

## Chapter 2

# Finding Flow in Music Practice: An Exploratory Study About Self-Regulated Practice Behaviours and Dispositions to Flow in Highly Skilled Musicians

M.V. Araújo and C.F. Hein

**Abstract** This chapter addresses a study aimed at investigating self-regulated practice behaviours and flow dispositions in expert musicians. A sample of 168 classically trained musicians completed a survey comprising a questionnaire measuring musical self-regulated practice behaviours and the Short Dispositional Flow Scale. Associations of self-regulated practice behaviours and flow dispositions were explored using multivariate regression. Results showed that flow was predominantly a function of self-regulated behaviours Personal Resources and Practice Organization, but not a function of External Resources. Analyses of individual items demonstrated self-regulation seemed to contribute for the experience of flow indicators related to musical skills, tasks, the clarity of goals and feedback, and also concentration and control over the activities. The chapter ends with implications of the findings for musicians, teachers and researchers.

### 2.1 Introduction

The importance of the ‘flow’ construct (Csikszentmihalyi 1990) for the domain of musical performance is becoming widely recognised. Defined as a state in which “an individual is completely immersed in an activity without reflective self-consciousness but with a deep sense of control” (Engeser and Shiepe-Tiska 2012,

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M.V. Araújo (✉)

Communication and Arts Department, University of Aveiro, INET-MD,  
Campus Universitário de Santiago, 3810-193 Aveiro, Portugal  
e-mail: [marcosaraujo@ua.pt](mailto:marcosaraujo@ua.pt)

C.F. Hein

Department of Social Science, University College London Institute of Education,  
20 Bedford Way, WC1H 0DP London, UK  
e-mail: [chein@ioe.ac.uk](mailto:chein@ioe.ac.uk)

p. 1), flow is often described as an optimal experience, being a highly desirable state to achieve, and one that can improve human performance. In flow, the individual often report one if not all of the following indicators:

challenge-skill balance (feeling competent enough to meet the high demands of the situation), action-awareness merging (doing things spontaneously and automatically without having to think), clear goals (having a strong sense of what one wants to do), unambiguous feedback (knowing how well one is doing during the performance itself), concentration on the task at hand (being completely focused on the task at hand), sense of control (having a feeling of total control over what one is doing), loss of self-consciousness (not worrying what others think of oneself), transformation of time (having the sense that time passes in a way that is different from normal), and autotelic experience (feeling the experience to be extremely rewarding). (Martin and Jackson 2008, p. 146)

Recently, researchers in the field of music have acknowledged musical performance as an ideal activity for the flow experience (Custodero 2002; Lamont 2012). From a cognitive perspective, music challenges the performer to be completely attentive with mind and body, and music is one of the most demanding tasks for the human central nervous system (Altenmüller and Schneider 2008; Williamon 2004). From a communicative perspective, music challenges the performer to express his/her art via sound and expressive movement according to personal and cultural standards and meanings (Lehmann et al. 2007; Davidson 2012). Music performance also challenges the performer perceptually, to organize sound in time, and to explore possible interpretations (meanings) for particular musical sounds (St George et al. 2012). These challenges make musical performance a possible platform for flow experiences.

As a consequence, empirical research about flow in music performance increased significantly. Flow has been investigated in musicians with different levels of expertise and in a variety of contexts such as live performance auditions (Wrigley and Emmerson 2013), wind ensemble rehearsal (Kraus 2003), musical practice activity (Waite and Diaz 2012) and jazz performance (Hart and Di Blasi 2015; Sawyer 2006). Its indicators were related to optimal or successful performances (Bellon 2006; Clark et al. 2014), and flow was also positively related to well-being in music students (Fritz and Avsec 2007), practice time (Marin and Bhattacharya 2013; Waite and Diaz 2012), students' achievement (O'Neill 1999) and emotional intelligence (Marin and Bhattacharya 2013), and negatively related to performance anxiety (Fullagar et al. 2012; Kirchner et al. 2008). Confirming results from domains other than music, no association was shown between flow and demographic variables such as age, genre and level of musical expertise (Marin and Bhattacharya 2013; Sinnamon et al. 2012; Wrigley and Emmerson 2013). Beyond these findings, a particularly important implication of the flow experience for musicians may be that they can experience well-being during the development of their activities, while, at the same time, improving as musicians and deriving enjoyment from within their musical activities.

## 2.2 Flow in the Context of Music Practice

One activity that may not fit the necessary conditions for the occurrence of flow in music is practice. Practice is an activity that musicians spend much of their time engaged with. For professionals from the Western classical music tradition, practice is usually a solitary and effortful activity, focused on deficiencies and aimed for high levels of proficiency in performance (Chaffin et al. 2002; Lehmann et al. 2007). Because of this, not everyone can always meet the requirements of practice. Where this is the case one might conjecture that flow is not likely to occur.

However, research on music practice demonstrates that individuals with high levels of expertise usually can make practice more efficient (Chaffin et al. 2002). In this context, practice is deliberate and carried out exclusively towards goals and performance improvement. Musicians usually have well-defined tasks, representing musical challenges to overcome. Through intense concentration, skilled musicians rely on their personal strategies when trying to accomplish difficult elements within the task (Chaffin et al. 2002). The practice of professionals is also defined as efficient because it achieves a desired end product in as short a time as possible (Hallam 1997). In this kind of practice, expert musicians also rely heavily on self-regulation (Araújo 2015; Bonneville-Roussy and Bouffard 2014). Self-regulated practice improves performance through the management and planning of practice, and metacognition plays a crucial role, since expert musicians are normally metacognitively engaged with their practice approaches, choosing, modifying and adapting practice strategies (Hallam 1995, 2001). Phases of self-regulation include planning, performance and evaluation of practice outcomes (McPherson and Zimmerman 2011).

In view of all those efficient practice behaviours, one may suppose that efficiency in practice could explain why some musicians are positively engaged with practice, demonstrating some kind of inner drive to continue to enhance and develop it (Bruser 1997; Kurtz 2007; Mach 1991). But would those efficient practice behaviours used by expert performers contribute to making their practice a more enjoyable activity?

Although research on the practice of expert performers usually does not include motivation as dependent variables, many studies have shown associations of flow experience with music practice. Butkovic et al. (2015) found that musical flow proneness was the most significant predictor of total hours of practice throughout the lifetime of a sample of adult musicians. Marin and Bhattacharya (2013) also found that dispositions to flow in student pianists were significantly related to practice time in hours, but not related to the experience of number of years of piano playing. The same result was found in a study with undergraduate music majors (Waite and Diaz 2012). Positive experiences related to practice can also be found in professional musicians' accounts. For instance, Yehudi Menuhin defined music practice as "the search for ever greater joy in movement and expression" (Kurtz 2007, p. 7), and pianists Claudio Arrau and Mark Westcott stated that it is beautiful to practice, and that they love to do it (Chaffin et al. 2002; Mach 1991). In addition, a study conducted by Hallam (1995) found distinct motivations for practice among

professional musicians, with some of them presenting intrinsic motivation for practice. If those musicians positively engaged with practice are prone to flow experience, an overall question that needs to be answered is, then, what musicians do in order to have optimal experiences in practice, or what characteristics of their practice might be related to flow?

Few studies have focused on the relationships between musicians' practice behaviours and flow. Although Waite and Diaz (2012) found evidence of flow experience in the practice sessions of twenty undergraduate music majors, their study did not explore associations between specific practice behaviours and flow. Two studies (Bloom and Skutnick-Henley 2005; Kirchner 2011) suggested strategies for the incorporation of flow conditions into music practice. Among several strategies, some of them included the selection of a repertoire within a musician's capacities; focus on the present moment while practicing; a set of clear and specific goals; and avoidance of inner monologue. However, no evidence of the effectiveness of those strategies in the attainment of flow in music practice was provided. In the same research line, Araújo and Andrade (2011) discussed and identified the presence of flow indicators in the musical activities of two professional musicians. When related to practice, the authors found that flow tended to emerge from a combination of continuous sense of challenge and repertoire preference (i.e. the less preferred the repertoire, the more effort was needed). While the set of specific and clear goals were related to a sense of personal accomplishment in practice, both musicians frequently used expressions such as 'a marvellous experience' and 'much happiness' to describe their feelings when they achieved their goals. Conclusively, the authors acknowledged the musicians' self-regulatory processes as "essential components of optimal performance, directing attention and generating the concentration, favouring the flow experience" (Araújo and Andrade 2011, p. 553). Yet, more studies are needed to determine whether these conclusions could be generalized to a more comprehensive sample of expert musicians.

The evidence outlined above suggests that the musicians' experience of flow in practice may be affected by specific practice behaviours, especially self-regulated practice behaviours. In fact, several studies have demonstrated that self-regulation plays a crucial role in the efficiency of practice of musicians from different ages (Araújo 2015; Bonneville-Roussy and Bouffard 2014; McPherson and Zimmerman 2011; Miksza 2011), and the general psychology literature has also found that high levels of self-regulation were related to a sense of psychological stability, personal control and well-being in the general population (Hoyle 2010). People who exert self-regulation typically have well-defined goals and adopt appropriate standards of behaviour (Hoyle 2010). However, little is known about which specific self-regulated practice behaviours are most effective in eliciting flow in the context of music practice. Previous research has not included a more comprehensive set of efficient practice behaviours. Also, a general goal of research on music practice is to find out which specific practice behaviours and strategies are most effective to improve performance (Hallam 1997; Jorgensen 2004; Miksza 2007, 2011), tending to focus on performance achievements rather than optimal experiences. Thus, there is a need for research that incorporates multiple self-regulated practice behaviours, indicators of optimal experiences (i.e. flow) and demographical variables.

The multi-faceted nature of practice results in wide individual differences in musicians' approaches to practice. Specific behaviours such as marking parts, using a metronome, repeating sections, etc. are highly dependent on factors such as the musicians' characteristics (i.e. level of expertise, learning styles, approaches to practice, motivation, personality) and task requirements (i.e. nature of the task, repertoire of the instrument and its characteristics) (Hallam 1997). Because of that, a more general set of self-regulated practice behaviours was considered as a way to investigate relationships with optimal experiences. Thus, the purpose of the research reported here was to examine relationships between self-regulated practice behaviours and dispositions to flow in expert musicians. No studies have explored relationships between a more comprehensive set of self-regulated practice behaviours and dispositions to flow in the music practice of expert musicians. Through this investigation, we expect to offer an opportunity to establish the practice behaviours that might influence flow in musicians, contributing to assisting musicians, teachers and researchers to make practice a meaningful experience.

## 2.3 Method

### 2.3.1 *Materials*

In this study, we explored the relationships between self-regulated practice behaviours and flow dispositions in expert musicians. For this purpose, a cross-sectional survey study was developed using two self-report instruments measuring self-regulated practice behaviours and dispositions to flow.

### 2.3.2 *Self-Regulated Practice Behaviours Questionnaire*

The self-regulated practice behaviours questionnaire was used to assess the self-regulation of the expert musicians. Its main section includes 22 items related to three different aspects of self-regulation previously found in an Exploratory Factor Analysis: Practice Organization, Personal Resources and External Resources (Araújo 2015). Self-regulation Through Practice Organization scale includes ten items assessing behaviours related to the organization of practice (e.g. 'I set goals for my practice sessions'; 'I organize the physical environment of my practice sessions'; 'I plan the time of my practice sessions'). Self-Regulation Through Personal Resources includes seven items related to knowledge/regulation of strategies (e.g. 'I am aware of the strategies that I use during practice') and general self-efficacy for goal achievement in practice (e.g. 'I am able to achieve my practice goals satisfactorily'). Lastly, Self-Regulation Through External Resources scale included four items measuring the influence of external aspects in the practice process (e.g. 'I seek

information from several sources [books, CDs, videos, internet, biographies, arts, etc.] to support my study'; 'I request help from others [teachers, peers, composers, musicologists and specialists]'). The measure is rated on a 5-point Likert-type scale related to frequency of behaviours (1-never to 5-always) and levels of agreement (1-completely disagree to 5-completely agree). The questionnaire also included a demographical section regarding participants' age, gender, musical instrument, experience in music counting from their first public concert, and daily practice time measured in hours.

### 2.3.3 *Flow Scale*

The Dispositional Short Flow Scale (Martin and Jackson 2008) is a brief measure of flow that was validated for the music performance domain. The scale presents nine items each reflecting one of the nine flow indicators, e.g. Challenge-Skill Balance ('I feel I am competent enough to meet the high demands of the situation'), Clear Goals ('I have a strong sense of what I want to do'), Full Concentration ('I am completely focused on the task at hand'), Sense of Control ('I have a feeling of total control'), Autotelic Experience ('The experience is extremely rewarding'). All items were rated on 1 (strongly disagree) to 5 (strongly agree). There are several reasons for the use of this scale in the present study: firstly, this scale achieved good psychometric properties in a sample of musicians (Martin and Jackson 2008); secondly, it seemed to be adequate to the exploration of flow both as a uni- (i.e. global) and multi-dimensional concept; thirdly, according to the scale developers, the "items were selected that appeared to best measure the intended construct" (Martin and Jackson 2008, p. 143), and this can also allow for individual analysis per item, which in turn allows for assessment of individual flow indicators and their relation with music practice behaviours; lastly, being practical and quick to complete, the short version seemed to be a good choice for the undertaking of a study with musicians.

In addition, although there is conceptual and empirical evidence showing that the components of flow are highly correlated, it is premature to conclude that flow can be considered as a one-dimensional concept (Engeser and Shiepe-Tiska 2012), and more research is needed to specify under which conditions components are associated or dissociated. Csikszentmihalyi has conjectured that the action-awareness merging dimension may be the clearest sign of the experience, and some authors concluded, "immersion might, in fact, represent a more central aspect than the other components" (Engeser and Shiepe-Tiska 2012, p. 12). Because of the uncertainty of flow as a one-dimensional concept, this research follows, a priori, the current consideration of flow as an experience with different components, which, in their interplay, represent the experience of flow.

### 2.3.4 *Participants*

The participants were volunteers and completed the questionnaire online on a web platform<sup>1</sup> created for this research. For the selection of participants, an invitation for participation in the survey was distributed via email to several music institutions (e.g. universities, colleges, conservatoires) and released in online social networks and digital forums about music research (e.g. *Performance Studies Network*). Those institutions were deemed appropriate because they often include professional musicians and adult students training for professional engagement with music. The invitation included the hyperlinks for access to the web platform for the survey response and information regarding the aims of the research.

From a return rate of 335 questionnaires, only 168 (male = 50.0 %; female = 50.0 %) were used for the present study, as they had more than 10 years of practice experience, satisfying the main criteria to be experts in music (Ericsson et al. 1993). Participants' ages ranged from 18 to 74 years ( $m=34.41$ ,  $SD=12.39$ ). They were nationals from several countries, but the majority of the respondents were Brazilian (42.8 %), Portuguese (15.7 %) and British (13.9 %). Despite the absence of empirical support for cultural differences affecting both flow and practice behaviours in expert performers (Hallam 1997; Miksza 2011), the present study uses a statistical procedure that is robust to flow and self-regulation reports differing by country.

At the time of this research, the majority of the musicians practiced at least 1–2 h per day and at least 5–6 days a week, confirming that their level of expertise was relatively high. Their main instruments were keyboards (27.4 %), plucked strings (22.6 %), woodwinds (17.3 %), bowed strings (14.9 %), also including singers (9.5 %), brass (4.2 %) and percussion (3.6 %) players.

### 2.3.5 *Procedures*

The survey remained open for 5 months, and the participants answered the online questionnaire from October 15th, 2013 to February 28th, 2014. Because the participants were volunteers, they did not need to provide their names or any other data related to their identity. Thus, ethical considerations were only related to assuring the participants of the confidentiality of their responses. The statistical analysis was run with the software IBM SPSS 20 statistics and Stata 13.

We explored the association of self-regulated practice behaviours and flow dispositions using multivariate regression. Following the discussion above, we regressed the same variables on ten different dependent variables. The first model uses factor scores estimated from a Confirmatory Factor Analysis (CFA) using all nine items (named here as Global Flow), the other nine dependent variables are the nine individual items of the Dispositional Short Flow Scale. Using these nine items

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<sup>1</sup><http://questionarios.ua.pt/index.php/589964/lang-en>

as dependent variables, each on a 5-point Likert scale, we treated these variables as continuous. We made this assumption to be able to compare more easily the corresponding estimates with those of the Flow factor scores, which are on a continuous scale.

We included control variables in the model in order to account for self-regulated behaviours varying systematically by country as well as due to gender, years of experience, musical instrument, whether they have graduated from higher education, whether they have taken part in prize competitions, and hours spent practising per week. Including these control variables also aided inference, as the variance of the error term may not be constant, and instead may be a function of these individual characteristics. We further relaxed this assumption and estimated heteroskedasticity-robust standard errors based on White (1980). We report standardised ‘beta’ coefficients to ease comparability of our estimates with those from other samples. Thus the reported estimates indicate the change of the dependent variable in standard deviations with a one standard deviation change in the independent variables.

## 2.4 Results

The results of these regressions can be found in Table 2.1, in which the rows denote the corresponding dependent variables, and the three self-regulated practice behaviours are located in the columns. The first model (in the first row) uses the flow factor scores obtained from a CFA using all items. It therefore can be seen as a summary score of overall flow experience (Global Flow). The estimates suggest that Global Flow is predominantly a function of Practice Organization and Personal Resources, but not a function of External Resources. Analysis of the individual items shows that Challenge-Skill Balance, Clear Goals and Full Concentration appear to follow this pattern. In each of these three cases the estimated correlations are positive for Practice Organization and Personal Resources, whereby the estimated correlation for Personal Resources is twice to three times the size of the corresponding estimate for Practice Organization.

Five of the nine flow indicators appear to only be explained by one of the three self-regulated behaviours. While Unequivocal Feedback and Sense of Control appear to be functions of Personal Resources, Action-Awareness Merging appears to decrease by approximately 0.2 standard deviations (SD) with a standard deviation increase in Practice Organization. On the other hand, Loss of Self-Consciousness and Autotelic Experience appear to be explained by External Resources. The former estimate again is negative and suggests a 0.24 SD decrease. In contrast, a standard deviation increase in External Resources is associated with a 0.3 SD increase in Autotelic Experience. Interestingly, Time Transformation does not seem to vary significantly by any of the three self-regulated behaviours.



**Table 2.1** The association of self-regulated practice behaviours and flow experience

Dependent/independent variables	Practice organization	Personal resources	External resources
Global flow	0.11*	0.27***	0.00
	(2.43)	(2.18)	(0.06)
Challenge-skill balance	0.18*	0.65***	-0.07
	(2.18)	(5.24)	(-0.07)
Action-awareness merging	-0.20*	-0.07	0.02
	(-2.08)	(-0.47)	(0.15)
Clear goals	0.30***	0.67***	0.04
	(3.54)	(6.26)	(0.40)
Unequivocal feedback	0.11	0.28*	0.04
	(1.05)	(2.07)	(0.23)
Full concentration	0.21*	0.46**	-0.05
	(2.16)	(2.97)	(-0.40)
Sense of control	0.17	0.33*	-0.05
	(1.49)	(2.19)	(-0.37)
Loss of self-consciousness	0.14	0.25	-0.24*
	(1.45)	(1.81)	(-2.05)
Time transformation	0.04	0.08	0.02
	(0.31)	(0.63)	(0.12)
Autotelic experience	0.114	0.166	0.306*
	(1.04)	(1.26)	(2.14)

Standardised 'beta' coefficients reported; T-statistics in parentheses based on heteroskedasticity-robust standard errors. Sample size is 168 in all 10 regressions

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

## 2.5 Discussion

This study examined relationships between self-regulated practice behaviours and dispositions to flow in the music practice of expert classically trained musicians. Following previous evidence suggesting that efficient practice behaviours may affect flow in musicians, this research is the first empirical evidence of self-regulated practice behaviours affecting dispositions to flow in expert musicians.

Among the three self-regulated behaviours, Self-Regulation Through Personal Resources was a particularly strong predictor of flow dispositions when the estimates are significant. Prior studies have noted that professional musicians usually demonstrate extensive metacognition in their practice processes (Hallam 2001), and, indeed, advanced musicians rely more on self-regulation through personal resources than external ones (Araújo 2015). Thus, this result suggests that self-regulation through personal resources may affect flow in the music practice of expert musicians.

However, the analyses of individual items show that Personal Resources did not predict all the nine flow indicators, but only Challenge-Skill Balance, Clear Goals

and Unequivocal Feedback, commonly regarded as conditions to flow in research (Csikszentmihalyi 1990; Fullagar et al. 2012), and Full Concentration and Sense of Control (see Table 2.1). An explanation for this relevant connection between Personal Resources and flow conditions (i.e. balance, goals and feedback) may be that those musicians presenting high capacity for self-regulation through personal resources can make sensible and correct choices of what to do in practice (e.g. musical tasks/challenges, goals, repertoire), contributing to the achievement of a balance between task challenges and their own perceptions of competence. As Hallam (1997) noticed, expert musicians usually “know how to do the right thing at the right time” (p. 181), which may explain the clarity of practice goals. A positive relation between performers’ experience and clarity of goals has been found in other studies (Chaffin and Imreh 2001; Chaffin et al. 2002; Chaffin and Lemieux 2004). It is accepted that expert musicians have their own artistic conceptualisations of works to be studied (Chaffin and Lemieux 2004). These characteristics of Self-Regulation Through Personal Resources may, in turn, have enhanced the musicians’ concentration in practice, fostering feelings of capacity for being productive and efficient.

Albeit with a lower level of statistical significance, our results show that Self-Regulation Through Practice Organization was also a significant predictor of musicians’ dispositions to flow in practice, having a prominent role in the experience of Challenge-Skills Balance, Clear Goals and Full Concentration. These indicators were more related to Personal Resources, which suggests that expert musicians relying on both self-regulated factors (Personal Resources and Practice Organization) may be more prone to achieve those referred to flow indicators. In relation to Challenge-Skills Balance, organized musicians usually set plans and goals for practice (Chaffin et al. 2002; Chaffin and Lemieux 2004; Jorgensen 2004), which may also explain the choice of tasks that are challenging but possible to achieve through practice. Regarding Full Concentration, flow theory suggests that concentration is generally possible because the task has clear goals and immediate feedback (Csikszentmihalyi 1990). This idea was supported by a study conducted by Hallam (2001), in which practice organization was related to concentration in the practice of professional musicians.

On the contrary, the results show Practice Organization negatively related to Action-Awareness Merging, i.e. the more organized the musician, the less prone to the experience of action-awareness merging in practice he/she is. In performing activities, a sense of low attention effort and spontaneity associated with this flow indicator often results in automaticity. According to Jackson et al. (2010), “feelings of automaticity are described by performers, whose well-learned routines enable them to process subconsciously and pay full attention to their actions” (Jackson et al. 2010, p. 7). Because of that, Action-Awareness Merging may be less likely to occur in practice, and a possible explanation for its negative relation between both variables is that if a musician is executing a task on ‘automatic pilot’, a clear signal of the experience of this flow indicator in performing activities (Bellon 2006; Clark et al. 2014; Jackson et al. 2010), it is possible that he/she needs no more practice organization, because he/she has probably achieved his/her goals. Perhaps musicians

need organization only when seeking to achieve their practice goals, a situation where automaticity may be less likely to occur.

External Resources is the aspect of self-regulation that advanced musicians rely on less (Araújo 2015), and our findings do not suggest that it is a significant predictor of dispositions to flow. However, the analyses of individual items show that Self-Regulation Through External resources was negatively related to Loss of Self-Consciousness and positively related to Autotelic Experience. It is possible that the inclusion of external resources (e.g. teachers, peers, composers, specialists, materials) in the practice process of some expert musicians may have elicited considerations that practice is a rewarding activity in itself, contributing to enjoyment and intrinsic motivation for practice. But further research is needed to confirm if this is the case. On the other hand, a likely explanation for the negative association with Loss of Self-Consciousness is that many studies in music have found problems with the Loss of Self-Consciousness indicator (Marin and Bhattacharya 2013; Sinnamon et al. 2012), which raises uncertainty about the equal importance of this flow indicator for music or about the adequacy of the item in capturing this characteristic of flow.

Finally, time transformation was not related to any aspect of efficient practice. Because Time Transformation is one of the most reported flow dimensions in studies using disposition flow scales in music (Marin and Bhattacharya 2013; Sinnamon et al. 2012), it is possible that other factors might contribute to the experience of this flow indicator in practice.

Self-Regulation is an important element of the expert musicians' practice (Araújo 2015). When related to flow, it seemed to contribute to the experience of flow indicators that were related to musical skills, tasks, the clarity of goals and feedback, and also concentration and control over the activities. Self-Regulation Through Personal Resources and Practice Organization contributed to the achievement of conditions for flow, which, in turn, enhanced the possibility of increased concentration and sense of control in practice. Apparently, expert musicians who also include external elements in their practice processes (e.g. peers, composers, students, materials from distinct sources, etc.) tend to consider practice a more rewarding activity. Overall, it is likely that self-regulated behaviours, which were acquired over more than 10 years of deliberate practice, may have contributed to making the practice of this sample of expert musicians a more rewarding activity. However, the multi-dimensional nature of the construct and the methods used in this study did not allow the inference of causal relationships between flow and the self-regulated practice behaviours. The methods only weaken the influence of other variables on the flow reports, thereby allowing conclusions in the light of the literature on music practice.

Our findings have important practical implications for musicians, researchers and teachers alike. Although the findings cannot be considered causal, the finding that Self-Regulation Through Personal Resources is a relevant predictor of dispositions to flow in music practice indicates that this aspect of self-regulation may be particularly useful for the achievement of flow in the context of practice. Thus, experimental research could be conducted to test the effect of an intervention of

self-regulated strategies in the experience of flow in students. Although relying less on external resources, musicians feeling unmotivated to practice may consider external factors (e.g. teachers, peers, composers, specialists, materials, recordings, etc.) in their practice processes. Teachers could also design specific self-regulatory strategies to help those students who are less motivated to undertake efficient/deliberate practice, contributing to making their practice processes more meaningful and rewarding experiences. This points to a need for more research on aspects of musical practice that are more likely to generate the experience of flow in the practice of students with less experience. This could possibly contribute to a decrease in dropout in music, allowing students to have meaningful experiences in their music learning processes.

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