

**The Effects of Personality And Creativity on Uses  
of Music**

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Submitted in partial fulfilment of the requirements of  
the Bachelor of Arts degree (Psychology  
Specialization) at DBS School of Arts, Dublin.

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March 2012  
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### **ACKNOWLEDGEMENTS**

I would like to take the opportunity to thank my supervisor Dr. Patricia Frazer for all her much appreciated assistance in this research. Also, I would like to thank all the people who gave graciously of their time to participate in the study. Most of all, I would like to express my gratitude to my family for their support and patience while I was working on this project.

## ABSTRACT

This study aimed to explore the relationships between the Big Five personality traits, creativity, and individual differences in uses of music (i.e. when and why people choose to listen to music). A sample of one hundred and two people ( $N = 102$ ) completed measures for the above constructs and data were analyzed using bivariate correlations and multiple regressions. Results showed that, in line with the hypotheses, personality traits Openness to Experience and Extraversion were significantly positively correlated, and predicted, Creativity. Neuroticism, in contrast, was found negatively linked to Creativity. Moreover, Openness to Experience and Extraversion were positively associated with Background uses of music. Both variables were also found to be predictive of uses of music for background purposes. Results are discussed with reference to previous findings on personality as determinants of creativity and different uses of music.

## INTRODUCTION

People love music. Music forms an indivisible part of their everyday life and it is at the centre of many social activities, such as concerts, parties, weddings or sporting events. This inclination to music manifests itself in every culture and goes back in time. No recorded culture throughout the history lacked music (Storr, 1992). Music is so interwoven with human life that it is essential to understand what functions it has, what purpose serves and what needs fulfills. Darwin himself was puzzled about it as he wrote in the *Descent of Man*: “As neither the enjoyment nor the capacity of producing musical notes are faculties of the least use of man... they must be ranked among the most mysterious with which he is endowed.” (Darwin, 1871)

The significance of music is demonstrable also in terms of business. The music industry is one of the largest in the USA, employing hundreds of thousands people. In 2006, the global value of the recorded music industry was over \$ 130 billion (International Federation of Phonographic Industry). iTunes, the largest online digital store, have served over 16 billion songs since their launch in 2003. The number of subscribers to online music streaming services such as Spotify and Deezer has leapt from eight to more than 13 million in 2011 (Digital Music Report 2012).

Despite the fact that music occupies such a significant place in people’s everyday life, it has initially received little attention in the social and personality psychology. [North & Hargreaves, 2008]. However, with the onset of digital revolution in 1990’s which has made listening to music available everywhere and at all times, researchers have begun to take greater interest in this phenomenon and its effects on a wide range of thought and behaviour. In recent years, two lines of research relating music to personality have emerged: uses of music and musical preferences.

Musical preferences vary massively. Factors that influence preference (taste) can relate to music itself, the listening situation and the listener.

Research on how music influences musical preferences has been dominated by experimental aesthetics. The psychobiological approach adopted by experimental aesthetics was first introduced by Daniel Berlyne (1971). He proposed a theory according to which preference for artistic stimuli such as music is related to their 'arousal potential' (amount of activity they produce in the brain). Music with an intermediate degree of arousal potential is liked most, and this degree of liking gradually decreases towards the extremes of arousal potential. This means that there is an inverted – U relationship between preference and stimulus arousal potential. Berlyne stated there were several categories of variables that mediated arousal potential and those of most importance and interest were 'collative' variables. Collative variables concern the informational properties of the music such as its level of complexity or familiarity. According to Berlyne people prefer moderately arousing music because it stimulates the relevant brain centers at the optimal level. Music of high degrees of arousal potential not only activates pleasure centres but it also stimulates displeasure centres in the brain.

Numerous laboratory studies carried out between the 1960s and early 1980s provided evidence for Berlyne's theory of moderate arousal. With reference to 'collative variables', North and Hargreaves (1996) visited several aerobics and yoga classes and found an inverted-U relationship between people's ratings of liking and complexity of music played in the classes. Studies concerning familiarity and musical preference have also produced encouraging results. Erdelyi (1940) considered the relationship between the plugging of 20 records on the radio and sales of the sheet music. There was an inverted – U relationship between these, suggesting that as plugging increased listener's familiarity with the records, so the popularity of the latter rose. Wiebe (1940) found that although radio plugging of songs

did not affect the liking ratings of initially well-liked music, it did influence liking ratings for songs that were initially less popular. Similarly, Simonton (1987) analysed 105 melodies by Beethoven and found that his moderately original works have proved to be most popular.

In contrast to this general pattern of support for Berlyne's theory, Russell (1987) found that the appearance of song in music sales charts was associated with greater familiarity with the music but it was not associated with changes in liking for the song in question.

In the 1980s and early 1990s Berlyne's theory began to be challenged by a new approach to musical preference based in cognitive psychology. Many studies in cognitive psychology indicated that people classify stimuli by successfully matching them with an abstract schema, or 'prototype', representing the appropriate category. The prototypes occur through experience of the world and because "more typical stimuli are coded by mental representations capable of greater activation; preference should be positively related to prototypicality" (Martindale and Moore, 1988, p. 661). In other words, preference increases with prototypicality: typical examples of any category should be preferred because they give rise to a stronger activation of the relevant cognitive representations.

The research on preference for prototype demonstrated that the prototypicality of music may be stronger determinant of preference than its arousal evoking qualities. This contrast with Berlyne's (1971) claim that the collative variables (e.g. complexity, familiarity) are the "most significant of all for aesthetics" (p. 69). For example, Martindale and Moore (1989) reported that complexity accounted for 4% of the variance in people's liking of classical music themes, whereas 51% was accounted for by typicality measures. Similar results were reported by e.g. Hekkert and van Wieringen (1990); Whitfield (1983); and Whitfield and Slatter (1979). However the prototypical model showed also some limitations. In particular, the argument that people prefer songs that sound most like the music they are usually exposed to is rather circular. It is basically saying that people like music that sounds similar to music

they like. Furthermore, the preference for prototypes does not specify which aspects of music people respond to. Finally, and most importantly, the reductionist approach adopted by the experimental aesthetics ignores sociocultural factors that shape musical preference in the modern day.

In the recent years there has been an increasing trend towards the recognition of social context in musical behaviour. Research on musical preference has focused on how 'real' people react to 'real' music in 'real' situations Konecni (1982) has argued that 'the vast majority of research studies... have treated aesthetic preference and choice as if they, and the process of appreciation itself, normally occur in a social, emotional, and cognitive vacuum, as if they were independent of the contexts in which people enjoy aesthetic stimuli in daily life' (p. 498). Konecni embraced Berlyne's theory of the importance of moderate arousal potential, but addressed also additional source of it. He argued that the listener sums arousal evoked by music and arousal evoked by the context in which it is experienced and selects music that will bring about, overall, a moderate level of arousal. For example, a listener in a highly arousing situation should choose to listen to simple music whereas a listener in a boring situation should select more complex music. This can be seen in situations like driving a car, when people come into heavy traffic they turn down the radio, they are reducing the cognitive/arousal load from the music in an attempt to compensate for additional load imposed by the traffic conditions. Findings of the research have provided support for this theory. Konecni and Sargent-Pollock (1976) found that when participants carried out complex mental tasks while simultaneously listening to music, they tended to choose to listen to simple rather than complex melodies. North and Hargreaves (1999) reached similar conclusions. They asked participants to complete five laps of a motor racing computer game. While doing this, they were forced to listen to either a loud, fast (i. e. arousing) or slow, quiet (i.e. less arousing) music. In addition, in some conditions participants were asked to count



backwards in intervals of three. Consistent with Konecni's arguments lap times were slowest when participants listened to the arousing music and counted backwards, whereas the lap time were quickest when participants heard the less arousing music and did not have to count. There were two notable criticism of Konecni's research. First, while recognising the limitations of the lab based studies, his research was nevertheless carried out under laboratory conditions. Second and more important, Konecni's model could not account for every listening situation. In other words, it is unlikely that people always choose to use music as a means of moderating their level of arousal. For example, people dancing in a nightclub should wish to listen to quiet and slow music which would reduce their levels of arousal but it is clearly not the case.

One line of research has focused on the appropriateness of a piece of music for a particular listening situation with the preference for prototypes framework. Appropriateness might be characterized as the extent to which a particular piece of music is typical of that usually played in the situation in question. This relationship between liking for music and its appropriateness for the context was confirmed in North and Hargreaves' (1996) study in aerobics and yoga classes. Participants in the classes were asked to rate the music they liked as well as rate how appropriate each piece was for the class. It was found that ratings of liking and appropriateness were correlated positively in support of this theory. North and Hargreaves (2000) carried out additional studies to investigate this relationship between liking and appropriateness further. In one study, participants were asked to ride an exercise bike or to relax. After doing this, they could choose listening to a loud, fast or slow, quiet music. Consistent with Konecni's theory, people preferred music that would moderate their arousal resulting from previous activity. People who had ridden a bike choose slow, quiet music, whereas people who had relaxed preferred loud, fast music. In the second experiment, participants were asked to choose music while they were performing the task (riding a bike,

relaxing) and they had chosen music that further polarized their arousal. People who were exercising choose fast music and people who were resting choose slow music. This could be explained by that participants were trying to achieve a particular arousal-based goal. The notion of arousal-based goal can explain why people like loud and fast music in nightclubs: it further increases their level of arousal and adds to the 'party atmosphere' they are trying to create. In summary, people do not always use music to bring about a moderate level of arousal, but arousal nevertheless seems to be a key factor in determining the use of music to achieve particular goals. Similarly, people do like music that is prototypical of that usually heard in a particular listening context, but arousal is probably a major (although not the only) factor in determining whether music is perceived as prototypical in the first place.

Research carried out predominantly in the 1970s highlighted the importance of compliance and prestige effects in musical preference. Even though these studies do not provide universal support for the notion of compliance, there is some indication that listeners will 'go along' with the musical judgments of the majority. Findings of several studies supported this theory. Crowther (1985) asked participants to listen to four types of music, two of which would be liked by other participants and two of which would be disliked. While they listened to music, the participants could see a panel of lights that supposedly indicated what other participants are listening to. Crowther manipulated the panel that it showed that majority of participants was listening to the disliked music. As a consequence, participants started to listen to the disliked music. These findings suggested that musical preference of the majority was able to overcome the individuals' musical taste. Similar results were produced by the study by Aebischer, Hewstone, and Henderson (1984). Pupils at a high school were asked to state their preference for either hard rock or new wave music; hard rock was the pupils' clear favourite. The participants were then shown the supposed results of a survey regarding these musical styles. It showed that pupils preferred new wave over hard rock. As expected, this influence

led to greater liking for new wave. The literature concerning prestige effects on responses to music and the arts in general has been reviewed by Hargreaves (1986) and the general pattern of finding supports the existence of prestige effects in responses to music.

Other factors that play an important role in influencing musical preference are individual differences, such as socio-economic status, ethnicity, age, sex or personality.

During the 1960s and 1970s a considerable research carried out concerned the role of social class in differentiating musical preference. Bourdieu (1971) argued that people's social background determines their taste and musical preferences. Quantitative research has used sociodemographic variables to categorize fans of certain musical styles into so-called 'taste publics'. These taste publics "express values and standards of taste and aesthetics" (Fox and Wince, 1975, p. 199), such that they comprise of a particular group of people. For example, DiMaggio and Useem (1978) reported that only 4% of blue-collar workers had attended a symphony orchestra concert during the past 12 months, compared with 14% of managerial workers and 18% of professionals. Pegg's (1984) survey of British concert attendance revealed a similar pattern of finding. People from upper and middle class were more likely to attend classical concerts than people from working class. The notion of taste cultures has been however widely criticized. Zillman and Gan (1997, p. 172) argued that "taste cultures are poorly defined. They are, for the most part, hypothetical constructs... Surely, nobody is able to stake out the actual taste publics of heavy metal, reggae, or folk music." Also, Shepherd (2003, p. 74) argued that the research on taste public "operated only at the level of social groups. Little attention was paid to the social and cultural identity of individuals". In attempt to investigate these issues, North and Hargreaves (2007a, b, c) examined differences in the socio-economic statuses of 2,062 fans of 19 different musical styles and found that fans of 'higher' music, such as opera or classical music had higher incomes and were better educated. Thus, the results supported the theory of taste publics.

Another line of research considered age-related factors in relation to musical preference and taste. Le Blanc (1991) attempted to explain the general pattern of development of musical preference across the life span. His approach was based on the concept of open-earedness, which can be defined as listener's tolerance for different musical styles. Le Blanc proposed a model of four stages, namely: (1) younger children are more open-eared; (2) open-earedness declines as children enter adolescence; (3) there is a partial rebound of open-earedness as the listener matures from adolescence to young adulthood, and (4) open-earedness declines as the listener matures to old age. Le Blanc, et al., (1993) tested this model by obtaining preference judgments from 2,262 listeners aged between 6 and 91 years old and found that the results conformed to the model for overall responses. North and Hargreaves (1995) found similar results in their study. Participants, between 9 and 50+ years old, were shown the list of 200 pop groups and singers and asked to choose up to 30 who in their 'opinion had performed music that deserved to be called to the attention of others'. The results showed a tendency to select as eminent those artists who had their first UK number 1 when the participants were adolescents/ young adults. Late adolescence / young adulthood seem to be a 'critical period' in which musical preferences became fixed. Later research has also supported the notion of a 'critical period. North and Hargreaves (2002) investigated 12,502 nominations of the greatest pop musicians gathered in response to a survey run by Channel 4 programme, The Guardian newspaper and the music retailer HMV and found the evidence for the late adolescence / early adulthood 'critical period'. Holbrook and Schindler (1989) have proposed several explanations for this effect. The first is that the process is similar to that which occurs during 'imprinting' (a phenomenon in which young animals at a critical stage in their development form a strong and irreversible bond with a parent), in that the late adolescence / early adulthood period represents a time of maximal sensitivity toward and liking for any music that people are exposed to. It is also possible to link this process to the theory of musical

prototypes. The fact that musical prototypes might become finalized during late adolescence / early adulthood critical period is another representation of the preference for prototypes phenomenon (Trehub and Unyk, 1991)

Surprisingly few studies have considered the role of gender as the source of differences in musical preferences. Those studies that have been carried out can be divided into two groups concerning attitudes towards music and uses of music. Most of the studies have shown significant differences in musical preferences of males and females. The general pattern suggested that women prefer 'softer' musical styles whereas men tend to prefer 'harder' styles (Appleton, 1970; Baumann, 1960; Birch, 1962; Christenson and Peterson, 1988; Skipper, 1975). More recent evidence suggests that this trend is continuing with regard to more modern forms of pop music such as the aggressive styles of rap and heavy rock which tend to be preferred by males (Robinson, et al., 1996; Took and Weiss, 1994). One possible reason why boys tend to prefer more aggressive musical styles might be shown by research on gender differences in adolescents' uses of music. North, Hargreaves, and O'Neill (1998) asked 2,465 13 – 14 year olds to give reasons why they listened to music. Girls seemed to use listening to music for mood optimization ("To get through difficult times", "To express feelings / emotions"), whereas boys used it more for impression management ("To be cool" or "To impress friends")

Another line of musical preferences research has addressed the role of personality in relation to musical differences. Cathel and Anderson (1953) were among the first who related individual differences in music preferences to personality traits. Accordingly, they devised an Institute for Personality and Ability Testing (IPAT) Musical Preference Test, which interpreted musical preferences as unconscious aspects of specific personality traits. Since then, researchers have focused on more explicit personality characteristics. For example, Little and Zuckerman (1986) found links between sensation seeking and preference for rock,

heavy metal and punk music. Another line of research has revealed a positive correlation between psychoticism, extraversion and preference for rock, heavy metal and punk music (Williamson, 1997).

The most comprehensive research to date on music preferences was conducted by Rentfrow and Gosling (2003). In the series of studies, they first identified the structure of musical preferences and organised them into four dimensions: reflective/complex, intense/rebellious, upbeat/conventional and energetic/rhythmic. Afterwards, these dimensions were related to the Big-Five personality factors and they found that both reflective/complex and the intense/rebellious dimensions were positively correlated to Openness to Experience. Additionally, a preference for energetic and rhythmic music was positively associated with Extraversion and Agreeableness; a preference for upbeat and conventional music was positively linked to Extraversion, Agreeableness and Conscientiousness but it showed a negative correlation with Openness to Experience. These findings were confirmed by a more recent longitudinal study with Dutch adolescents (Delsing et al., 2008).

Renfrow and Gosling's study did not however investigate how individual differences influence the uses of music in everyday life. One of the possibilities they suggested was that individuals use music as a means of regulating their emotions. Given the amount of time people spend listening to music, it is expected that they use music to "achieve different psychological ends, such as creating certain moods states, or changing their levels of emotional arousal" (North, Hargreaves, and Hargreaves, p. 42)

One line of research has indicated that individuals, especially young people, use music to create an external image that helps them to establish their social identity and group membership (North, Hargreaves, & O'Neill, 2000). Other studies have suggested that individuals might choose to use music as a mere appreciation or a background accompaniment to other activities. (Tekman & Hortaçsu, 2002)

Very little research has focused on the link between personality traits and individual differences in uses of music. The first study which has examined this link was a paper by Chamorro-Premuzic and Furnham (2007), in which the researchers have introduced a new measure called The Uses of Music Inventory. This measure evaluates differences in uses of music which they showed to factor into three categories: emotional use (music as a means for mood stimulation and emotional regulation), rational use (individuals seek an intellectual stimulation and engage with music on a rational level) and background or social use of music (music used as an accompaniment to other activities). The researchers have then examined the relationship between these categories and Big-Five Personality traits and they have found, as predicted, that Neuroticism was positively correlated with emotional use of music, which confirmed findings of previous studies that emotionally unstable individuals are likely to use music to regulate their mood states (Juslin and Laukka, 2004). Furthermore, the data revealed that individuals who scored high on Openness to Experience, a dimension characterized by creative, original and untraditional thinking and seeking of the novel and unfamiliar, engage with music in an intellectual and cognitive way. Although not predicted, they also reported a negative correlation between Conscientiousness and emotional uses of music.

A series of subsequent studies have tested the generalizability of Chamorro-Premuzic and Furnham's (2007) findings across different cultures. Some previous studies have confirmed that music is of central importance among adolescents in different countries (Bjurström & Wennhall, 1991; Fitzgerald et al., 1995; Ter Bogt, 2000) while others suggested that there might be minor cross-cultural differences in uses of music (Rana & North, 2007)

The study with a Spanish sample (Chamorro-Premuzic, Goma-i-Freixanet, Furnham & Muro, 2009a) replicated the results of their previous study. In addition, the data showed a positive association between Extraversion and a background or social use of music. Conversely, emotional use of music was negatively correlated to Extraversion. This is congruent with

Eysenck and Eysenck's (1985) postulation that extraverts are under-aroused in comparison with introverts, therefore individuals that score high in Extraversion might choose to listen to music while doing other activities (e.g. cleaning, driving, studying, exercising) in order to increase their levels of arousal to optimal levels.

In a sample of South-African adolescents, Chamorro-Premuzic et al. (2010) sought to bring together two lines of past research. They have extended uses of music research (Chamorro-Premuzic & Furnham, 2007) to a new culture and age-group and combined it with music preferences research (Rentfrow & Gosling, 2003, 2006). In addition, the model has been expanded by including a measure of positive affect (PA) and negative affect (NA) as predictors of uses of music. Structural equation modelling (SEM) has been used to test a model wherein affect (PA and NA) predicts uses of music, which in turn, predict music preferences. They have found that PA positively related to background and cognitive use of music, while NA was positively correlated to emotional use of music. These associations were consistent with findings of previous research, namely, Extraversion was consistently correlated with positive affect (DeNeve & Cooper, 1998; Lucas & Fujita, 2000), therefore the link between PA and intellectual or social use of music. In the same way, Neuroticism was associated with a higher intensity of emotional affect, especially negative emotions (Costa&McCrae, 1992), which could explain the link between NA and emotional use of music.

Although the findings of research into uses of music have been consistently replicated across cultures, they provide only preliminary evidence for the idea that individual differences underlie different uses of music. The main limitation of this research is mainly that apart from major personality traits (Big Five) only a limited number of traits have been considered and included into the model. For example, measures of creativity (as suggested by Chamorro-Premuzic, Fagan, and Furnham, 2009b) and cognitive ability could help to explain how



people use music in everyday life; in particular they could be relevant with regard to understanding the link between Openness and cognitive use of music.

Many different definitions of creativity can be found in the psychological literature. There is not however a single accepted definition, nor is there a standardized measure for creativity. Traditionally, creativity has been defined as the ability to produce work that is both novel and useful (Sternberg and Lubart, 1995, p. 3)

There are four major perspectives by which psychologists conceptualize creativity (Runco, 2004). The person approach is the first type of perspective, it explores the personality traits and abilities of creative people, the second is the process approach which studies the cognitive mechanisms underlying the process of creative thinking, for example, divergent thinking, the next is the product approach that examines characteristics of creative products, such as works of art and finally, the press approach which looks at the relationship between creative people and their environment.

The psychological study of creativity has been of interest for researchers for decades (Runco, 2004). They have primarily investigated intellectual or personality traits in relation to creativity. Early research focused mainly on the relationship between creativity and intelligence and speculated whether creativity is a part of general intelligence, a correlate of it or an entirely independent ability. Guilford (1967), for example, perceived creativity as a component of intelligence. He differentiated between convergent and divergent thinking, the latter often being associated with creativity. Gardner (1993) also supported the view of creativity as a part of intelligence. Furthermore, Cattell (1971) proposed that creativity was determined by one's general intelligence, in particular a person's fluid intelligence (ability to solve novel problems) as well as by personality traits. Sternberg (1985), on the other hand, reviewed implicit theories of intelligence and creativity and concluded that "implicit theories are clearly inconsistent with view that regards creativity as an aspect of intelligence (p.612).

However, when Sternberg created scales of intelligence and creativity based on implicit theories of each, he found that they correlated significantly ( $r = .69$ ). Yet, Torrence (1963) review of creativity studies concluded that intelligence and creativity are only moderately associated.

Another line of research has concentrated on links between creativity and personality. Barron (1963) was among the first to examine the personality differences between creative and non-creative people, particularly those with higher and lower intellectual ability.

With respect to the Big Five factors of personality, there have been some significant findings. The factor that has been most powerfully and consistently positively linked to creativity is Openness to Experience. (Furnham & Chamorro & Premuzic, 2004a, 2004b). Dollinger and Clancy (1993) reported a positive correlation between participants' Openness and their verbal creativity. King, McKee-Walker, and Broyles (1996) also identified a positive correlation between verbal creativity and Openness to Experience. They also found a positive link between creativity and Extraversion and a negative correlation between creativity and Agreeableness. Feist and Barron (2003) conducted a 55 year longitudinal study on personality and creativity and they found that personality predicted creative achievements better than the measures of ability and potential.

Feist's (1998) meta-analysis of the creativity literature investigated the role of creativity and personality and found that artists were approximately one standard deviation lower on Conscientiousness and half a standard deviation higher on Openness to Experience and non-artists. In the more recent review of literature, Chamorro-Premuzic and Furnham (2005) organized the Big Five personality traits according to whether they were positively or negatively related to creativity. They concluded that Neuroticism, Extraversion, and notably Openness to Experience are positively linked to creativity, whereas Agreeableness and Conscientiousness are negatively linked to creativity.

The assessment of creativity has proven to be a challenging task, due to the difficulty in selecting appropriate measures (Batey & Furnham, 2006; Plucker & Renzulli, 1999). Various often conflicting definitions of creativity have complicated a selection of appropriate measures of creativity.

Tests of divergent thinking represent the most widely employed measures of creativity and have been reported to be good predictors of creative achievement (Barron & Harrington, 1981; Harrington, 1972; Torrance, 1974; Vernon, 1971). In contrast to convergent tests that require a single correct answer, divergent tests ask for as many appropriate answers as possible. Some tests emphasize the sheer quantity of production: Unusual Uses Test (Guilford, 1954) asks respondents to find as many uses for a given object as they can. Similarly, Word Association Test (Getzels & Jackson, 1962) requires respondents to identify a number of various uses for a word provided. Other tests, like Consequences Test (Guilford, 1954) score for unusual and original responses. The best regarded test of creativity is the Torrance Test of Creativity and Thinking (TTCT; Torrance, 1974). The test measures divergent thinking processes (e.g., name all the things you can think of that are red and edible) and longitudinal studies have shown that the accumulated score of creativity provided by the TTCT correlated in approximately  $r = .51$  with creative achievement measures (Torrance, 1975)

As measures of creativity, divergent thinking tests have been widely criticized. Wallach and Kogan (1965), Harrington (1975), and Katz and Poag (1979) have shown that validity of these tests is influenced by the conditions under which they are administered. For example, simply asking people to “be creative” will generally improve their performance on divergent thinking (Datta, 1963). Sternberg (1985) refused to use tests of creativity because he felt “such tests capture, at best, only the most trivial aspects of creativity” (p. 618). Although, tests like Word Association have limited face validity, they are rather successful in

identifying creative individuals. Barron and Harrington (1981) cautiously concluded that “some divergent thinking tests, administered under some conditions and scored by some sets of criteria, do measure abilities related to creative achievement and behaviour in some domains” (p.447).

Various studies have compared creative individuals on measures of personality. Some of them employed a Creative Personality Scale (CPS, Gough, 1979). This 30-item scale was derived from the 300-items Adjective Check List (ACL; Gough & Heibrun, 1965). Ratings of creativity from expert judges, faculty members, personality assessment staff members, and life history interviewers were examined on a sample that totaled over 1,700 subjects. Internal consistency coefficients in the derivation samples ranged from .73 to .81. The CPS was also found to be significantly correlated with six other creativity scales. In addition, it was correlated with creativity ratings in 10 of 12 groups. In the two cross validation samples, the CPS showed correlations with rated creativity of .35 ( $N = 35$ ,  $p = .05$ ) for men and .40 ( $N = 35$ ,  $p = .05$ ) for women. Longitudinal studies (Kaduson & Schaefer, 1991) have also confirmed a concurrent validity of this measure.

## THIS STUDY

The aim of this study is to explore relationships between personality, creativity and different uses of music. The hypotheses investigated in this study are:

- Hypothesis 1: It is predicted that there will be a significant positive correlation between Creativity and Openness to Experience. Openness to Experience is a trait that represents the tendency to engage in intellectual activities and experience new sensations and ideas. It is associated with intellectual curiosity, aesthetic sensitivity, vivid imagination, behavioural flexibility, and unconventional attitudes. Therefore it is not surprising that Openness has been consistently found positively associated with Creativity (Dollinger and Clancy, 1993; King, McKee-Walker, and Broyles, 1996; Furnham, 1999; George and Zhou, 2001)
- Hypothesis 2: There will be a significant positive relationship between Creativity and Cognitive uses of music. Cognitive use of music assesses the extent to which an individual is likely to use music in an intellectual manner, for example focusing on the performers, analyzing the structure of the composition or examining the score and parts played by different instruments. Individuals that score high on creativity are more likely to use music in this manner to create an intellectual or cognitively – stimulating experience and emphasize the high aesthetic value of music.
- Hypothesis 3: It is expected that Creativity will be positively correlated with Extraversion. The relationship between Creativity and Extraversion is a complicated one. Various studies have revealed a positive association between Extraversion and creativity (Feist, 1998; King et al., 1996, McRae, 1987). Other studies did not find any relationship between these two variables (Gotz and Gotz, 1979). However, in the recent review of the literature, Chamorro-Premuzic and Furnham (2005) concluded that Extraversion was one of the personality traits positively linked to creativity.

- Hypothesis 4: There will be a significantly positive association between creativity and background uses of music. This is an extension of the previous hypothesis. Extraversion is positively linked to background uses of music (Chamorro-Premuzic & Furnham, 2007) and thus, if extraversion is found to be positively correlated with creativity, there should also be a positive association between creativity and background uses of music.
- Hypothesis 5: Extraversion will produce a significant positive correlation with Background uses of music. This association is consistent with theory (Eysenck, 1992, 1993) that extraverts are under-aroused and as a result, they seek activities that would enable them to raise their arousal levels to achieve optimal arousal. Therefore one would expect extraverted individuals to use listening to music while performing other activities as a mean to increase their arousal and avoid boredom. Previous research produced mixed results in this area; in the study by Chamorro-Premuzic and Furnham (2007) extraversion was not found to be positively associated with background uses of music, however, the later study (Chamorro-Premuzic et al., 2009) with an Asian sample supported this association and found a positive correlation between these two variables.

## METHODOLOGY

### Materials

**The Big Five Inventory** (John & Srivastava, 1999) measures Big Five personality factors. The questionnaire consists of 44 items which are scored on five point Likert type scale (ranging from 'strongly disagree' = 1 to 'strongly agree' = 5). The five subscales are Extraversion (8 items, sample item: 'is talkative'), Agreeableness (9 items, sample item: 'is helpful and unselfish with others'), Conscientiousness (9 items, sample item: 'does a thorough job'), Neuroticism (8 items, sample item: 'is depressed, blue'), and Openness (10 items, sample item: 'is original, comes up with new ideas'). John and Srivastava (1999) reported alpha reliabilities for subscales as E = .88; A = .79; C = .82; N = .84; O = .81.

**The Creative Personality Scale** (Gough, 1979) is a measure for assessing creativity. The scale consists of 30 items, 18 of which are positive [sample item: wide interests] and 12 of which are negative [sample item: conservative]. The scale range for the CPS is [- 12, 18]. The score is computed by adding one point for each positive item and subtracting one point for each negative item. The CPS was validated by comparing self-reported adjectives with ratings of creativity by faculty on over 1000 students (Gough, 1979). The CPS is a reliable and valid test for the identification of creative personality (Carson et al., 2005; Gough, 1979; McRae, 1987).

**Uses of Music Inventory** (Chamorro-Premuzic & Furnham, 2007) is a 15 items scale which measures views regarding music, when it is listened and why. Items are rated on a 5 point scale (1= strongly disagree, 5 = strongly agree). There are three subscales in this inventory and each subscale consists of 5 items: Emotional uses of music (M [emot], sample item: "When I want to feel happy I listen to a happy song."), Rational, cognitive or intellectual uses

of music (M [cog], sample item: “Rather than relaxing, when I listen to music I like to concentrate on it.”) and Background or social uses of music ( M [back], sample item: “If I don’t listen to music while I’m doing something, I often get bored.”) The Cronbach’s alpha for the three subscales in the original study was M [emot] = .78; M [cog] = .85; M [back] = .76. (Chamorro-Premuzic & Furnham, 2007)

**Demographic Details:** all participants provided their demographic details, consisting of sex and age.

### **Participants**

A total number of one hundred and two people (N=102) completed the questionnaire. There were 65 females and 37 males in the sample, aged between 19 and 58 years (M = 34.2, SD = 7.2). The participants were of various nationalities and came from a variety of backgrounds. The opportunistic sampling was used, with the only requirement being fluency in English and basic computer skills.

### **Design**

This study used quantitative correlational questionnaire design to assess the strength and direction between measured variables. Target variables were Big Five Personality Factors (Extraversion, Agreeableness, Conscientiousness, Neuroticism and Openness), Creativity and Uses of Music (Emotional, Rational or Background). Variable Personality was measured in the first section of the questionnaire, creativity in the second and uses of music in the last part of the questionnaire.



## **Procedure**

The questionnaire was created and hosted on the kwiksurveys.com website and it was distributed through the social network Facebook. The link to the questionnaire and invitation to participate in the study were put on the researcher's profile's wall. Additionally, participants were recruited by using emails and messages. The questionnaire was not timed and the participants completed it in their free time and at their own pace. Details about the nature of the study were given, they were asked to give consent and they were assured that complete anonymity was guaranteed. After the completion of the questionnaire they were asked to provide demographic details (sex and age) to control for their effects on measured variables.

## RESULTS

Descriptive statistics (M, SD) for all target measures are reported in Table 1. Table 2 reports the intercorrelations among the target measures, with numbers in bold highlighting hypothesized associations.

*Table 1*

*Descriptive Statistics for Target Variables*

	N	M	SD
1 Extraversion (8 items)	102	28.12	4.58
2 Agreeableness (8 items)	102	33.64	4.52
3 Conscientiousness (9 items)	102	31.52	5.44
4 Neuroticism (8 items)	102	25.10	5.68
5 Openness (10 items)	102	37.33	5.16
6 M(emot) (5 items)	102	15.77	5.44
7 M(cog) (5 items)	102	17.69	1.96
8 M(back) (5 items)	102	18.99	2.18
9 Creativity (30 items)	102	2,16	3.81

*M (emot) = emotional uses of music; M (back) = background uses of music; M (cog) = cognitive uses of music;*

### *1. Correlations*

Pearson's Correlation Coefficients were calculated for all target measures.

H1: The relationship between the predictor variable Openness to Experience and the criterion variable Creativity was examined to explore the first hypothesis of the study that there would be a significant positive correlation between Creativity and Openness to Experience. The data

showed that there is a significant positive correlation of moderate strength between the two variables ( $r = .45$ ,  $p = .01$ ), therefore the first hypotheses of this study can be accepted.

H2: As for hypothesis 2 variables Creativity and Cognitive uses of music were assessed to examine their correlation. It has been predicted that there would be a significant positive relationship between the two however no significant correlation was found. As a result, the hypothesis 2 can be rejected.

H3: It has been hypothesized that Creativity and Extraversion would be positively associated. The results supported the hypothesis 3 as a moderate significant positive correlation was found between the variables Creativity and Extraversion ( $r = .43$ ,  $p = .01$ ).

H4: The hypothesis 4 predicted that there would be a positive significant correlation between Creativity and Background uses of music. The results has supported the hypothesis as it was found that there is a weak positive association between these two variables ( $r = .27$ ,  $p = .01$ ).

H5: The hypothesis 5 has predicted that there would be a significant positive relationship between Extraversion and Background uses of music. The relationship between these two variables was examined and it was found that there is a moderate significant positive association between Extraversion and Background uses of music ( $r = .32$ ,  $p = .01$ ). Accordingly, the fifth hypothesis of this study has been accepted.

In addition, the results showed further correlations that had not been predicted. Extraversion produced a significantly positive correlation with Cognitive uses of music ( $r = .36$ ,  $p = .01$ ). Background uses of music was found to be significantly and positively correlated with Agreeableness ( $r = .34$ ,  $p = .01$ ) and Conscientiousness ( $r = .43$ ,  $p = .01$ ). Similarly, Creativity showed a significantly positive association with Agreeableness ( $r = .28$ ,  $p = .01$ ).

However, Neuroticism produced a significant and negative correlation with Creativity ( $r = -.31, p = .01$ )

Table 2

*Inter-correlations for Target Measures*

	1	2	3	4	5	6	7	8	9
1 Extraversion	1	.37**	.23*	-.26**	.36**	.13	.36**	<b>.32**</b>	<b>.43**</b>
2 Agreeableness		1	.35**	-.45**	.16	.05	.08	.34**	.28**
3 Conscientiousness			1	-.44**	.05	-.04	.16	.43**	.26**
4 Neuroticism				1	-.11	.12	.18	-.07	-.31**
5 Openness					1	.18	.18	.29**	<b>.45**</b>
6 M(emot)						1	.05	.03	.08
7 M(cog)							1	.14	.18
8 M(back)								1	<b>.27**</b>
9 Creativity									1

Note.  $N = 102$ . *M (emot)* = emotional uses of music; *M (back)* = background uses of music;

*M (cog)* = cognitive uses of music; **bold** coefficients refer to hypothesized correlations.

\* Significant at the level  $p < .05$  (2 tailed). \*\* Significant at the level  $p < .01$  (2 tailed)

## 2. Multiple Regressions

Multiple regressions were conducted on the factors that produced significant correlations to investigate whether these relationships were predictive. Table 3 shows the  $\beta$  and t values.

Regression Model (RM) 1: Multiple regression was used to test whether Openness to Experience was a predictor of Creativity. The results of the regression indicated that two predictors explained 19.3% of the variance ( $R^2 = 0.20$ ,  $F(1,100) = 25.14$ ,  $p < .001$ ). It was found that Openness to Experience significantly predicted creativity ( $\beta = .45$ ,  $p < .001$ , 95% CI = .20 - .46).

RM 2: The second regression model investigated whether Extraversion was found to significantly predict Creativity. Results showed that 17.3% ( $R^2 = .18$ ,  $F(1, 100) = 22.08$ ,  $p < .001$ ) of the variance in the creativity scores was accounted for by the Extraversion variable and it was found that Extraversion significantly predicted creativity ( $\beta = .43$ ,  $p < .001$ , 95% CI = .20 - .50)

RM 3: After conducting a regression of Creativity as a predictor of Background uses of music, Creativity was found to significantly predict background uses of music ( $\beta = .27$ ,  $p = .006$ , 95% CI = .05 - .26), however the variance accounted for by Creativity was only rather small: 6.4% ( $R^2 = 0.07$ ,  $F(1,100) = 7.93$ ,  $p = .006$ )

RM 4: The regression model showed that Extraversion scores did significantly predict Background uses of music ( $\beta = .32$ ,  $p = .001$ , 95% CI = .06 - .24), and this model accounted for 9.5% of the variance in the model ( $R^2 = .10$ ,  $F(1,100) = 11.60$ ,  $p = .001$ ).

Table 3

## Multiple Regressions for Target Variables

Model		St. $\beta$ #1	St. $\beta$ #2	St. $\beta$ #3	St. $\beta$ #4	t
#1	Creativity (GPS)					- 4.10
	Extraversion (BFI)	<b>.45**</b>				5.01
	$F(1,100) = 25.14$ $Adj.R^2 = .20$					
#2	Creativity (GPS)					- 3.63
	Extraversion (BFI)		<b>.43**</b>			4.70
	$F(1,100) = 22.08$ $Adj.R^2 = .18$					
#3	M(Back) (UMI)					77.74
	Creativity (GPS)			<b>.27**</b>		2.82
	$F(1,100) = 7.93$ $Adj.R^2 = .07$					
#4	M (Back) UMI)					11.46
	Extraversion (BFI)				<b>.32**</b>	3.41
	$F(1, 100) = 11.60$ $Adj.R^2 = .10$					

Note. M (emot) = emotional uses of music; (GPS) = Gough Personality Scale, (BFI) = Big Five Inventory; (UMI) = Uses of Music Inventory

## DISCUSSION

The study examined the relationship between established personality traits (Big Five), creativity, and individual differences in uses of music. Its results provide support for a number of hypotheses, namely that Creativity was significantly positively correlated with Openness to Experience. This result replicated findings by McCrae (1987) as well as Rawlings et al. (1998). Positive correlation between Openness and Creativity is also in line with Feist's (1998) meta-analysis of creativity literature that found creative people to be open to new experience.

Extraversion was significantly and positively correlated with Creativity. Findings from previous research concerning the relationship between Extraversion and Creativity were inconsistent. Several studies into creative personality found no significant relationship between Extraversion and Creativity (e.g. Gotz and Gotz, 1979), while others have found a positive correlation between these two variables (Feist, 1998; King et al., 1996; McCrae, 1987). It has been suggested that Extraversion provides both the energy for creativity pursuits and the sociability that increases the likelihood that an individual's creative ideas have been appreciated in the past; leading to a self-appraisal of superior creative abilities.

The results also showed a significant and positive correlation between Extraversion and Background uses of music, suggesting that individuals high in Extraversion are more likely to use music as a background to other activities. This is consistent with findings of previous studies that have repeatedly found a positive association between these two measures (e.g. Chamorro-Premuzic et al., 2009, 2010). The positive association between Extraversion and use of music as background is in accord with existing literature (Eysenck, 1992, 1993; Costa & McCrae, 1992). Specifically, extraverts possess low levels of arousal, therefore extraverted individuals may use music to deal with the monotony of everyday tasks or events (e.g.

cleaning, exercising) and they may also experience lower distraction levels when listening to background music than introverts (Furnham & Strbac, 2002).

Creativity is another trait that has been found to be positively linked to using music as a background to other activities. It had been predicted that there would be a positive correlation between Creativity and Cognitive uses of music and that individuals with higher creativity would use music to create an intellectual and stimulating experience; however the results of this study did not support this theory.

Neuroticism and Creativity surprisingly produced a significant negative correlation. Previous research has not showed a consistent pattern in connection with these two variables. Various studies have found no relationship between Neuroticism and Creativity (Eysenck & Furnham, 1993; Martindale & Dailey, 1996; McCrea, 1987), whereas Chamorro-Premuzic and Furnham (2005) reviewed literature on creativity and concluded that Neuroticism was positively linked to creativity. On the other hand, Gotz and Gotz (1979) reported a negative relationship between the factor Neuroticism and scientific creativity but a positive relationship with artistic creativity. Also, Charyton et al. (2009) found that negative affect that is linked Neuroticism is negatively associated with creativity. Similarly, Amabile et al. (2005) reported that feelings of distressed and anxiety reduce creative abilities and ideation.

In contrast with other studies (Feist, 1998; Furham, Batey, Anand, & Manfield, 2008), Creativity has been found positively correlated to Conscientiousness. Previous research has suggested that decreased Conscientiousness may promote creative behaviour, in that individuals with low Conscientiousness are more likely to disregard instruction, avoid order, and act impulsively. Consequently, these behaviours may improve the chances of finding new and useful ways of approaching tasks and ideas. Perhaps this inconsistency can be linked to McCrae (1987) who found a positive correlation between Conscientiousness and creativity on self-report measures of the construct. He reasoned that conscientious people tend to invest



more effort into pursuing creative activities than less conscientious people. However, these results were based on creativity measured through self-report measures, rather than actual results of creativity tests. The creativity measure employed by this study is a self-report measure assessing a creative personality therefore the results it has produced may be parallel with the findings of McRae's research.

The present study has a number of limitations. First of all, a sample used in this study was relatively small and thus it may not have been representative of a general population. Although, current study did not find any gender differences with regard to uses of music which was consistent with previous research (e.g. Chamorro-Premuzic & Furnham, 2007), one could expect that men and women use music for different purposes. Specifically, there may be gender differences in Emotional uses of music which refers to the extent to which individuals use music for emotional regulation, e.g. inducing positive or negative moods. This would be in line with previous research showing that women are more likely than men to respond to emotional effects of music (Panksepp, 1995). Therefore future research should explore the role of gender in uses of music.

Similarly, this study found no age differences in uses of music factors. However, young people tend to spend a significantly higher amount of time listening to music than older individuals (North & Hargreaves, 2008). Therefore, it is likely that music serves different purposes in different age groups. It might be useful for future research to examine possible age differences in uses of music.

Moreover, present research relied on self-reports of musical use, which may be different than the actual uses of music. Future research could overcome this limitation by exploring actual uses of music. With the widespread online resources for purchasing and listening to music, the data could be easily obtained as well as more illustrative of actual music uses.

Creativity construct in this study was assessed by a self-report measure. It could be useful to use different measures of creativity, for example, those measuring ideational fluency and divergent thinking to examine the role of creativity in different uses of music further.

Finally, the research into individual differences in uses of music is still rather limited and it should expand the current model by including further personality and social factors (e.g. environment, peer influence, music training) and examine their effects on uses of music.

Despite these limitations, this study replicates to some extent findings of previous research in uses of music (Chamorro-Premuzic and Furnham, 2007), as well as adds some information how creativity influences affects individual differences in uses of music.

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