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Flow Experience and Self-Regulation in Music Performers After a Procedure of Emotion Induction

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Abstract

Two hundred musicians were administered after a public exhibition a mood induction procedure, the *Flow State Scale* and a *Self-regulation Scale*, collecting also information on the use of mental strategies to withstand negative emotions. Results have shown that flow experience varied depending on the type of instrument used and self-regulatory characteristics of the subjects involved. Self-regulation and flow are strongly correlated among pianists and vocal performers. The emotional induction affects the self-evaluative judgments on own performance. Past experience in practice of music, while results in better performance levels, does not constitute an advantage in emotional management. The use of mental strategies is associated with the formulation of more realistic judgments, with a better protection and management of interfering emotions.

Keywords: flow; self-regulation; musical performance; emotion induction; self-assessment.

Introduction

Flow, or optimal experience, can be broadly defined as a psychological state involving the positive experience of being fully engaged in the successful pursuit of an activity (Csikszentmihalyi, 1990), and due to its intrinsically rewarding nature, flow seems to motivate humans to keep returning to the flow-inducing action and meeting greater challenges. Csikszentmihalyi (1990) developed a nine-dimensional flow construct. Based on these dimensions, flow is characterized by 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).

A relationship between flow and superior performances and achievement was previously found by others (O'Neill, 1999; MacDonald et al., 2006; Baker and MacDonald, 2013).

Research on musicians' personalities has largely focused on differences between musicians of various instrument groups and musical styles (Buttsworth and Smith, 1995; Kemp, 1996; Cribb and Gregory, 1999; Langendörfer, 2008; Hernandez et al., 2009; Vuust et al., 2010), the relationship between personality and performance anxiety (Cooper and Wills, 1989; Marchant-Haycox and Wilson, 1992).

Considering more specifically the experience of flow, in the Sinnamon et al. (2012) study, the ranking of the nine subscales for the elite sample (studying music performance on a full-time basis) showed that clear goals, autotelic experience, clear feedback and challenge-skill balance were the four dimensions with the highest mean ratings. Csikszentmihalyi (1990) has already proposed that certain personality traits, such as curiosity, persistence and low self-centeredness, may be characteristics of people who can easily achieve flow states. According to Marin and Bhattacharya (2013), trait emotional intelligence and amount of practice predict flow in pianists.

At present, there appear to be limited studies that relate the flow with the self-regulation of musical performers (Miksza, 2011, 2013). At a basic level, self-regulation is the ability to adapt mental, emotional and physiological state to the task at hand, including through the use of active or implicit strategies.

Our idea is that the use of strategies of self-regulation promotes the flow and especially allows to better manage the interference of negative emotions, which can occur even by stimuli strictly not related to the context of the reference that is the public performance (as associations of thoughts, random stimuli antecedents, etc.). The interference of negative emotions is not necessarily related to performance anxiety, it may affect not only the level of performance, but also distort the judgment on the level of involvement, the global and technical assessment of interpretation performed, the grade of satisfaction perceived, the comparison with the expectations of the performer himself.

Aims

Assessing whether different instruments used by a sample of musicians are significantly associated with different perceived levels of flow; measuring the correlations between the dimensions of flow and self-regulation among the performers; determining whether positive or negative emotional activation influences the judgment on their musical performance.

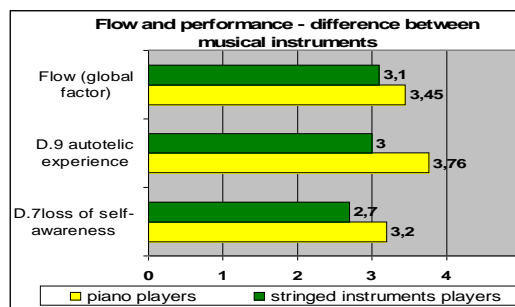
Instruments and Methods

A sample of 200 subjects has been selected, aged between 15 and 28 years old, enrolled in the last classes of the Conservatory of Music in Frosinone (Italy), with assiduous practice of musical exhibition for at least seven years. The sample was structured into performers of piano, performers of wind instruments, performers of string instruments, and vocal performers. Information was collected on the use of mental strategies to withstand negative emotions, the pressure of the public and to improve concentration. After running each participant a selected piece of music lasting twenty minutes, we proceeded to the mood induction on the subjects through the presentation of specific emotional texts according to the technique of the guided imagery (Mayer, Allen, Beauregard, 1995), afterwards it was administered the *Flow State Scale* (Jackson & Marsch, 1996, Italian adaptation by Muzio, Nitro and Rind, 1998) and the Self-regulation scale from *Multidimensional Personality Profile* (Caprara et al., 2006). Finally we collected assessments on the quality of technical and interpretative execution, the perceived satisfaction from the same performers and from a music teacher who was present at the execution and agreed to participate in the study by filling out an evaluation form of the individual musicians after their execution.

Statistical Analysis and Results

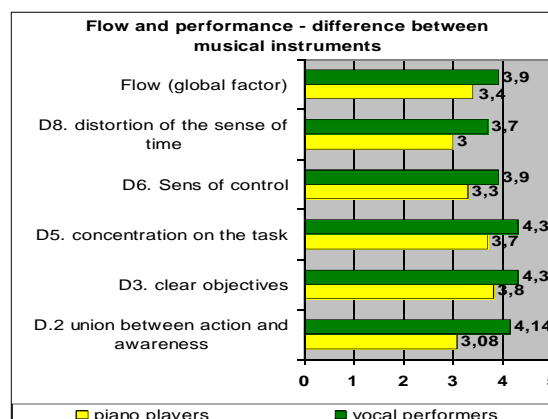
200 subjects participated in the study (86 males and 114 females, mean age 21, SD: 6.5). With respect to distribution of the instruments: 112 piano, 38 string instruments, wind instruments 22, voice 28. 104 randomly selected subjects received a positive emotional induction training; while others 96 were subjected to a negative emotional induction training. From the analysis of the scores on the scale of the flow is shown that splitting the subjects by instrument, were obtained significant differences to the sub-dimensions of the flow and to the value of the total flow.

Specifically, comparing the group of pianists with the performers of stringed instruments, it was found that for dimension D7 (loss of self-consciousness), there was a significant difference (.05) between the means: 3.20 (piano) and 2.7 (string). For the dimension D9 (autotelic experience) there was a significant difference (.003) between the means: 3.76 (piano) and 3.00 (string). Compared to the total flow, there was also a significant difference (.05) between the means: 3.45 (pianists) and 3.1 (string).



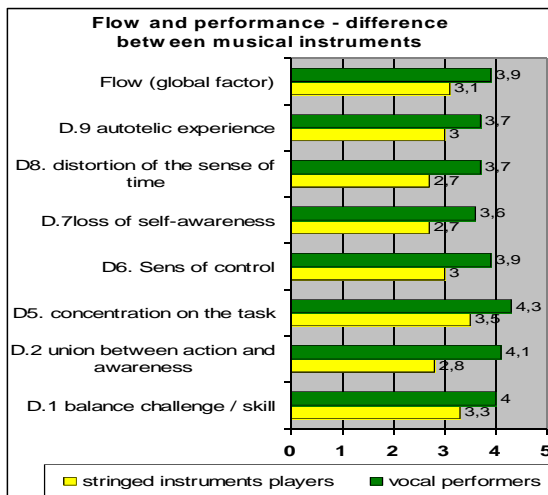
Comparing the group of pianists with those of wind instruments there were no significant differences to be noted.

While among pianists and vocal performers were recorded several significant differences: among dimension D2 (union between action and consciousness) mean difference is significant (Sig. .001) with 3.08 (piano) and 4.14 (vocal); on dimension D3 (clear objectives) there was a significant difference (.05) between the mean 3.8 (piano) and 4.3 (vocal); for dimension D5 (concentration on the task), there was a significant difference (.04) for mean 3.7 (pianists) and 4.3 (vocal); to the dimension D6 (sense of control), there was a significant difference (.04) between the mean 3.3 (piano) and 3.9 (vocal); for the dimension D8 (distortion of the sense of time) there was a significant difference (.02) between the mean 3.0 (piano) and 3.7 (vocal). For the total flow, there was a significant difference (.01) between the mean 3.4 (piano) and 3.9 (vocal).

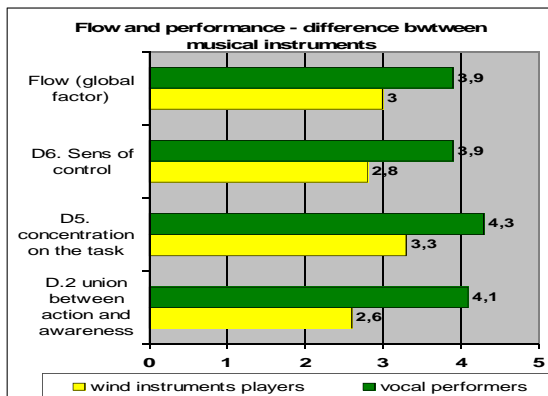


Comparing the group of musicians with stringed instrument with those using a wind instrument did not reveal any significant differences. Comparing the group with stringed instruments and vocal performers, revealed several significant differences: for the dimension D1 (balance between challenge and skill), there was a significant difference (.03) between the mean 3.3 (string) and 4.0 (voice); for the dimension D2 (union between action and consciousness), there was a significant difference (.001) between the mean 2.8 (string) and 4.1 (vocal); for the dimension D5 (concentration on the task), there was a significant difference (.02) between the mean 3.5 (string) and 4.3 (vocal); to the dimension of D6 (sense of control), there

was a significant difference (.02) between the mean 3.0 (string) and 3.9 (vocal); for the dimension D7 (loss of self-consciousness), there was a significant difference (.02) between the mean 2.7 (string) and 3.6 (vocal); for the dimension D8 (distortion of the sense of time), there was a significant difference (.02) between the mean 2.7 (string) and 3.7 (vocal); for the dimension D9 (autotelic experience), there was a significant difference (.05) between the mean 3.0 (string) and 3.7 (vocal). For the total flow, there was a significant difference (.002) between the mean 3.1 (string) and 3.9 (vocal).



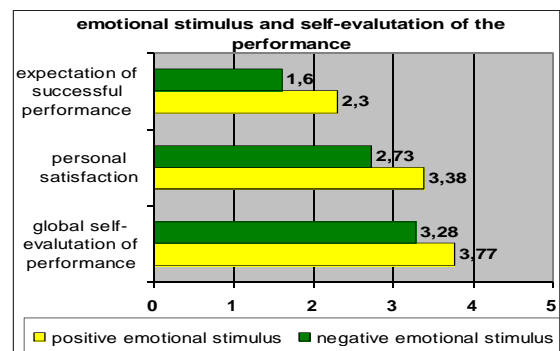
Comparing the group with wind instruments and vocal performers, revealed several significant differences: for the dimension D2 (union between action and consciousness), there was a significant difference (.004) between the mean 2.6 (wind) and 4.1 (vocal); for the dimension D5 (concentration on the task), there was a significant difference (.04) between the mean 3.3 (wind) and 4.3 (vocal); to the dimension of D6 (sense of control), there was a significant difference (.04) between the mean 2.8 (wind) and 3.9 (vocal); for the total flow, there was a significant difference (.04) between the mean 3.0 (wind) and 3.9 (vocal).



We then proceeded to explore the correlations between the sub-dimensions of the scale of the flow and the scale of self-regulation. It emerged a correlation of .30** for $p < .005$ with D9 (autotelic experience), of .28** with D6 (sense of control); for $p < .05$ resulted a correlation of .22* with D4 (direct and immediate feedback), of .20* with D5 (concentration on the task). Among total flow and self-regulation there was a correlation of .21* always for $p < .05$.

By analyzing the correlations depending on the instrument used, it was found that pianists showed a higher correlation with the dimension D5 (concentration on the task) and specifically a value of .47 ** for $p < .005$; then with D6 (sense of control) $r = .39$ **; for $p < .05$, $r = .32$ * correlated with D9 (autotelic experience), $r = .31$ * with D3 (clear objectives), and .26* with D4 (direct and immediate feedback). The total level of flow was correlated with the self-regulation with a value of .43**. For musicians of string and wind instrument there were no significant correlations. Vocal performers revealed a correlation value of .63* for $p < .05$ with D4 (direct and immediate feedback), $r = .49$ * with D9 (autotelic experience).

We then proceeded investigating whether post-execution emotional induction could have a significant influence on the self-evaluation of the musicians. The data showed that the subjects underwent to a positive stimulus got an average 3.77 compared to 3.28 of the subjects who underwent negative emotional induction with reference to the global judgment on the execution performed (Sig. .01). On the level of perceived satisfaction, there was an average of 3.38 per positive induction and 2.73 for negative one (Sig. .01). Confronting the expectations on the quality of the execution it emerged a significant difference (Sig. .05) among those who received a positive induction, which reported an average of 2.3, and those who have had negative induction, which reported an average of 1.6.

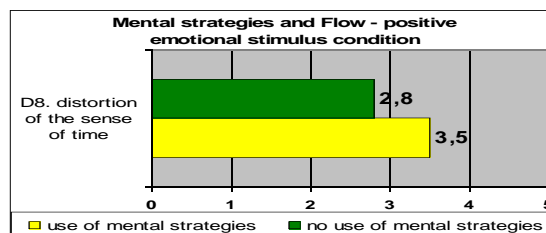


We also wanted to assess whether years of musical experience or age of the subjects could be a mediating factor on the interference of the emotional stimulus. But there were no significant differences comparing groups according to age and years of musical experience. We then proceeded to the comparison between the global self-assessment of musician and the judgment expressed by the teacher.

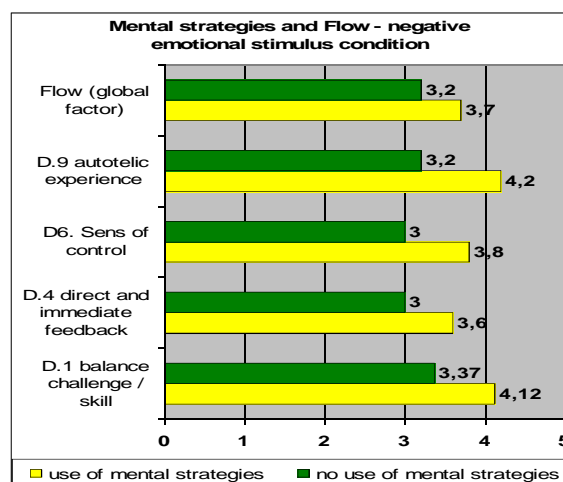
The data showed that the group receiving negative emotional induction reported scores not in line with the

judgment of the teachers and tended toward lower levels, taking a direction opposite to the rating on the interpretation of musicians given by the teacher. While the self-report of the group subjected to positive emotional induction were found to be positively correlated with the judgment of the teachers. More specifically, the global self-evaluation was related to the global judgment of the teacher with $r = .43^{**}$, to the technical judgment of the teacher with $r = .49^{**}$, to the judgment on the interpretation with $r = .41^{**}$, and to the degree of satisfaction with $r = .39^{**}$. The technical self-evaluation was correlated to the global evaluation of the teacher with $r = .37^{**}$, to the technical judgment of the teacher with $r = .52^{**}$, to the judgment of the interpretation with $r = .37^{**}$, and to the degree of satisfaction with $r = .36^{**}$. The self-evaluation of the interpretation was correlated to the global evaluation of the teacher with $r = .55^{**}$, to the technical judgment of the teacher with $r = .51^{**}$, to the judgment of the interpretation with $r = .53^{**}$, and to the degree of satisfaction with $r = .46^{**}$. The self-assessment of the degree of perceived satisfaction was correlated to the global evaluation of the teacher with $r = .39^{**}$, to the technical judgment of the teacher with $r = .41^{**}$, to judgment of interpretation with $r = .39^{**}$, and to the degree of satisfaction with $r = .39^{**}$. We then analyzed the differences, depending on the mental strategies, in the experience of flow among the group receiving negative emotional induction.

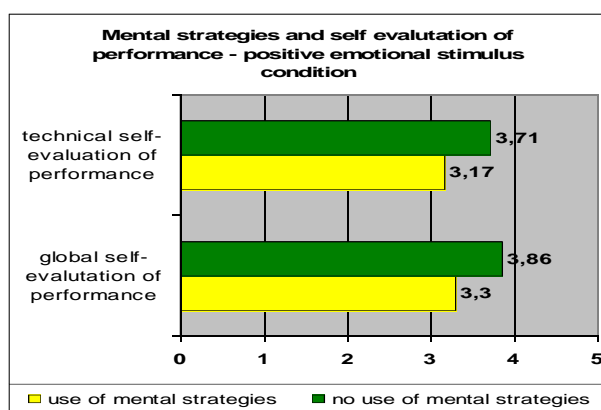
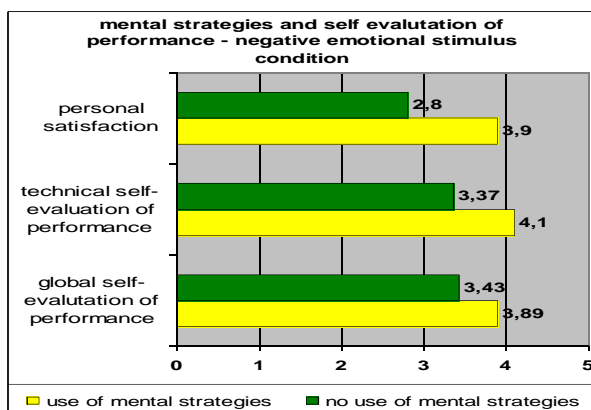
The data showed differences between those who use mental strategies compared to those who do not use them. Specifically the dimensions of flow concerned were: D1 (balance between challenges and skills) for the group that makes use of strategies which reported an average of 4.12 while the group that makes no use presented an average of 3.37 (Sig. .02 to t-test); D4 (direct and immediate feedback) for the group that makes use of strategies which reported an average of 3.6 while the group that makes no use presented an average of 3.0 (Sig. .02 to t-test); D6 (sense of control) for the group that makes use of strategies which reported an average of 3.8 while the group that makes no use presented an average of 3.0 (Sig. .01 to t-test); D9 (autotelic experience) for the group that makes use of strategies which reported an average of 4.2 while the group that makes no use has presented an average of 3.2 (Sig. .007 to t-test); considering total level of flow, the group that makes use of strategies reported an average of 3.7 while the group that makes no use presented an average of 3.2 (Sig. .03 to t-test). Among the group subjected to positive emotional stimulus, the only significant difference was found in the size D8 (distortion of the sense of time) where the group that uses mental strategies reported an average of 3.5 while the group that does not use mental strategies reported an average of 2.8 (Sig. .04).



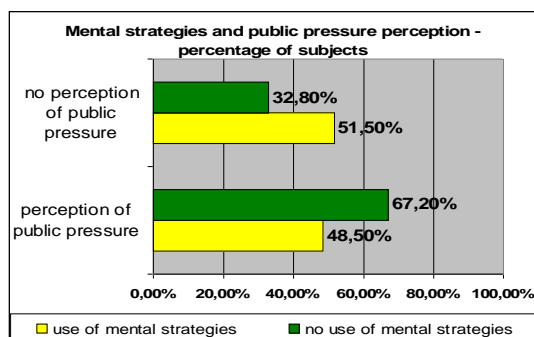
Finally, we passed to analyze the differences, depending on the mental strategies, in the self-evaluation of the performance in the group which received negative emotional induction.



The data showed significant differences with the highest average among those who use mental strategies, which reported to self-report on global performance an average of 3.89 compared to 3.43 of the subjects who did not use mental strategies (Sig. .05). Considering the self-evaluation on technical execution, subjects who use mental strategies reported an average of 4.10 compared with 3.37 for subjects not using mental strategies (Sig. .01). The self-evaluation of the interpretation revealed no significant differences (3.90 and 3.80). Considering self-report assessment of perceived satisfaction, those who use mental strategies reported an average of 3.90 compared to 2.80 for subjects not using mental strategies (Sig. .03). In the group receiving positive emotional induction according to mental strategies, reported significant differences in the self-evaluation of global execution, with averages of 3.30 and 3.86 (Sig. .01); in the self-evaluation of technical execution, averaging from 3.17 to 3.71 (Sig. .01).



Considering the judgments expressed by the teachers, these did not show significant differences between those using and those not using mental strategies in both conditions (positive or negative induction). Analyzing the perceived pressure of public, it was found that among those who do not use mental strategies there were more people who feel the pressure from the public. The 67.2% of those not using mental strategies sensed the pressure of the public, compared to 48.5% of those using mental strategies. While not feeling the pressure of the public were 32.8% of those not using the strategies and 51.5% of those who use the strategies.



Discussion

It can firstly be noted that the experience of involvement in the activity and performing identification has been perceived

in a different way depending on the instrument used. The levels of total flow were increased in pianists (3.44) and to a decreasing extent have featured musicians of wind instruments (3.16) and musicians of stringed instruments (3.13). However, in comparison with the group of vocal performers there was a clear difference for the latter that showed higher level of total flow (3.90). Probably this difference is due to instrumental mediation for the execution of the performance and to interference of the greater reactivation of procedural memory.

By analyzing the correlations between flow and self-regulation, the data suggest that the more self-regulated subjects are able to experience greater pleasure from the execution, also show a greater control of the situation and increased concentration on the task. Depending on the instrument used, self-regulation is strongly present in the pianists which reveals a wide correlation with the dimension D5 that is with concentration on the task (.47 **) and with the D6, sense of control (.39 **).

Among performers of string and wind instruments flow and the self-regulation are not related, so for these the experience of involvement shall be released from the exercise of control and maximum focus on. Among vocal performers self-regulation is strongly correlated (.63 **) with the dimension D4 that is the receipt of direct and immediate feedback and with the dimension D9 (autotelic experience). So for the mostly self-regulated vocal performers appears to be important the ability to understand all the signals coming from the environment, leading to a greater propensity to take pleasure from the experience. In absolute terms, the more self-regulated appeared to be vocal performers (average 83.7), followed by pianists (82.63), musicians of wind instrument (80.50), and finally by the musicians of stringed instrument (80.11).

From the data, it became clear that the negative emotional induction, even if carried out after the musical performance, affects their judgment; in fact, the group subjected to the experimental condition evaluated his performance so much lower than the subjects who underwent positive emotional induction. This conditioning is clear also analyzing the correlations between self-report of subjects and judgment of teachers; in fact, while the self-report of the positively induced subjects were strongly correlated with ratings of the teacher, self-assessments of negative induced subjects were released from the judgment of the teachers. This may confirm an alteration of the judgment downwards freeing itself from an objective and faithful to reality consideration.

Contrary to what one would expect, years of experience, while results in better performance levels, does not constitute an advantage in emotional management. In fact, what seems able to protect individuals from emotional conditioning turn out to be the mental strategies used to manage the emotional burden associated with the task. They reflect a mental organization able to recognize the source of emotions and able to compartmentalize them (almost creating a sealed room), preventing the emotion of invade neighboring experience and alter its valence but well distinguishing the

contexts (which reflect a different experience). This has been verified both in positive and negative stimulus condition, where the subjects using mental strategies, they showed better emotional control, proof of a mental self-regulatory mechanism capable of filtering the experiences on the basis of a clear and distinct causal attribution.

Conclusion

The study found that the type of instrument used affects the levels of flow, but the vocal performers manifest comparatively higher levels of flow. Self-regulation and flow are strongly correlated among pianists and vocal performers. The emotional induction affects the self-evaluative judgment. The years of experience in the practice of music, while results in better performance levels, does not constitute an advantage in emotional management. The use of mental strategies is associated with the formulation of more realistic judgments, with a better protection and management of interfering emotions.

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