

Running head: SELF-AFFIRMATION IMPROVES MUSIC PERFORMANCE

Self-affirmation improves music performance among performers high on the
impulsivity dimension of sensation seeking.

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Abstract

In the light of evidence that self-affirmation can mitigate the negative effects of stress on outcomes, this study tested whether a self-affirmation manipulation could improve undergraduate students' achievement in a formal musical performance examination. The study also investigated the association between impulsivity and music performance and explored whether impulsivity moderated any impact of self-affirmation on exam performance. *Methods:* At baseline, participants provided demographic information and completed the UPPS-P Impulsive Behaviour Scale (short-form), which assesses five dimensions of impulsivity (negative and positive urgency, lack of premeditation, lack of perseverance, and sensation seeking). In the subsequent 14 days, participants ($N = 65$) completed either a self-affirmation manipulation or a control task, before reading a message about the impact of practice on music performance. Music performance was formally assessed 14 days later. *Findings:* Sensation seeking was the only dimension of impulsivity associated with exam performance, with participants high in sensation seeking receiving lower grades. Critically, self-affirmation promoted better music performance among those high in sensation seeking. *Discussion:* Self-affirmation may provide a useful intervention to augment the performance of musicians who would otherwise perform worse than their counterparts under formal evaluative circumstances, such as those high in sensation seeking.

Keywords: Self-affirmation; Music Performance, Impulsivity, Sensation-Seeking

Introduction

People demonstrate competence in a range of academic, artistic, social and physical domains, yet factors may interfere to undermine their performance, particularly in public and evaluative situations (Elliot, 2005). Musicians in particular may suffer from impediments to optimal performance, given the fine-grained and nuanced features of the performances they are required to give. Performing music in front of others requires intense concentration and is generally stressful, even for highly skilled and experienced performers (Eysenck, Derakshan, Santos, & Calvo, 2007; Nieuwenhuys & Oudejans, 2012; Kenny, 2011). Anxiety experienced during a performance can reduce working memory, diminish confidence, disrupt concentration, and impair performance (Kenny, 2011; Killough, Thompson & Morgan, 2015; Wan & Huon, 2005).

Undergraduate students of music are required to demonstrate growing competence in a variety of areas including fine motor skills and co-ordination, attention and memory, and artistic and interpretive ability. This skill set is typically evaluated in formal academic assessment settings against predetermined criteria, with student musicians receiving an overall score for performance that reflects their mastery of a range of technical and communicative qualities (McPherson & Schubert, 2004). Hence, for an undergraduate student of music, music performance examinations represent a recurrent, intermittent stressful event.

Self-Affirmation

One way to help students of music function more effectively in musical examinations is through the administration of interventions to help mitigate the potential negative impact of stress. Self-affirmation - the process of reflecting upon personally important attributes or characteristics, such as strengths or values –

potentially represents one such intervention (Cohen & Sherman, 2014; Steele, 1988). Self-affirmation may boost the psychological resources that individuals have available to cope with stressors and encourage the individual to put the threat into perspective, reducing its potential to elicit adverse psychological and physiological responses (Sherman & Hartson, 2011). Consistent with this, self-affirmation manipulations have been shown to reduce the negative psychological and physiological effects of both experimental and naturalistic stressors (Cohen & Sherman, 2014). For example, Sherman, Bunyan, Creswell, and Jaremka (2009) found that self-affirmed undergraduate students had reduced epinephrine responses to exam stress compared to their non-affirmed counterparts. Self-affirmed students also reported (a) worrying less about failure while taking the exam and (b) being less likely to get stuck on questions when they did not know the answer. Furthermore, Creswell, Dutcher, Klein, Harris and Levine (2013) found that self-affirmation manipulations boosted problem-solving performance among those who were chronically stressed.

For students of music, a musical performance examination is typically stressful, not least because the formal evaluation of music performance has the potential to threaten the student's view of him/herself as a talented and capable musician. A self-affirmation intervention should serve to highlight other important sources of self-worth to the student, reminding him/her of the bigger picture and allowing him/her to gain perspective, with attendant positive implications for self-regulation and coping (Cohen & Sherman, 2014; Sherman, 2013). This, in turn, may bolster performance. Despite the promising potential of such an intervention, no research to date has explored the impact of self-affirmation on music performance. Hence, the primary aim of the current research was to examine whether a self-

affirmation manipulation would enhance music students' performance achievement as assessed by an end-of-semester music performance examination.

Impulsivity and Music Performance

In the context of music, one individual difference with potentially important implications for examination performance is impulsivity. Impulsivity is a heterogeneous concept that has variously been defined in terms of disinhibition, lack of planning, inability to inhibit inappropriate behaviours, insensitivity to consequences, inability to delay gratification, venturesomeness, risk-taking, and sensation seeking, (e.g., Cloninger, Przybeck, & Svrakic, 1991; Evenden, 1999; Eysenck & Eysenck, 1977; Patton, Stanford, & Barratt, 1995, Zuckerman, 1971).

Factor analyses of self-report and behavioural measures of impulsivity suggest a multifactorial model of impulsivity. Thus, Whiteside and Lynam (2001) identified four distinct facets of impulsivity: *urgency*, *lack of premeditation*, *lack of perseverance*, and *sensation-seeking*, while Sharma, Markon and Clark (2014) suggested that impulsivity was underpinned by three distinct personality traits (e.g., neuroticism, disinhibition, and extraversion), and put forward four types of impulsive behaviour: inattention, inhibition, impulsive decision-making, and shifting. Knezevic-Budisin, Pedden, White, Miller, and Hoaken (2015), on the other hand, propose a two-factor model, with one factor reflecting the tendency to act without thinking or planning and the other reflecting a need for reward, excitement and risk-taking. Regardless of its conceptualisation, impulsivity is typically considered as dysfunctional (but see Dickman, 1990).

Numerous studies have reported associations between impulsivity (variously defined) and academic performance, including failure to complete assignments, inaccuracies in academic work, performance errors, and lower academic grades (e.g.,

Lozano, Gordillo, & Perez, 2014; Spinella & Milley, 2003). Studies have also shown that impulsive individuals are less likely than others to engage in effectively structured self-regulated learning strategies that may help them maximise their efforts in the music practice room (Miksza, 2006, 2009, 2011). However, little research attention has been paid to the impact of impulsivity on music performance (though see Miksza, 2006; 2011), even though impulsivity – and attendant levels of inattention, procrastination and lack of preparation – seems likely to be associated with poorer performance. Accordingly, a second aim of the present study was to explore whether impulsivity was associated with music students' performance achievement in their end-of-semester examinations. In particular, using Whiteside and Lynam's four factor (UPPS) model of impulsivity, the opportunity was taken to explore which dimension(s) of impulsivity were related to performance among those participants not receiving the self-affirmation manipulation, as this pattern of findings should best represent the typical association between impulsivity and music performance in the absence of an intervention.

Impulsivity as a Moderator of Self-Affirmation Effects

Self-affirmation interventions frequently appear to confer the greatest benefit for those who are arguably most in need of intervention (e.g., Düring & Jessop, 2015; Harris & Napper, 2005; Sherman et al., 2009). For example, Sherman et al. (2009) found that the buffering effects of self-affirmation on epinephrine responses were most evident for students who were particularly vulnerable to the threat posed by the examinations. Therefore, if a particular dimension of impulsivity hinders music performance, it seems plausible that the benefits of self-affirmation will be most evident for those scoring high on this dimension of impulsivity. In line with this reasoning, a third aim of the present research was to explore whether any

dimension(s) of impulsivity associated with music examination performance moderated the impact of self-affirmation on outcomes.

Method

Participants

We collected data from 102 undergraduate music students. We were able to match data across all 3 phases of data collection for 65 of these participants, 47 of whom were female (72.31%). Thus, our analyses were conducted on 65 participants who completed measures at baseline and completed all three phases of data collection. Participants comprised 55 singers (84%), 3 string players, 1 flute player, 5 brass players, and 1 pianist. Participant age ranged from 18 to 33 years ($M = 19.00$, $SD = 2.02$). Participants engaged in an average of 505.42 ($SD = 367.63$) minutes of music practice per week at baseline. Participants completing all three time points did not differ on any of the baseline variables from those failing to complete the study (i.e., gender, age, instrument of study [singer vs. instrumentalist], music practice, or impulsivity dimensions; all $ps > .29$).

Design and procedure

This study employed a prospective experimental design. Data were collected at three time points. Participants completed questionnaires in lectures and seminars. At baseline, participants indicated their intent to participate in the study and provided demographic information. Two weeks later, they were alternately allocated to complete either a self-affirmation ($n = 35$) or a control task ($n = 32$), before reading a message about the links between music practice and music performance achievement. As part of their undergraduate course assessment, two weeks after the experimental manipulation, participants sat a 10 minute music examination in which they

performed to a panel of judges and were awarded a percentage score out of 100. We were therefore able to take advantage of this natural occasion of performance assessment to obtain objective ratings of participant performance. Ethical approval for this project was given by the hosting university [ref number 1314_57].

Materials

Baseline Questionnaire.

Participants completed a questionnaire including the following sections:

Demographic information. Participants were asked to indicate their age and gender

Impulsivity. Impulsivity was assessed using the short (20-item) version of the UPPS-P Impulsive Behaviour Scale (Cyders, Littlefields, Coffey, & Karyadi, 2014). This scale assesses five dimensions of impulsivity: *negative urgency*, reflecting the tendency to act on impulse when experiencing negative emotions (e.g., “When I am upset, I often act without thinking”); *positive urgency*, capturing the predisposition to act on impulse when experiencing positive affect (e.g., “I tend to lose control when I am in a great mood”); *lack of premeditation*, signifying spur-of-the-moment action without consideration of the long-term consequences (e.g., “I like to stop and think things over before I do them”); *lack of perseverance*, denoting the inability to remain focused on a task (e.g., “I generally like to see things through to the end”), and *sensation seeking*, referring to the need for novelty, excitement, and intense sensations (e.g. “I quite enjoy taking risks”). Responses to all items were given on four-point scales ranging from *agree strongly* to *disagree strongly*¹. Internal reliabilities for all impulsivity dimension subscales were acceptable (α .73), and mean scores were calculated for each subscale, with higher scores representing greater levels of impulsivity on the dimension in question.

Time 1 Questionnaire

Music practice. Using an adapted version of the timeline follow-back technique (Sobell & Sobell, 1992), participants were asked to report the number of minutes they had engaged in individual music practice on each day of the previous week. Each day of the week was presented on a separate line in the questionnaire and space was given for participants to write a description of their practice session(s). Daily minutes of practice were calculated for each participant and summed to provide a measure of music practice.

Self-affirmation manipulation. Following Harris et al. (2014), participants in the self-affirmation condition provided three reasons why their most important value was important to them and one example of something they had done to show how important this value was to them. Participants in the non-affirmation condition provided three reasons why their least important value was important to someone else and an example of something that person might do to demonstrate its importance. In both conditions, a list of 11 different values (such as compassion, intelligence, creativity, spirituality, kindness) were given as examples ².

Music Practice Message ². Participants were asked to read a short message about the impact of deliberative music practice on music performance quality (145 words). A motivational message to encourage students to increase music practice time in the run up to the music performance examination was also included. Participants subsequently completed a number of measures assessing their attitudes, intention, and self-efficacy regarding music practice, which are not analysed further here.

Time 2 Examination

As part of their undergraduate course assessment, two weeks after the experimental manipulation, participants sat a 10 minute music examination in which

they performed before a panel of judges and were awarded an overall percentage score³.

Results

Chi-square analyses and ANOVAs revealed no pre-intervention differences between conditions on any of the baseline variables (i.e., gender, age, instrument of study [singer vs. instrumentalist], music practice, or impulsivity dimensions; all $ps > .091$).

<Table 1>

Impulsivity and music performance grade

Bi-variate correlations between impulsivity and music performance for participants in the control condition revealed sensation seeking to be the only dimension of impulsivity significantly associated with percentage music performance grade (Table 2). Specifically, participants scoring higher on sensation seeking tended to perform worse in their music examination, $r = -.50$, $p = .01$. This suggests that, in the absence of an intervention, participants higher in sensation seeking may be at greater risk of poor performance.

Given our hypothesis that the self-affirmation manipulation should be particularly effective at boosting the performance of those who would otherwise perform less well, we focused on sensation seeking as our individual difference moderator in the analyses reported below.

< Table 2>

Self-affirmation and music performance grade

We used moderated regression analysis to explore whether (1) self-affirmation would have a main effect on music performance and (2) self-affirmation and sensation seeking would have an interactive effect on music performance. Condition (dummy coded with the control condition allocated a value of 0 and the self-affirmation condition allocated a value of 1) and sensation seeking (with scores standardized before data analysis) were entered at Step 1 and Step 2, respectively. The interaction between Condition and Sensation-seeking was added at Step 3 (Table 3). The dependent variable was music performance grade. Condition did not significantly predict performance, $R^2 = .02$, $F(1,45) = .79$, $p = .39$, indicating that there was no main effect of the self-affirmation manipulation. The inclusion of sensation seeking at Step 2 similarly failed to predict music performance grade, $R^2 = .02$, $F(1,44) = 0.98$, $p = .33$. However, when the interaction term was entered into the model at Step 3, it significantly increased the variance in music performance grade accounted for by the model, $R^2 = .13$, $F(1,43) = 6.47$, $p = .01$, demonstrating that there was a significant interaction between condition and sensation seeking. The standardized beta coefficient for sensation seeking was also significant at step 3, $\beta = -0.52$, $t = 2.57$, $p = .01$.

< Table 3 >

We plotted this significant interaction at high (+1 SD), medium (Mean) and low (-1 SD) levels of sensation seeking (see Figure 1). For participants high in sensation seeking, there was a significant effect of condition, $b = 6.07$, $t(43) = 2.48$, $p = .05$, with those in the self-affirmation condition (vs. control condition) achieving a higher music performance grade. For participants average or low in sensation-seeking

there was no significant effect of the self-affirmation manipulation, $b = 1.64$, $t(43) = 0.95$, $p = .345$ and $b = -2.79$, $t(43) = -1.14$, $p = .261$ respectively.

<Figure 1 here >

Discussion

The primary aim of the present study was to explore whether self-affirmation could enhance students' music examination performance. Our findings demonstrated that self-affirmation was associated with higher examination grades, but only for those students identified as being at particular risk of underperforming, specifically those high in sensation seeking. Moreover, the impact of the self-affirmation manipulation was of meaningful magnitude for these students, with the average grades of non-affirmed and affirmed students high in sensation seeking being 57.26% and 63.63% respectively. Hence, the self-affirmation manipulation moved high sensation seeking students from a lower to an upper second class degree grade band⁴. In the context of the UK education system, this is a very significant shift that may lay the foundations for future career aspirations. For example, an upper second degree classification is often required for entry into postgraduate courses in the UK. Indeed, music students who believe they are not good at performing are less likely to pursue a career in music performance upon graduation (Parkes & Jones, 2011).

There was no evidence that self-affirmation influenced music performance for those reporting lower levels of sensation seeking and no overall main effect of self-affirmation on outcomes. Thus, only those music students indicating a preference for varied, novel, and complex sensations and experiences – who otherwise tended to perform worse in their formal examination - appeared to benefit from the self-

affirmation manipulation. This finding contributes to an emergent literature documenting the greatest benefits of self-affirmation for those who are arguably most in need of intervention (e.g., Düring & Jessop, 2015; Sherman et al., 2009).

There are a number of potential explanations for the finding that self-affirmation only benefitted those high in sensation seeking. It is possible that these musicians are particularly vulnerable to performance errors in high stress examination situations. If the self-affirmation manipulation acted to bolster self-regulatory resources (Logel & Cohen, 2011; Schmeichel & Vohs, 2009), the benefits of this for music examination performance might thus be particularly apparent for those high in sensation seeking. Alternatively, musicians high in sensation seeking might be less inclined to engage in systematic, repetitive music practice, where the latter is generally regarded as an important predictor of expertise in music (Ericsson, Krampe, & Tesch-Römer, 1993; Hambrick, Macnamara, Campitelli, Ullen, & Mosing, 2014). Hence, if the self-affirmation manipulation increased receptivity to the message about the advantages of independent music practice (Epton, Harris, Sheeran, Kane, & van Koningsbruggen, 2014; Cohen & Sherman, 2014), this may have had a particular impact on participants high in sensation seeking in terms of promoting music practice with attendant implications for performance. Future research would benefit from exploring the validity of these potential mediating pathways.

A second aim of the current research was to explore which (if any) dimension(s) of impulsivity were associated with music performance under control conditions. As alluded to above, sensation seeking emerged as the only dimension to be significantly related to examination grade, with participants scoring higher on sensation seeking tending to perform worse in the absence of intervention. This finding contributes to an emerging literature documenting associations between

individual differences and music performance (Gingras, 2014; Sloboda, 2000; Welch & Papageorgi, 2014).

A key strength of the current study is the use of an objective assessment of students' music performance abilities by experts in the field as our core outcome measure. Few studies of self-affirmation have used objective measures of behavior, and more are needed. However, a limitation to our study is the relatively high attrition rate (Amico, 2008), albeit analyses revealed no significant differences on any of the baseline measures between those who completed the study and those who did not. This attrition was primarily due to student absenteeism in music lectures and seminars in the week that the self-affirmation manipulation took place (Time 1).

A further limitation to the present research is that we have only considered the effects of impulsivity from the perspective of the UPPS model of impulsive behaviour (Whiteside & Lynam, 2001). It would be interesting for future research to explore associations between impulsivity, self-affirmation and music performance utilising other conceptualisations of impulsivity (e.g., Sharma et al., 2014; Knezevic-Budisin et al., 2015).

Furthermore, the present research focused on the undergraduate students of music and it is thus not possible to determine whether the apparent benefits of self-affirmation would hold for more or less experienced musicians high in impulsivity. Future studies would benefit from using samples of participants with a wider range of music performance competence (e.g., early learners, post-graduate students, and professional musicians). It may also be prudent to replicate the current study with a broader range of instrumentalists. Certainly, further investigations are needed before conclusions about the effectiveness of self-affirmation across music settings can be drawn.

In sum, the present study is the first to explore whether self-affirmation can influence music performance. Results indicate that self-affirmation may present a relatively simple strategy to bolster the performance of a particular subset of musicians who tend to underperform in formal examination circumstances: those high in sensation seeking. Whether a self-affirmation intervention would similarly promote the performance of music students under pressure in other settings (e.g., live concert performances) remains to be established.

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Footnotes

¹ Items for *lack of perseverance* and *lack of premeditation* were reverse scored, so that higher values indicate more impulsive behaviour.

² In addition to the primary goal of exploring the impact of self-affirmation on music performance grade, we initially intended to explore (as a subsidiary aim) the effect of self-affirmation on acceptance of a message detailing the links between music practice and music performance. The main dependent variable for this analysis was to be the number of hours spent on music practice in the run up to the music performance examination. However, as only three students consented to provide this information (please refer to footnote 3), we had insufficient data to run the analyses. Had we collected sufficient data on music practice, we would have investigated whether any changes in music practice cognitions mediated the effects. It may be of interest to note, however, that there were no main effects of the self-affirmation manipulation on these cognitive outcomes.

³ Immediately before their examination, students were invited to complete a further questionnaire assessing practice behaviour and levels of perceived stress in the run up to the examination. Only 3 students consented to complete this questionnaire. In hindsight, it may have been prudent to collect this data after the examination, as pre-examination nerves may have contributed to participants' reluctance to take part.

⁴ The British undergraduate grading system employs a marking range from 0 – 100%, with marks of 70%+ equated to a 1st class pass, marks between 60-69% equated to an upper second class pass, marks between 50-59% equated to a lower second class pass, marks between 40-49% equated to a third class pass, and, marks of 39% or below equated to a fail.

Table 1: Means and standard deviations of the study variables by condition.

Variable	Control <i>M (SD)</i>	Self-affirmation <i>M (SD)</i>	Whole Sample <i>M (SD)</i>
Performance Grade	60.97 (5.98)	62.18 (5.63)	61.58 (5.80)
Baseline Practice (minutes)	512.24 (499.29)	549.86 (544.96)	532.41 (500.65)
Negative Urgency	2.37 (0.62)	2.41 (0.68)	2.39 (0.65)
Positive Urgency	2.09 (0.56)	1.90 (0.56)	2.00 (0.56)
Premeditation	2.21 (0.66)	2.15 (0.37)	2.17 (0.51)
Perseverance	2.93 (0.47)	3.10 (0.46)	3.12 (0.47)
Sensation Seeking	2.66 (0.64)	2.64 (0.66)	2.65 (0.64)

Table 2: Bivariate correlations of the study variables in the control condition.

	1	2	3	4	5	6
1. Music Grade						
2. Baseline Practice (minutes)	.17					
3. Negative Urgency	-.01	-.09				
4. Positive Urgency	-.16	-.32	.39*			
5. Premeditation	-.27	-.10	.47**	.35		
6. Perseverance	-.12	.20	-.28	.15	-.10	
7. Sensation Seeking	-.50*	.14	-.31	.14	.17	.31

* $p < .05$; ** $p < .01$

Table 3: Hierarchical Regressions of Music Performance Grade on Self-affirmation and

Sensation Seeking							
Variables entered	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>R</i> ²	<i>R</i> ²	<i>F</i>
<i>Step 1</i>					0.02	0.02	0.79
Condition	0.27	0.13	0.30	0.89	0.39		
<i>Step 2</i>					0.04	0.02	0.98
Condition	0.27	0.13	0.30	0.90	0.37		
Sensation seeking	-0.14	-0.15	0.14	-1.00	0.39		
<i>Step 3</i>					0.16	0.13	6.47*
Condition	0.29	0.15	0.28	1.04	0.30		
Sensation seeking	-0.50	-0.52	0.19	-2.57	0.01		
Condition x Sensation Seeking	0.69	0.52	0.27	2.54	0.01		

* $p = .02$

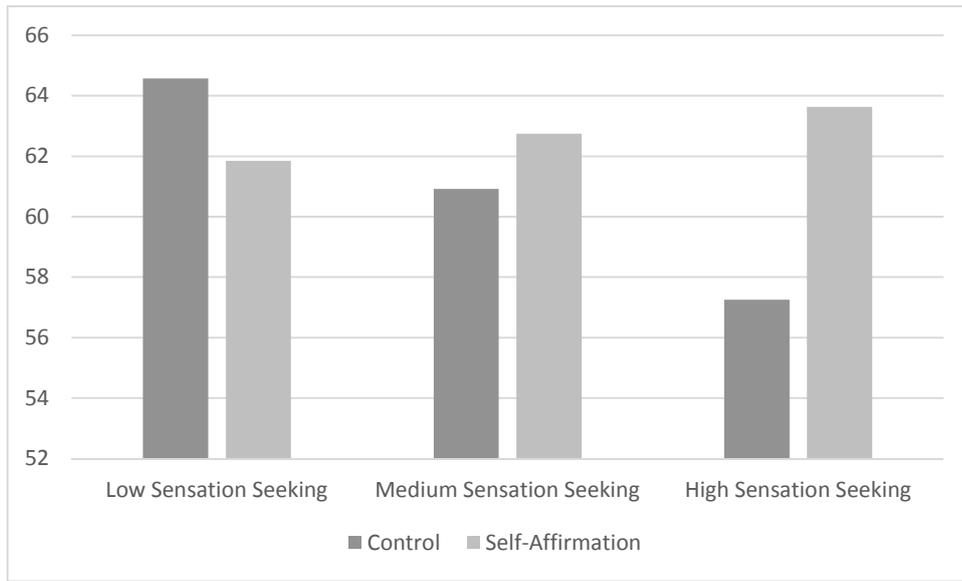


Figure 1. Interaction of self-affirmation with sensation-seeking on music performance grade