



## Bridging music and organizational psychology: Everyday music uses and preferences and the prediction of organizational behaviour<sup>☆</sup>



Aaron J. Halliday<sup>\*</sup>

Department of Psychology, the University of Western Ontario, London, Ontario, Canada

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### ABSTRACT

Two online studies, using multiple regression analysis, were conducted to investigate the relative predictive power between music preference and every-day use of music and traditionally used personality assessments in the organizational psychology literature (the Big Five and the Dark Triad) with regards to several commonly studied work-relevant outcomes. The first study, using an unemployed student sample ( $N = 401$ ), provided evidence indicating that music tastes and preferences are weak but statistically significant predictors of student self-reported innovation. However, music preferences and uses do not add significantly to the prediction of self-reported innovation beyond that of traits. The second online study, examining an employed sample ( $N = 1059$ ), provided evidence indicating that music uses and preferences are statistically significant predictors alone and they provide a small but statistically significant amount of additive predictive power to the prediction of self-reported counterproductive work behaviours (but not to job dedication, organizational citizenship behaviours, interpersonal facilitation, counterproductive work behaviours, burnout, & turnover intentions). Additionally, evidence from structural equation modeling suggested a proposed mechanism whereby music preferences' relationships with work-outcomes are potentially mediated by music uses. The impacts of these findings with regards to their applications in personnel recruitment and selection and organizational psychology are discussed.

There is a substantial body of literature detailing the efficacy of individual differences such as traits as predictors of work outcomes (e.g., Chiaburu, Oh, Berry, Li, & Gardner, 2011; Karwowski & Lebuda, 2016; Ones, Viswesvaran, & Dilchert, 2005). However, as effective as traditionally used predictors are in their prediction of work-related behaviours and capacities, there is always room for improvement, refinement, and new effective variable additions to explore. Two variables that have yet to be examined with regards to these particular predictive capacities are individual music preferences and everyday music uses. Music preferences – favouring of a particular musical style (s) (including different artists or genres) over others – and music uses – how and why people tend to use music in their everyday lives – have both been demonstrated to be tied to individual differences in cognition and personality (Chamorro-Premuzic & Furnham, 2007; Vella & Mills, 2017). Interestingly, cognition and personality are two of the most thoroughly studied and validated predictors of organizational outcomes (Marcus, Goffin, Johnston, & Rothstein, 2007; Ree & Earles, 1992). However, to date, no known studies have attempted to bridge these two

bodies of literature in order to better understand the relevance and potential utility that may be explored between music and organizational psychology. This study intends to examine the relationships between music preferences, uses and personality while providing a preliminary exploration of their respective abilities and mechanisms by which they may predict work-relevant outcomes.

### 1. The Big Five, The Dark Triad, and organizational outcomes

Personality traits are relatively stable and consistent behavioural, cognitive, and emotive characteristic dispositions and tendencies that can be used to successfully distinguish people from one another (Ones et al., 2005). Due to these properties (consistent, stable, and discriminately variable among individuals) and given they are conveniently measurable (via self-report scales) traits have been repeatedly found to be useful in predicting a wide range of human behaviour particularly in a work context (e.g., Tett, Jackson, & Rothstein, 1991). Although there are literally thousands of hierarchically organized traits

*Abbreviations:* STOMP, Short Test of Music Preference; UoM, Uses of Music; Emo, Emotional Uses of Music; Cog, Cognitive Uses of Music; Bg, Background Uses of Music; OCB, Organizational citizenship behaviour; CWB, Counterproductive work behaviour

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<sup>\*</sup> 38 Grand Magazine Street – Unit 132, Toronto, ON M5V 0B1, Canada.

E-mail address: [ahallida@uwo.ca](mailto:ahallida@uwo.ca).

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to choose from (Ones et al., 2005), the widely known Big Five (including traits of openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism; Tett et al., 1991; McCrae, 2009) and Dark Triad (including traits of narcissism, psychopathy, and Machiavellianism; Koehn, Okan, & Jonason, 2018; Spain, Harms, & LeBreton, 2014) have become popular positive and negative trait scales (respectively) commonly used in research and practice in the prediction of a wide range of organizational outcomes. Both the Dark Triad and the Big Five have been consistently linked to a wide range of positive and negative outcomes including but not limited to: various performance indicators (Butler, 2017; Tett et al., 1991) organizational citizenship behaviours (OCBs; Szabó, Czibor, Restás, & Bereczkei, 2018; Kiffin-Petersen, Jordan, & Soutar, 2011), employee creativity (Bridges & Schendan, 2018; Butler, 2017; Dahmen-Wassenberg, Kämmerle, Unterrainer, & Fink, 2016), counter-productive work behaviours (CWBs; Sulea, Maricuțoiu, Dumitru, & Pitariu, 2010; Grijalva & Newman, 2015) and burnout (Bańka & Orłowski, 2012; Tang, Pang, He, Chen, & Leng, 2018). Due to their predictive validity and convenience of utility they are among the predominant methods of assessment and selection for employment and organizational research.

## 2. Music preferences and uses and their integration with organizational psychology

More recently, there has been a boom in research pertaining to the psychology of music that has provided new insight and theoretical understanding regarding the relevance, roles, and cues that music plays in human psychology. Despite it being something of common knowledge, research is beginning to reveal how music engagement can be self-descriptive and self-expressive. This leads one to believe that various forms of music engagement may be tied to individual differences. Music preferences and uses have been demonstrated to be associated with differences in cognition, personality, social conduct and social identity (Chamorro-Premuzic & Furnham, 2007; North, Hargreaves, & O'Neill, 2000; Vella & Mills, 2017). Who we are may define what music we prefer and how we engage with music, for what purposes and to what ends (Chamorro-Premuzic & Furnham, 2007; Vella & Mills, 2017). Personality or cognitive differences may determine differences in music tastes, which may determine whether or not music is used for various purposes. As described by psychologists Chamorro-Premuzic and Furnham (2007) intellectual individuals are likely to score higher on openness to experience, to prefer reflective and complex music over upbeat and conventional genres, and to use music for more cognitive purposes. These individuals are more likely to seek intellectually stimulating experiences and to derive intellectual meaning from their activities. This spurs the argument that individual differences frame our engagement with music similar to how our personality may influence people's thoughts, feelings and behaviours at work.

From an organizational psychology perspective, the argument above would suggest that music tastes and uses are likely key indicators of individual differences (such as personality and cognitive ability) that may prove valuable for various organizational uses ranging from identification of unhealthy or potentially concerning workers to personnel recruitment and selection efforts. Being indirect indicators with unknown ties to work outcomes these variables may hold less validity but may also be less likely to be as vulnerable to candidate response management (faking/lying) efforts. Moreover, regardless of any moral, ethical, or legal arguments surrounding the use of such data for recruitment and selection purposes, organizations are increasingly using both social media and tools like artificial intelligence and machine learning as a means of optimizing recruitment and selection processes (Peaco, 2018; Van Iddekinge, Lanivich, Roth, & Junco, 2016; Wade, 2017; Zickar, 2018). Most popular social media platforms (e.g., LinkedIn, Facebook, MySpace, Soundcloud) offer a space to present such data in the form of music or interests and grant public access to this content (sometimes regardless of user privacy settings). The benefits of

such automated tools is that they are capable of incorporating a staggering amount of data and information for predictive purposes and, to date, business ethics and the law have been slow to side for or against with the use of these tools. If there is a valid means to incorporate such readily available data as music preferences and uses can make even minor improvements to the validity of such tools it may merit some consideration. Additionally, given there is a dearth of work bridging these two domains of psychology, if a more thorough understanding of music psychology can be developed to enhance organizational and individual functioning at work - this also warrants more than cursory exploration.

It is well known that music can be instrumentally applied to achieve desired ends – music influences people's thoughts, feelings, and behaviours. Music can impact mood and provide a motivating source of activation, supplemental pleasure and enjoyment, it may boost energy or to simply enhance the enjoyment of engaging in work (Hutchinson et al., 2018; Middleton, Ruiz, & Robazza, 2017). This frames a slightly different argument whereby despite individual differences people use music for various purposes. Many of these purposes may orient around self-regulating and enhancing engagement with the people and activities in their work and lives. As an example, many parents attempt to enhance the intellectual prowess of their children by giving them early exposure to music or early music training. Such utilitarian exposure to music and training, even in short-lived lab studies, has been specifically demonstrated to be associated with enhanced cognition, language acquisition, and divergent thinking (e.g., Benedek, Borovnjak, Neubauer, & Kruse-Weber, 2014; He, Wong, & Hui, 2017; Swaminathan & Gopinath, 2013). If this argument for the instrumental role of music is correct, music tastes and preferences may potentially serve additional value to organizational psychology above and beyond that of typically used personality assessments toward the prediction of work-relevant outcomes. As such, music tastes and uses would more likely serve as a more complex indicator of how people self-regulate and facilitate their behaviour or may be key avenues to explore for musical interventions.

## 3. Study I

If either (or both) of the “music as self-descriptive/autobiographical” or “music as utilitarian/instrumental” arguments are true, it would seem prudent to consider music preferences and uses and possibly other such readily available data as possible predictors of various work-relevant outcomes. One work-relevant outcome that seems most likely to exhibit a close connection with such music engagement is creativity or innovation – the exploration, generation, and exploitation of new ideas, creative behaviours, change initiatives, and the applications of new knowledge to solve problems or enhance processes (Yeşil & Hırlak, 2013). As with reflective and complex music preferences (genres like jazz and classical music) and cognitive uses of music, evidence demonstrates that innovation and creativity are tied to individual differences in openness to experience, agreeableness and intelligence (Kazelskis, Jenkins, & Lingle, 1972; Steel, Rinne, & Fairweather, 2012). Therefore it seems likely that, reflective and complex music preferences and cognitive music uses are likely to be predictive of individual innovation and creativity. Thus follows the three primary aims of this study: (1) to demonstrate the network of relationships between music preferences and uses with descriptive/autobiographical variables (personality traits) and instrumental/utilitarian outcomes (innovation/creativity), (2) to assess the effective utility of using such variables descriptive of music engagement (preferences and uses) in predicting a work-relevant outcome (innovation/creativity), and (3) to assess the relative predictive advantage of including music preferences and uses in conjunction with personality assessments traditionally used to predict relevant organizational outcomes. Three primary hypotheses may therefore be delineated.

**Hypothesis 1a.** Music preferences and music uses are expected to be

associated with self-reported Big Five and Dark Triad personality traits.

**Hypothesis 1b.** Personality traits of the Big Five and the Dark Triad as well as individual music preferences (particularly reflective and complex) and music uses (particularly cognitive) are expected to be positively associated with self-reports of innovative tendency.

**Hypothesis 2a.** Given a multiple regression analysis self-reported (particularly reflective and complex) and uses (particularly cognitive) are expected to be predictive of self-reported innovative tendency.

**Hypothesis 2b.** Given a multiple regression analysis traditionally used personality assessments (the Big Five and the Dark Triad) are expected to be predictive of self-reports of innovativeness.

**Hypothesis 3.** Given a multiple regression approach, music tastes and uses are expected to additively contribute to the prediction of various work outcomes above and beyond traditionally used personality assessments (the Big Five and the Dark Triad).

3.1. Methods

3.1.1. Participants

A total of 401 students (female  $N = 100$ ; 24.9%; male  $N = 295$ ; 73.6%; other  $N = 1$ ; 0.2%; refused to indicate  $N = 5$ ; 1.2%;) ranging from 18 to 60 years of age ( $M = 20.62$  years,  $S.D. = 3.30$  years) participated in this study. This convenience sample was recruited using an advertisement posted to a public Internet community forum. All students were required to be at least 18 years old and be able to communicate fluently in the English language to participate in this study. Participants voluntarily participated having knowingly received no financial incentive for their participation.

3.1.2. Measures

All data was obtained using an online computerized test battery that was comprised of the following scales. For convenience and brevity, all internal consistency reliability coefficients are presented in Table 1.

**3.1.2.1. Music preferences.** The 4 combined subscales of the 14-item Short Test of Music Preference (STOMP; Rentfrow & Gosling, 2003) was administered to assess the reflective and complex (comprised of jazz, blues, classical, and folk) intense and rebellious (comprised of rock, alternative, and heavy metal), energetic and rhythmic (comprised of rap/hip-hop, R&B/soul, and dance/electronica), and upbeat and conventional (comprised of soundtracks, pop, religious, and country) music preferences. Respondents completed the 14-item scale by reading each of the 14 listed music genres and indicating their preference level for each genre along a seven-point Likert scale ranging from 1 (“strongly dislike”) to 7 (“strongly like”). This assessment (including its four comprising subscales) has been demonstrated to be both reliable (internally consistent and consistent in responses across 3 weeks in time; Rentfrow & Gosling, 2003) and valid (Chamorro-Premuzic & Furnham, 2007; Vella & Mills, 2017).

**3.1.2.2. Music uses.** The 15-item Uses of Music Inventory (UoM; Chamorro-Premuzic & Furnham, 2007) was administered to participants to assess emotional (e.g., “Almost every memory I have is associated with a particular song”), cognitive (e.g., “Listening to music is an intellectual experience for me”), and background (e.g., “I enjoy listening to music while I work”) uses of music. Participants responded to the UoM by reading a statement illustrating engagement with music and used a 5-point Likert scale to indicate their agreement or disagreement with each statement ranging from 1 (“Strongly disagree”) to 5 (“Strongly agree”). This assessment (and its three subscales) has been demonstrated internally consistent and to have convergent validity with measures of individual differences and relevant likely outcomes (Chamorro-Premuzic & Furnham, 2007; Vella & Mills, 2017).

Table 1  
Correlation matrix of variables included in Study I.

Variable	Music tastes			Uses of music			The Big 5 personality					Dark Triad personality			Innovation		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
1. Taste for reflective and complex music	(0.56)																
2. Taste for intense and rebellious music	0.182*	(0.59)															
3. Taste for upbeat and conventional music	0.226*	0.082	(0.31)														
4. Taste for energetic and rhythmic music	0.189*	0.010	0.132	(0.50)													
5. Use of music for emotional purposes	-0.018	0.094	0.118	0.068	(0.58)												
6. Use of music for cognitive purposes	0.199*	0.040	-0.262*	-0.092	0.319*	(0.70)											
7. Use of music for background purposes	-0.072	0.228*	0.004	0.117	0.129	0.324*	(0.70)										
8. Openness	0.315*	0.106	0.048	0.164	0.097	0.081	0.059	(0.73)									
9. Extraversion	0.039	-0.054	-0.006	0.097	0.022	0.027	0.052	0.290*	(0.88)								
10. Agreeableness	0.009	-0.006	0.006	0.120	0.088	-0.131	0.064	0.028	0.005	(0.72)							
11. Emotional Stability	0.000	-0.133	-0.166	-0.084	-0.084	0.121	-0.084	0.027	0.425*	0.114	(0.89)						
12. Conscientiousness	0.028	-0.086	-0.077	-0.072	0.032	0.063	-0.011	0.094	0.143	0.157	0.254*	(0.84)					
13. Narcissism	0.011	0.015	0.159	0.094	0.094	0.054	0.034	0.107	0.257*	-0.223*	-0.134	0.125	(0.82)				
14. Psychopathy	-0.038	-0.012	-0.011	-0.116	-0.141	0.116	-0.049	-0.030	0.051	-0.561*	0.102	-0.206*	0.245*	(0.74)			
15. Machiavellianism	0.065	0.043	0.076	0.043	0.000	0.146	0.045	0.114	0.250*	-0.437*	0.042	-0.221*	0.401*	0.485*	(0.85)		
16. Innovation	0.149	0.061	-0.071	0.013	0.003	0.311*	0.027	0.520*	0.404*	-0.128	0.291*	0.202*	0.104	0.140	0.216*	(0.68)	

Note. Parentheses on the diagonal present reliability coefficients. Upbeat and conventional music (3) was found to be an unreliable measure, therefore correlations with it should be regarded as being potentially spurious. Correlation values are marked as being statistically significant with asterisks at probability rates of  $p < .001$  with a \*.

### 3.1.2.3. Personality

**3.1.2.3.1. The Big Five.** The 50-item Big Five Personality Trait Short Questionnaire (Morizot, 2014) was used to assess the openness, conscientiousness, extraversion, agreeableness, and emotional stability of the Big Five. Respondents completed the assessment by reading a trait stem (e.g., “I see myself as someone who likes to talk, express his/her opinion.”) and using a 5-point Likert scale to indicate their level of agreement ranging from 1 (“*Totally disagree*”) to 5 (“*Totally agree*”). The Big Five have a long historical track record demonstrating internal reliability and validity, this scale included (Morizot, 2014).

**3.1.2.3.2. The Dark Triad.** The 12-item Dirty Dozen (Jonason & Webster, 2010) was administered to evaluate narcissistic, psychotic, and Machiavellian traits of the Dark Triad. Respondents completed the assessment by reading a stem (e.g., “I tend to manipulate others to get my way”) and using a 9-point Likert scale to indicate their level of agreement ranging from 1 (“*Disagree strongly*”) to 9 (“*Agree strongly*”). The Dirty Dozen has been translated into multiple different languages and has a well-established record demonstrating internal reliability and validity (e.g., Jonason, Abboud, Tomé, Dummett, & Hazer, 2017; Savard, Simard, & Jonason, 2017).

**3.1.2.4. Innovation.** The 3-item Innovation Index (Fairlie & Holleran, 2012) was administered to assess self-reported innovation and creativity. Participants are provided with a self-oriented statement (e.g., “I often find more than one solution to a problem.”) and they respond with the use of a 5-point Likert scale ranging from 1 (“*Very true*”) to 5 (“*Very untrue*”). This novel scale has demonstrated some reliability and validity (Fairlie & Holleran, 2012).

### 3.1.3. Procedure

Participants viewed a study advertisement online, accessed the survey via hyperlink that was presented in the advertisement. Upon accessing the survey website, participants read a letter of information and consent. Then, participants completed a demographics questionnaire and the questionnaire battery described above. Finally, participants were debriefed and thanked for their time and participation. Participants completed the task in approximately 25 min.

## 3.2. Results

### 3.2.1. Internal consistency reliability and associative relationships

Little's missing completely at random test was conducted on all data and no values indicating statistical significance were obtained. Therefore, all data was interpreted to be missing at random rather than originating from systematic sources. In an effort to maximize statistical power, missing data was then imputed using expectation-maximization methods.

All internal consistency reliabilities and relevant Pearson product moment correlation coefficients are presented in Table 1. The internal consistency reliabilities for most of the scales used in this study were found to (at minimum) approach functional values (ranging from  $\alpha = 0.50$  to  $\alpha = 0.89$ ; according to the guidelines discussed by George & Mallery, 2003). Although the overwhelming majority of the scales used in this study demonstrated coefficients indicating acceptable levels of internal consistency reliability the subscale assessing preference for upbeat and conventional music was found to demonstrate insufficient levels of internal consistency reliability ( $\alpha = 0.31$ ) and was removed from inclusion in further analyses. It was also of particular note that although the internal consistency reliabilities of most of the measures of music preferences and uses were found to be sufficient, they were lower than most measures of personality and innovation.

Examination of the correlation matrix (Table 1) provided some support for hypothesis 1. Given the number of analyses being performed, a conservative critical probability value of  $p < .001$  was adopted. Regarding hypothesis 1a, there was some evidence that music

preferences and uses were found to be predictive of traits. Use of music for emotional purposes was negatively correlated with emotional stability ( $r = -0.291, p < .001$ ). However, evaluating at traditional ( $p < .05$ ) levels of significance reflective and complex music preferences were positively correlated with openness ( $r = 0.315, p < .001$ ); intense and rebellious music preferences were negatively correlated with openness ( $r = 0.106, p < .05$ ) and emotional stability ( $r = -0.133, p < .01$ ); energetic and rhythmic music preferences were positively correlated with openness ( $r = 0.164, p < .01$ ) and agreeableness ( $r = 0.120, p < .05$ ), and negatively correlated with psychopathy ( $r = -0.116, p < .05$ ); emotional music uses were positively correlated with openness ( $r = 0.129, p < .05$ ) and negatively correlated with emotional stability ( $r = -0.291, p < .001$ ) and psychopathy ( $r = -0.141, p < .01$ ); and cognitive music uses were positively correlated with openness to experience ( $r = 0.324, p < .001$ ), emotional stability ( $r = 0.121, p < .05$ ), psychopathy ( $r = 0.116, p < .05$ ), and Machiavellianism ( $r = 0.146, p < .01$ ) and negatively correlated with agreeableness ( $r = -0.131, p < .01$ ). Regarding hypothesis 1b, cognitive uses of music ( $r = 0.311, p < .001$ ) were associated with self-reported innovative tendency. Similarly, there was a notably less significant association with reflective and complex music preference ( $r = 0.149, p < .01$ ). However, no other correlation analyses were found to indicate statistically significant associations between self-reported innovative tendency and other remaining music preferences or uses. All correlation coefficients and significance values (at conservatively adjusted critical  $p$ -values of  $p < .001$ ) are presented in Table 1.

### 3.2.2. The prediction of innovative tendency

Contrasting hierarchical linear regression analyses were performed to test hypothesis 2 and 3. More specifically, to test hypothesis 2, a multiple regression analysis was conducted to examine whether music preferences and uses were significantly predictive of self-reported innovative tendency. To test hypothesis 3 (whether music preferences and uses additively contribute to the prediction of self-reported innovation above and beyond that of traits alone) further multiple regression analyses were conducted, first, with personality traits alone, second, followed by an analysis combining traits and music preferences. The analyses of hypothesis 3 were then repeated, reversing the entry of variable sets (traits and then music tastes versus music tastes followed by traits) to control for order of entry effects. By controlling for order of entry effects in this way, any statistically significant improvements in predicted variance ( $R^2$ ) that are indicated under both orders of entry would demonstrate additional predictive power given the combination of both variable sets.

To conserve space while presenting findings change in  $R^2$  and the significance of changes in the  $F$ -statistic values under the music preferences and uses heading serve to indicate the change in predicted variance and significance of the additional predictive power gained by adding music preferences and uses to the covariate; similarly change in  $R^2$  and the significance of changes to the  $F$ -statistic values under the traits heading serves to indicate the change in predicted variance and significance of the additional predictive power gained by adding traits are to music preferences and uses; finally change in  $R^2$  and the significance of changes to the  $F$ -statistic values under the “combined” heading serves to indicate the change in predicted variance and significance of the additional predictive power gained by adding music preferences and uses to traits. Moreover, as there is the potential for cohort effects to be associated with appreciation of certain genres of music, age was first controlled for as a likely covariate. All relevant statistics pertaining to hypotheses 2 and 3 are reported in Table 2 (to conservative critical probability values of  $p < .001$ ).

Evidence demonstrated by analyses pertaining to hypothesis 2 strongly indicates that music preferences and uses are statistically significant predictors of self-reported innovative tendency. Although the amount of variance that is predicted by music preferences and uses was

**Table 2**  
Hierarchical regression analysis predicting self-reported innovative tendency.

	Covariate	Music preferences & uses	Traits	Combined
Age	−0.092	−0.107	−0.019	−0.030
Preference for reflective and complex music		0.076		−0.023
Preference for intense and rebellious music		0.035		0.057
Preference for energetic and rhythmic music		0.027		−0.017
Use of music for emotional purposes		−0.014		0.003
Use of music for cognitive purposes		0.302*		0.106
Use of music for background purposes		0.035		0.006
Openness			0.453*	0.418*
Extraversion			0.159	0.172
Agreeableness			−0.125	−0.113
Emotional Stability			0.181*	0.172
Conscientiousness			0.133	0.129
Narcissism			−0.013	−0.012
Psychopathy			0.054	0.049
Machiavellianism			0.071	0.062
$R^2$	0.009	0.119	0.419	0.432
<i>Adj. R<sup>2</sup></i>	0.006	0.103	0.406	0.410
$\Delta R^2$		0.110	0.314	0.013
<i>F</i>	3.429	7.559*	31.318*	19.550*
<i>Sig. F Change</i>		8.186*	26.595*	1.521
<i>df</i>	1, 399	7, 393	9, 391	15, 385

Note.  $p < .001$  are indicated by \*.  $\Delta R^2$  and *Sig. F Change* values under music preferences and uses indicate the change in predicted variance and significance of the additional predictive power when music preferences and uses are added to the covariate (age);  $\Delta R^2$  and *Sig. F Change* values under traits indicate the change in predicted variance and significance of the additional predictive power traits are added to music preferences and uses;  $\Delta R^2$  and *Sig. F Change* values under the column labeled “combined” indicate the change in predicted variance and significance of the additional predictive power when music preferences and uses are added to personality traits. As with music preferences and uses, personality traits were also found to add significant variance above and beyond the covariate (Age;  $\Delta R^2$  0.410,  $p < .001$ ).

fairly small, the regression model was found to reach values indicating statistical significance (see Table 2 for details). However, evidence gleaned by analyses pertaining to hypothesis 3 indicated that music preferences and uses are not additively predictive of self-reported innovation above and beyond that of traditionally used personality assessments in organizational psychology (Table 2). Although both music preferences and uses and personality traits were found to contribute to models predicting self-reported innovation as single variable sets and traits were found to additively contribute above and beyond music preferences and uses, music preferences and uses were not found to additively contribute above and beyond traditionally used personality measures. In sum, evidence indicates that music preferences and uses are weak but statistically significant predictors of student self-reported innovative tendency on their own, but do not improve the prediction of self-reported innovative tendency above and beyond personality traits.

### 3.3. Discussion

This study sought to examine the relationships between music preferences, uses and personality while providing a preliminary exploration of their respective predictive capacities regarding the work-relevant outcome innovative tendency. This study yielded mixed although somewhat supportive findings. Each will now be considered with regards to the theoretical and practical implications and relevant possible limitations taken from the lessons that may be drawn, learned from, and applied from this research.

The findings pertaining to hypotheses 1 and 2 demonstrated that music preferences and uses (particularly cognitive uses of music and to a lesser degree reflective and complex music preferences) are both positively associated with self-reported innovation. The effect sizes of significant correlations were small to moderate in magnitude. Given the conservatively adjusted  $p$ -value employed it is believed that this provides some preliminary evidence suggestive (if these findings generalize beyond academic contexts) that work-related outcomes other than innovative tendency might be associated with music preference and uses as well. Although, findings pertaining to hypothesis 3 failed to demonstrate that music preferences and uses provided additional

statistically significant predictive insight beyond personality traits with regards to self-reported student innovative tendency music preferences and uses were demonstrated to be predictive of innovative tendency while controlling for the covariate age. The implications of these findings are that music engagement variables like preference and everyday use of music may serve as sufficient corroborating variables less likely to be manipulated by applicants. However, further research would need to validate the likelihood that individuals would, indeed, be less likely to hide or fake music-related details.

Obviously there are some limitations of this study. First, given the participants of this study were taken from a convenience sample of unemployed student participants it is entirely possible that findings may not generalize to work contexts or to other relevant work outcomes. Second, although these findings provide some indication music preferences and uses are associated with personality traits and outcomes like self-reported innovative tendency this research did little to investigate the how music may influence more typically studied work-relevant outcomes.

In sum, these findings are suggestive of a degree of practical utility in bridging music and organizational psychology. However, given the limited nature of the findings of this study it is not enough to draw any firm conclusions or suggestions for organizations to practically apply. These limitations combined with the fruitful results of this study inspired an additional study to replicate these findings, address these stated limitations, and further develop a possible mechanism descriptive of possible paths of effect.

## 4. Study II

The overarching aim of the second study was to replicate, expand, and generalize findings while proposing a possible mechanism by which music preferences and uses may be tied to work-relevant outcomes. As stated earlier, given a self-descriptive/autobiographic conceptualization, similar to personality traits a wide range of work-relevant outcomes are expected to be predicted by music preferences and uses as they are likely to be descriptive of various complex and relevant individual differences. However, given a utilitarian/instrumental

perspective how individuals use music would be the most proximal predictor of relevant outcomes regardless of their traits, as people effectively learn how to leverage music to achieve various ends. With this in mind four primary hypotheses can be delineated; three of which are simple extensions of those of Study I:

**Hypothesis 1.** Self-reported music preferences and uses are expected to be associated with self-reported work-relevant employee outcomes (innovation, job satisfaction, job dedication, organizational citizenship behaviours (OCBs), interpersonal facilitation, counterproductive work behaviours (CWBs), turnover intentions, and burnout).

**Hypothesis 2a.** Given a multiple regression analysis music preferences and uses are expected to be predictive of work-relevant outcomes described in hypothesis 1.

**Hypothesis 2b.** Given a multiple regression analysis traditionally used personality assessments (the Big Five and the Dark Triad) are expected to be predictive of work-relevant outcomes described in hypothesis 1.

and

**Hypothesis 3.** Music tastes and uses will additively contribute to the prediction of various work-relevant outcomes above and beyond traditionally used personality assessments (the Big Five and the Dark Triad).

Additionally, a fourth hypothesis intends to examine a potential mechanism by which music engagement influences work outcomes. As proposed above, if music preferences and uses serve self-descriptive/autobiographical and utilitarian/instrumental purposes it would make sense that music uses would serve as a mediator of individual music preferences. People would be most likely to employ their favourite music genres to specific ends. A mediation model should therefore illustrate such multiple mediation phenomena between music preferences and uses and various organizational outcomes.

**Hypothesis 4.** Given a structural equation modeling approach, the relationship between music preferences and work-relevant outcomes are proposed to function as mediated by music uses.

#### 4.1. Methods

##### 4.1.1. Participants and procedure

A total of 1059 gainfully employed individuals (female  $N = 255$ ; 24.1%; male  $N = 786$ ; 74.2%; other  $N = 3$ ; 0.3%; omitted  $N = 15$ ; 1.4%;) ranging from 18 to 66 years of age ( $M = 28.11$  years,  $S.D. = 8.26$  years) participated in this study. This sample was recruited using an advertisement posted to music forums of popular news and content website that has a large focus on music-related content. All participants were required to be at least 18 years old and be able to communicate fluently in the English language to participate in this study. Participants received no financial incentive for their participation. All procedures were identical to the prior study with the exception of additional work-related measures.

##### 4.1.2. Measures

As with the prior study, all data was obtained using an online computerized test battery that was comprised of all of the measures included in the prior study but with the new addition of the following work-relevant measures.

**4.1.2.1. Organizational citizenship and counterproductive behaviour.** Slightly modified versions of the 5-item organizational citizenship behaviour (OCB) and the 4-item counterproductive work behaviour (CWB) subscales of the Organizational Citizenship Behaviour Individual Measure (Jayasuriya, Jayasinghe, & Wang, 2014) was used to assess OCBs and CWBs. Respondents completed the assessment by reading sentence stems (e.g., “I help co-workers if they fall behind in their

work.” – OCB; “I neglect to follow given instructions” – CWB) and using a 6-point Likert scale to indicate their how often the statement is representative of their work behaviour ranging from 1 (“Never”) to 6 (“Always”). This scale was slightly modified from the original by reorienting the scale from rating coworkers to providing self-ratings. Prior research has demonstrated this scale to be both reliable and valid in both formal and informal organizational settings (Jayasuriya et al., 2014).

**4.1.2.2. Job dedication and interpersonal facilitation.** The 7-item Job Dedication Measure and the 8-item Interpersonal Facilitation Measure (Van Scotter & Motowidlo, 1996) were used to assess job dedication and interpersonal facilitation. Respondents completed the assessment by indicating how often they perform behaviours reflective of interpersonal facilitation (e.g., “How often do you... praise coworkers when they are successful?”) or job dedication (e.g., “... put in extra hours to get work done on time?”) using a 6-point Likert scale ranging from 1 (“Never”) to 6 (“Always”). Prior research has demonstrated these scales to be both reliable and valid (Van Scotter & Motowidlo, 1996).

**4.1.2.3. Job satisfaction and turnover intentions.** The 7-item Job Response Measure (Cheng, Yang, Wan, & Chu, 2013) was used to assess job satisfaction and turnover intentions. Respondents completed the assessment by reading statements and indicating how much each statement described their work situation. For example, participants would receive either a job satisfaction item (e.g., “I like working where I do”) or a turnover intentions item (e.g., “I will leave the company in the next few years”) and would respond using a 7-point Likert scale ranging from 1 (“Does not describe my situation at all”) to 7 (“Describes my situation exactly”). Prior research has demonstrated these scales to be both reliable and valid (Cheng et al., 2013).

**4.1.2.4. Burnout.** The Bergen Burnout Inventory – 9-item (Salmela-Aro, Rantanen, Hyvönen, Tilleman, & Feldt, 2011) was administered to assess burnout. Participants were asked to indicate how much they agreed with the application of 9 itemized statements (e.g., “I feel that I have gradually less to give”) via a 6-point Likert scale ranging from 1 (“Completely disagree”) to 6 (“Completely agree”). Prior research has demonstrated these scales to be both reliable and valid (Salmela-Aro et al., 2011).

#### 4.2. Results

##### 4.2.1. Internal consistency reliability and associative relationships

As done in the prior study, Little's missing completely at random test was conducted on all data and, once again, no values indicating statistical significance were obtained. Therefore, all data was interpreted to be missing at random rather than originating from systematic sources. In an effort to maximize statistical power, missing data was then imputed using expectation-maximization methods.

All internal consistency reliabilities and relevant Pearson product moment correlation coefficients are presented in Table 3. Although the overwhelming majority of the scales used in this study demonstrated coefficients indicating acceptable levels of internal consistency reliability the subscale assessing preference for upbeat and conventional music was found to demonstrate insufficient levels of internal consistency reliability ( $\alpha = 0.39$ ) and was removed from inclusion in further analyses. As noted in Study I, the internal consistency reliability coefficients of music preferences and uses were found to be somewhat lower than those of personality traits and most organizational outcomes.

Examination of the correlation matrix demonstrated support for hypothesis 1. Reflective and complex music preferences were positively correlated with self-reported innovation ( $r = 0.111$ ,  $p < .001$ ), OCBs ( $r = 0.125$ ,  $p < .001$ ), interpersonal facilitation (support;  $r = 0.141$ ,  $p < .001$ ), and also marginally significantly (according the conservatively adjusted  $p$ -value) with job dedication ( $r = 0.080$ ,  $p < .05$ ).

**Table 3**  
Correlation matrix of variables included in Study II.

Variable	Music tastes			Uses of music					The Big 5 personality					Dark Triad Personality	
	1	2	3	4	5	6	7	8	9	10	11	12	13		
1. Taste for reflective and complex music	(0.59)														
2. Taste for intense and rebellious music	0.152*	(0.61)													
3. Taste for upbeat and conventional music	0.250*	0.077	(0.39)												
4. Taste for energetic and rhythmic music	0.156*	0.015	0.164*	(0.53)											
5. Use of music for emotional purposes	0.007	0.069	0.135*	0.137*	(0.62)										
6. Use of music for cognitive purposes	0.241*	0.052	-0.188*	-0.075	0.149*	(0.71)									
7. Use of music for background purposes	-0.096	0.142*	-0.001	0.185*	0.387*	0.077	(0.66)								
8. Openness	0.287*	0.008	0.073	0.194*	0.146*	0.297*	0.074	(0.77)							
9. Extraversion	0.046	0.046	0.045	0.195*	0.032	0.046	0.064	0.265*	(0.87)						
10. Agreeableness	0.041	0.016	-0.014	0.031	0.015	0.020	-0.018	0.045	0.057	(0.73)					
11. Emotional Stability	0.031	-0.023	-0.016	0.059	-0.252*	-0.004	-0.148*	0.047	0.363*	0.294*	(0.88)				
12. Conscientiousness	0.006	0.012	-0.005	-0.005	0.041	0.056	-0.070	0.090	0.110*	0.158*	0.302*	(0.81)			
13. Narcissism	-0.011	-0.003	0.108*	0.105	0.090	0.038	0.090	0.159*	0.247*	-0.127*	-0.119*	-0.092	(0.80)		
14. Psychopathy	-0.054	0.017	-0.049	0.005	-0.059	0.050	0.036	-0.118*	-0.058	-0.513*	-0.095	-0.158*	0.149*		
15. Machiavellianism	-0.022	0.007	0.060	0.138*	0.104	0.030	0.142*	0.083	0.246*	-0.401*	-0.080	-0.154*	0.391*		
16. Innovation	0.111*	-0.010	-0.005	0.061	0.054	0.201*	0.056	0.522*	0.286*	0.037	0.228*	0.245*	0.068		
17. Job satisfaction	0.027	-0.047	-0.036	0.001	-0.097	0.020	-0.049	0.046	0.199*	0.197*	0.308*	0.215*	0.009		
18. Job dedication	0.080	-0.001	-0.018	0.002	0.055	0.153*	0.037	0.245*	0.222*	0.156*	0.222*	0.521*	-0.048		
19. Organizational citizenship behaviours	0.125*	0.060	0.021	0.093	0.124*	0.071	0.059	0.222*	0.158*	0.322*	0.089	0.187*	-0.038		
20. Interpersonal facilitation (support)	0.141*	0.081	0.057	0.100	0.129*	0.095	0.075	0.249*	0.323*	0.362*	0.114*	0.166*	0.014		
21. Counterproductive work behaviours	0.024	-0.058	-0.021	0.135*	-0.034	0.084	0.066	0.082	0.116*	-0.153*	-0.064	-0.324*	0.155*		
22. Turnover intentions	-0.019	0.059	0.028	0.130*	0.090	0.007	0.074	0.027	0.046	-0.119*	-0.131*	-0.144*	0.072		
23. Burnout	-0.030	0.037	0.029	0.001	0.096	0.058	0.066	-0.048	-0.215*	-0.199*	-0.393*	-0.211*	0.056		

Variable	Good work outcomes					Bad work outcomes							
	14	15	16	17	18	19	20	21	22	23			
1. Taste for reflective and complex music													
2. Taste for intense and rebellious music													1.
3. Taste for upbeat and conventional music													2.
4. Taste for energetic and rhythmic music													3.
5. Use of music for emotional purposes													4.
6. Use of music for cognitive purposes													5.
7. Use of music for background purposes													6.
8. Openness													7.
9. Extraversion													8.
10. Agreeableness													9.
11. Emotional Stability													10.
12. Conscientiousness													11.
13. Narcissism													12.
14. Psychopathy	(0.71)												13.
15. Machiavellianism	0.435*	(0.83)											14.
16. Innovation	-0.058	0.105	(0.71)										15.
17. Job satisfaction	-0.087	0.009	0.179*	(0.88)									16.
18. Job dedication	-0.145*	-0.044	0.439*	0.328*	(0.83)								17.
19. Organizational citizenship behaviours	-0.204*	-0.028	0.287*	0.192*	0.380*	(0.76)							18.
													19.

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Table 3 (continued)

Variable	Dark Triad Personality			Good work outcomes				Bad work outcomes			
	14	15	16	17	18	19	20	21	22	23	
20. Interpersonal facilitation (support)	-0.317*	-0.020	0.258*	0.214*	0.402*	0.591*	(0.78)				20.
21. Counterproductive work behaviours	0.176*	0.205*	0.108*	-0.084	-0.164*	-0.068	-0.086	(0.68)			21
22. Turnover intentions	0.081	0.054	-0.026	-0.565*	-0.159*	-0.055	-0.045	0.113*	(0.86)		22.
23. Burnout	0.117*	0.008	-0.145*	-0.667*	-0.230*	-0.106	-0.133*	0.156*	0.465*	(0.85)	23.

Note. Parentheses on the diagonal display reliability coefficients. Taste for upbeat and conventional music (3) was found to be an unreliable measure and therefore any correlations found with this variable may be considered to be spurious. Statistically significant correlations are indicated ( $p < .001$ , with an \*).

Energetic and rhythmic music preferences were positively correlated with self-reported CWBs ( $r = 0.135, p < .001$ ), turnover intentions ( $r = 0.130, p < .001$ ), and also marginally significantly with interpersonal facilitation ( $r = 0.100, p < .005$ ), OCBs ( $r = 0.093, p < .005$ ) and innovation ( $r = 0.061, p < .05$ ). Intense and rebellious music preference was only marginally positively correlated with interpersonal facilitation ( $r = 0.081, p < .01$ ). Emotional music uses of music were positively correlated with OCBs ( $r = 0.124, p < .001$ ), interpersonal facilitation ( $r = 0.129, p < .001$ ) and also correlating with marginal significance with job satisfaction ( $r = -0.097, p < .005$ ), turnover intentions ( $r = 0.090, p < .005$ ), and burnout ( $r = 0.096, p < .002$ ). Cognitive music uses of music were positively correlated with self-reported innovative tendency ( $r = 0.201, p < .001$ ) and job dedication ( $r = 0.153, p < .001$ ), and also correlating with marginal significance with OCBs ( $r = 0.071, p < .05$ ), interpersonal facilitation ( $r = 0.095, p < .005$ ), and CWBs ( $r = 0.084, p < .01$ ). No other correlations between music preferences and uses and various work outcomes were found to reach values indicating statistical significance.

4.2.2. Prediction of work outcomes

Contrasting hierarchical linear regression analyses were performed to test hypothesis 2 and 3. More specifically, to test hypothesis 2, multiple regression analyses were conducted to test whether music engagement and personality traits were significantly predictive of work outcomes alone. As done in Study I, to test hypothesis 3 (whether music preferences and uses additively contribute to the prediction of work-relevant outcomes above and beyond that of traits alone) further multiple regression analyses were conducted with personality traits alone followed by analysis combining traits and music preferences then repeating this analysis after reversing the order and contrasting the significance of the change in predicted variance when adding the two together. All analyses were performed and reported in the same manner as in Study I. All relevant statistics pertaining to hypotheses 2 and 3 are reported in Table 4.

Evidence demonstrated by analyses pertaining to hypothesis 2 strongly indicates that music preferences and uses are statistically significant predictors of work-relevant outcomes on their own even while controlling for the effects of age. Although the amount of variance that is predicted by music preferences and uses for each of the 8 examined work-relevant outcomes is fairly small, all models were found to reach values indicating statistical significance ( $R^2$  ranging from 0.015 to 0.077, most values significant to  $p < .001$  except for job satisfaction and burnout which were  $p < .01$  and  $p < .05$  respectively).

Evidence demonstrated by analyses of hypothesis 3 also provided evidence indicating that music preferences and uses are additively predictive toward select work related outcomes above and beyond that of traditional personality assessments (Table 4). More specifically, when applying the critical significance value, music preferences and uses were found to provide additive predictive power when combined with personality traits (and vice-versa) with regards to CWBs. It should also be noted, that when evaluated to more traditional critical significance levels ( $p < .05$ ), 6 of the 8 tested outcomes (job dedication, OCBs, interpersonal facilitation, CWBs, burnout, & turnover intentions) were found to reach values indicating marginal statistical significance. Once more, the gains in predictive variance were quite small when adding music tastes and uses to personality traits (2%). However, evidence obtained via this analysis seems to demonstrate a degree of additional practical utility of music preferences and uses as predictors of work-relevant outcomes in a sample of working adults.

4.2.3. A proposed mechanism of music engagement predicting work outcomes

Hypothesis 4 proposed that, given a structural equation modeling approach, music uses would mediate music preference-work outcome relationships. This proposal is predicated on the belief that people



**Table 4**  
Hierarchical regression analysis predicting work outcomes.

Independent Variable	Job satisfaction				Job dedication				Organizational citizenship							
	Covariate	Music preferences & uses	Personality traits	Combined	Covariate	Music preferences & uses	Personality traits	Combined	Covariate	Music preferences & uses	Personality traits	Combined				
Age	0.059	0.078	-0.043	-0.043	0.093	0.088	0.049	0.043	0.124*	0.137*	0.011	0.022	0.111*	0.131*	0.057	0.070
Preference for reflective and complex		0.062	-0.031	-0.031		0.020		0.027		0.047		0.022		0.096		0.062
Preference for intense and rebellious		-0.037	-0.020	-0.020		-0.045		-0.053		-0.021		-0.029		0.033		0.030
Preference for energetic and rhythmic		0.065	-0.053	-0.053		0.024		-0.021		0.009		-0.013		0.076		0.034
Emotional use of music		0.006	-0.014	-0.014		-0.097		-0.072		0.029		-0.021		0.106		0.053
Cognitive use of music		0.191*	0.047	0.047		0.036		0.014		0.140*		0.074		0.038		-0.008
Background use of music		0.051	0.043	0.043		0.003		0.019		0.043		0.069		0.026		0.024
Openness			0.483*	0.486*			-0.020	-0.022								0.134*
Extraversion			0.082	0.087			0.080	0.091								0.101
Agreeableness			-0.030	-0.030			0.144*	0.153*								0.343*
Emotional Stability			0.139*	0.145*			0.201*	0.177*								-0.107
Conscientiousness			0.171*	0.164*			0.130*	0.138*								0.138*
Narcissism			-0.039	-0.039			0.022	0.021								-0.086
Psychopathy			-0.007	-0.013			-0.007	-0.011								-0.031
Machiavellianism			0.086	0.087			0.082	0.093								0.123
R2	0.003	0.057	0.353	0.360	0.009	0.021	0.139	0.147	0.015	0.045	0.334	0.344	0.012	0.053	0.192	0.202
Adj. R2	0.003	0.051	0.347	0.351	0.008	0.014	0.132	0.135	0.015	0.039	0.328	0.334	0.011	0.047	0.185	0.191
ΔR2		0.054	0.303	0.008		0.012	0.126	0.008		0.030	0.298	0.010		0.041	0.149	0.010
F	3.708	9.156*	63.465*	39.147*	9.243	3.194	18.826*	11.966*	16.579*	58.405*	58.405*	36.398*	13.071*	8.395*	27.642*	17.621*
Sig F Change	10.032*	10.032*	61.689*	2.082	2.175	19.254*	1.583	1.583	1.583	5.477*	59.250*	2.591	15, 1043	7.535*	24.387*	2.285
df	1, 1057	7, 1051	9, 1049	15, 1043	1, 1057	7, 1051	9, 1049	15, 1043	1, 1057	7, 1051	9, 1049	15, 1043	1, 1057	7, 1051	9, 1049	15, 1043

Independent Variable	Counterproductive behaviour				Turnover intentions				Burnout							
	Covariate	Music preferences & uses	Personality traits	Combined	Covariate	Music preferences & uses	Personality traits	Combined	Covariate	Music preferences & uses	Personality traits	Combined				
Age	0.084	0.106	0.025	0.035	-0.004	0.020	0.050	0.067	-0.243*	-0.226*	-0.229*	-0.217*	-0.027	-0.015	0.036	0.052
Preference for reflective and complex		0.106		0.071		-0.007		-0.008		-0.041		-0.049		-0.045		-0.041
Preference for intense and rebellious		0.050		0.042		-0.069		-0.065		0.058		0.058		0.032		0.037
Preference for energetic and rhythmic		0.078		0.007		0.146*		0.090		0.105		-0.049		-0.005		0.057
Emotional use of music		0.100		0.035		-0.095		-0.068		0.059		0.051		0.077		0.024
Cognitive use of music		0.059		0.023		0.109		0.100		0.007		0.000		0.053		0.085
Background use of music		0.037		0.029		0.080		0.041		-0.017		-0.031		0.022		0.001

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Table 4 (continued)

	Interpersonal facilitation			Counterproductive behaviour			Turnover intentions			Burnout		
	Covariate	Music preferences & uses	Personality traits	Combined	Covariate	Music preferences & uses	Personality traits	Combined	Covariate	Music preferences & uses	Personality traits	Combined
Openness			0.136*	0.099	0.077	0.037	0.049	0.044			0.003	-0.025
Extraversion			0.280*	0.273*	0.102	0.099	0.118	0.099			-0.076	-0.088
Agreeableness			0.324*	0.313*	-0.045	-0.050	-0.081	-0.092			-0.091	-0.105
Emotional Stability			-0.134*	-0.115*	0.020	-0.001	-0.103	-0.090			-0.307*	-0.295*
Conscientiousness			0.097	0.094	-0.322*	-0.308*	-0.084	-0.084			-0.102	-0.106*
Narcissism			-0.067	-0.060	0.059	0.059	-0.008	-0.008			0.049	0.051
Psychopathy			-0.162*	-0.165*	0.093	0.079	0.039	0.040			0.057	0.045
Machiavellianism			0.132*	0.124*	0.047	0.043	-0.060	-0.074			-0.092	-0.101
R2	0.007	0.057	0.292	0.303	0.163	0.183	0.097	0.111	0.001	0.015	0.184	0.195
Adj. R2	0.006	0.051	0.286	0.293	0.156	0.171	0.089	0.098	0.000	0.008	0.177	0.183
ΔR2			0.246	0.011	0.141	0.020	0.034	0.014		0.014	0.180	0.011
F	7.463	9.047*	48.102*	30.268*	22.707*	15.534*	12.485*	8.654*	0.796	2.267	26.341*	16.839*
Sig F Change			46.117*	2.781	22.562*	4.159*	4.972*	2.689		2.512	29.163*	2.293
df	1, 1057	7, 1051	9, 1049	15, 1043	9, 1049	15, 1043	9, 1049	15, 1043	1, 1057	7, 1051	9, 1049	15, 1043

Note. *p* < .001 are indicated by \*. Age entered as a likely theoretically proposed covariate. ΔR2 and Sig. F Change values under music preferences and uses indicate the change in R2 and significance of the additional predictive power when music preferences and uses are added to the equation in addition to the covariate (Age); ΔR2 and Sig. F Change values under personality traits indicate the change in R2 and significance of the additional predictive power when personality traits are added to the equation in addition to the covariate (Age). ΔR2 and Sig. F Change values under Combined indicate the change in R2 and significance of the additional predictive power when music tastes and uses are added to personality traits and the covariate (Age). All ΔR2 values of traits being added to the covariate (Age) are ≥ 0.038 with all *p*'s < .001.

would prefer a limited spectrum of music from all available options and they would likely draw from their preference to instrumentally implement various outcomes. A single model was constructed to test this hypothesis (presented in Fig. 1). The tested model included each of the variables included in the analyses pertaining to hypothesis 2 and 3 as observed variables. All analyses were performed with the software package MPlus using the default estimation technique of robust maximum likelihood and while employing 5000 iterations (Muthén & Muthén, 2010). The proposed model predicting work-relevant outcomes was tested (with *N* = 1059 cases; see Table 5). The model (presented in Fig. 1) converged in fewer than 5000 iterations. A statistically significant chi-square value was obtained ( $\chi^2(48) = 332.410$ , *p* < .001). However, this index of model fit is frequently violated with complex models such as this. The path-analysis performed by this study revealed model fit indexes that reached values indicating mediocre to good model fit (*RMSEA* = 0.075, 90% *C.I.* = 0.067 to 0.083; *Comparative Fit Index* = 0.90). In particular, the fit index, the Standardized Root Mean Square Residual (*SRMR* = 0.049; Cangur & Ercan, 2015) presented robust fit and it is known to provide an absolute estimate of model fit relative to no model fit that is most appropriately applied to complex models such as this (Kenny, 2015). Therefore, I reject the null hypothesis (4): given a structural equation approach, the proposed mediated model predicting work-relevant outcomes demonstrated model fit. Evidence from structural equation modeling suggests a music preferences' relationship with work outcomes are likely mediated by every-day music uses. All relationships demonstrated values indicating statistical significance had been obtained excluding the relationships between self-reported innovation and turnover intentions and music uses predicting CWBs. All standardized and non-standardized parameters of this model are presented in Table 5.

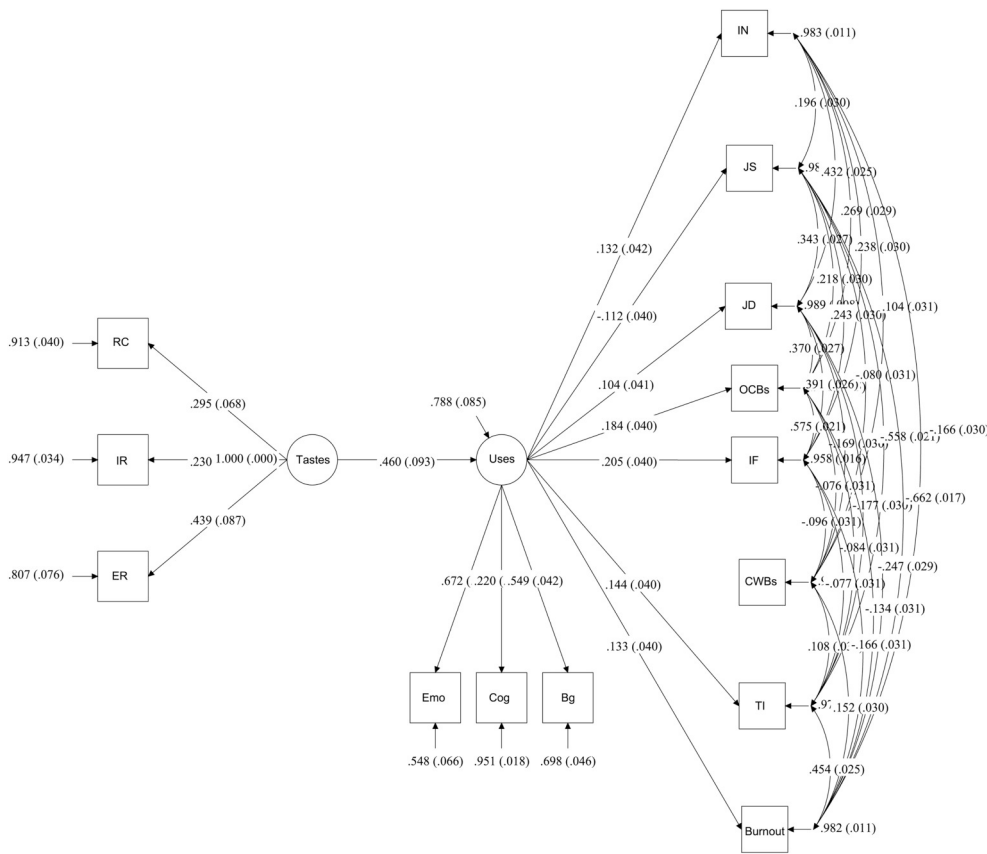
4.3. Discussion and overall conclusions

Study II sought to replicate, expand, and generalize the findings of Study I while proposing a mechanism by which music preferences and uses may be tied to work-relevant outcomes. Study II yielded results that were supportive of each hypothesis to varying degrees. Each will now be discussed with a dedicated focus aiming to address relevant theoretical, practical, and ethical implications of these findings.

The findings pertaining to hypotheses 1, 2, and 3 demonstrated that music preferences and uses are associated with work-relevant outcomes. Moreover, the evidence seems to suggest that there are likely small but statistically significant benefits to be gained by combining traits with music preferences and uses in an effort to predict various work-relevant outcomes with employment candidates and working individuals. In particular, innovative tendency is most associated with reflective and complex music preferences and cognitive uses of music. Similarly, CWBs seem to be best benefit from the additional predictive power offered by music engagement variables.

As in Study I, there were somewhat lower reliabilities demonstrated with the STOMP and UoM in comparison to personality traits and outcome measures in Study II. Low reliability coefficients are noted to reduce a predictor's correlation with criterion variable and therefore will adversely affect its regression coefficient (Boyle & Pickles, 1998). Therefore, given the findings of the current research (evaluated with current reliability coefficients and to conservatively adjusted critical *p*-values) it is entirely possible that music preferences and uses could actually be more predictive of work outcomes in reality and be detected if they were assessed with more reliable scales. Although there are shortcomings are known in the literature surrounding the STOMP particularly surrounding the lack of independence among factors and primarily Western orientation of the scale's applicability it is recognized as a current gold standard (Chamorro-Premuzic & Furnham, 2007). More reliable scales would help to optimally leverage self-report survey research methods in this domain.

Study II provided preliminary evidence replicating the findings of



**Fig. 1.** A mediated model of musical organizational influences. Standardized estimates and errors are presented. Only relationships demonstrating statistically significant values are presented as connecting arrows. Non-significant relationship values have been removed for clarity. RC, IR, ER indicate reflective and complex, intense and rebellious, and energetic and rhythmic music preference; Emo, Cog, and Bg indicate emotional, cognitive, and background music uses; and IN, JS, JD, IF, and TI indicate innovation, job satisfaction, job dedication, interpersonal facilitation, and turnover intentions respectively.

Study I and generalizing them from academic to work contexts while proposing an explanatory framework describing the bridge between music and organizational psychology. The findings pertaining to **hypothesis 4** imply, given that music uses seem to be critical proximal mediators of music preferences in facilitating work-relevant outcomes, that people do use music in utilitarian/instrumental ways likely from a subset of personal preferences in music that best meet the intended ends. Therefore, it may be effective to train people how to adaptively use music or to carefully and appropriately administer certain genres of music to facilitate various positive work outcomes as a form of intervention. Obviously, additional experimental research is required before such interventions take place to precisely coordinate and determine what music, personality, and outcomes would be amenable to such intervention. However, if such research is fruitful this could be an area ripe for simple and cost-effective organizational intervention. Organizations may therefore be wise to allow personal discretionary use of music under contexts that it is safe and not distracting to others.

Two broad implications come to mind regarding the findings pertaining to **hypotheses 1** through **3**. First, as mentioned in the introduction regardless of the morality, ethicality, or legality of using such data for various organizational purposes or ends, organizations are increasingly using social media and tools like artificial intelligence and machine learning as a means of optimizing recruitment and selection processes. The evidence of this research suggests that incorporating such readily available data as music preferences and uses may add small (but statistically significant) improvements to the predictive validity of these (and other similar selection) tools. However, such new indicators should be approached with caution so as to be aware of human rights and ethical and legal violations. This brings me to the second implication, regarding the ethics of the potential applications of these findings. It appears that music preferences and uses function together as predictive agents of select work outcomes in complex and dynamic ways. This seems to be especially true when combining them with

personality traits. As with personality traits, it is inadvisable to suggest that organizations would recruit or select candidates for employment on the basis of music preferences and uses alone. This is especially true given the small contribution of each predictor in isolation. Until further research has explored this in depth, organizations should be wary of disenfranchising people on the basis of any particular music preference or use (or lack thereof). The findings of this study illustrate that individual indicators of human work-psychology can be gleaned by such seemingly innocuous data as music preferences and uses – variables that people would seem to have little interest in hiding from potential employers. If selection tools are being designed and employed that make use of this readily available data, it is important and prudent to validate such approaches – scientifically and ethically – to promote effective guidelines for use and prevent possible legal and ethical violations.

The collective findings of this research can be interpreted in support of a theory by which openness to experience predicts work outcomes and drives music preferences, which motivate utilitarian use of music to direct behaviours. However, given all current data is associative in nature, further research is certainly needed before causality can be argued. Statistical modeling techniques like path analysis and structural equation modeling are not a replacement for experimental research. The findings of this research, however, do make a small steps in providing evidence of one likely path given the relationships of the studied variables. There are likely to be additional mediating variables beyond music use at play between the music preferences-work outcomes relationship. It is also likely that people are using music for multiple purposes beyond those outlined by the uses of music measure included in both studies I and II, some of which may also facilitate various work relevant outcomes through different mechanisms. For example, it is entirely possible that people may be motivated to use reflective and complex music while performing academic tasks or to use energetic and rhythmic music to facilitate social engagement with coworkers. If this

**Table 5**  
Model parameter standardized estimates, errors, and two-tailed significance values obtained.

Model component being tested	Standardized estimate	S.E.	<i>p</i> <
Tastes by			
Reflective and complex music preferences	0.295	0.068	.001
Intense and rebellious music preference	0.230	0.073	.005
Energetic and rhythmic music preferences	0.439	0.087	.001
Uses by			
Emotional	0.672	0.049	.001
Cognitive	0.220	0.041	.001
Background	0.549	0.049	.001
Uses on			
Tastes	0.460	0.093	.001
Innovation on			
Uses	0.132	0.042	.005
Job satisfaction on			
Uses	−0.112	0.040	.01
Job dedication on			
Uses	0.104	0.041	.05
OCBs on			
Uses	0.184	0.040	.001
Interpersonal facilitation on			
Uses	0.205	0.040	.001
CWBs on			
Uses	0.039	0.043	<i>ns</i>
Turnover intentions on			
Uses	0.144	0.040	.001
Burnout on			
Uses	0.133	0.040	.005

Model component being tested	Standardized estimate	S.E.	Significance value
Innovation with			
Job satisfaction	0.196	0.030	0.001
Job dedication	0.432	0.025	0.001
OCBs	0.269	0.029	0.001
Interpersonal facilitation	0.238	0.030	0.001
CWBs	0.104	0.031	0.005
Turnover intentions	−0.046	0.031	<i>ns</i>
Burnout	−0.166	0.030	0.001
Job satisfaction with			
Job dedication	0.343	0.027	0.001
OCBs	0.218	0.030	0.001
Interpersonal facilitation	0.243	0.030	0.001
CWBs	−0.080	0.031	0.01
Turnover intentions	−0.558	0.021	0.001
Burnout	−0.662	0.017	0.001
Job dedication with			
OCBs	0.370	0.027	0.001
Interpersonal facilitation	0.391	0.026	0.001
CWBs	−0.169	0.030	0.001
Turnover intentions	−0.177	0.030	0.001
Burnout	0.247	0.029	0.001
OCBs with			
Interpersonal facilitation	0.575	0.021	0.001
CWBs	−0.076	0.031	0.05
Turnover intentions	−0.084	0.031	0.01
Burnout	−0.134	0.031	0.001
Interpersonal facilitation with			
CWBs	−0.096	0.031	0.005
Turnover intentions	−0.077	0.031	0.05
Burnout	−0.166	0.031	0.001
CWBs with			
Turnover intentions	0.108	0.031	0.001
Burnout	0.152	0.030	0.001
Turnover intentions with			
Burnout	0.454	0.025	0.001

Note. All modeled relationships were found to indicate statistical significance excluding those between self-reported innovation and turnover intentions and music uses predicting counterproductive work behaviours.

were the case, such uses of music as these would indicate that some people are more instrumentally effective in using music to self-regulate their thoughts, feelings, and behaviours than others and perhaps that is what facilitates positive outcomes. This may suggest a causal chain

whereby people would likely have to first be open to diverse forms of music, enjoy a particular genre of music, be aware and able enough to self-regulate in this way, and then use the music to effectively facilitate and achieve such work-related aims. However, such chains (like the

mediated model tested in Study II) are best tested with experimental and repeated-measures designs. Future research would likely be well spent exploring the role of such self-regulation and probable causal chains among variables. It also bears note that close examination of associative relationships across the two studies indicates that the most proximal indicator of innovative tendency remains to be openness to experience. The results of this current project are consistent with aforementioned prior research indicating those who prefer reflective and complex (and, in Study II, energetic and rhythmic) music are also more likely to demonstrate openness to experience. Although correlation alone should never be assumed to be evidence for causation, if causal inferences are likely to occur it seems natural to hypothesize they would be quite probable to occur where there are particularly strong associations between variables. If such a causal chain as this were found to be true it would argue in favour of openness to experience being the most proximal indicator of behaviour and individual music engagement being a valid indicator of trait differences. In truth, both arguments would support the use of these variables where feasible, relevant, and ethical.

Another limitation revolves around the generalizability of these findings to broader populations. The samples in both studies were comprised of largely a white, individualist, first world, males. Cultural effects may be likely to occur, especially given that the central investigatory variables are cultural variables in nature - music preference and use. More research is needed to investigate demographic and cultural effects potentially at play. On that note, it bears mentioning the relationship between diversity and performance is mixed and highly complex (for more on this see [Pelled, Eisenhardt, & Xin, 1999](#)). This work is not arguing to prioritize hiring a homogenous team of people that prefer reflective and complex music or use music for only cognitive purposes. Rather, just as individuals are expected to employ tools and tactics that are likely to enhance and motivate outcomes, leaders are expected to use every tool to their advantage (assessing knowledge, skills, and abilities, traits, biodata, fit, etc.) in crafting productive teams and selecting individuals that are likely to be successful in the positions they occupy.

In sum, this work has expanded the interdisciplinary bridge between music and organizational psychology. It has revealed the value and possible utility of music preferences and uses for organizational purposes. It seems that music is used autobiographically and instrumentally by individuals to convey whom they are and facilitate people to become who they wish to be in a given moment. It is important, going forward, to ensure such data is used appropriately and ethically to achieve various individual and organizational ends.

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