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Abstract

The purpose of this study is to examine a set of motivation variables within guitar and piano players. We also tested for motivational differences among three groups: those who write music, those who plan to write music in the future, and those who do not write nor intend to write. An international sample of 599 musicians was obtained (guitar: $N = 292$, piano: $N = 307$) through the use of an online survey. Self-Determination Theory, a prominent perspective in the motivation literature, was utilized along with other motivational constructs, including perceived competence, musical self-esteem, effort, desire to learn, willingness to play, and possible musical selves. Findings revealed differences between pianists' and guitarists' levels of motivational intensity, desire to learn, introjected regulation, perceived competence and willingness to play. Results also indicated that the group who write music had significantly higher levels of musical self-esteem, willingness to play, motivational intensity, desire to learn, and perceived competence. Findings from this study suggest that pianists and guitarists both are intrinsically motivated, but for different reasons. The underlying motivational needs that are met by the instrument's "culture" appear to focus on competence for pianists and on autonomy and relatedness for guitarists.

Keywords

autonomy, competence, intrinsic, motivation, musical self, relatedness, self-determination, writing music

To play a musical instrument well requires an extensive amount of effort and a potentially significant investment of oneself in the music learning and creation process. The intensity and duration of the learning process implies a strong role for sustaining motivation in the success of a musician. This study will examine musicians who play two of the most popular instruments, piano and guitar, with the goal of identifying similarities and differences between them in key motivation variables, and whether or not the creative process of writing music is related to musicians' motivation.

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Perhaps the most obvious difference among musicians is their choice of instrument. A musical instrument can be much more than a stand-alone physical object in the eyes of the one who plays it; the instrument can become part of the person's identity, an extension of the self.

When we think of a musician's virtuosity or even of her expressiveness or musicality, we think of these things as specifically tied up with what she does with the particular instrument she plays . . . (T)he truth is that it is difficult to say where the instrument ends and the rest of the body begins. (Alperson, 2008, pp. 37–40)

The preference for a particular musical instrument has been found to be related in part to the musician's personality (Bell & Cresswell, 1984; Cribb & Gregory, 1999). Other studies suggest that one's masculinity or femininity, a key element of identity, can be enhanced or challenged by the choice of a particular instrument (Delzell & Leppla, 1992; O'Neill & Boulton, 1996; Sinzel, Dixon, & Blades-Zeller, 1997). The qualities of the instrument, how it can be used, and the ways in which one learns to play are relevant to how a musician is perceived. Both piano and guitar can be played across musical genres, either as part of a group or a single instrument performance, and are often played alone for personal enjoyment. Piano tends to be learned and practiced more formally than guitar (Daniel, 2004; Green, 2006). Learning to play the piano tends to emphasize attention to technique, theory, and reading music. Learning to play guitar lends itself to noodling, improvisation and "jamming." Cribb and Gregory (1999) argue that each instrument is associated with a specific culture. This is not to say that every pianist or guitarist learns in the same way, but as large groups, we can observe regular patterns in how the instruments are approached. If the cultures of the instruments show differences, and the motivational dynamics of the people who play them can be affected by these patterns, then it seems plausible that the piano will motivate its musicians in ways that differ from the guitar. Our first goal is to examine the relationship among key motivation variables for pianists and guitarists.¹

Our second goal is to examine motivational differences associated with writing music. A musical piece often is seen as an extension of the person who wrote it. Even simple compositions are saturated with the author's experiences, interpretations, thoughts and emotions – all significant components of personal identity. Simply engaging in the writing process, or setting a goal to one day be a writer, can be a window into the self and its motivations. Song writing has been reported to be therapeutic for individuals suffering from anorexia nervosa (McFerran, Baker, Patton, & Sawyer, 2006), palliative care patients (O'Callaghan, 1996), and troubled teens (Keen, 2004). The Victorian author Samuel Butler wrote, "Every man's work, whether it be literature or music or pictures or architecture or anything else, is always a portrait of himself." The act of writing music can lead to powerful forms of self-expression that become integral to a sense of identity. In his blog "Creating Music," Jason Hannah (2010) asked fellow musicians why they write or create music. In summing up the contributions he received, Hannah (2010) suggested a consensus: "I create music because that's who I am . . . a songwriter, a musician, and a creative artist." Given its integral role in self-perceptions, the act of composing music seems likely to affect musical motivation (Leung, 2008). Additional research is needed to understand the motivational implications of writing music, and whether pianists and guitarists are equally likely to write.

Perspectives on motivation

The present study sampled concepts from the broad literature on motivation in order to better understand similarities and differences between pianists and guitarists. Arguably, the key

distinction in the current modern motivation literature is between intrinsic and extrinsic motives, but it would be too simplistic to believe that pianists and guitarists are *either* intrinsically or extrinsically motivated. Rather, intrinsic and extrinsic motives are treated as part of a continuum within Self-Determination Theory (SDT, Deci & Ryan, 1985). SDT highlights the individual's sense of self and the satisfaction of needs for competence, relatedness and autonomy as fundamental to an understanding of motivation. To shed light on other aspects of the self, we will also measure self-esteem as well as possible musical selves.

The musical self: Self-Determination Theory. SDT considers motivation a multifaceted phenomenon that highlights differences in types or qualities of motivation (Deci & Ryan, 1985, 2002, 2008; Ryan & Deci, 2000). To differentiate intrinsic from extrinsic motives, Deci and Ryan (2008) focus on the degree to which motives are self-directed and autonomous versus other-directed and externally controlled. Four key concepts can be identified and located on a continuum. (1) *Intrinsic regulation* is the most autonomous type of motivation. It arises from an inherent interest and sense of gratification from the activity itself, such as playing an instrument simply for the joy it provides. (2) *Identified regulation* arises from personal values and a sense of importance or meaning that an activity provides, and is somewhat less autonomous than intrinsic regulation. Identified regulation can motivate behavior required by a specific role or sense of self that might not be inherently enjoyable (e.g., "I practice because I am a pianist, and a pianist must practice"). (3) *Introjected regulation* is energized by factors such as an approval motive, avoidance of shame, contingent self-esteem, and ego-involvement. Falling toward the controlled end of the continuum, introjected regulation involves feelings of obligation or doing something because one "ought to" do it. The most controlling type of motivation, (4) *Extrinsic regulation*, supports behaviors performed to obtain a tangible reward or to satisfy an external demand, as when one performs for money or to pass an examination. Previous research on this theory has provided support for its key theoretical tenets (Deci & Ryan, 1985, 2002, 2008; Ryan & Deci, 2000).

The theoretical underpinnings of SDT propose that three basic, psychological needs underlie the intrinsic-extrinsic continuum: competence, autonomy, and relatedness (Deci & Ryan, 2008). *Competence* reflects the psychological need to be effective in interactions with the environment, the desire to exercise one's capacities and skills and, in doing so, to seek out and master optimal challenges (Deci & Ryan, 1985). The second need, *autonomy*, reflects the psychological need to experience self-direction and personal endorsement in the initiation and regulation of one's behavior (Deci & Ryan, 1985); to be an "origin" rather than a "pawn." Finally, *relatedness* is the psychological need to establish close emotional bonds and attachments with other people and is accompanied by a desire for intimacy (Deci & Ryan, 2008; Ryan, 1991). SDT represents a potentially powerful scheme for understanding music motivation and its roots.

Possible musical selves. If SDT is a reflection of the present motivated self, possible selves theory approaches motivation from a teleological perspective (Markus and Nurius, 1986). Possible selves are cognitive-affective manifestations of one's self in the future (Markus & Nurius, 1986) in various life domains, including music (Schnare, MacIntyre & Doucette, 2011), and reflect an awareness of one's potential (Oyserman & Markus, 1990). More specifically, possible selves reflect individuals' ideas about what they would like to become and what they are afraid to become in the future (Markus & Nurius, 1986; Markus & Ruvolo, 1989). The desired and/or undesired imagined future self acts as either an attractive incentive to be approached or an unattractive incentive to be avoided (Markus & Nurius, 1986). A child may form a possible

musical self by observing an admired musical role model, perhaps a rock star guitarist or a brilliant classical pianist. Forming a possible self includes creating a mental image of playing for an adoring audience, along with anticipating the events, sensations and reactions of both self and others (Erikson, 2007). This rich source of imagery taps into a potentially deep well-spring of emotion and motivation by integrating attributes that the self does not yet possess into a desired goal (Schnare et al., 2011).

Musical self-esteem. In conjunction with the description of possible selves, this study also examined self-esteem in the music domain. *Self-esteem* reflects a generally favorable or unfavorable attitude toward the self (Rosenberg, 1965), with perceived achievement being the key influence on levels of self-esteem (Marsh, Trautwein, Ludke, Koller, & Baumert, 2006). Self-esteem is linked to motivation by reflecting the quality of adaptive and productive functioning (Josephs, Markus, & Tafarodi, 1992).

Desire to learn and motivational intensity (effort). MacIntyre, Potter and Burns (2012) found that motivation for music learning, defined in large part by the *desire to learn* and *motivational intensity* (effort), strongly predicted both practice and the perception of musical competence. *Desire to learn* reflects the strength of the emotional attachment the student has towards learning. *Motivational intensity* reflects the level of effort that a student is willing to put forth (see Gardner, 1985).

Willingness to play. This motivational construct has been adapted from McCroskey and Richmond's (1991) *Willingness to communicate* which characterizes the readiness to initiate conversation if the opportunity arises. Music can be played meaningfully in performance settings ranging from highly formal recitals to informal jam sessions, and the volitional engagement in music performance helps to complete the motivational picture. If music performance is a form of self-expression or communication, then it might be helpful to examine the musician's willingness to play across various settings.

Motivation in context

Research into music motivation has tended to focus on music learned and played within a school setting (for example, Asmus, 1986; McCormick & McPherson, 2003; Schmidt, Zdzinski, & Ballard, 2006; Sichivista, 2007). Recent research by Green and others has examined motivation for music learned and played *outside* of an educational context and the findings point to interesting contextual differences (see Cope, 2002; Green, 2006, 2008, 2009). Jaffurs (2006) suggested that institutionalized study tends to be accompanied by a degree of technical polish and refinement uncharacteristic of learning outside a school setting. In general, interest in music outside school appears to be much higher than music interest within a middle and high school context (McPherson, 2010). The formal curriculum of music instruction might work against creating a sense of autonomy and is a constant challenge to feelings of competence as incipient skills develop (Bowman, 2004). Green (2004) suggested that, ironically, learning music in a formal setting does not appear to promote an integration of music into people's daily lives.

The differences between formal and informal musical contexts also are reflected in the relative emphasis placed on writing music. Composing often is an autonomous process and provides an outlet for creativity and emotional expression. If formal instruction

places relatively less emphasis on writing music due to constraints imposed by teachers and a curriculum, then will pianists and guitarists differ on average in their desire to write music? If so, will writing music also be related to the other motivational variables discussed above?

The current study

The present study examined pianists and guitarists outside a school environment, specifically a sample of musicians recruited online. Our aim was to examine the correlations among the motivation variables described above that arise within a group of musicians who have diverse learning histories. In particular, we will test for differences between pianists and guitarists on these motivational variables. Finally, we examined whether or not writing music might be related to the set of motivational variables in this study. Five specific research questions guided the analyses:

- RQ1:** Will pianists and guitarists show different mean scores on the motivation variables?
- RQ2:** How strongly do the motivational variables correlate with each other?
- RQ3:** Will the magnitude of correlations among the motivational variables differ significantly for pianists and guitarists?
- RQ4:** Do groups of musicians who write music, plan to do so, or have no intention to write music show different levels of motivational variables?
- RQ5:** Are pianists and guitarists equally likely to write music?

Method

Participants

This study consisted of 599 male (72%) and female (27%) musicians (guitar: $N = 292$, piano: $N = 307$). Musicians in the sample included both professionals and recreational players with formal and informal training backgrounds. Half of the guitarists claimed to be primarily self-taught and another 8% learned from friends and family, only 16% of guitarists had 2 or more years of formal musical training. More than two-thirds of pianists (69%) had 2 or more years of formal training and another 15% undertook formal training for less than 2 years. The musicians were distributed across a range of ages as follows: under 20 years (17.9%), in their 20s (17.5%), in their 30s (16.7%), in their 40s (19.2), in their 50s (18.9%) and over 60 years of age (9.5%). Over a third of the sample (33.4%) began learning their instrument before the age of 10 and another 41.2% began learning in their teenage years. The international sample was comprised of participants from 57 countries, including the US ($n = 326$), the UK ($n = 93$), Canada ($n = 64$), Australia ($n = 16$) and Germany ($n = 12$). The most popular genres of music played by the respondents, based on the categories used for the Recording Industry Association of America's Grammy Awards, were classical and pop for pianists, rock and blues for guitarists (see Table 1).

Materials/measures

In addition to demographic information, the following scales² were included in the online questionnaire:

Table 1. Top 10 genres of music played by respondents.

| | Piano genre (number*) | Guitar genre (number*) |
|--|-----------------------------|-----------------------------|
| 1. | Classical (167) | Rock (219) |
| 2. | Pop & Traditional pop (130) | Blues (185) |
| 3. | Jazz (71) | Pop & Traditional pop (176) |
| 4. | Gospel (70) | Alternative (128) |
| 5. | Blues (63) | Country (122) |
| 6. | Rock (55) | Folk (113) |
| 7. | Folk (52) | Jazz (100) |
| 8. | New Age (55) | Metal (87) |
| 9. | Children's (42) | R&B (80) |
| 10. | Alternative (37) | Classical (69) |
| Total number of genres reported | 1018 | 1718 |

Note. *The number in parentheses reflects the number of respondents who listed the genre as one they play. Respondents could list as many genres as they wished.

Self-determination. Participants completed 16 items from Williams and Deci's (1996) *Self-Determination Scale*, which measured individual differences in quality of motivation (extrinsic regulation, $\alpha = .79$ piano and $.73$ guitar, introjected regulation, $\alpha = .76$ piano and $\alpha = .82$ guitar, identified regulation, $\alpha = .72$ piano and $.61$ guitar, and intrinsic regulation, $\alpha = .65$ piano and $.63$ guitar). A 7-point Likert scale was used that ranged from 1 (not at all true) to 7 (very true). An example item measuring extrinsic regulation was as follows: "Because I feel like I have no choice about playing music; others make me do it."

Perceived competence. This variable was measured by adapting 4 items from Williams and Deci (1996). An example item read as follows: "I feel confident in my ability to learn music." A 7-point Likert scale was used that ranged from 1 (not at all true) to 7 (very true). Reliability for this scale was $.85$ for piano and $.84$ for guitar.

Musical self-esteem. Rosenberg's (1989) 10-item *Self-Esteem Scale* was adapted to measure Musical Self-Esteem. A 9-point Likert scale was used that ranged from 1 (very strongly disagree) to 9 (very strongly agree). An example item from this scale read as follows: "In music, I feel that I am a person of worth, at least on an equal plane with others." Reliability for this scale was $.87$ for piano and $.88$ for guitar.

Motivational intensity. This variable was extracted from Gardner and MacIntyre's (1991) *Attitude and Motivation Test Battery (AMTB)* and was adapted to music. Nine items were included in this scale. A 7-point Likert scale was used that ranged from 1 (strongly disagree) to 7 (strongly agree). An example item read as follows: "I really work hard to learn music." Reliability for this scale was $.66$ for piano and $.62$ for guitar.

Desire to learn. This variable was taken from Gardner and MacIntyre's (1991) *Attitude and Motivation Test Battery (AMTB)* and was adapted to music. Ten items were included on this scale. A

7-point Likert scale was used that ranged from 1 (strongly disagree) to 7 (strongly agree). An example item was as follows: "I want to learn music so well that it will become second nature to me." Reliability for this scale was .70 for piano and .70 for guitar.

Willingness to play. McCroskey and Baer's (1985) 9-item *Willingness to Communicate* scale was adapted to music, to measure *Willingness to Play* in formal, informal, and neutral settings in front of others. A 10-point Likert scale was used that ranged from 1 (I would never feel like playing) to 10 (I would always feel like playing). An example item was as follows: "When playing formally for a large group of strangers." Reliability for this scale was .95 for piano and .94 for guitar.

Possible selves. In order to introduce a qualitative dimension to this study to inform the interpretation of the quantitative results, three open-ended questions examined possible selves (see Schnare et al., 2011): *Hoped for Selves*, *Expected Selves*, and *Feared Selves*. The questions read as follows:

Many people have in mind some things that they hope to be in the future, regardless of how likely it is that they will actually be that way or do those things. We call these **hoped-for** selves. People consider not only what they want to happen, but also what they believe will happen to them. We call these **expected** selves. Finally, people also think of what they don't want to happen to them, in other words, what they fear will happen. We call these **feared** selves. We are interested in these three types of possible selves in music.

- A. Please list below three possible musical selves that you would hope to describe you in the next year. When I think about Music, next year I **hope** to be ...
- B. Please list below three possible musical selves that are most likely to be true of you in the next year. When I think about Music, next year I **expect** to be ...
- C. Please list below three possible musical selves that you fear or worry about being in the next year. When I think about Music, next year I am **afraid** that I will be ...

Selected quotes from the qualitative analysis of possible selves will be reported in the Discussion section.

Procedure

Participants were recruited through snowball sampling, in which a link to an online survey (hosted by Google Docs) was posted to numerous music websites, chat forums, and Facebook groups dedicated to discussion of piano and guitar. Participants were initially sent to an online consent form describing the purpose and objective of the study. Participants were assured that data would be kept confidential and that they were free to choose not to answer any question and to withdraw from the study at any time. Also included in this consent form was the contact information of the researchers and the University Research Ethics Committee. Participants then completed the demographics section followed by sections on motivational intensity, desire to learn, willingness to play, self-determination, perceived competence, and musical self-esteem. Finally, participants completed three open-ended questions, *hoped for*, *expected*, and *feared* possible selves.³

Results

Significant differences between pianists and guitarists were found among the means of the motivational variables. Using a one-way MANOVA (RQ1), a significant effect of instrument was found at the multivariate level $F(9, 565) = 14.8, p < .001$, partial $\eta^2 = .19$. At the univariate level, compared with guitarists, pianists showed significantly higher motivational intensity ($F(1, 573) = 25.8, p < .001$, partial $\eta^2 = .04$), desire to learn ($F(1, 573) = 5.30, p < .05$, partial $\eta^2 = .01$), and introjected regulation ($F(1, 573) = 4.13, p < .05$, partial $\eta^2 = .007$) but significantly lower perceived competence ($F(1, 573) = 7.84, p < .05$, partial $\eta^2 = .014$) and willingness to play ($F(1, 573) = 58.08, p < .05$, partial $\eta^2 = .09$). The remaining four variables, extrinsic regulation, identified regulation, intrinsic regulation, and musical self-esteem did not show significant differences between groups (all $F_s < 0.65, p_s > .42$). Means and standard deviations are presented in Table 2.

Correlations were computed to examine how the variables fit together. Given that the means for five motivational variables differed significantly between the two groups, correlations will be reported separately for pianists and guitarists. To examine the relationships among the nine motivation variables (RQ2), correlations were computed separately for pianists and guitarists (see Table 3). The four SDT variables (extrinsic, introjected, identified, and intrinsic regulation) showed the expected pattern of correlation; each variable was most strongly correlated with its neighbor on the continuum. Intrinsic regulation was significantly correlated with all five of the non-SDT variables (desire to learn, perceived competence, motivational intensity, musical self-esteem, and willingness to play). Identified regulation was correlated with three non-SDT variables: desire to learn, perceived competence, and motivational intensity. However, both extrinsic and introjected regulation correlated very weakly with the five non-SDT variables, and among guitarists extrinsic regulation was significantly, negatively correlated with intrinsic regulation, perceived competence, desire to learn, and motivational intensity. In both groups, introjected regulation was significantly, negatively correlated with musical self-esteem.

Other especially noteworthy relationships include the strong inter-correlations among perceived competence, willingness to play, and musical self-esteem (r_s range from .46 to .71, $p_s < .001$). Further, for both pianists and guitarists, motivational intensity was strongly correlated ($r_s > .50$) with desire to learn and also with perceived competence ($r_s > .33$).

Table 2. Means for pianists and guitarists on motivation variables.

| | Guitarists | Pianists |
|-------------------------|---------------|---------------|
| Extrinsic regulation | 5.82 (3.29) | 5.86 (3.60) |
| *Introjected regulation | 12.87 (6.94) | 13.98 (6.22) |
| Identified regulation | 24.12 (3.67) | 24.37 (3.84) |
| Intrinsic regulation | 22.66 (2.83) | 22.75 (2.74) |
| *Perceived competence | 22.38 (4.78) | 21.22 (5.16) |
| *Motivational intensity | 46.92 (7.92) | 50.30 (8.04) |
| *Desire to learn | 49.19 (5.96) | 50.30 (5.58) |
| *Willingness to play | 68.21 (18.41) | 55.17 (22.38) |
| *Musical self-esteem | 63.21 (15.11) | 62.60 (15.41) |

Note. * The difference between pianists and guitarists is significant ($p < .05$). Standard deviations appear in parenthesis. Given the listwise deletion of cases with a missing value on any scale item, the sample size for this analysis was 283 for guitarists and 292 for pianists.

Table 3. Correlations among motivational constructs for pianists and guitarists.

| | | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---------------------------|---|--------|--------|--------|--------|---------|----------|--------|--------|
| 1. Intrinsic | P | .69*** | .22*** | -.05 | .26*** | .21*** | .43***,# | .43*** | .20*** |
| | G | .65*** | .07 | -.19** | .35*** | .14* | .63***,# | .50*** | .19*** |
| 2. Identified | P | – | .34*** | -.01 | .22*** | .12* | .53*** | .41*** | .24*** |
| | G | | .30*** | -.07 | .28*** | .01 | .63*** | .51*** | .10 |
| 3. Introjected | P | | – | .39*** | -.08 | -.32*** | .19** | .09 | -.01 |
| | G | | | .37*** | -.08 | -.24*** | .13* | .06 | .06 |
| 4. Extrinsic | P | | | – | .10 | .03 | -.08 | .00 | .07 |
| | G | | | | -.12* | -.08 | -.21*** | -.14 | .08 |
| 5. Perceived competence | P | | | | – | .71*** | .13* | .42*** | .47*** |
| | G | | | | | .68*** | .29*** | .33*** | .52*** |
| 6. Musical self-esteem | P | | | | | – | .07 | .38*** | .46*** |
| | G | | | | | | .11 | .19*** | .49*** |
| 7. Desire to learn | P | | | | | | – | .50*** | .17** |
| | G | | | | | | | .55*** | .21*** |
| 8. Motivational intensity | P | | | | | | | – | .35*** |
| | G | | | | | | | | .18** |
| 9. Willingness to play | P | | | | | | | | – |
| | G | | | | | | | | |

Note. * $p < .05$; ** $p < .01$; *** $p < .001$; # correlations in this cell differ significantly ($p < .05$).
Abbreviations: P = Pianists; G = Guitarists.

A z-test was used to examine differences in the magnitude of the observed correlations between pianists and guitarists (RQ3). There were 36 pairs of correlations compared. To be moderately conservative in evaluating the differences between correlations for pianists and guitarists, the Hochberg (1988) adjustment procedure was employed. This procedure adjusts the alpha level in an ordered fashion, such that the smallest difference in correlations is evaluated at .05, the next smallest at $.05/2$ (.025), the next smallest at $.05/3$ (.017) and the largest difference among the 36 pairs of correlations in Table 3 is evaluated at $(.05/36 = .0014)$. Only one pair of correlations produced a significant difference; the desire to learn was more strongly correlated with intrinsic motivation for pianists ($r = .63$) than for guitarists ($r = .43$) ($z = 3.43$, $p < .001$).

The fourth and fifth research questions involved musical composition. To examine the potential relationship between writing music and the motivation variables, a one-way MANOVA was performed (RQ4). Three groups were identified, those who currently write music ($n = 272$), those who do not write now but plan to write in the future ($n = 145$), and those who neither write nor plan to write ($n = 153$). The three groups differed significantly at the multivariate level ($F(18, 1116) = 6.61$, $p < .001$, partial $\eta^2 = .096$). At the univariate level, none of the four SDT variables showed group differences (all F s < 1.9 , p s $> .15$). However, a difference between writing groups was observed on all five non-SDT variables: musical self-esteem ($F(2) = 19.59$, $p < .001$, partial $\eta^2 = .07$), willingness to play ($F(2) = 47.95$, $p < .001$, partial $\eta^2 = .15$), motivational intensity ($F(2) = 3.11$, $p < .05$, partial $\eta^2 = .01$), desire to learn ($F(2) = 7.35$, $p < .05$, partial $\eta^2 = .03$), and perceived competence ($F(2) = 21.80$, $p < .001$, partial $\eta^2 = .07$). Figure 1 shows the means for each group, expressed as a percentage of the maximum value of the scale. For all five variables, a Tukey's HSD test revealed that those who currently write music had

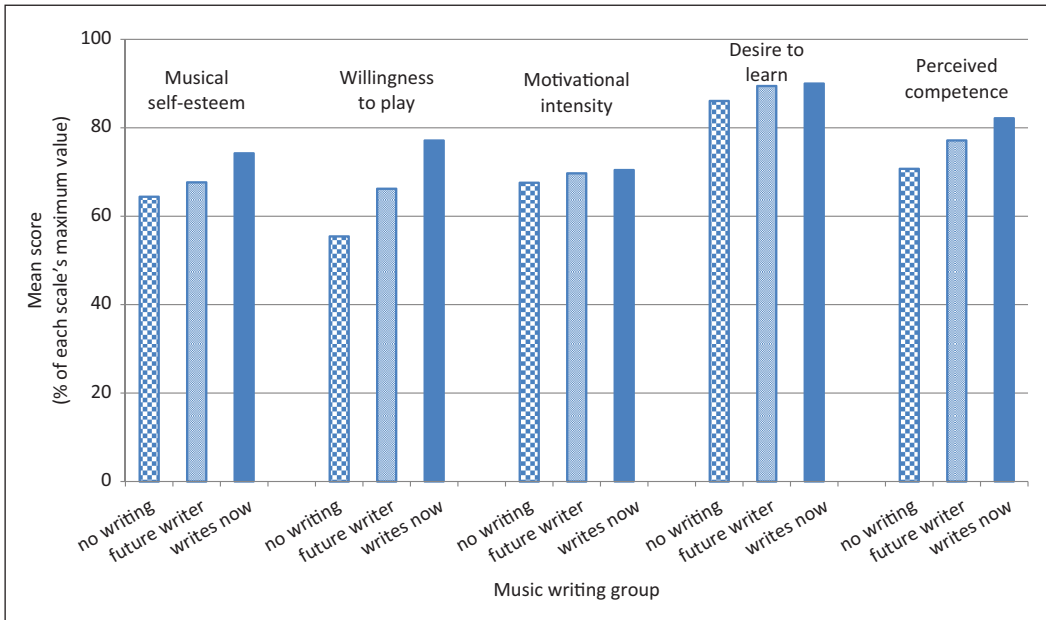


Figure 1. Music writing group.

significantly higher means ($ps < .05$) than those who do not write or intend to write music. The third group, those who plan to write music in the future, consistently fell between the other two groups.

The final research question (RQ5) addressed differences between the number of pianists and guitarists who reported writing music. Results showed a significant difference between the groups ($\chi^2(2) = 68.78, p < .001$); almost twice as many guitarists than pianists reported writing music (63% versus 32% respectively). Furthermore, pianists were much more likely to report having no intention to learn to write music in the future (40.1%) compared to guitarists (13.5%).

Discussion

The results indicated that the patterns of correlations are comparable within groups of pianists and guitarists, even though the mean levels of several motivational variables showed significant differences between the groups. Results further revealed that writing music is associated with positive motivational results, but writing did not show differences on the variables across the self-determination continuum. Overall, the levels of intrinsic regulation were high for the musicians in the sample, for both instruments, though the sources of motivation and its effects showed some differences. In discussing the results, we will incorporate responses from the individuals in the sample, giving voice to the participants, in their own words.

The pattern of correlations for the four SDT variables was consistent with the underlying theory (Deci & Ryan, 1985, 2008), supporting the idea of an underlying continuum from extrinsic to intrinsic regulation. As expected, the more self-determined motives, identified and intrinsic regulation, were correlated positively with the desire to learn, the perception of competence, and the motivational intensity (effort) invested in both piano and guitar. This reflects

the tendency for intrinsic motivation to increase task persistence (Ryan, Frederick, Lepes, Rubio, & Sheldon, 1997), the quality of learning (Vansteenkiste, Simons, Lens, Soenens, & Matos, 2005), and self-esteem (Kasser & Ryan, 1996, 2001). At the other end of the SDT continuum, extrinsic and introjected regulation tended to correlate near-zero or negatively with the non-SDT motivational variables. Previous studies have reported that extrinsic regulation can undermine the effects of intrinsic motivation (Deci, Koestner, & Ryan, 1999; Kohn, 1993), and the present data generally were consistent with those studies. Although contrasting pianists and guitarists might have produced different patterns of correlations among these variables, there was only one correlation (out of 36) that was significantly different between the groups. Therefore, there is little evidence here to suggest that the underlying psychological structure of musical motivation differs across the groups who play piano and guitar.

However, significant differences were observed in the mean level of motivation variables. Specifically, pianists reported greater externally introjected regulation, a stronger desire to learn and exerted more intense effort, but also reported a lower sense of competence and less willingness to play than guitarists (see Table 2). This pattern of results is consistent with the relatively formal learning-environment of the piano, where achievement strivings and high personal standards are emphasized (Stoeber & Eismann, 2007). Prior research shows that high achievement and perfectionistic strivings can be positively correlated with effort and motivation (Bieling, Israeli, Smith, & Antony, 2003; Mills & Blankstein, 2000; Stoeber & Rambow, 2007). The culture surrounding the piano includes recitals, competitions, and grading by levels in formal systems that are not prevalent in guitar learning. Given this difference in culture, it is not surprising that pianists were found to have significantly higher levels of introjected regulation and exerted greater intensity of effort to learn, yet felt less competent and less willing to play.

The formality of the learning culture of the piano creates standards of excellence consistent with achievement motivation (McClelland, Atkinson, Clark, & Lowell, 1953). The possible selves that pianists described in the present data reflect a focus on competition: “[I hope to be] A first prize winner in a competition;” “[I hope to be] Winner of concerto competition;” “[I hope to be] winner of a piano competition”) and “[I fear] being disappointed in myself, as I set goals too high, and do not remember where I started.” The pianists’ comments suggest that the structure of the formal learning environment can contribute to satisfying the need for competence (Miserandino, 1996): “[I hope to be] following a structured framework of a good music program (college) . . .” and “I hope to have a more regular and scheduled way of practicing. Waking up early to practice before work, and then practicing after . . .”, and “[I fear] . . . playing irregularly . . .”

If pianists’ motivation system emphasizes the need for competence, then needs for autonomy and relatedness seem to be more strongly implicated in the motivation of guitarists. Perhaps the attraction to an informal learning environment reflects a guitarist’s relative preference for autonomy and personal control over the learning process. In responding to the possible selves items, guitarists often noted the desire to improvise across genres and creatively play solos “[I hope to be] able to pull a bit of ‘flash’ out for solos in the work I do with my band. I want to surprise audiences there;” “[I hope to] be able to play whatever it is that I want to . . .”; “[I hope to be] better at improvising, I find it hard to relate my theoretical knowledge to the fretboard, and I don’t yet ‘see’ shapes and patterns emerging on the fretboard as I play. I’d like to be able to start playing in any key, and be able to play long, un-interrupted phrases in different positions.”

Results showed guitarists with a higher level of willingness to play than pianists, and the responses to possible selves items suggested that connecting with others through music is important to guitarists. Guitarists wrote about wanting to fit into a group and be accepted by

other musicians, “*I hope to make more friends among musicians;*” “[*I hope to*] *know more like minded musicians with similar goals and aspirations;*” “[*I hope to be*] *a player who jams with other musicians more often;*” and “[*I hope to be*] *Able to play informally with other musicians (and good enough that they will want to invite me to play again).*”

The physical qualities of the instruments help to emphasize different needs. Relative to the piano, the guitar is a more portable instrument, making it easier for guitarists to join other musicians for informal practice or jam sessions. Also, the shape and weight of the guitar, and the relative lack of emphasis on sheet music, allows the guitarist to maintain eye contact with others while playing, with minimal preparation, and to move around during a stage performance. This physical positioning allows for a more intimate interaction between the guitarist and both band mates and the audience. This opens up channels of verbal and nonverbal communication. Guitarists appear to value the relatedness that their instrument allows, and incorporate autonomy as part of their sense of possible musical self.

The creative process of writing one’s own music was found to be associated with higher levels of willingness to play, musical self-esteem, intensity of effort, and desire to learn. One possible explanation for this may be related to ways in which writing clarifies goals (Nunnally, 1989; Snyder et al., 1991). Writing music, like writing text, requires one to examine and express emotions in the work. Clarification of goals can buttress the motivation of musicians leading to a willingness to play music and a stronger desire to learn more in the music domain (see also Latham & Yukl, 1976). Also, the sense of achievement realized in the writing process has the potential to boost one’s musical self-esteem and perceived competence, especially if self-esteem is conceptualized in terms of a collection of achievement-related successes (Helmke & van Aken, 1995).

Two-thirds of the guitarists in the present sample, and almost one-third of the pianists, compose their own music. The informal learning patterns that guitar players described might have contributed to their relatively higher engagement with the writing process. One guitarist expressed a need for autonomy by stating:

[I hope to be] gigging less than I have these past few years, but still playing good shows that are satisfying and profitable. I’d like to go back to focusing more on composition, recording and moving forward in terms of uniqueness, instead of making money playing the music of others and mastering styles/songs that have already been done.

Less restrictive environments that allow individuals to pursue their interests and provide personal choice tend to enhance creativity (Moller, Deci, & Ryan, 2006; Patall, Cooper, & Robinson, 2008).

Limitations of the study. Some limitations of the study that might affect the interpretation of the results must be identified. First, recruitment of participants through internet-based, snowball sampling does not ensure that the participants are exactly who they claim to be. Research ethics required that participants remain anonymous, so we could not verify that the respondents played and performed piano and guitar as they described. Further, the results cannot be generalized to all pianists or guitarists because (a) the sample is non-random, and (b) defining the population of “pianists” and “guitarists” would be quite a difficult task (see Heckathorn and Jeffri, 2001, for a discussion of the difficulty in sampling jazz musicians). The advantage of the present sampling method is that data was obtained from a diversity of respondents in a fairly large sample. Second, our sample consisted only of people who identified piano or guitar as

their primary instrument – this is only a portion of all musicians, and our findings may not be applicable to other types of instrumentalists. Third, the qualitative portion of this study used self-report measures of possible future selves. The hoped for, expected, and feared possible selves reported here might be tied to the specific questions asked and the way in which they were asked. Even though the text boxes in which respondents wrote their answers online could expand to handle long answers, many respondents provided brief responses or wrote in point form (see also Schnare et al., 2011). Fourth, the findings of this study may be affected by the age range of musicians in the study; it is a fairly mature sample (the majority of the sample is over 30 years old) and age is believed to be a factor in the continuation of music (Hallam, 2002, p. 236). Fifth, the term “writing music” may have been interpreted in different ways within the sample. The sample is international but consists primarily of “Western” countries (the USA, UK, and Canada), therefore the applicability of results to non-Western cultures is an open question. Finally, the Cronbach alpha reliabilities for the motivational constructs were sufficient for our purposes but lower than obtained in other studies, possibly attenuating the observed correlations.

Future research. Future research might examine a wider range of instruments in the study of motivation, taking into account both the physical properties of the instrument and how the culture of the instrument meets the underlying needs for autonomy, competence and relatedness. In particular, it would be interesting to know if similar levels of intrinsic regulation are supported differentially by emphasizing one or another of the foundational psychological needs. A study of musicians who play multiple instruments might be undertaken to examine ways in which different instruments satisfy different motivational needs. Further, a process-oriented study examining the roles that particular instruments may play in the development of a musician’s sense of self could further our understanding of how motivation is sustained over long periods of time. Future research might also profit from including questions about the personality of the musicians (see Bell & Cresswell, 1984; Cribb & Gregory, 1999), and how personality interacts with satisfaction of needs within the music domain. Finally, explicitly considering the interaction between the qualities of the instrument and the musician might allow music educators to close the gap between the popularity of music outside versus inside formal learning environments (Bowles, 1991).

Conclusion

Overall, this study shows high levels of intrinsic motivation among both pianists and guitarists. It might be safe to say that neither guitar nor piano players would continue to be musicians if they did not value and enjoy music. In describing his hoped-for possible self, a guitarist wrote: “*my idea is to sit on my veranda and just enjoy myself with or without anyone else around, guitar in hand, playing anything that I desire.*” This respondent has described a quintessentially autonomous and self-determined approach to his instrument. We have argued that instruments may support intrinsic motivation in different ways. Pianists seem to be motivated more than guitarists by the need for competence, as demonstrated with formal success and competitive achievement. Alternatively, guitarists’ needs for autonomy and relatedness appear to be more salient in their motivation system. Even if satisfaction of different needs may be facilitated by instruments in different ways, that does not render the remaining motivational needs irrelevant. Perhaps one way to enhance intrinsic motivation within musicians generally is the use of flexible learning programs that tap into all three motivational needs (see Green, 2006). This could be

accomplished by incorporating elements of the informal learning style into the formal learning style, and vice versa. In addition, it might be worth exploring the motivating effect of writing original music on either instrument. Flexibility within the learning of music may be an important factor in fostering and sustaining musicians' intrinsic motivation.

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Notes

1. It is important to note that we are discussing motivation among musicians who already play. Motivation to begin to learn an instrument might be very different from the motivation to continue playing beyond the early stages of learning (see Chen & Howard, 2004).
2. For all variables, negatively worded items were recoded (1 = 7, 2 = 6, 3 = 5, and so on) so that high scores reflected high levels of the variable being measured.
3. The qualitative data of Possible Selves was analyzed to identify themes, following Schnare et al. (2011). The emergent themes were largely redundant with those identified in the previous study and will not be discussed here. Therefore, the data in the present study will be used in a different way, to give the musicians a voice when interpreting the meaning of quantitative findings in the discussion section below.

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