1, 5434) = 49.21, p < .001, \eta^2 = .009$ (Table 1).

The average scores on motivation for non-musician males 39.6 (SD = 24.5) and females 44.8 (SD = 26.8), amateur males 41.8 (SD = 24.1) and females 49.3 (SD = 25.7), and professional males 45.9 (SD = 23.3) and females 50.2 (SD = 24.2) are displayed in Figure 1.

There was no interaction between level of music engagement and sex on motivation, $F(2, 5433) = 1.09, p = .338, \eta^2 < .001$.

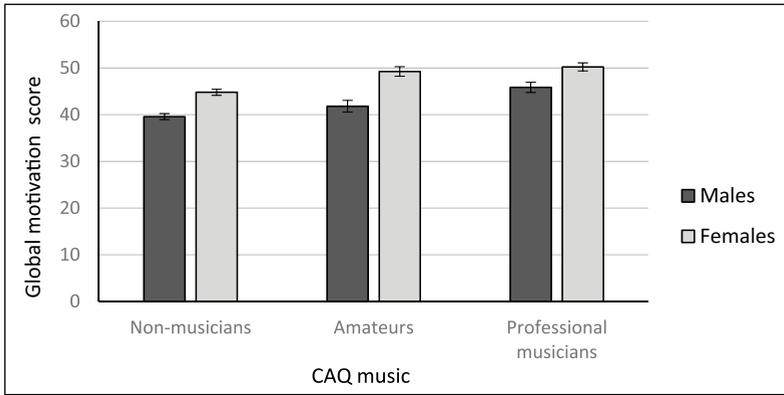


Figure 1. Global motivation score and Creative Achievement Questionnaire CAQ music.

Table 2. Sex differences in motivation.

	Males (<i>n</i> = 2,305)	Females (<i>n</i> = 3,130)	Sex differences	Effect size
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	Cohens's <i>d</i>	ηp^2
Motivation index	41.18 (24.34)	47.04 (26.08)	-.23***	.01***
Intrinsic	16.04 (3.34)	16.53 (3.29)	-.15***	.004**
Integrated	14.29 (3.84)	15.01 (3.63)	-.19***	.01***
Identified	14.07 (3.85)	14.78 (3.77)	-.19***	.008***
Introjected	9.76 (3.98)	10.26 (4.33)	-.12***	.004***
External	9.61 (4.04)	9.28 (4.29)	.08***	.001*
Amotivation	6.86 (3.76)	6.25 (3.61)	.17***	.005***
Status	2.73 (1.70)	2.40 (1.60)	.20***	.008***
Money	3.58 (.045)	3.48 (.039)	.06***	.001*

Note: **p* < .05, ***p* < .01, ****p* < .001.

Women reported higher values than males for the intrinsic, integrated, identified and introjected motivation subscales, whereas men reported higher values for the subscales measuring external motivation, amotivation, status and money, as detailed in Table 2.

Discussion

Our study aimed to explore the differing motivational drives in relation to music engagement by examining participants who were categorised into the groups non-musicians, amateurs, or professionals. In our sample we found, intrinsic motivation to be higher in professional musicians. This observation of an increase in intrinsic global motivation rising with level of musical engagement is in line with Deci and Ryan's (2000) work, wherein they argue that people who are self-determined to pursue their own goals feel motivated by the challenge, experiencing a mixture of pleasure and a sense of mastery. However, our findings may have been affected by a selection effect: the rather challenging work conditions that musicians face (Menger, 1999; Dobson, 2011) are likely to mean that only those individuals with high intrinsic motivation in the first place would choose to proceed with a professional music

career, regardless of extrinsic motivation. Thus, it is possible that the common intrinsic driving force amongst professional musicians is already present at earlier stages, before becoming a musician. We cannot conclude from this study what comes first: the intrinsic motivation that influences the individual's likelihood of progression into a music career, or intrinsic motivation being a (partial) result of the enjoyment of playing music. The latter may be true because music engagement develops automaticity and meta-cognitive awareness. It is known that becoming a professional musician requires extensive practise (Krampe & Ericsson, 1996). Such practise entails hard work combined with corrective feedback, encouragement and hours of practise (Ericsson et al., 1993; Lehmann & Ericsson, 1997). And, as discussed earlier, the intensity of this activity can be linked to the experience of flow – being highly immersed in the activity at hand – if connected with intrinsic motivation. The degree to which an individual is prone to experiencing flow is thought to be determined by both genetic and environmental factors (Mosing et al., 2012). Therefore the interaction between genetics and the environment would merit further study in relation to intrinsic motivation for a full understanding of the antecedents of differences in motivation among professional musicians, amateurs, and non-musicians.

Our results also show gender differences in motivation: women reported higher levels of global intrinsic motivation as compared to men, regardless of the level of music engagement. In the motivational subscales, women also showed higher ratings of intrinsic (motivated by joy, satisfaction), integrated (motivated by following one's own values), identified (motivated by aim and purpose), and introjected (motivated by avoiding guilt or anxiety) motivation, than men. Thus women appear to be more driven by the joyfulness of experience: doing what they value most highly in life and engaging in accordance to their beliefs, than men. Furthermore, women scored higher specifically for the measure of introjected motivation. Introjected motivation is the pursuit of an activity because of feelings of pressure from oneself, that is to say, derived internally (Koestner & Losier, 2002). In relation to the extant literature, this may be a reflection of forcing oneself to perform to avoid feeling guilt and self-criticism; as described in Asmus (1986), women are found to blame failure on themselves more often than men. The opposite of self-judgement is to show oneself compassion, that is, to be kind to oneself in instances of failure. Self-compassionate behaviour has previously been found to relate to intrinsic motivation in students (Neff, Hsieh, & Dejjitterat, 2005). Though our study did not reveal specific evidence for self-compassion behaviours, professional musicians are known to place high demand upon themselves, and thus need to balance striving to avoid letting oneself down, with the risk of falling deep into self-pity at times of failure. This is likely to manifest itself in a strong motivation to spend time rehearsing beforehand so as to alleviate such symptoms of performance anxiety (Langendörfer, Hodapp, Kreutz, & Bongard, 2006). The value placed on social acceptance, and the associated fear of failure, can be a driving force to work harder; the mechanisms behind anticipation of social judgements has been found to differ among individuals (van der Molen et al., 2014).

We cannot rule out that these observed sex differences may also reflect response bias. In our results we found that the responses to our additional questions about status and money differed between men and women, although the effect sizes were small, and only one question asked related to each of these issues. Men gave higher ratings than females on these questions indicating that they placed greater importance on them. Furthermore, motivation driven by being evaluated by others also received higher ratings from men than women. We may be observing an effect of societal gendering as these results are consistent with males' higher competitiveness and strive for status, which are predicted by parental investment theory (Trivers, 1972). These external factors may strengthen men's motivational drive in the later stages of

musicianship where money and fame become more prominent. However, we also found that the scores of amotivation indicated that men were more often lacking motivation when compared to women.

Women scored slightly higher on a sense of internal pressure (introjected motivation), and men scored higher on external motivation related to responses to questions about being influenced by other people's opinions (such as being highly valued by others). It is of course important to keep in mind that these effects were small, and that there may be large differences among individuals in how able they are to cope with failure and, indeed, with critique from others that is to a great extent unavoidable in a musical career, for example when receiving performance reviews.

While there was a main effect of gender on motivation overall, gender differences in motivational drives did not interact with the level of musical activity. As shown in Figure 1, females scored higher on the motivation index, that is, they showed higher intrinsic motivation, regardless of the level of musical activity. This implies that gender differences in motivation are present in both non-musicians and amateurs and do not change with level of music engagement. This suggests that professional musicians already have higher intrinsic motivation when making their decision to pursue a music career, compared to amateurs and non-musicians; however, this theory needs to be further explored. Although, in general, a higher level of engagement is likely to indicate a higher level of motivation to pursue a musical career, the implication of these findings is that for those who wish to encourage young students of music to consider a career in music, gender may play a minor role in identifying the type of motivation that drives individuals. For example, teachers may observe that young female musicians display more of the intrinsic, introjected and integrated motivation whilst young male musicians may show more aspects of the extrinsic types of motivation. Teachers may find it useful to be aware of the potential negative impact that higher levels of intrinsic motivation may have on students, which this study indicates are slightly more likely to be female: overcommitment, self-blame and "usefulness". Accordingly, teachers should seek to encourage the development of skills to alleviate such negative forces since they represent a risk for high levels of stress and burnout.

Limitations and future directions

Our possibility to draw conclusions about causality is limited because of the cross-sectional design of the study. A longitudinal study would be required to draw such conclusions. We may therefore only speculate regarding the source of variations found in our data. Apart from the fact that our study sample is representative of the Swedish population only, there may be an overrepresentation of individuals interested in music. During recruitment, it became evident to participants that the focus of the study was on exploring musical engagement and it is possible that less motivated individuals may have chosen not to complete the questionnaire. We need more studies that address the phenomenon of emotional exhaustion in relation to different types of motivation in order to draw firm conclusions regarding this.

Further studies exploring the mechanisms underlying the associations between gender, motivation and musical engagement, taking other factors such as genetics into account, are also required. This could lead to further guidance regarding improvement of support offered by music educators.

Conclusion

Our findings indicate that intrinsic motivation plays a role when progressing in the field of music. Motivation was found to vary according to gender: women displayed a more intrinsic

motivation profile while men described themselves as slightly more externally driven. Such differences may be considered in adjusting the forms of support offered to young musicians in music education. The phenomenon of motivation is complex, and we have highlighted areas that require further investigation, but this study has elucidated some differences in the types of motivation found in men and women, and between non-musicians, amateurs and professional musicians.

Funding

The authors disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This research was financially supported by Riddargårdskliniken, Sven and Dagmar Salén Foundation and Riksbankens Jubileumsfond, which is gratefully acknowledged. We would like to thank Professor Fredrik Ullén for contribution of the data from the Swedish Twin registry and for his support.

ORCID iD

Eva Bojner Horwitz  <https://orcid.org/0000-0002-2377-1815>

References

- Asmus, E. P., Jr. (1986). Student beliefs about the causes of success and failure in music: A study of achievement motivation. *Journal of Research in Music Education*, 34, 262–278.
- Butkovic, A., Ullén, F., & Mosing, M. A. (2015). Personality related traits as predictors of music practice: Underlying environmental and genetic influences. *Personality and Individual Differences*, 74, 133–138.
- Carson, S. H., Peterson, J. B., & Higgins, D. M. (2005). Reliability, validity, and factor structure of the Creative Achievement Questionnaire. *Creativity Research Journal*, 17(1), 37–50.
- Covington, M. V., & Müeller, K. J. (2001). Intrinsic versus extrinsic motivation: An approach/avoidance reformulation. *Educational Psychology Review*, 13, 157–176.
- Deci, E. L., Koestner, R., Ryan, R. M., & Cameron, J. (2001). Extrinsic rewards and intrinsic motivation in education: Reconsidered once again: Comment/reply. *Review of Educational Research*, 71(1), 1–51.
- Deci, E. L., & Ryan, R. M. (2000). The “what” and “why” of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, 11, 227–268.
- Dobson, M. C. (2011). Insecurity, professional sociability, and alcohol: Young freelance musicians' perspectives on work and life in the music profession. *Psychology of Music*, 39, 240–260.
- Ericsson, K. A., Krampe, R. T., & Tesch-Römer, C. (1993). The role of deliberate practice in the acquisition of expert performance. *Psychological Review*, 100, 363–406.
- Guay, F., Mageau, G. A., & Vallerand, R. J. (2003). On the hierarchical structure of self-determined motivation: A test of top-down, bottom-up, reciprocal, and horizontal effects. *Personality and Social Psychology Bulletin*, 29, 992–1004.
- Holst, G. J., Paarup, H. M., & Baelum, J. (2012). A cross-sectional study of psychosocial work environment and stress in the Danish symphony orchestras. *International Archives of Occupational and Environmental Health*, 85, 639–649.
- Jacukowicz, A. (2016). Psychosocial work aspects, stress and musculoskeletal pain among musicians: A systematic review in search of correlates and predictors of playing-related pain. *Work*, 54, 657–668.
- Koestner, R., & Losier, G. F. (2002). Distinguishing three ways of being highly motivated: A closer look at introjection, identification, and intrinsic motivation. In E. L. Deci & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 101–121). Rochester, NY: University of Rochester Press.
- Krampe, R. T. H., & Ericsson, K. A. (1996). Maintaining excellence: Deliberate practice and elite performance in young and older pianists. *Journal of Experimental Psychology: General*, 125, 331–359.
- Langendorfer, F., Hodapp, V., Kreutz, G., & Bongard, S. (2006). Personality and performance anxiety among professional orchestra musicians. *Journal of Individual Differences*, 27, 162–171.

- Lehmann, A. C., & Ericsson, K. A. (1997). Research on expert performance and deliberate practice: Implications for the education of amateur musicians and music students. *Psychomusicology*, *16*(1–2), 40–58.
- Lichtenstein, P., Sullivan, P. F., Cnattingius, S., Gatz, M., Johansson, S., Carlström, E., & Pedersen, N. L. (2006). The Swedish twin registry in the third millennium: An update. *Twin Research and Human Genetics*, *9*, 875–882.
- Maslach, C., & Leiter, M. P. (2017). New insights into burnout and health care: Strategies for improving civility and alleviating burnout. *Medical Teacher*, *39*, 160–163.
- McPherson, G. E., Osborne, M. S., Barrett, M. S., Davidson, J. W., & Faulkner, R. (2015). Motivation to study music in Australian schools: The impact of music learning, sex, and socio-economic status. *Research Studies in Music Education*, *37*, 141–160.
- Menger, P. M. (1999). Artistic labor markets and careers. *Annual Review of Sociology*, *25*(1), 541–574.
- Mosing, M. A., Butkovic, A., & Ullén, F. (2018). Can flow experiences be protective of work-related depressive symptoms and burnout? A genetically informative approach. *Journal of Affective Disorders*, *226*, 6–11.
- Mosing, M. A., Madison, G., Pedersen, N. L., Kuja-Halkola, R., & Ullén, F. (2014). Practice does not make perfect no causal effect of music practice on music ability. *Psychological Science*, *25*(9), 1795–1803.
- Mosing, M. A., Magnusson, P. K., Pedersen, N. L., Nakamura, J., Madison, G., & Ullén, F. (2012). Heritability of proneness for psychological flow experiences. *Personality and Individual Differences*, *53*, 699–704.
- Neff, K. D., Hsieh, Y. P., & Dejitterat, K. (2005). Self-compassion, achievement goals, and coping with academic failure. *Self and Identity*, *4*, 263–287. doi:10.1080/13576500444000317
- Stoeber, J., & Eismann, U. (2007). Perfectionism in young musicians: Relations with motivation, effort, achievement, and distress. *Personality and Individual Differences*, *43*, 2182–2192.
- Theorell, T., Lennartsson, A., Madison, G., Mosing, M. A., & Ullén, F. (2015). Predictors of continued playing or singing: From childhood and adolescence to adult years. *Acta Paediatrica*, *104*, 274–284.
- Trivers, R. L. (1972). Parental investment and sexual selection. In B. Campbell (Ed.), *Sexual selection and the descent of man, 1871–1971* (pp. 136–179). Chicago, IL: Aldine.
- Ullén, F., Harmat, L., Theorell, T., & Madison, G. (2016). Flow and individual differences: A phenotypic analysis of data from more than 10,000 twin individuals. In L. Harmat, F. Ø. Andersen, F. Ullén, J. Wright, & G. Sadlo (Eds.), *Flow experience: Empirical research and applications* (pp. 267–288). Cham, Switzerland: Springer International Publishing.
- Vallerand, R. J., & Bissonnette, R. (1992). Intrinsic, extrinsic, and amotivational styles as predictors of behavior: A prospective study. *Journal of Personality*, *60*, 599–620.
- van der Molen, M. J., Poppelaars, E. S., van Hartingsveldt, C. T., Harrewijn, A., Gunther Moor, B., & Westenberg, P. M. (2014). Fear of negative evaluation modulates electrocortical and behavioral responses when anticipating social evaluative feedback. *Front Hum Neurosci*, *21*(7), 936. doi: 10.3389/fnhum.2013.00936