

Investigating Cognitive, Emotional, and Social Functions of Violent Music for its Fans

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Abstract

The majority of research investigating violent music has primarily focused on negative outcomes evoked in non-fan populations, calling into question the ecological validity of such research. The present study focussed on fans of two genres of violent music, violent heavy/death metal and violent rap, and investigated: (1) the cognitive, emotional, and social functions these genres serve for their fans; (2) short-term emotional responses after listening to violent music; and (3) the capacity for fans' passion (harmonious vs. obsessive) and psychopathology (depression, anxiety, stress) to explain within-group differences in positive/negative outcomes. Fans of violent heavy/death metal music ($N = 46$), violent rap music ($N = 49$), and a comparison fan group of non-violent classical music ($N = 50$) completed an online questionnaire pertaining to their preferred genre. Participants completed surveys measuring music functions, music in mood regulation, passion for music, and psychopathology. They then listened to music excerpts of their preferred genre, reporting their emotional and affective responses. Whilst both groups of violent music fans reported mostly similar cognitive, emotional, and social functions of music to classical music fans, both violent fan groups reported significantly less positive and more negative emotional responses than classical music fans. Harmonious and obsessive passion significantly predicted some functional uses of music and some positive and negative emotional outcomes in all groups, although some findings were varied. Finally, psychopathology was significantly positively associated with negative emotional outcomes in all three groups. Specifically, depression was associated with negative outcomes for heavy/death metal fans, whereas anxiety was associated with negative outcomes for violent rap fans. These results show that violent music is used for a range of functions, and that those functions differ depending on fans' specific kind of passion and their current feelings of depression and anxiety. The cognitive, emotional, and social impact that violent music may have on society is discussed.

Statement of Candidate

I hereby confirm that all material contained in this project are my original authorship and ideas, except where the work of others has been acknowledged or referenced. I also confirm that the work has not been submitted for a higher degree to any other university or institution. The research project was approved by the Macquarie University Human Research Ethics Committee (Approval No. 5201600451).

Merrick Powell

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Investigating Cognitive, Emotional, and Social Functions of Violent Music for its Fans

Music is one of the most widely consumed and enjoyed forms of media throughout the world, both currently and historically (Schäfer, Tipandjan, & Sedlmeier, 2012; Upadhyay Shukla, Tripathi, & Agrawal, 2017). For example, recent research has shown that late teens in the USA actively listen to over three-and-a-half hours of music a day (Warburton, Roberts, & Christenson, 2014). Music has been shown to elicit a broad range of emotions and serves an incredibly diverse range of positive cognitive, emotional, and social functions for people of all ages (Boer & Fischer, 2011; Brattico et al., 2011; Schäfer et al., 2013; Saarikallio, 2006; 2012, Schäfer & Sedlmeier, 2009). Whilst the positive benefits of engagement with conventional music such as pop and classical music are well known, this is not the case for one specific controversial type of music: music with violent and antisocial themes, termed hereafter as ‘violent music’ (Anderson, Carnagey & Eubanks, 2003).

Violent music is predominantly associated with two genres: heavy/death metal and rap. Whilst not all heavy/death metal and rap music contain examples of violent themes, these genres have a high proportion of songs containing lyrics that depict, and often endorse, violent acts by one or more individuals against others, including rape, murder, and assault (Fried, 2003; Kubrin, 2005). Thus, the present study is primarily concerned with the violent examples of heavy/death metal and rap music. Many parental and Government groups have called for the censorship and banning of the sale of this music, paralleling previous ‘moral panics’ in response to violent movies and video games (Anderson et al., 2003; Chastagner, 1999; Christenson, Roberts, & Bjork, 2012; Wright, 2000). Scientific studies investigating violent music have tended to follow the trajectory of other violent media research, focusing on the capacity of these genres to elicit negative outcomes in listeners. In particular, research has shown that violent heavy/death metal and violent rap can lead to increases in aggressive cognitions, negative affect, mild aggressive behaviours, and misogynistic attitudes (Anderson

et al., 2003; Brummert Lennings & Warburton, 2011; Fischer & Greitemeyer, 2006; Mast & McAndrew, 2006). However, such past studies have often tested non-violent music fans rather than fans who engage with these genres on a regular basis, leaving the external validity of this research into question.

Nevertheless, a small body of research has examined the characteristics of fans of violent music. Some suggestions have been made that fans of violent music are more likely than non-fans to exhibit negative traits and antisocial behaviours, such as aggressiveness, drug abuse, and low self-esteem (Arnett, 1992; Baker & Bor, 2008). However, recent research on fans of violent music suggests that the relationship fans have with the music may not be as inherently detrimental as previously thought. For example, violent music may have the potential to serve positive cognitive, emotional, and social functions for its fans, to a similar extent than other more positively-valenced and conventional music (Saarikallio, 2006; Sharman & Dingle, 2015; Thompson, Geeves & Olsen, 2018). However, these positive outcomes have not been assessed in comparison to fans of other music genres. Does being a fan of any kind of music afford positive outcomes, or are particular outcomes genre specific? Furthermore, there has been little research investigating the factors that may mediate differences between positive and negative outcomes within groups of violent music fans. In other words, what are the candidate mechanisms that predict why some fans of violent music experience positive outcomes whereas other may not?

The present study begins to address these gaps in the violent media literature by investigating the cognitive, emotional and social functions that violent music can serve for its fans, and comparing those to fans of the non-violent classical music genre. Furthermore, differences and similarities in the emotional and affective responses to music will be compared between violent music fans of heavy/death metal, violent rap, and classical music fans after they listen to excerpts of their respective music genre during the study. Finally, two

candidate psychological mechanisms that may help predict individual differences between positive and negative outcomes within groups of heavy/death metal, rap, and classical fans will be investigated. These are (1) fans' passion for their preferred genre, and in particular, harmonious and obsessive passion as predictors of positive and negative outcomes, respectively (Vallerand et al., 2003); and (2) fans' psychopathology – depression, anxiety, and stress. Before these aspects of the study are discussed in more detail, past literature surrounding music's relationship with emotion and cognition will be reviewed, as will the existing research investigating the outcomes of engaging with violent music.

1.1 Emotional and Cognitive Engagement with Music

As music is one of the most consumed types of media in many population groups worldwide (Schäfer et al., 2012; Rideout, Feohr & Roberts, 2010; Upadhyay et al., 2017; Warburton et al., 2014), an understanding of the short- and long-term psychological effects of engagement with music is of fundamental importance. People are motivated to engage with music for a variety of different cognitive, emotional, and social reasons. In other words, music has a range of functions that fulfil listeners' needs, and this is true across many cultures (Upadhyay et al., 2017). For example, music is often used as a means of emotion regulation, such as facilitating positive emotions or alleviating negative emotions (Saarikallio & Erkkilä, 2007). Music is often used to express one's identity, to reinforce an affiliation to a certain group, as part of social events and rituals such as weddings, amongst many other perceived benefits (Boer & Fischer, 2011; Schäfer, Sedlmeier, Städtler, & Huron, 2013; Schäfer et al., 2012). The emotional outcomes that result from engaging with music can differ across music fans, depending on the styles of music they enjoy and the purpose the music serves for the listener (Saarikallio & Erkkilä, 2007; Schäfer & Sedlmeier, 2009). Indeed, specific genres of music can serve different functions for their listeners. For example, genres

like techno and pop music tend to predominantly serve entertainment purposes for their listeners, whilst genres like classical music tend to serve broader functions including strengthening intense emotional experiences and working through emotional hardships (Saarikallio, 2006).

The variety of functions that music provides listeners is well exemplified in music that deals with difficult emotions and subject matter, such as negatively valenced ‘sad’ music (Vuoskoski, Thompson, McIlwain & Eerola, 2012). Characterised by a narrow pitch range, slow tempo, use of the minor mode, dull timbres, and themes of grief and sorrow (Hunter, Schellenberg & Griffith, 2011; Juslin & Laukka, 2004), sad music can lead to positive emotional responses in listeners including wonder and peacefulness (Garrido, 2017; Sachs, Damasio & Habibi, 2015; Vuoskoski et al., 2012). However, whilst some sad music fans have reported positive outcomes, often from an empathic connection to the music or an appreciation of the aesthetic qualities of music, others experience greater negative affect and ruminative feelings after listening to sad music. Interestingly, this occurs even though listeners report that they purposely listen to the sad music for positive outcomes such as pleasure and happiness (Garrido & Schubert, 2011; McFerran & Saarikallio, 2014; Vuoskoski, et al., 2012). Violent music is another example of negatively valenced music that has the potential to elicit positive and negative outcomes similar to sad music (Thompson et al., 2018). Historically, however, research on violent music such as heavy metal, its sub genres (e.g., death metal), and violent rap music has tended to focus on purely negative outcomes.

1.2 Violent Music Research

1.2.1 Definition of violent heavy/death metal music. Violent heavy metal music in general, and death metal in particular, are characterised by distorted, dissonant guitar playing,

fast “blast beat” drumming and often growl-like, screaming vocalisations containing vivid depictions of violence (Mayer & Timberlake, 2014; Tsai et al., 2010). These genres were founded in shock value and tend to avoid conventional “verse-chorus” song structures and the clear tonal structures that are characteristic of most conventional Western popular music (Thompson et al., 2018).

1.2.2 Definition of violent rap music. Violent rap music is characterised by a recurrent drum beat with a strong emphasis on a spoken-style vocal delivery (Miranda & Claes, 2004; Travis, 2013). As a sub-genre of the broader genre of rap music, violent rap is characterised by explicitly violent themes and was largely popularised in the 90s ‘gangsta rap’ movement. This music, like violent heavy/death metal, often contains very coarse lyrical themes that glamorise violence, misogyny, assault and substance abuse (Fried, 2003).

1.2.3 History of violent music. Violent music such as heavy/death metal and violent rap has a controversial history that has generated large-scale public concern in the last few decades. Parental groups, community groups, and even Government bodies have all called for the banning and censorship of music recordings and live performances of controversial musicians of violent music (Ballard, Dodson, & Bazzini, 1999; Binder, 1993, Hansen, 1995). Heavy/death metal was the first to be seriously embroiled in these controversies, where heavy metal band, Judas Priest, were sued in a high-profile case where parents claimed the band’s songs drove their sons to commit suicide (Moore, 1996). Since then, popular death metal bands such as Cannibal Corpse have had their music banned for periods of time in Germany, Australia, and Russia (Michaels, 2018), due to their extreme lyrical content embedded within song titles such as ‘Relentless Beating’, ‘Necropedophile’, and ‘She Was Asking for It’ (Fried, 2003). Whilst receiving minimal mainstream airtime, violent heavy metal bands such as Pantera have still sold millions of albums worldwide and have had four albums certified platinum (Giron, Brown, & Gabriel, 2016).

Violent rap music, whilst having similar controversies, has seen a recent rise into the popular mainstream sphere of music. A content analysis published in Kubrin (2005) revealed the very high proportion of violent content in modern rap music, with 65% of the 403 songs analysed containing violent themes. In the last two decades, it has been frequently played on popular radio and music television programs, albeit in a heavily censored form (Travis, 2013; Warburton et al., 2014). However, this growing popularity may still result in greater exposure to the original messages of violence, misogyny, criminal activity, and drug use found within violent rap music. Indeed, there has also been a recent rise in popularity of violent rap artists into the mainstream, such as XXXTenacion who, prior to his recent passing, saw commercial success whilst on trial for domestic violence against his pregnant girlfriend (Jenkins, 2018). Such issues are examples of why continued research is vital to understand violent music and its outcomes both on its fans and society more generally.

Other forms of violent media such as television, film, and video games have shown consistent yet small to moderate effects of increasing aggressive thoughts and behaviours, desensitisation to violence and a range of other detrimental outcomes (Anderson et al., 2003, 2010; Bushman & Huesmann, 2006; Krahe et al., 2011). These studies have been predominantly conducted within the General Aggression Model (GAM) framework. The GAM proposes that particular interactions between personal factors (e.g. impulsivity) and situational variables (e.g. being belittled by friends soon after watching a violent film) can enhance an internal set of aggression-related thoughts that can increase the likelihood of aggressive behaviours (Anderson & Bushman, 2002). The model also predicts how repeated occurrences of these events help form cognitive scripts that facilitate the development of a more aggressive personality in the longer term (Anderson, Gentile & Buckley, 2007).

Violent music has also been largely examined within the GAM framework. As a result, the focus of violent music research has primarily been on negative cognitive and

behavioural outcomes (Anderson et al., 2003, 2010). Such observed negative outcomes include increases in the accessibility of aggressive cognitions, negative attitudes, negative affect, hostility, and arousal, in response to violent music (Anderson et al., 2003; Brummert Lennings & Warburton 2011). These studies were predominantly conducted by exposing participants to violent heavy metal and then having them complete self-report scales and/or ambiguous word associations or word completion tasks. As well as insufficient control conditions, these studies were conducted on populations that were not specifically fans of the genres of music in question; that is, participants who do not regularly consume the music outside of laboratory settings. This calls into question the ecological validity of such research. With heavy/death metal music infrequently entering the public sphere, results from non-fan populations are not reflective of those who engage with it in the ‘real-world’.

Violent rap music research has paralleled the reported negative outcomes from heavy/death metal music, with exposure to violent rap music being associated with a greater acceptance of violence and increased self-reported likelihood of engagement in violent acts (Johnson, Jackson, & Gatto; 1995). The Johnson et al. (1995) study, however, included rap videos, providing extra sensorial depictions of aggression and violence than music alone. Studies using music exclusively have revealed a correlation between misogynous thinking and violent rap consumption (Fischer & Greitemeyer, 2006; Cundiff, 2013). However, these studies were also conducted using non-fan populations. Research investigating the experiences of fan groups of these genres has rarely been conducted, especially in terms of investigating the potential for both positive and negative functions and experiences (Pyatak & Muccitelli, 2011). To address this gap, the present study recruited fans of violent rap and fans of heavy/death metal music – as well as fans of non-violent classical music as a control – to investigate how their preferred music functions to elicit positive and/or negative outcomes.

1.3 Functions of Violent Music

A relatively small amount of empirical evidence exists on the positive and/or negative consequences of long-term exposure to violent music (Brummert Lennings & Warburton, 2011, Sharman & Dingle, 2015). Nevertheless, qualitative and quantitative research with violent music fans suggests there may be cognitive, emotional, and social functions that violent music is capable of serving for its fans (Guibert & Guibert, 2016; Schäfer & Sedlmeier, 2009; Thompson et al., 2018). These functions, branded the ‘Big Three’ functions of music by Schäfer et al. (2013), are now discussed.

1.3.1 Cognitive functions of violent music. Music has been shown to have profound cognitive impacts on its listeners across the lifespan (Schellenburg, Nakata, Hunter, & Tamoto, 2007). For example, music preferences have been shown to often reflect both one’s sense of identity, perception of self and their ideal self-image, acting as a ‘badge’ that represents their values (Hargreaves & North, 1999; Rentfrow & Gosling, 2003). Whilst this notion has been explored within relatively conventional music genres, it can be applied to violent music in a few different ways. Rentfrow & Gosling (2003) found that people with a non-conservative perception of self were more likely to enjoy intense and rebellious music (encompassing rock and heavy metal) than those with a conservative self-perception, who tended to enjoy upbeat and conventional music like pop and country. Furthermore, rap music fans have reported increases in self-concept, self-awareness, and self-esteem following rap music exposure (Uhlig, Dimitriadis, Hakvoort, & Scherder, 2017; Tyson & Porcher, 2012). Another study revealed that the majority of participants agreed that rap music helped them think critically about their world and aided an increased sense of resilience and self-expression (Travis, 2013). This starkly contrasts past research on the cognitive functions of violent music conducted within the GAM, where violent music has only ever been associated

with negative cognitive processes such as increases in the accessibility of aggressive and misogynistic cognitions (Anderson et al., 2003; Fischer & Greitemeyer, 2006).

In the context of the present study, the cognitive functions of music refer to processes that involve using music to help establish or explore one's identity and challenge their thoughts and beliefs about the world. In order to investigate the cognitive functions that music can serve its fans, Schäfer and Sedlmeier (2009) have developed a scale based on seven main functions of music identified from the literature, The Functions of Music Questionnaire (FMQ; Schäfer & Sedlmeier, 2009). From its seven subscales, the two subscales of *self-reflection* and *self-regulation* are the most relevant here. These two subscales encapsulate how music may function to challenge one's existing thoughts and express one's own values and identity. This scale, whilst previously used on a range of other music genre fans, has yet to be utilised for fans of violent music.

There are two competing predictions that pertain to the cognitive functions of violent music. If violent music does not afford the self-reflective and self-regulatory functions that other forms of non-violent music offer, then we predict significantly lower ratings on the *self-reflection* and *self-regulation* subscales of the FMQ for heavy/death metal fans and violent rap fans, relative to non-violent classical music fans (H₁). However, if violent music serves self-reflective and self-regulatory functions for its fans, similar to that of non-violent music fans, then we should observe similar ratings on the *self-reflection* and *self-regulation* subscales between heavy/death metal fans, violent rap fans, and non-violent classical music fans.

1.3.2 Emotional functions of violent music. As music is such a powerful expresser and inducer of mood, the use of music for mood and emotion regulation purposes is frequently cited as one of the primary motivations for engaging with music (Carlson et al., 2015; Saarikallio, 2008; Taruffi & Koelsch, 2014). As such, the emotional functions of music

herein refer to the strategies employed by fans to use music for mood and emotion regulation. The regulation of mood and emotions through music largely involves the effective management of different physiological and emotional states (Schäfer et al., 2013). One common way of assessing the regulatory use of music is the Brief Music in Mood Regulation Scale (B-MMR; Saarikallio, 2012). The B-MMR scale assesses the use of seven mood regulation strategies, identified by Saarikallio and Erkkila (2007) through large-scale confirmatory factor analysis. The seven strategies are as follows: 1) Entertainment, where music creates the environment for the maintenance or improvement of positive moods; 2) Revival, where music provides energy when a person is deflated or tired; 3) Strong Sensation, where music strengthens intense emotional experiences; 4) Diversion, where music helps forget unwanted thoughts and feelings; 5) Discharge, where music releases negative emotions by helping a person express them; 6) Mental Work, where music helps mentally contemplate and navigate emotional difficulties; and 7) Solace, where music helps comfort when feeling down (Saarikallio, 2008).

A small number of studies have investigated the mood regulation strategies associated with listening to rock and heavy metal music. Saarikallio (2006) found that these genres, along with classical music, were more strongly associated with a greater range of mood regulation strategies than all other genres involved in the study. For example, rock and heavy metal fans used music more for revival than folk, gospel, and pop. Whilst heavy metal was associated with all mood regulation strategies in the study, rap music was only associated with entertainment. Another study investigating rap music found it to be associated with positive mood management (Cook, Ashlin, & Welker, 2017). However, in Cook et al. (2017), heavy metal music was not associated with any mood management strategies. In another investigation of mood-regulation strategies, Bodner and Bensimon (2014) divided participants into two groups: listeners of problem music that included fans of heavy metal

and rap, and listeners of non-problem music such as pop music. They found that the problem music group used mood regulation strategies to a greater extent than the non-problem group. It is clear from this brief review that findings are mixed as to what extent fans of violent music utilise music as a tool for emotion and mood regulation

Although Schäfer and Sedlmeier (2009) included an emotional regulation subscale in their FMQ, the B-MMR will be used in the present study as it has a far greater prevalence in past literature and affords a more holistic approach to an investigation of emotion and mood regulation. As with the cognitive functions of music, there are two competing predictions that are associated with the emotional functions of violent music for its fans. If violent music does not afford the mood and emotional regulation functions that other forms of non-violent music offer, then we predict significantly lower ratings on the B-MMR emotional function subscales for heavy/death metal fans and violent rap fans, relative to non-violent classical music fans (H_2). However, if violent music serves mood and emotional regulation functions for its fans, similar to that of non-violent music fans, then we should observe similar ratings on these emotional function subscales between heavy/death metal fans, violent rap fans and non-violent classical music fans.

One mood regulation strategy measured by the B-MMR, *discharge*, may function differently for violent music fans than the other six mood regulation strategies in the B-MMR. Previously, heavy metal music was found to be much more strongly associated with discharge than any other genre in the study (Saarikallio, 2006). As the strategy is based around using music to express and release negative emotions (Saarikallio & Erkkilä, 2007) and violent music is associated with the management of anger and aggression (Sharman & Dingle, 2015), it may be the case that discharge will be utilised more by violent music fans than by fans of non-violent music genres. The potential for discharge to function differently

to other measures in the B-MMR will be investigated in the analysis of the emotional functions of music.

1.3.3 Social functions of violent music. The social benefits of engaging with music have been widely studied and recognised (Hallam, 2010; Upadhyay et al., 2017). Termed *social relatedness* by Schäfer et al., (2013) in the ‘Big Three’ music functions, this pertains to any use of music to facilitate social bonding or affiliation with other fans or in-group members. Music can be a crucial means of identifying common interests, having the ability to lower inhibitions and increase feelings of connectedness between people listening to or performing music together (Roberts, Christenson, & Gentile, 2003; Thompson & Quinto, 2011). Furthermore, music can serve a social purpose even whilst listening alone, allowing the individual to alleviate loneliness through connecting to the feelings or characters that a song portrays (Gantz, Gartenberg, Pearson, & Schiller, 1978). Indeed, music can function as a ‘social surrogate’; where by reminding individuals of meaningful events and significant others, music acts as a substitute for social interaction (Schäfer & Eerola, 2017).

In qualitative research conducted on fans of heavy metal, the social aspect of metal fandom appears to be of key importance (Arnett, 1991). Arnett (1991) found that of those interviewed, over half reported that most of their friends liked heavy metal music and that it was an integral part of their friendship. Another survey conducted on 8,700 heavy metal festival attendees asked what attracted them to the festival. 60% of fans reported that “mixing with other fans” was the main attraction, whilst only 1% of attendees stated that their attraction was based on “celebrating values such as Satanism and death” (Guibert & Guibert, 2016). Whilst illuminating the social importance of violent music, these findings also help dispel common misconceptions about violent music as inherently violent and antisocial. On the contrary, heavy metal fans (or ‘Metalheads’) have a strong sense of community through

their particular dress code, often involving long hair, black metal band t-shirts, and other stylistic additions like studded belts and tattoos (Snell & Hodgetts, 2007).

The rap music sub-culture has similar in-group characteristics, with a particular dress code and dialect that separates it from all other music genres. For example, rap musicians are often involved in large groups called ‘crews’ (Kubrin, 2005). Most of the observed social benefits in the rap literature however appear to be in a more therapy-based context, where rap music has been utilised to help express emotions and discuss difficult issues (Evans, 2010; McFerran, 2012). This is commonly achieved by having the client reveal self-composed rap lyrics that contain uncomfortable topics they otherwise would not be able to address (Steele, 2012). It should be noted, however, that whilst Schäfer et al (2013) observed that the social functions of music were generally of less significance than the cognitive and emotional elements, a strong sense of social connection appears to be of key importance in violent music fans. The social function of relatedness will be investigated through the ‘social bonding’ subscale of the FMQ, whereby we predict that heavy/death metal fans and violent rap fans will report greater levels of social bonding than fans of non-violent music (H₃).

1.4 Emotional and Affective Responses to Violent Music

Whilst violent music may be capable of serving similar functions for its fans as some non-violent music – and perhaps even greater social bonding outcomes – there is still much debate as to whether the act of listening to violent music can elicit short-term positive emotional and affective responses, rather than the stereotypical negative responses that various lobby groups and Government bodies are often concerned about. The majority of violent music research has predominantly investigated links between exposure to the violent content and increases in anger, sadness and a range of other inherently negative emotional experiences (Anderson et al., 2003). However, a small body of research investigating fans of

death metal has reported the potential for positive emotional outcomes that are in direct contrast to the emotional content conveyed from the music. When compared to a group of non-death metal fans, death metal fans reported significantly greater positive emotions such as power, joy, peace, and wonder after listening to four randomly selected death metal excerpts (Thompson et al., 2018). This supports the proposition made by Sharman and Dingle (2015) that ‘extreme’ music, including genres like heavy metal, can function in a positive manner and elicit positive emotional outcomes for its fans.

However, there were problematic shortcomings in both these studies. First, Sharman and Dingle (2015) allowed participants to self-select their own music as experimental stimuli, meaning participants likely had pre-existing emotional connections to the music that impacted the listening experience and generalisability of results (Västfjäll, 2001). Second, Thompson et al. (2018) used a control group of participants who simply identified as non-fans of death metal music. This group may have included individuals who were not fans of *any* genre of music. The present study will address both of the shortcomings: all experimental groups are self-identified fans of a specific genre of music (heavy/death metal, violent rap, and classical) and will be presented with a randomly selected subset of music excerpts predetermined by the experimenter that corresponds to their preferred genre.

Despite the aforementioned shortcomings, these studies nevertheless reveal the potential for heavy/death metal fans to feel more positive after engaging with negatively valenced music. Whilst research investigating the emotional responses of violent rap fans is limited, there is some suggestion of a similar proclivity to heavy/death metal in its capacity to elicit positive outcomes in fans. Studies have revealed that fans of violent rap music feel an increased sense of pride, power, and emotional resilience after listening to violent rap music (Travis, 2013). However, the focus of violent rap music research tends to on behavioural outcomes such as aggression, rather than emotional responses.

Whilst emotions are defined as responses to or appraisals of certain situations, affect refers to a more all-encompassing process that includes an individual's attitudes and moods (Gross, 2010). One of the most frequently cited and investigated negative outcomes from engagement with violent music is a change in affect, where a decrease in positive affect and/or increase in negative affect are reported, often in unison (Brummert Lennings & Warburton, 2011). However, there is now some evidence to show that when violent music is engaged with by its fans, positive influences on affective responses emerge. Thompson et al. (2018) observed both a significant increase in positive affect and a significant decrease in negative affect in death metal fans. They did so by administering the Positive and Negative Affect Scale (PANAS; Watson, Clark & Tellegen, 1988) before and after exposure to four one-minute excerpts of death metal. This finding is consistent with other research investigating fans of non-violent music, where music has been shown to induce positive affective responses (Västfjäll, 2001). Non-death metal fans experienced the opposite outcomes when presented with death metal excerpts, consistent with the aforementioned experiences of non-fan engagement with violent music (Thompson et al., 2018). However, in their investigation of extreme music fans that included heavy/death metal music, Sharman and Dingle (2015) only observed significant increases in the 'active' and 'inspired' subscales of the PANAS, but not the positive affect scale as a whole. As such, if personally selected violent music only improved a relatively small subset of positive affect scales, perhaps violent music may be less capable than more positively-valenced music genres in eliciting positive affective responses?

In order to investigate the direct influence of violent music on emotional and affective outcomes, the present study will draw from the method reported in Thompson, et al. (2018) whereby a series of categorical emotional scales, the PANAS, and the 3-D Model of Affect, that includes subscales of valence, energy, and tension were administered to participants from

each fan group after listening to excerpts of music from their preferred genre. There are two competing predictions that pertain to the emotional and affective responses to violent music. If violent music is not as capable of eliciting positive emotional responses than other forms of non-violent music, we predict that heavy/death metal fans and violent rap fans will report significantly lower ratings on positive emotional and affective scales and higher ratings on negative emotional and affective scales, relative to non-violent classical music fans (H_4). However, if violent music is capable of eliciting positive emotional responses in its fans, similar to that of non-violent music fans, then we should observe similar ratings on these emotional and affective scales between heavy/death metal fans, violent rap fans, and non-violent classical music fans.

1.5 Individual Differences Within Fan Groups

Until this point, the focus has been on between-group similarities and differences comparing music fans. In this section, the focus narrows to within-group differences, and in particular, investigates individual differences within fan groups and the candidate mechanisms that predict why some fans may extract positive outcomes from violent music, whereas others may not. As previously mentioned, the way an individual engages with music will strongly influence the resultant emotional outcomes. Therefore, there are likely to be differences in the ways that fans of the same genre utilise and respond to music. This has been observed in sad music fans, where some sad music fans reported improved moods and others reported increased depressive moods (Garrido, 2017; Garrido & Schubert, 2015; Sachs et al., 2015). Thompson, et al. (2018) observed similarly divergent results in death metal fans. Whilst the majority of death metal fans reported experiencing positive outcomes, 10% of respondents reported a desire to engage in anti-social behaviours after listening to death metal music.

Currently, there is little research investigating how and why individuals engage with music differently within the same fan group, and what underlying differences or mechanisms can explain such phenomena. The present study addresses this gap in the literature by investigating two mechanisms that may explain some individual differences in positive and negative outcomes within groups of violent and non-violent music fans. These are: (1) whether fans exhibit either harmonious and obsessive passion for their preferred genre; and (2) fans' current level of psychopathology, specifically depression, anxiety, and stress.

1.5.1 Passionate engagement with music. One potentially influential factor in understanding individual differences in positive and negative outcomes within fan groups is the type of passionate engagement each fan has with their preferred genre of music. This can be addressed using the Dualistic Model of Passion (Vallerand et al., 2003). Developed in line with Self-Determination Theory (SDT; Deci & Ryan, 2000), the model proposes that people engage with activities in order to satisfy basic psychological needs such as autonomy and relatedness to others. In satisfying these needs, the specific activity will become self-defining and become integrated into the individual's personality and identity (Vallerand et al., 2003). The Dualistic Model of Passion details two ways in which individuals engage with activities they are passionate about, based on two different ways that the activities are internalised into their personality and identity (Vallerand et al., 2003; 2008).

The first is harmonious passion, where an activity is reflective of, and congruent with, a person's internal aims and goals (Schellenberg et al., 2018). This leads to the activity being *autonomously internalised* into their personality and identity. As a result, the individual feels congruent with the activity and can control engagement with it, allowing them to engage in the activity only when positive returns are expected (e.g. fun, positive affect). The activity can then be enjoyed without negatively influencing other elements of the individual's life. As a result, harmonious passion has been associated with a broad range of adaptive outcomes

such as life satisfaction, post-activity satisfaction, autonomy, and a stronger sense of self (Curran, Hill, Appleton, Vallerand, & Standage, 2015; Fuster, Chamarro, Carbonell, & Vallerand, 2014; Vallerand et al., 2008).

Obsessive passion, by contrast, is when an activity is not entirely congruent with a person's intrinsic desires, and other factors, such as a need for social acceptance or increased self-esteem, drive one's association with the activity (Vallerand et al., 2003). This often leads to an uncontrollable engagement with it. The activity then occupies excessive space in a person's identity and negatively impacts their schedule and relationships (Schellenberg et al., 2018; Vallerand et al., 2008). Obsessive passion is frequently associated with negative outcomes such as negative emotions, rumination, aggression, relationship issues, and workaholism (Curran et al., 2015; Lajom, Amarnani, Restubog, Bordia, & Tang., 2017; Mageau et al., 2009; Vallerand et al., 2008).

Therefore, whilst harmonious and obsessive passion have common characteristics such as finding importance in activity engagement, differences lie in the motivations for engaging in an activity and the potential for positive or negative outcomes (Schellenberg et al., 2018). Whilst never used to investigate music fans, this model has been used successfully to predict the aforementioned positive and negative outcomes in a range of other hobbies with potentially maladaptive outcomes, such as football fans (Vallerand et al., 2008), gamblers (Mageau, Vallerand, Rousseau, Ratelle, & Provencher, 2005), and computer gamers (Fuster et al., 2014). A recent meta-analysis of 94 studies has further revealed the strength of these associations, as well as showing their stability across a range of ages and genders (Curran et al., 2015).

The present study hypothesises that harmonious passion is a significant predictor of cognitive and emotional functions from violent music, as well as positive changes to emotional and affective responses after listening to violent music. Obsessive passion, on the

other hand, is not expected to be a significant predictor of cognitive and emotional functions of violent music. Rather, it is hypothesised that obsessive passion is a significant predictor of negative emotional and affective outcomes after listening to violent music. Both harmonious and obsessive passion have been reported to be reliable predictors of positive social benefits in non-music domains (Vallerand, 2008). Therefore, it is hypothesised that both harmonious and obsessive passion are both significant predictors of fans' propensity to use violent music for social bonding. These predictions form Hypothesis 5 (H₅) in the present study.

1.5.2 Psychopathology. Another factor potentially associated with differences in the functions of, and responses to, violent music is a listener's level of psychopathology; specifically, depression, anxiety and stress. Addressed predominantly in the context of sad music, strong negative outcomes after music listening have been observed in populations who reported an increased prevalence of depressive symptoms and stress levels (Garrido & Schubert, 2011; McFerran & Saarikallio, 2014). In the context of violent music, depression has been shown to correlate with heavy metal preference in multiple studies (Lester & Whipple, 1996; Martin, Clarke & Pearce, 1993; Shafron & Karno, 2013). This has often been assessed using self-report scales such as the Depression Anxiety Stress Scale (DASS-21; Lovibond & Lovibond, 1995). However, it is important to note that the directionality in such relationships between psychopathology and an external input such as music is frequently debated and difficult to ascertain; for example, whether violent music *leads to* depression or whether pre-existing emotional issues draw people towards extreme genres such as these.

Regardless of the directionality of this relationship, populations who experience greater psychopathology such as depression, anxiety, and stress often have difficulty regulating their moods using music. McFerran and Saarikallio (2014) found that adolescents with depression were more incapable of improving their mood after playing self-selected music, which included some sad and aggressive music. Furthermore, similar clinical

populations have struggled to break cycles of negative music engagement and perpetuated negative emotional outcomes (Dillman Carpentier et al., 2008). One study reported that negative outcomes from listening to rap music were only observed when fans of violent rap music were in a negative mood (Gardstrom, 1999). Therefore, whilst difficult to ascertain a direct causal link between violent music and increases in psychopathology such as depression, there is still great cause for concern regarding the way that emotionally vulnerable populations engage with violent music and how such engagement affects their emotional outcomes.

Although it is beyond the scope of the present study to investigate clinical populations, the DASS-21 was employed to assess the key psychopathological factors of depression, anxiety, and stress within fans of violent music and fans of non-violent music. It is predicted that higher presence of psychopathology will be positively associated with negative emotional and affective responses to music and negatively associated with positive emotional and affective responses to music in all three fan groups. This prediction forms Hypothesis 6 (H₆) in the present study.

1.6 The Present Study

It may be the case that violent music is utilised for cognitive, emotional, and social functions for its fans. The present study is designed to address this issue by investigating the similarities and differences in the functional use of music between three different music fan groups. These groups consist of two different violent music fan groups: fans of heavy/death metal and fans of violent rap music, as well as one non-violent comparison group, classical music fans. Furthermore, the study will investigate fans' short-term emotional and affective responses after listening to their preferred genre of music. This is designed to determine whether positive non-violent functional uses of music translate into positive emotional

outcomes for listeners. Finally, as not all members within a fan group will be expected to respond in the same way, within-group individual differences will be explored by investigating two candidate mechanisms that can explain why some fans may extract positive outcomes from violent music, whereas others may not. The two mechanisms are the type of passionate engagement fans utilise with their preferred genre of music, and the presence of psychopathology, including depression, anxiety, and stress.

2. Method

2.1 Participants

172 participants were recruited for the study. 27 were excluded as they either failed to complete the survey, did not meet the criteria for the fan group they signed up for, or failed catch trials designed to check whether they were adequately attending to the task. The final sample consisted of 145 Australian participants across the three fan groups: 46 fans of heavy/death metal (59% female, 39% male, 2% other), 49 fans of violent rap (80% female, 20% male), and 50 fans of classical music (76% female, 22% male, 2% other), ranging from 18 to 55 years of age. All participants were Macquarie University first-year psychology students. Specific demographic information for each experimental group in the study is presented in Table 1.

Table 1

Demographic Information

Fan Group	<i>n</i>	Male	Female	Other	Group Means (<i>SD</i>)	
					Age	Years of Training
Heavy/Death Metal	46	18	27	1	19.90 (2.25)	3.02 (4.70)
Rap	49	10	39	0	20.31 (3.13)	2.29 (3.97)
Classical	50	11	38	1	22.28 (7.50)	4.17 (4.75)

Note. ‘Years of Training’ refers to years of musical instrument training.

2.2 Materials

2.2.1 Stimuli. The music stimuli in the three different surveys administered to the three different fan groups consisted of eight 60-second audio samples taken from popular, pre-released songs in each genre. Death metal excerpts for the heavy/death metal fan group were identical to those used in Thompson et al. (2018) and were selected by searching death metal blogs and music websites. The search terms included ‘best’, ‘top’, and ‘most popular’ death metal songs. The selected songs were from the last 20 years and appeared across a range of websites, deeming them adequately reflective of the genre. Violent rap music excerpts were selected in a manner as similar as possible to the death metal excerpts, using songs that were on multiple lists across a range of different rap music websites. The search terms were the same, however the term ‘violent’ was included in each term. This is because violent rap music is one of a range of subgenres of rap, whereas the majority of death metal music is inherently violent (Fried, 2003; Miranda & Claes, 2004).

The classical music excerpts were also selected using a similar procedure, whereby classical music forums and other websites were used to find songs most commonly regarded as the ‘best’ or ‘most popular’. The music was all selected from the common-practice period including the Baroque, Classical and Romantic eras spanning from 1600-1820. Of the eight

excerpts within each genre, participants in each respective group were randomly assigned to hear four of the eight, with all eight excerpts programmed to be equally distributed across the full sample of participants. All song names, artist names, and lyrics are included in Appendix A. None of the classical music excerpts contained lyrics.

2.3 Measures

2.3.1 Functions of Music Questionnaire. The Functions of Music Questionnaire (FMQ; Schäfer & Sedlmeier, 2009; Schäfer et al., 2012) consists of seven subscales that each reflect a function that music may serve for its fans – including using music as a memory prompt, diversion, emotion regulation, self-regulation, self-reflection, background music and social bonding (See Appendix B). These functions were identified by Boer & Fischer (2012) as the seven main functions of music based on a broad sample of participant data. The three subscales of particular interest in the present study were those that reflected the cognitive and social functions of music identified by Schäfer et al. (2013): self-regulation, a subscale pertaining to the use of music to help an individual think differently or in a new way; self-reflection, which pertains to helping explore and express one's identity; and social bonding, which involves facilitating social connections.

The FMQ consists of 16 items that measure the seven factors above. Participants were instructed to rate their agreement with the 16 statements on a 10-point rating scale, from 1 = "I do not agree at all" to 10 = "I totally agree". One example statement, pertaining to the self-reflection factor, is "This music helps me express my identity". The FMQ is one of the only music questionnaires that addresses the social functions of music, which is an important aspect of fans' engagement with violent music (Guibert & Guibert, 2016). Of the 16 items in the FMQ, three were specific to self-regulation; four were specific to self-reflection; and

three were specific to social bonding. For each of these subscales, the scores were summed and averaged for each participant, with the mean scores used in the analyses. The internal consistency scores for all subscales of the FMQ are presented in Table 2.

Table 2

Internal Consistency Coefficients for Each Measure

Scale Set	Scale Item	Internal Consistency (α)		
		Heavy/Death Metal	Violent Rap	Classical
Functions of Music Questionnaire	FMQ - Self-Reflection	.78	.83	.88
	FMQ - Self-Regulation	.70	.74	.65
	FMQ – Social Bonding	.77	.85	.74
Brief Music in Mood Regulation Scale	B-MMR – Entertainment	.85	.61	.81
	B-MMR – Revival	.76	.75	.79
	B-MMR – Strong Sensation	.84	.84	.78
	B-MMR – Diversion	.86	.86	.88
	B-MMR – Discharge	.85	.85	.78
	B-MMR – Mental Work	.90	.90	.84
	B-MMR – Solace	.90	.90	.84
Dualistic Model of Passion	Harmonious Passion	.86	.83	.84
	Obsessive Passion	.88	.90	.91
Depression Anxiety Stress Scale	Depression	.94	.91	.93
	Anxiety	.87	.86	.83
	Stress	.86	.89	.87
Positive and Negative Affect Scale – Time 1	Positive Affect	.93	.90	.88
	Negative Affect	.93	.86	.85
Positive and Negative Affect Scale – Time 2	Positive Affect	.91	.88	.93
	Negative Affect	.89	.86	.87

2.2.2 The Brief Music in Mood Regulation Scale. The Brief Music in Mood

Regulation Scale (B-MMR; Saarikallio, 2012) is a concise refinement of the original Music in Mood Regulation Scale (Saarikallio, 2008) that assesses participants' use of a range of different mood regulation strategies through music. These include: entertainment, revival,

strong sensation, diversion, discharge, mental work, and solace (See Appendix C). The brief version of the scale consists of 21 items as opposed to the original 40 items, and each item consists of a statement where participants use a 5-point Likert-scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree) to make their response. For example, one statement for the revival mood regulation strategy is, “When I’m exhausted, I listen to music to perk up”. The 21-item B-MMR has similarly good internal consistency to the original sub-scales in the longer 40-item version ($\alpha = .73$ to $.88$) and a similar total scale co-efficient ($\alpha = .93$, compared to $.96$ for the 40-item original version) (Saarikallio, 2012). The B-MMR has been used successfully in recent related studies with good internal consistency scores (Chin & Rickard, 2012; Thompson, Geeves & Olsen, 2018). The internal consistency scores for all subscales of the B-MMR are presented in Table 2.

2.2.3 Emotional and affective responses to music. These items were taken from Thompson et al., (2018), which included a combination of three different scales that measured a range of emotional and affective responses to each of the musical excerpts (See Appendix D). Firstly, there were ten ‘emotional response’ items. These included eight items from the Geneva Emotional Music Scale (GEMS-9; Zentner, Grandjean, & Scherer, 2008) including wonder, transcendence, power, nostalgia, peacefulness, joyful activation, tension, and sadness. There were two additional negative emotion items added: anger and fear. Secondly, there were five ‘affective response’ items, from the three-dimensional model of affect (Schimmack & Grob, 2000). These included positive and negative valence, high and low energy, and low tension. The two poles within each valence (positive and negative) and energy (high and low) factor were separated into separate questions and were scored independently from each other to allow for mixed emotions (e.g., ratings of both positive and negative valence). Only the low pole of tension was included here as there was already a ‘tension’ item for high tension included in the GEMS-9. Finally, there were three ‘emotional

reaction' items that measured the participants' engagement and enjoyment with each excerpt, as well as the magnitude of emotion evoked. Participants were asked to report how much each statement described their emotional response to the music on 7-point Likert scales, from 1 (not at all) to 7 (extremely). There was also one item that asked if the participants had heard each musical excerpt previously to this survey, scored as a yes/no item.

2.3.4 The Positive and Negative Affect Scale. The Positive and Negative Affect Scale (PANAS; Watson et al., 1988) is a 20-item self-report questionnaire consisting of a 10-item positive affect subscale and a 10-item negative affect subscale (See Appendix E). The positive subscale includes items such as excited, strong, and enthusiastic and the negative subscale includes items such as irritable, ashamed, and distressed. Participants were asked to indicate to what extent they felt these different states at the present moment, on a 5-point Likert scale between 1 (very slightly/not at all) and 5 (extremely). Each subscale is scored separately by summing the scores from each item in each subscale. The PANAS is a widely used and validated scale in non-clinical samples, with a construct validity review revealing the independence of NA and PA and great reliability – $\alpha = .89$ for the PA scale, and $.85$ for the NA scale (Crawford & Henry, 2004). The internal consistency scores for each subscale, both pre- and post-exposure, in the present study are presented in Table 2.

2.3.5 Passion Scale. The Passion Scale is divided into two subscales of seven items to reflect the two different types of passion within the Dualistic Model of Passion (Vallerand et al., 2003): The harmonious passion subscale and the obsessive passion subscale (See Appendix F). The original phrasing of the items in the passion scale was adapted to reflect the particular genre of music for each group (e.g., “I cannot live without it” was rephrased to “I cannot live without classical music”). All items were scored on a 7-point Likert scale ranging from 1 (do not agree at all) to 7 (completely agree). An example of a harmonious passion item was “My heavy/death metal music listening is in harmony with other activities

in my life” and one example of an obsessive passion item was “I have difficulties controlling my urges to listen to heavy/death metal music”. Although this is the first time the items have been adjusted for a music context, previously published studies have adjusted the scale for a range of other activities such as gambling, football fanaticism and video gaming. These studies have consistently delineated the high construct validity of the scale through exploratory and confirmatory factor analysis, as well as very good internal consistency (α between = 0.81 and 0.92) (Vallerand 2003, 2008). The internal consistency scores for both subscales used in the present study are presented in Table 2.

2.3.6 The Depression Anxiety Stress Scale. The shortened version of the Depression Anxiety Stress Scale (DASS-21; Lovibond & Lovibond, 1995) includes three subscales of seven items each to measure depression, anxiety, and stress (See Appendix G). Participants were asked how many times they felt a certain way over the past week, with responses being on a 4-point Likert scale ranging from 0 = “Did not apply to me at all” and 3 = “applied to me very much, or most of the time”. An example item for depression was “I felt that I had nothing to look forward to”. An example item for anxiety was “I felt I was close to panic” and an example item for stress was “I found it difficult to relax”. The DASS-21 was chosen for the current study as it has been employed on large non-clinical populations with meta-analyses revealing good internal consistency and construct validity across cultures (Norton, 2007). Whilst once criticised for not having great discriminant validity between the three different constructs, the aforementioned widespread use and validation of the scale deemed this the most appropriate scale for the purpose of this study (Antony, Bieling, Cox, Enns & Swinson, 1998). The internal consistency scores for each subscale in the present study are presented in Table 2.

2.4 Procedure

After the study gained approval from the Macquarie University Human Research Ethics Committee (reference no. 5201600451), participants were able to sign up to one of three surveys representing each of the different genre fan groups via Macquarie University's online SONA participant recruitment website. Each survey was presented using the Qualtrics web platform. The necessity of being a fan to participate was highlighted in each survey title, whilst a categorical yes or no question regarding fan status was also placed at the beginning of each survey. Furthermore, participants who were unfamiliar with the four excerpts and disliked the four excerpts that were presented to them in the music listening phase of the study were removed from the sample, as it was determined that they did not adequately meet the criteria of a fan of the respective genre they signed up for. Participants were also not allowed to complete more than one survey to ensure independence of observations. Participants completed the surveys for course credit, with no participants receiving any financial reimbursement.

After giving informed consent, participants answered demographic questions about age, sex, and musical training (See Appendix H). Participants who stated they did play an instrument were asked what instrument and how many years they received training for. Participants then completed the pre-test subscales: The PANAS, Passion Scale, B-MMR, FMQ, and DASS-21. Participants were then informed that the music listening component was to begin and were instructed to ensure their device volume was at a suitable level. Participants then listened to the four prescribed musical excerpts and were instructed to concentrate on the music and pay attention to the emotions they experienced in response to each excerpt. Participants were not able to skip through an excerpt and were only able to progress by listening to each complete excerpt. After listening to each excerpt of music, participants answered the questions regarding emotional and affective responses to music

previously described in Section 2.2.3 above. Once all four excerpts and emotional/affective responses were completed, participants completed the PANAS for a second time so a change in positive and negative affect after listening to the music could be measured by calculating the difference between PANAS Time 1 scores (pre-listening) and Time 2 scores (post-listening). Finally, participants were debriefed, reminded of the psychological resources available if distress was experienced, and thanked for their participation.

2.5 Statistical Approach

Participant responses to the survey questions were directly downloaded from the Qualtrics survey website, where they were organised using Microsoft Excel 2017 and analysed using SPSS (Version 25). The sample size was chosen based on the size of fan group selected in the Thompson et al., (2018) study, where 145 fans were recruited. This choice was then confirmed by a group size calculation using G*Power (version 3.2), where the recruited number was deemed sufficient from estimating the required number of participants for a medium-to-large effect size. No participants from the final pool of 145 were excluded from the analysis, all independent variables were reported, and all dependent variables were analysed. All questions in the survey required a response, meaning there was no incomplete or missing data.

The Analysis of Variance (ANOVA) approach used to test H_1 - H_4 was first conducted with a series of 3 x 2 (fan group x gender) factorial ANOVAs on all dependent measures. However, there was no significant influence of gender across all three groups in all analyses. Therefore, the analyses in the Results section below reported data collapsed across gender. Analyses of boxplots and standardised z-scores revealed seven participants who had scores exceeding ± 3.29 standard deviations from the mean. These outliers were corrected by

assigning them new values that were either one unit larger or smaller than the next most extreme score in the data set. This is a validated and often used strategy when dealing with univariate outliers (Tabachnick & Fidell, 2001).

2.5.1 Assumptions for H₁ to H₄. The analysis method employed to investigate H₁-H₄ was a series of one-way between-subjects analysis of variance (ANOVA), with the dependent variables being the subscales of the B-MMR, the self-reflection, self-regulation, and social bonding subscales of the FMQ, and the 20 different emotional and affective responses to music. The assumption of independence was met from the design of the experiment because participants were only able to sign up to one survey, ensuring there was no chance of the same participant appearing in more than one condition.

Whilst ANOVA tests are quite robust when group sizes are equal or very close, as they are in the current study, the assumption of homogeneity of variance with the groups was nevertheless checked using Levene's test. This revealed that the assumption of homogeneity of variance was met for all subscale aside from the entertainment subscale of the B-MMR and the emotional response scales of sadness, tension, anger, and fear. The assumption of normality was investigated from analysing both histograms and Q-Q plots, as well as using the Shapiro-Wilk test for deviations from normality. There were a series of violations to the assumption of normality, however ANOVA tests are also considered robust to slight violations of normality (Field, 2013). Therefore, no data were transformed.

2.5.2 Assumptions for H₅. The analysis method employed to investigate H₅ was a series of multiple regressions, with the two types of passion (harmonious and obsessive passion) as predictors and dependent variables being the subscales of the B-MMR, the self-reflection, self-regulation, and social bonding subscales of the FMQ, and the 20 different emotional responses to music. The assumption of linearity was satisfied as scatterplots

revealed linear relationships between the IVs and DVs were observed in all groups. The assumption of independence of error terms was satisfied as Durbin-Watson test were between 1.28 and 2.55. The assumption of homoscedasticity was satisfied as scatterplots of the residuals versus predicted values revealed no particular patterns or trends.

Normal distributions of the residuals were tested using histograms and Q-Q plots of the residuals, as well as conducting Shapiro-Wilk tests on the residuals. Most of the distributions appeared to follow a normal distribution, however there were a few residuals that revealed significant Shapiro-Wilk statistics, meaning they did not satisfy the assumption. In the violent rap fan group, the subscales of entertainment, revival, and self-reflection were not normally distributed, as well as emotional response subscales sadness, tension, anger, fear, low energy, and low tension. In the heavy/death metal fan group, the subscale low tension was not normally distributed. In the classical music fan group, the violating subscales were revival, diversion, self-reflection, and the emotional response subscales engagement, sadness, tension, anger, fear, low valence, and low energy. As our sample is not considered large enough to ensure that the distribution of errors will approximate normality, it was decided to use a more conservative alpha value of .01 rather than .05 when reporting statistical significance for these subscales in the multiple regressions (Field, 2013). A correlation matrix with all independent variables satisfied the assumption of non-multicollinearity, with all correlation coefficients of the independent variables being between below 0.8 and all variance inflation factor scores were lower than 1.44.

2.5.3 Assumptions for H₆. The analysis method for H₆ was a series of bivariate correlations between the emotional responses to music and the three subscales of depression, anxiety, and stress from the DASS-21. The assumptions of linearity and homoscedasticity were assessed using scatterplots and were satisfied. The assumption of normality was investigated from analysing both histograms and Q-Q plots, as well as using the Shapiro-

Wilk test for deviations from normality. There were some violations to the assumption of normality, therefore it was decided to use the non-parametric Spearman's rho to test the hypothesis (Field, 2013).

3. Results

3.1 Fan Group Characteristics

A series of one-way ANOVAs were conducted to assess if there were any pre-existing differences between fan groups in musical training, familiarity with the stimuli, passionate engagement with their preferred genre of music, and psychopathology. First, as musical training can potentially enhance the ability to identify emotions in music, the amount of musical training each participant had undertaken was recorded (see Table 1) (Hailstone et al., 2009; Müller, Höfel, Brattico, & Jacobsen 2010). There was no significant effect of fan group on the amount of music training, $F(2, 142) = 2.32, p = .102$. Second, participants in each group were also asked if they had heard any of the music excerpts prior to the experiment, as being familiar with a piece of music can strongly influence the emotional responses to it (Pereira, 2011; Västfjäll, 2001). There was a significant effect of fan group on the proportion of songs participants were familiar with, $F = 71.15, p < .001, \eta^2_p = .495$. Three pairwise contrasts using a Bonferroni adjusted alpha of .017 revealed that classical music fans reported significantly greater familiarity, on a scale from 0 to 1, ($M = .75, SD = .44$), than both heavy/death metal ($M = .24, SD = .43, p < .001, 95\% CI [.42, .59]$), and violent rap music ($M = .33, SD = .47, p < .001, 95\% CI [.33, .51]$). There was no significant difference between heavy/death metal fans and classical fans for familiarity ($p = .063$). Finally, differences in passionate engagement and psychopathology between the three music fan groups were investigated. There was no significant effect of fan group on harmonious passion, $F(2, 142) =$

2.347, $p = .099$, $\eta^2_p = .032$, obsessive passion, $F(2,142) = .594$, $p = .553$, $\eta^2_p = .008$, or on the presence of depression, $F(2,142) = .135$, $p = .874$, $\eta^2_p = .002$, anxiety, $F(2,142) = 2.73$, $p = .068$, $\eta^2_p = .037$, or stress, $F(2,142) = .931$, $p = .397$, $\eta^2_p = .013$. The descriptive statistics for the depression, anxiety, and stress scores are presented in Table 3.

Table 3

Descriptive Statistics for Depression, Anxiety, and Stress Scores

Fan Group	<i>n</i>	Group Means (<i>SD</i>)				
		Depression	Anxiety	Stress	Harmonious Passion	Obsessive Passion
Heavy/Death Metal	46	6.28 (5.74)	6.09 (4.89)	7.98 (4.93)	30.93 (7.90)	21.41 (9.20)
Rap	49	6.20 (5.08)	4.98 (4.35)	7.61 (5.03)	30.82 (7.64)	23.39 (10.06)
Classical	50	5.76 (5.25)	3.96 (4.13)	6.66 (4.78)	33.76 (7.36)	23.14 (9.42)

3.2 Cognitive Functions of Violent Music

Two one-way between-subjects ANOVAs were conducted to investigate H_1 using the two cognitive subscales of self-regulation and self-reflection from the FMQ. As seen in Figure 1, there was a significant effect of fan group on self-regulation, $F(2,142) = 8.68$, $p < .001$, $\eta^2_p = .109$. Three pairwise comparisons using a Bonferroni adjusted alpha of .017 revealed that heavy/death metal fans reported a significantly lower use of self-regulation ($M = 5.62$, $SD = 1.88$) than both violent rap fans ($M = 7.02$, $SD = 1.81$), $p < .001$, 95% CI [.68, 2.13], and classical fans ($M = 6.85$, $SD = 1.99$), $p = .001$, 95% CI [.52, 1.96]. There were no significant differences between violent rap and classical fans for self-regulation ($p = .642$). As seen in Figure 2, there was no significant effect of fan group on self-reflection, $F(2,142) = 2.65$, $p = .074$, $\eta^2_p = .036$. Hence, the prediction in H_1 that violent music fans would report significantly lower scores than classical music fans on the cognitive functions of music was

partially supported in the heavy/death metal fan group and not supported in the violent rap music group.

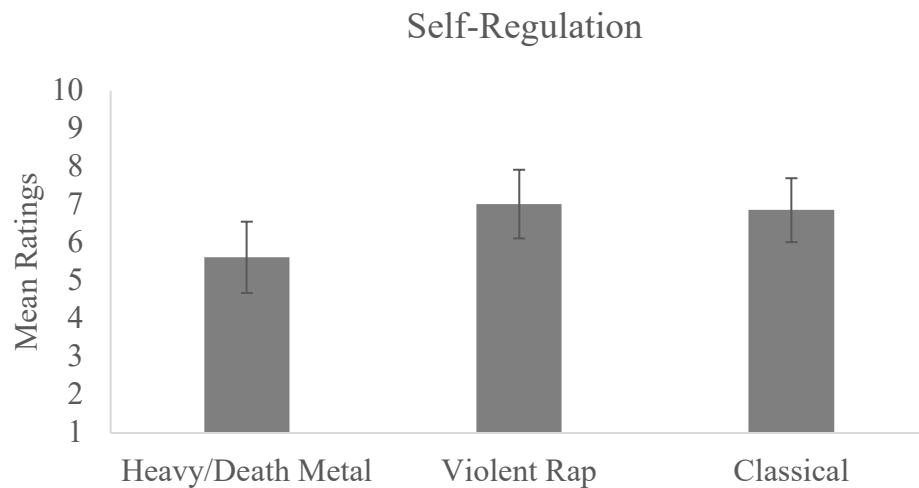


Figure 1. Mean ratings by the three different fan groups for the self-regulation subscale of the FMQ. The scale ranges from a score of 1 to 10, where the higher the score, the greater the use of self-regulation. Error bars represent standard error of the mean.

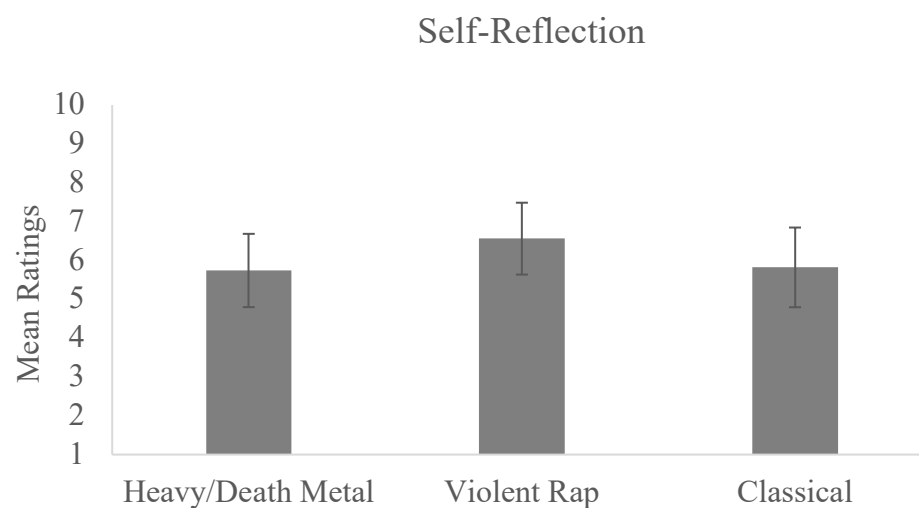


Figure 2. Mean ratings by the three different fan groups for the self-reflection subscale of the FMQ. The scale ranges from a score of 1 to 10, where the higher the score, the greater the use of self-regulation. Error bars represent standard error of the mean.

3.3 Emotional Functions of Violent Music

Seven one-way between-subjects ANOVAs were conducted on the emotional functions derived from the B-MMR. Five of the seven subscales revealed no significant effect of fan group (F -values < 2.61 , p -values $> .076$, see Figure 3). However, there was a significant effect of fan group on the entertainment subscale, $F(2,142) = 7.02$, $p = .001$, $\eta^2_p = .090$. Three pairwise contrasts using a Bonferroni adjusted alpha of .017 revealed that heavy/death metal fans reported a significantly lower use of music for entertainment ($M = 16.72$, $SD = 3.86$) than both violent rap fans ($M = 18.78$, $SD = 1.98$), $p = .001$, 95% CI [.88, 3.23], and classical fans ($M = 18.50$, $SD = 2.59$), $p = .003$, 95% CI [.61, 2.96]. There were no significant differences between violent rap fans and classical fans for entertainment ($p = .636$). As can also be seen in Figure 3, there was a marginally significant effect of fan group on emotional function of discharge, $F(2,142) = 2.89$, $p = .059$, $\eta^2_p = .039$. Therefore, the prediction in H₂ that violent music fans would report significantly lower scores than classical music fans on the emotional functions of music was only supported for the entertainment subscale in the heavy/death metal fan group and not supported in the violent rap music group.

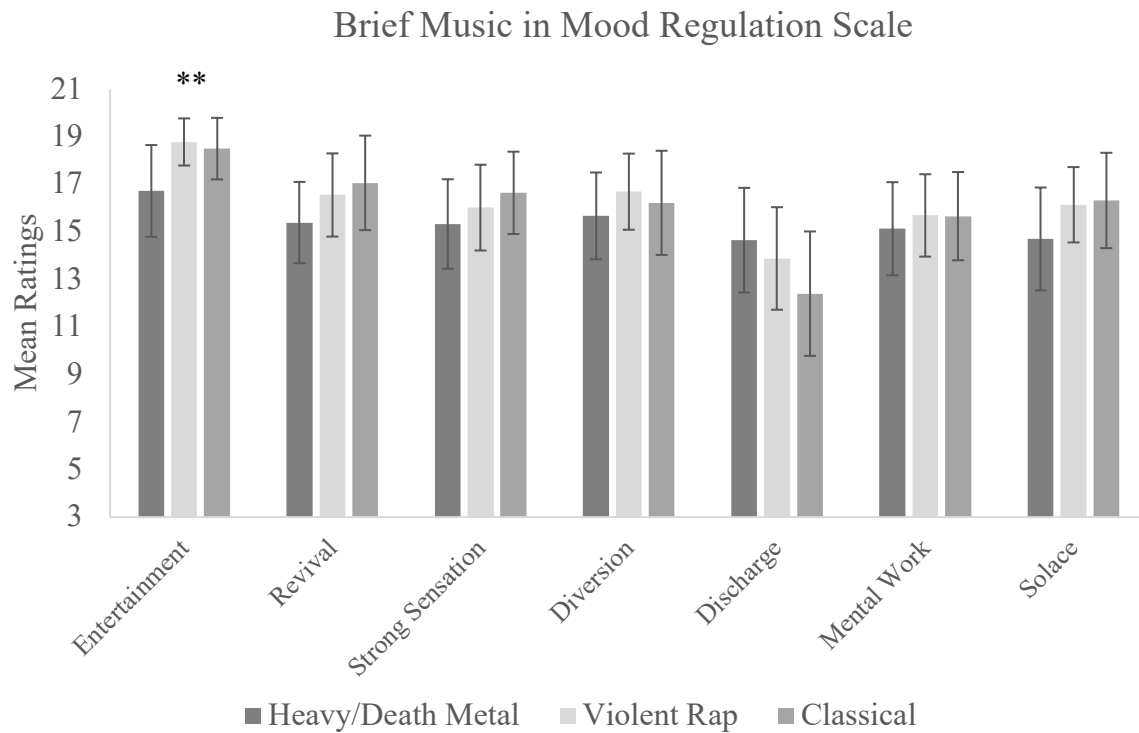


Figure 3. Mean ratings by the three different fan groups for the seven subscales of the B-MMR. The scale ranges from a score of 3 to 21, where the higher the score, the greater the use of each particular mood-regulation strategy. Error bars report standard error of the mean.

** $p < .01$.

3.4 Social Functions of Violent Music

A one-way between-subjects ANOVA was conducted on the social measure, the social bonding subscale of the FMQ. As seen in Figure 4, there was a significant effect of fan group, $F(2,142) = 15.99, p < .001, \eta^2_p = .184$. Three pairwise contrasts using a Bonferroni adjusted alpha of .017 revealed that violent rap fans ($M = 6.97, SD = 2.13$) reported significantly greater use of social bonding than heavy/death metal fans ($M = 5.51, SD = 2.14, p = .001, 95\% \text{ CI } [.62, 2.32]$), and classical music ($M = 4.62, SD = 2.03, p < .001, 95\% \text{ CI } [1.53, 3.20]$). There was no significant difference between heavy/death metal fans and classical fans for social bonding after the Bonferroni adjustment was made ($p = .039$).

Therefore, the prediction in H₃ that violent music fans would report significantly greater scores than classical music fans on the measure of social bonding was supported in the violent rap group but not in the heavy/death metal group.

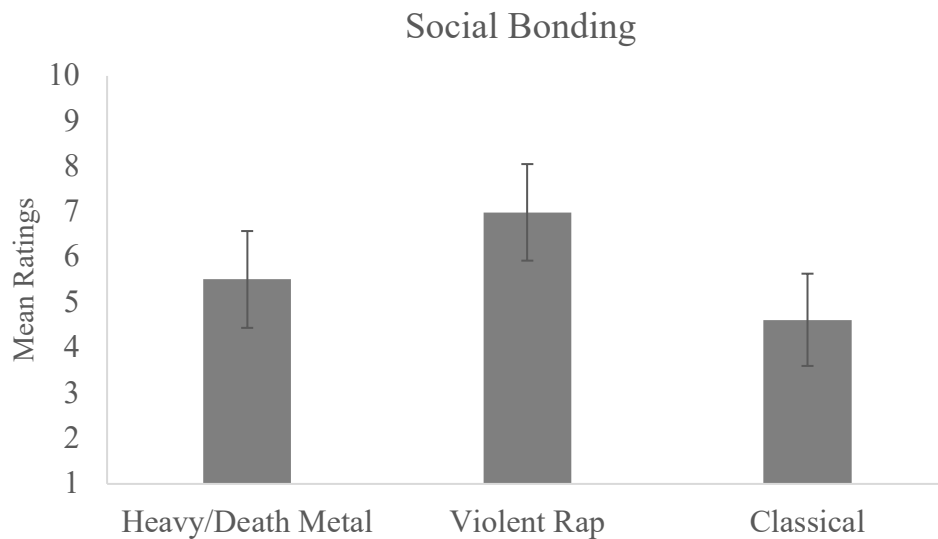


Figure 4. Mean ratings by the three different fan groups for the social bonding subscale of the FMQ. The scale ranges from a score of 1 to 10, where the higher the score, the greater the use of social bonding. Error bars represent standard error of the mean.

3.5 Emotional and Affective Responses to Music Listening

A series of one-way between-subjects ANOVAs with Bonferroni adjusted pairwise contrasts were conducted on the 20 categorical emotional and affective responses measured after participants listened to excerpts of music of their preferred genre.

3.5.1 Positive and negative emotional responses to music. There was a significant effect of fan group on all positive emotional responses to music. Three pairwise comparisons using a Bonferroni adjusted alpha of .017 revealed both violent music fan groups reported significantly lower ratings of all positive emotions than classical music fans (all p -values <

.004). Furthermore, there was a significant effect of fan group on the negative emotions of sadness, anger, and fear, whereby pairwise comparisons using a Bonferroni adjusted alpha of .017 revealed both violent music fan groups reported significantly greater ratings of than classical music fans for these negative emotions (all p -values $< .005$). There was no significant effect of fan group on ratings of tension ($p = .055$). Furthermore, pairwise contrasts using a Bonferroni adjusted alpha of .017 revealed that both violent music fan groups reported significantly lower engagement, enjoyment, and evoked emotions than classical fans (all p -values $< .001$).

3.5.2 Positive and negative affective responses to music. There was a significant effect of fan group on some positive affective responses to music. Three pairwise comparisons using a Bonferroni adjusted alpha of .017 revealed that both violent music fan groups reported significantly lower ratings of positive valence and low tension than classical music fans (all p -values $< .001$). Furthermore, there was a significant effect of fan group on the negative emotions of negative valence, where three pairwise comparisons using a Bonferroni adjusted alpha of .017 revealed both violent music fan groups reported significantly greater ratings of negative valence than classical music fans ($p < .001$). However, there were no significant effects of fan group on ratings of high energy, low energy, or change in negative affect (all p -values $> .167$). Pairwise comparisons using a Bonferroni adjusted alpha of .017 also revealed that heavy/death metal fans reported significantly greater change in positive affect than violent rap fans after listening to their preferred genre of music ($p = .006$), however there were no other significant differences between the two violent music groups. Therefore, the majority of results measuring emotional and affective responses to music support the prediction in H₄ that engagement with violent music results in a less positive emotional and affective responses and more negative

emotional and affective responses for its fans than classical music engagement does for its fans. All descriptive and inferential statistics are reported in Table 4.

Table 4

Summary of Means and Significance Tests for ANOVAs conducted on Emotional/Affective Responses for All Fan Groups

Construct	Scale Item	Mean (SD)			<i>F</i>	<i>p</i>	η^2_p
		Heavy/Death Metal	Violent Rap	Classical			
Positive							
Emotional Responses	Power	4.05 (1.06)	3.59(1.42)	4.47 (1.29)	5.92	.003	.077
	Joy	3.27 (1.13)	3.21 (1.32)	4.35 (1.29)	12.88	<.001	.154
	Peace	2.75 (1.32)	2.47 (1.14)	3.78 (1.15)	16.27	<.001	.186
	Wonder	3.10 (1.23)	2.87 (1.45)	4.11 (1.55)	10.61	<.001	.130
	Nostalgia	2.67 (1.37)	2.46 (1.07)	3.64 (1.24)	12.77	<.001	.152
	Transcendence	3.15 (1.17)	2.50 (1.40)	3.52 (1.52)	6.90	.001	.089
Negative							
Emotional Responses	Sadness	1.93 (.89)	2.36 (1.19)	1.74 (.68)	5.63	.004	.073
	Tension	2.33 (1.07)	2.23 (1.22)	1.84 (.84)	2.96	.055	.040
	Anger	2.48 (1.14)	2.30 (1.30)	1.42 (.66)	13.88	<.001	.163
	Fear	2.22 (1.03)	2.05 (1.12)	1.45 (.64)	8.72	<.001	.109
3D Model of Affect							
	Positive Valance	3.28 (1.14)	3.02 (1.27)	4.64 (1.28)	24.44	<.001	.256
	Negative Valance	2.36 (.98)	2.56 (1.35)	1.43 (.53)	12.47	<.001	.197
	Low Tension	2.29 (1.25)	2.67 (1.22)	3.63 (1.25)	16.07	<.001	.185
	High Energy	3.90 (1.18)	3.62 (1.39)	3.93 (1.51)	.75	.474	.010
	Low Energy	2.29 (1.24)	1.99 (1.02)	1.92 (.78)	1.81	.167	.025
Affect Change							
	Positive Affect Change	2.80 (7.93)	-1.37 (6.05)	4.38 (7.91)	8.05	<.001	.102
	Negative Affect Change	.85 (5.54)	.27 (3.93)	-.84 (3.87)	1.77	.174	.025
Overall Measures							
	Enjoyment	4.46 (1.06)	4.56 (.99)	5.66 (.97)	21.16	<.001	.163
	Engagement	4.52 (.98)	4.95 (.89)	5.52 (.93)	13.79	<.001	.230
	Evoked Emotions	3.97 (1.15)	4.21 (1.16)	5.04 (1.18)	11.24	<.001	.137

3.6 Passion as a Predictor of Within-Group Differences in Music Functions and Emotional/Affective Responses

Hypothesis 5 predicted that within each fan group, harmonious passion would significantly predict cognitive, emotional, and social functional use of music, as well as positive emotional and affective responses to music. It was further predicted that obsessive passion would only significantly predict the social functional use of music and negative emotional and affective responses to music.

3.6.1 Heavy/death metal fan group.

3.6.1.1 Functions of music. Harmonious passion was a significant predictor of the cognitive and social functional uses of music in heavy/death metal fans, as well as strong sensation, one of the seven subscales for emotional functional use, explaining up to 33% of the variance for the self-reflection scale in particular.

3.6.1.2 Emotional and affective responses to music. Harmonious passion was a significant predictor of the positive emotional responses to music peace, wonder, and nostalgia. Obsessive passion was a significant predictor of the negative emotional responses to music of sadness, tension, and anger. Therefore, the predictions in H₅ were supported for the emotional responses and both harmonious and obsessive passion in the heavy/death metal fan group. All multiple regression analyses for the heavy/death metal fan group are presented in Table 5.

Table 5

*Harmonious Passion and Obsessive Passion as Predictors of Heavy/Death Metal Fans'**Functional Uses and Emotional/Affective Responses to Music.*

Construct	Scale Item	Mean	SD	HP	OP	R ²
Passion Type						
	Harmonious Passion	30.93	7.90	-	-	-
	Obsessive Passion	21.41	9.20	.43**	-	-
Cognitive Functions						
	FMQ - Self-Reflection	5.74	1.89	.13**	.03	.33
	FMQ - Self-Regulation	5.62	1.88	.09*	-.01	.14
Emotional Functions						
	B-MMR – Entertainment	16.72	3.86	.09	.03	.03
	B-MMR – Revival	15.39	3.42	.06	-.01	.02
	B-MMR – Strong Sensation	15.33	3.77	.17*	-.02	.11
	B-MMR – Diversion	15.67	3.66	.15	.00	.10
	B-MMR – Discharge	14.65	4.40	.14	-.03	.05
	B-MMR – Mental Work	15.13	3.92	.11	-.08	.04
	B-MMR – Solace	14.70	4.33	.13	-.07	.05
Social Functions	FMQ – Social Bonding	5.51	2.14	.11*	.05	.26
Positive Emotional Responses						
	Power	4.05	1.06	.04	.02	.17
	Joyful Activation	3.27	1.12	.05	.02	.15
	Peacefulness	2.75	1.32	.06*	.00	.13
	Wonder	3.10	1.23	.07**	.03	.29
	Nostalgia	2.67	1.37	.07*	.02	.20
	Transcendence	3.15	1.17	.04	.03	.21
Negative Emotional Responses						
	Sadness	1.93	.89	.01	.03*	.14
	Tension	2.33	1.07	-.02	.05*	.12
	Anger	2.48	1.14	-.02	.05*	.14
	Fear	2.22	1.03	.01	.04	.13
3D Model of Affect						
	Positive Valence	3.28	1.14	.04	.02	.14
	Negative Valance	2.36	.98	.01	.02	.04
	Low Tension	2.23	1.25	.02	.02	.06
	High Energy	3.91	1.18	-.02	.03	.05
	Low Energy	2.31	1.28	.06*	.00	.13
Affect Change						
	Positive Affect Change	2.80	7.93	-.11	.11	.02
	Negative Affect Change	.85	5.54	.04	-.09	.02
Overall Measures						
	Enjoyment	4.46	1.06	.02	.02	.09
	Engagement	4.52	.98	.02	.02	.09
	Evoked Emotions	3.97	1.15	.05*	.03	.23

Note. $*p < .05$; $**p < .01$; All coefficients are beta weights from the multiple regression analyses except for between the two types of passion, which is a Pearson correlation coefficient (r); HP = harmonious passion. Data in this column reports the beta weights from the regression analyses between harmonious passion and the music functions and emotional/affective outcomes; OP = obsessive passion. Data in this column reports the beta weights from the regression analyses between obsessive passion and the music functions and emotional/affective outcomes.

3.6.2 Violent rap fan group.

3.6.2.1 Functions of music. Harmonious passion was a significant predictor of use of the cognitive function subscale self-regulation, but not self-reflection. Harmonious passion was a significant predictor of the social functional use of music but none of the emotional functions of music. Obsessive passion was also a significant predictor of the social functional use of music. However, obsessive passion was a significant predictor of cognitive function self-reflection and two emotional functions of music, discharge and solace.

3.6.2.2 Emotional and affective responses to music. Harmonious passion was not a significant predictor of any of the positive emotional responses after listening to the music. Obsessive passion was a significant predictor of two of the positive emotional responses to music, nostalgia and transcendence, in violent rap fans. Therefore, whilst some of the predictions in H_5 were supported in the violent rap fan group, harmonious and obsessive passion did not predict the functional use of music and emotional outcomes as systematically as they did in heavy/death metal fans. All multiple regression analyses for the violent rap fan group are presented in Table 6.

Table 6

Harmonious Passion and Obsessive Passion as Predictors of Violent Rap Fans' Functional Uses and Emotional/Affective Responses to Music.

Construct	Scale Item	Mean	SD	HP	OP	R ²
Passion Type						
	Harmonious Passion	30.82	7.64	-	-	-
	Obsessive Passion	23.39	10.06	.48**	-	-
Cognitive Functions						
	FMQ - Self-Reflection	6.56	1.85	.06	.08**	.31
	FMQ - Self-Regulation	7.02	1.81	.09**	.03	.24
Emotional Functions						
	B-MMR – Entertainment	18.78	1.98	.01	.02	.02
	B-MMR – Revival	16.55	3.50	.06	.01	.02
	B-MMR – Strong Sensation	16.02	3.61	.12	.06	.13
	B-MMR – Diversion	16.69	3.20	.07	.05	.07
	B-MMR – Discharge	13.88	4.13	-.04	.20**	.19
	B-MMR – Mental Work	15.69	3.47	.06	.10	.14
	B-MMR – Solace	16.14	3.17	.03	.12*	.19
Social Functions	FMQ – Social Bonding	6.99	2.13	.09*	.07*	.28
Positive Emotional Responses						
	Power	3.59	1.42	.02	.03	.09
	Joyful Activation	3.21	1.32	.02	.03	.07
	Peacefulness	2.47	1.14	.04	.01	.09
	Wonder	2.87	1.45	.05	.03	.17
	Nostalgia	2.46	1.07	.01	.07*	.20
	Transcendence	2.50	1.40	.04	.04*	.15
Negative Emotional Responses						
	Sadness	2.38	1.22	.00	.01	.01
	Tension	2.24	1.25	.02	.03	.11
	Anger	2.31	1.33	.02	.01	.04
	Fear	2.05	1.12	.00	.04	.10
3D Model of Affect						
	Positive Valence	3.02	1.27	.02	.02	.04
	Negative Valence	2.56	1.35	-.01	.02	.03
	Low Tension	2.67	1.22	.02	.00	.01
	High Energy	3.62	1.39	.00	.00	.00
	Low Energy	1.99	1.02	.00	.03	.06
Affect Change						
	Positive Affect Change	-1.37	6.05	.11	-.11	.03
	Negative Affect Change	.27	3.93	.13	-.04	.05
Overall Measures						
	Enjoyment	4.56	.99	.03	.01	.08
	Engagement	4.95	.89	.04*	.01	.18
	Evoked Emotions	4.21	1.16	.05	.01	.15

Note. * $p < .05$; ** $p < .01$; All coefficients are beta weights from the multiple regression analyses except for between the two types of passion, which is a Pearson correlation coefficient (r); HP = harmonious passion. Data in this column reports the beta weights from the regression analyses between harmonious passion and the music functions and emotional/affective outcomes; OP = obsessive passion. Data in this column reports the beta weights from the regression analyses between obsessive passion and the music functions and emotional/affective outcomes.

3.6.3 Classical music fan group.

3.6.3.1 Functions of music. Harmonious passion was a significant predictor of the cognitive and social functional uses of music in classical music fans, explaining up to 35% of the variance for the self-reflection scale in particular. Harmonious passion was also a significant predictor of entertainment, one of the seven subscales for emotional functional use. Obsessive passion did not significantly predict any functional uses of music.

3.6.3.2 Emotional and affective responses to music. Harmonious passion was a significant predictor of the positive emotional responses to music power, joy, wonder and positive valence. Obsessive passion was a significant predictor of an increase in negative affect in classical music fans and a decrease in feelings of peace. Therefore, whilst the predictions in H_5 were supported in terms of harmonious passion significantly predicting the cognitive and emotional functional use of music, as well as positive emotional and affective responses, obsessive passion did not significant predict negative emotional experiences. All multiple regression analyses for the classical music fan group are presented in Table 7.

Table 7

*Harmonious Passion and Obsessive Passion as Predictors of Classical Music Fans'**Functional Uses and Emotional/Affective Responses to Music.*

Construct	Scale Item	Mean	SD	HP	OP	R ²
Passion Type						
	Harmonious Passion	33.76	7.36	-	-	-
	Obsessive Passion	23.14	9.42	.53***	-	-
Cognitive Functions						
	FMQ - Self-Reflection	5.82	2.05	.12**	.05	.35
	FMQ - Self-Regulation	6.85	1.68	.10**	.01	.24
Emotional Functions						
	B-MMR – Entertainment	18.50	2.56	.15*	.07	.12
	B-MMR – Revival	17.06	3.98	.16	-.04	.06
	B-MMR – Strong Sensation	16.64	3.46	.14	.00	.09
	B-MMR – Diversion	16.22	4.38	.20	-.02	.10
	B-MMR – Discharge	12.40	5.23	.10	.09	.07
	B-MMR – Mental Work	15.66	3.71	.06	.10	.11
	B-MMR – Solace	16.32	4.01	.11	.09	.12
Social Functions	FMQ – Social Bonding	4.62	2.03	.12**	.04	.29
Positive Emotional Responses						
	Power	4.47	1.29	.07*	-.02	.14
	Joyful Activation	4.35	1.29	.06*	-.02	.10
	Peacefulness	3.78	1.15	.05	-.05*	.13
	Wonder	4.11	1.55	.09*	-.04	.13
	Nostalgia	3.64	2.42	.01	-.03	.05
	Transcendence	3.52	1.52	.09	.01	.21
Negative Emotional Responses						
	Sadness	1.74	.68	-.02	.02	.07
	Tension	1.84	.84	-.01	.03	.11
	Anger	1.42	.66	-.01	.03	.11
	Fear	1.45	.64	-.01	.02	.07
3D Model of Affect						
	Positive Valence	4.64	1.28	.08*	-.04	.13
	Negative Valance	1.43	.53	-.01	.02	.13
	Low Tension	3.63	1.25	.05	-.04	.09
	High Energy	3.93	1.51	.06	-.00	.07
	Low Energy	1.92	.78	-.01	.02	.02
Affect Change						
	Positive Affect Change	4.49	7.95	.22	-.10	.03
	Negative Affect Change	-.84	3.87	-.10	.15*	.09
Overall Measures						
	Enjoyment	5.66	.98	.05*	-.03	.12
	Engagement	5.52	.93	.06*	-.03	.13
	Evoked Emotions	5.04	1.18	.04	.01	.07

Note. * $p < .05$; ** $p < .01$; *** $p < .001$; All coefficients are beta weights from the multiple regression analyses except for between the two types of passion, which is a Pearson correlation coefficient (r); HP = harmonious passion. Data in this column reports the beta weights from the regression analyses between harmonious passion and the music functions and emotional/affective outcomes; OP = obsessive passion. Data in this column reports the beta weights from the regression analyses between obsessive passion and the music functions and emotional/affective outcomes.

3.7 Association Between Psychopathology and Emotional Responses to Fans' Preferred Music

Hypothesis 6 predicted that within each fan group, greater presence of psychopathology, in the form of depression, anxiety, and stress would be positively associated with negative emotional responses to music, and negatively associated with positive emotional responses to music. These predictions will be addressed within each fan group in turn.

3.7.1 Heavy/death metal fan group. There were significant positive correlations between ratings of depression and the negative emotional responses to music of sadness, tension, and fear in heavy/death metal fans. Ratings of anxiety were also significantly positively correlated with the negative emotional response of tension.

There was a significant positive correlation between rating of depression and the positive emotional response of nostalgia. Therefore, the predictions in H_6 were supported for depression and negative emotional responses but were not supported for positive responses. Correlations between ratings of psychopathology and the negative and positive emotional responses to music for heavy/death metal fans are presented in Table 8.

Table 8

Correlations Between Emotional Responses to Heavy/Death Metal Exposure and Three Measures of Psychopathology

Emotional Responses	Stress	Anxiety	Depression
Negative Emotions			
Sadness	.29	.21	.44**
Tension	.29	.30*	.40**
Anger	.08	.21	.25
Fear	.16	.23	.49**
Positive Emotions			
Power	.20	.22	.08
Joyful Activation	.13	.15	.01
Peacefulness	.19	.05	.21
Wonder	.12	.15	.22
Nostalgia	.23	.09	.34*
Transcendence	.20	.23	.22

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

3.7.2 Violent rap fan group. There were significant positive correlations between ratings of depression and the negative emotional responses of sadness and anger. Ratings of anxiety were positively associated with all four negative emotional responses to music in violent rap fans.

There were significant positive correlations between ratings of anxiety and the positive emotional responses of nostalgia, wonder, and transcendence. There were also significant positive correlations between ratings of stress and the positive emotional responses of wonder and transcendence. Therefore, the predictions in H₆ were again supported for anxiety and depression and negative emotional responses but were not supported for positive responses. Correlations between ratings of psychopathology and the negative and positive emotional responses to music for violent rap fans are presented in Table 9.

Table 9

Correlations Between Emotional Responses to Violent Rap Music and Three Measures of Psychopathology

Emotional Responses	Stress	Anxiety	Depression
Negative Emotions			
Sadness	.18	.31*	.37**
Tension	.25	.40**	.25
Anger	.21	.41**	.31*
Fear	.27	.44**	.25
Positive Emotions			
Power	.09	.08	-.04
Joyful Activation	.13	.14	.00
Peacefulness	.06	.16	.08
Wonder	.32*	.34*	.16
Nostalgia	.19	.29*	.23
Transcendence	.34*	.30*	.17

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

3.7.3 Classical music fan group. There were significant positive correlations between ratings of depression and the negative emotional responses of sadness, anger, and fear. Ratings of anxiety were positively associated with all four negative emotional responses to music in classical music fans. There were also significant positive correlations between ratings of stress and the negative emotional responses of sadness, anger, and fear.

There was also a significant negative correlation between ratings of stress and the positive emotional response of joyful activation. Therefore, the hypothesis was supported in terms of negative emotional responses, but only for one of the positive responses.

Correlations between ratings of psychopathology and the negative and positive emotional responses to music for classical music fans are presented in Table 10.

Table 10

Correlations Between Emotional Responses to Classical Music and Three Measures of Psychopathology

Emotional Responses		Stress	Anxiety	Depression
Negative Emotions				
	Sadness	.56***	.44*	.50***
	Tension	.51***	.37*	.45**
	Anger	.41**	.33*	.36*
	Fear	.27	.30*	.27
Positive Emotions				
	Power	-.23	-.05	-.22
	Joyful Activation	-.29*	-.05	-.25
	Peacefulness	-.15	-.04	-.02
	Wonder	-.26	.02	-.19
	Nostalgia	-.17	-.01	-.10
	Transcendence	-.11	.08	.05

Note. * $p < .05$; ** $p < .01$., *** $p < .001$

4. Discussion

The aim of this investigation was to examine the cognitive, emotional, and social functions that violent music can serve for its fans, as well as investigating the emotional and affective responses that violent music fans have to violent music. This was done by comparing two violent music groups, heavy/death metal and violent rap, to fans of a non-violent music genre, classical music. Furthermore, two candidate psychological mechanisms that may predict differences in positive and negative outcomes within fan groups were investigated: passion and psychopathology.

Overall, results indicated that fans of heavy/death metal music used violent music less for self-regulatory or entertainment purposes than fans of non-violent classical music, yet slightly more to discharge negative emotions. On the other hand, fans of violent rap music used music more for social bonding than fans of non-violent classical music. In terms of fans' emotional response to their preferred genre of music, violent music fans experienced a

greater magnitude of negative emotions and a reduced magnitude of positive emotions while listening to violent music, relative to classical fans' emotional response while listening to classical music.

Positive and negative outcomes were subtly but significantly predicted by the type of passion exhibited by fans (harmonious vs. obsessive) and by measures of psychopathology. For heavy/death metal fans, harmonious passion was a significant predictor of the cognitive and social functions of music and positive emotional experiences, whereas obsessive passion was a significant predictor of negative emotional experiences. Feelings of depression were also positively correlated with heavy/death metal fans' negative emotional experiences while listening to violent music. For violent rap fans, there was less of a systematic prediction of positive and negative outcomes from harmonious and obsessive passion, respectively. However, feelings of anxiety for violent rap fans positively correlated with negative emotional experiences while listening to violent music.

Finally, for classical fans, harmonious passion was a significant predictor of cognitive and social functions of music and positive emotional experiences, but opposite to heavy/death metal fans, obsessive passion *was not* a significant predictor of negative emotional experiences. Depression, anxiety, and stress were all positively correlated with negative experiences when listening to classical music. All findings will now be discussed in more detail.

4.1 Functions of Music in the Three Fan Groups

4.1.1 Cognitive functions of music. Results partially supported the prediction that the cognitive functions of music are different for violent music fans than for classical music fans. There were no significant differences observed between fan groups on the scale of self-reflection, but results from the self-regulation scale revealed that heavy/death metal fans

reported significantly lower use of music for self-regulation than violent rap and classical music fans. Therefore, for violent rap fans, violent music appears to serve cognitive functions similar to fans of more non-violent music such as the classical genre.

Heavy/death metal fans also utilise their music for self-reflection in a similar way to fans of classical music. However, the results also suggest that heavy/death metal music fans do not use their preferred music for self-regulation to the same extent as fans of violent rap music or non-violent yet emotionally salient classical music. The self-regulation subscale of the FMQ includes items that refer to music's ability to assist in relaxation and the forgetting of worries. It is perhaps not surprising, therefore, that ratings of self-regulation were significantly lower for fans of heavy/death metal music because both the music and lyrics in heavy/death metal are inherently arousing rather than relaxing, with growling and screaming vocalisations coupled with high intensity aggressive timbres played at often very fast tempos. These characteristics of heavy/death metal music may explain why fans of this genre did not report self-regulation as highly as fans of violent rap and non-violent classical music.

4.1.2 Emotional functions of music. Results generally failed to support the hypothesis that emotional functions of music differ between violent music fans and classical music fans, with results for five of the seven subscales of the B-MMR revealing no significant differences between the three fan groups. The lack of support for this hypothesis is not surprising given that recent findings suggest that violent music fans may be capable of utilising violent music for positive emotional functions such as mood and emotional regulation (Bodner & Bensimon, 2014; Thompson et al., 2018). The present findings lend some support to this conclusion. However, for the entertainment subscale, the heavy/death metal fan group reported significantly lower use of music for entertainment than violent rap and classical music fans. The entertainment subscale includes items that include using music as background music and using it to make the music more pleasant. Therefore, much like in

the self-regulation subscale, the musical features and lyrics in heavy/death metal may not necessarily be conducive to background music and therefore may be why fans of this genre did not report self-regulation as highly as fans of violent rap and non-violent classical music.

The findings that violent rap fans reported greater entertainment than heavy/death metal fans are consistent with findings from Cook et al. (2017), who reported that rap music was associated with positive mood management in fans and heavy metal was not. As entertainment is this subscale is defined by a maintenance or improvement of positive moods (Saarikallio, 2006), the present finding is congruent with that research. These findings do, however, contradict those from Saarikallio (2006), who found rock and heavy metal to be associated with all of the emotional regulation strategies to a greater extent than rap fans. In the Saarikallio (2006) study however, there was no indication of the nature of either the rap or the heavy metal stimuli presented to participants. Therefore, it is unknown whether participants heard music with violent themes. This is important as participant responses will greatly differ depending on the lyrical content (Fischer & Greitemeyer, 2006). Furthermore, there are a vast number of subgenres for both heavy metal and rap music (Fried, 2003; Wallach, Berger & Greene, 2011), and there are notable differences between fans of different rap subgenres and their behavioural and emotional outcomes (Miranda & Claes, 2004). Therefore, it is hard to compare the present study to this past literature as it is unclear whether the music selected was comparable to that of the present study. Overall, however, fans of the two violent music genres appear to use music for emotional regulation in a similar manner to fans of classical music.

There was also a marginally significant effect of fan group on the emotional function of discharge. Discharge refers to the release of negative emotions through music (Saarikallio & Erkkilä, 2007) and may be utilised differently than the other subscales in the B-MMR by violent music fans. This finding may be explained by the long-standing association between

violent music and the management of negative moods, as well as heavy metal being strongly correlated with discharge in past studies (Saarikallio, 2006; Sharman & Dingle, 2015).

Although there was only a marginally significant effect of fan group, inspection of Figure 3 shows that the results were in the direction expected from the rationale above. The question of how the emotion regulation strategy of discharge functions for violent music fans still awaits further clarification. However, in the present sample, the data suggest that violent music is utilised in a similar way to classical music in the context of emotional discharge; a result that is similar to the majority of the other emotional functions reported above.

Furthermore, whilst all other subscales of the B-MMR are regarded as positive and adaptive, there is debate as to whether discharge leads to positive or negative outcomes for those who employ it (Carlson et al., 2015). It has been proposed that music allows the positive expression of emotions like anger, allowing emotions to be explored healthily before they evolve into confrontational or verbal aggression (Izard, 2002; Saarikallio & Erkkila, 2007). However, other studies have shown that using discharge can exacerbate negative outcomes including increased anxiety, negative affect, and neuroticism (Carlson et al., 2015; Galaif, Sussman, Chou, & Wills, 2003). Therefore, the outcomes of the use of the discharge strategy also requires further clarification.

4.1.3 Social functions of music. Violent music fans were predicted to utilise music for social bonding to a greater extent than classical music fans. Such a prediction was based on the strong sense of community and distinct in-group membership inherent to both fans of heavy/death metal and violent rap music (Kubrin, 2005; Snell & Hodgetts, 2007; Thompson et al., 2018). This hypothesis was partially supported: violent rap fans utilise their music for social bonding significantly more than both the heavy/death metal and classical music fans. There were, however, no significant differences between the heavy/death metal and classical music groups. Rap music fans have reported the significance of rap music in social

connections across a range of cultures (Boer, 2009). Furthermore, the aforementioned strong in-group markers such as distinct dress codes and the prevalence of ‘crews’ in rap music may further accentuate the social nature of the music and hence be responsible for the greater use of music for social functions in violent rap fans (Kubrin, 2005). It is surprising that heavy/death metal fans did not use music for social bonding to a greater extent than fans of classical music did. Heavy/death metal music is often characterised by in-group markers such as aggressive textures and lyrics that may potentially repel outsiders while affirming the aesthetic values of in-group members. One potential reason that social bonding was not more important for heavy/death metal fans is that the term “heavy metal” may be applied across a range of subgenres, whereas rap music has a more restricted connotation of a particular subculture. Moreover, many “heavy metal” bands have succeeded in breaking into mainstream radio and popular media, such as Metallica, Guns N’ Roses, and Iron Maiden. As such, many of the fans of this genre may have eclectic tastes that are not restricted to heavy metal, such that their social identity is not tethered to a particular musical genre. Therefore, findings from the violent rap fan group, but not from the heavy/death metal fan group, support the hypothesis that violent music fans may utilise violent music for social functions to a greater extent than other non-violent or more mainstream genres of music.

4.2 Interim Summary

The results reported thus far largely support the argument that violent music is capable of being utilised by its fans for various positive cognitive, emotional, and social functions. Importantly, many of these functions for violent music fans were similar to those reported by fans of non-violent classical music. As classical music is known to be one of the strongest inducers of emotion and often utilised for mood regulation purposes (Eerola & Vuoskoski, 2013; Saarikallio, 2006), the statistically similar results between violent music

fans and classical music fans herein suggests that violent music may serve a range of important functions for its fans. Indeed, it is clear that violent music fans do not merely use the music to facilitate or nurture their aggressive or violent tendencies. Rather, such fans use the music for a range of positive functions that are comparable in the most part to fans of non-violent music. This result has clear implications for parental groups, community groups, and even Government bodies who call for the banning and censorship of music with violent antisocial themes. Clearly, the findings from the present study show that there is no 1:1 correlation between negative content in the music and negative cognitive, emotional, and social outcomes.

There have been few direct comparisons between heavy/death metal and rap fans in past literature (e.g., Ballard & Coates, 1995; Fried, 2003). The present study was designed to facilitate such a comparison and found that violent rap fans reported using the functions of self-regulation, entertainment and social bonding significantly more than heavy/death metal fans. Whilst violent rap and heavy/death metal music often feature similar lyrical content and have a similarly strong emphasis on defining in-group characteristics, the sonic characteristics of the genres are very different. Heavy metal and death metal are both often fast, high intensity music with growling and screaming vocalisations that emphasise aggression over intelligibility (Olsen, Thompson, & Giblin, 2018). Violent rap, on the other hand, often contains ‘laid back’ and recurrent drum beats with a strong emphasis on a syncopated and intelligible spoken vocal style (Miranda & Claes, 2004; Travis, 2013). As mentioned previously, these differences may explain some of the differences in the way each particular genre of music is utilised by their respective fan bases and a more direct comparison between these two violent groups is required.

Finally, the majority of the observed results and rationale for their predictions are in contrast to much of the predominant historical view of violent music, where research was

focused on specific violent features and the capacity of music to increase short-term negative outcomes (Anderson et al., 2003; Brummert Lennings & Warburton, 2011; Fischer & Greitemeyer, 2006). Whilst the results of these past studies provide important information about the direct influence of violent language and the sonic qualities of such music genres, the findings are likely to reflect the lack of enjoyment on the part of their non-fan participant samples. In other words, it is not surprising to observe increases in short-term negative outcomes when aggressive and violent music is presented to non-fans of that particular music. Although violent rap music has increased in prevalence in the mainstream recently (Warburton, Gilmour, & Laczkowski, 2008), there is a strong censorship framework in place in most countries (Schneider, 2011). Therefore, a focus away from these short-term negative effects in non-fan populations and an increased focus on fan populations of such genres is vital; an approach that characterises one of the strengths of the present study. However, although violent music fans report a broad range of positively-regarded functions as a motivation to engage with violent music, this does not necessarily mean that the emotional responses during the listening process are guaranteed to be positive. Therefore, the direct emotional responses to listening to these fan group's preferred music were investigated here.

4.3 Emotional and Affective Responses to Music in the Three Fan Groups

Recently, violent music fans, particularly heavy/death metal fans, have been observed to experience positive emotional responses directly after engaging with their preferred genre of violent music (Thompson et al., 2018). However, these studies either had no comparison group, or the comparison group were a group of non-death metal fans that listened to the same excerpts as the fans. It is uncertain whether the positive reactions observed would be similar to those from music that has been long observed to elicit positive outcomes for its fans, such as classical music (Västfjäll, 2001).

Results typically supported the hypothesis that violent music fans would report significantly lower ratings on the positive emotional and affective scales and higher ratings on the negative emotional and affective scales relative to non-violent music fans. Violent music fans reported significantly lower ratings of all positive emotions and significantly greater ratings of the negative emotions of sadness, anger, and fear than classical music fans. Furthermore, both violent music fan groups reported significantly lower engagement, enjoyment, and evoked emotions post-exposure than classical fans. Violent music fans also reported significantly lower ratings of positive valence, positive affect change, and low tension than classical music fans, as well as significantly greater ratings of negative valence than classical music.

There are several potential explanations for these differences between groups. Firstly, it is possible that whilst violent music is capable of eliciting a series of positive emotions within its fan base, the sonic features and lyrical content of the music does not allow this response to be *as* positive as for a genre such as classical music. This study measured positive experiences such as wonder, transcendence, joy, and others, which, based on the timbres and choice of key signatures across the three genres, may lead one to predict that the features of classical music are more aligned with eliciting positive responses. Therefore, this may be responsible for the higher response to these items in the classical music fans. Furthermore, the significant negative emotion measures included tension, sadness, and anger. Whilst the violent music fans still reported low means on these factors, the musical features such as use of dissonance, distressing lyrical content, and presence of high-pitched screams may be responsible for greater negative responses in the violent music fan groups when compared to classical.

Another potential explanation may relate to the sample of participants in the study, as well as the music that was presented. As mentioned, there are many subgenres of both heavy

metal and rap genres, and these subgenres facilitate different experiences and thus different outcomes (Miranda & Claes, 2004). Classical music, whilst having a series of different time periods, does not have as greater variation in its subgenres. Therefore, some people who may have signed up for the heavy/death metal and violent rap groups may have been a fan of certain types of rap or metal music but not those played in the study. One result that potentially supports this hypothesis is the subscale of enjoyment, which was significantly higher for the classical fan group compared to the two violent music groups.

Thirdly, the increased positive emotions experienced by the classical fans may be attributable to the statistically significantly higher prior knowledge of the presented excerpts that the classical fans had compared to the violent music fans. As well as being potentially stronger fans of the genre than those that signed up to each of the violent music groups, there is also the possibility that the participants had formed emotional and experiential connections to the excerpts they were already familiar with. This could lead to a strengthened positive emotional response to the familiar excerpts and thus a series of strengthened positive emotional responses (Pereira, 2011; Västfjäll, 2001).

Finally, one potential reason for the differences between groups is that violent music fans inherently experience a greater range of emotional responses than classical music fans. In other words, it may be that fans in the violent music groups are more heterogeneous than classical music fans when it comes to the range of emotional responses experienced when listening to the music. Whilst a number of violent music fans may experience positive outcomes from a healthy engagement with violent music, there may be a number of fans who experience a far greater range of negative emotional responses to music. This range of emotionality may be somewhat restricted for classical music fans and this conjecture has some support from data in Table 4, where the variability in mean responses for the negative emotions (reported as standard deviations) is far less for classical music fans than for violent

music fans. This is a well-explored phenomenon in sad music, whereby some sad music fans report positive outcomes and others report negative outcomes (Chen, Miller, Grube, & Waiters, 2006; Garrido & Schubert, 2015; Sachs et al., 2015). Whilst largely unexplored in the context of violent music, Thompson et al., (2018) did report that amongst generally positive responses from death metal fans, 10% reported wanting to engage in a series of anti-social behaviours post-death metal exposure. Such a sub-group of fans could account for the differences between violent and non-violent fan groups in the present, whereby classical music fans had a generally positive response to the music and violent music fans experienced a far greater range of negative responses in addition to positive responses.

It is evident from this discussion that violent music fans (and to a lesser extent, non-violent music fans) experience a broad range of positive and negative emotions. Why might this be the case, and what are the candidate mechanisms that can help explain why some fans may extract positive outcomes from violent music, whereas others may not? To address these questions within each fan group, two psychological factors were investigated: fans' type of passionate engagement with music and presence of psychopathology (i.e., depression, anxiety, and stress).

4.4 Within-Group Differences and their Association with Positive and Negative Emotional Outcomes in the Three Fan Groups

4.4.1 Type of passionate engagement. Drawing from the Dualistic Model of Passion (Vallerand et al., 2003) and its two passion components (positive harmonious passion and negative obsessive passion), it was hypothesised that within each fan group, harmonious passion would be a significant predictor of cognitive, emotional, and social functional use of music, as well as positive emotional and affective responses to music.

4.4.1.1 Heavy/death metal fans. Harmonious passion was a significant predictor of the cognitive and social functional uses of music in heavy/death metal fans, as well as strong sensation, one of the seven subscales for emotional functional use. In terms of emotional and affective responses to music, harmonious passion was a significant predictor of the positive emotional responses to music of peace, wonder, and nostalgia. Obsessive passion, whilst not predicting the social functional use of music, was a significant predictor of the negative emotional responses to music of sadness, tension, and anger.

These results suggest that harmonious passion has some predictive power in explaining which type of people use music for cognitive, emotional, and social functions. Furthermore, both harmonious and obsessive passion reveal they have predictive power in understanding the reasons behind both positive and negative responses to music, respectively. Therefore, the type of passionate engagement that characterises particular fans of heavy/death metal fans appears to predict not only whether or not violent music may serve a functional purpose for the individual, but also if they will experience positive or negative outcomes as a result. These results mirror previously published results observed in fan populations of other controversial hobbies with potentially detrimental outcomes, such as in football fanatics, gamblers, and computer gamers (Fuster et al., 2014; Mageau et al., 2005; Vallerand et al., 2008).

4.4.1.2 Violent rap fans. Harmonious passion was a significant predictor of one of the cognitive functions of music, self-reflection, and social functional uses of music in violent rap fans. Obsessive passion was also a significant predictor of the social functional use of music. However, contrary to predictions, obsessive passion was a significant predictor of the cognitive and emotional functions of self-reflection, discharge, and solace. In terms of emotional and affective responses to music, harmonious passion did not predict any

emotional responses to music. Contrary to predictions, obsessive passion significantly predicted two positive emotional responses to music, nostalgia and transcendence.

These results suggest that harmonious and obsessive passion is not as predictive of positive and negative outcomes in fans of violent rap music as it was for heavy/death metal fans, and fan groups of other passionate hobbies observed in past research. The violent rap fan group reported a statistically similar level of both harmonious and obsessive passion to heavy/death metal group, meaning this finding is not due to an inherently different level of passion between the groups. One potential explanation for this result is that the rap music fans have not engaged with these particular excerpts in as deep of an emotional level as the other two groups might have with their stimuli.

4.4.1.3 Classical music fans. Harmonious passion was a significant predictor of the cognitive and social functional uses of music, as well entertainment, one of the seven subscales for emotional functional use. Obsessive passion did not significantly predict any functional uses of music. In terms of emotional and affective responses to music, harmonious passion was a significant predictor of the positive emotional responses to music power, joy, wonder, and positive valence. Obsessive passion was a significant predictor of an increase in negative affect in classical music fans and a decrease in feelings of peace.

These results reveal a similar proclivity of harmonious passion to predict which type of people use music for cognitive, emotional, and social functions in classical music fans as it did for heavy/death metal. Furthermore, harmonious passion revealed predictive power in explaining who may experience positive outcomes from engagement with classical music. However, the present study did not reveal much support for the notion that obsessive passion would predict negative emotional outcomes. One explanation for this is the lack of verbal negative content present in the classical music to engage with in comparison to the violent music groups. As there was no lyrical content in the classical group compared to the vulgar

violent groups and the musical qualities were more sonically pleasant, there may have been little to incite negative outcomes in the classical fan group.

4.4.1.4 Implications for the Dualistic Model of Passion. Results across the three music fan groups provided some support for the Dualistic Model of Passion as not only being able to predict whether individuals will utilise their preferred music for a range of functional purposes, but also whether they will experience positive or negative outcomes as a result of engaging with it. These findings provide important information about the processes involved in understanding positive and negative responses to violent music within the same fan group. As there has been little research conducted on the individual differences between members of the same music fan groups, this provides new insight into what these differences are that are potentially dictating the nature of responses to violent music. Furthermore, to the researchers' knowledge, this is the first application of the Dualistic Model of Passion to music fans and thus provides support for this model and its application in a new domain and follows the application of this model to other hobbies such as computer gamers, football fans, and gamblers (Fuster et al., 2014; Mageau et al., 2005; Vallerand et al., 2008).

Results from the violent rap fans revealed some support for the Dualistic Model of Passion as a predictor of the functional uses and emotional outcomes of violent rap music for its fans, but there were also significant predictions in non-hypothesised directions. As well as potentially being less engaged with the music as the heavy/death metal fan group, it is also possible that music is less of an all-consuming experience for violent rap fans as it is for the fans of other genres of music and in other domains such as video gamers.

Finally, if this were the first application of the Dualistic Model of Passion to music fan groups, future applications across a broader range of music genres and repeated studies on a broader demographic range of fans of the genres tested here may help further the understanding of the reason for differences within fan groups and the applicability of the

Dualistic Model of Passion to music more generally. By developing an understanding of people's differing passionate engagement with music and how these interact with their emotional responses to music, we can potentially identify the people for whom violent music may be beneficial, and those for whom the music might have negative psychosocial consequences. This can then be utilised to help in the strengthening of positive listening strategies and help the understanding and management of negative listening strategies for 'at-risk' populations.

4.4.2 Presence of psychopathology. It was predicted that the greater presence of psychopathology would be positively associated with negative emotional responses to music and negatively associated with positive emotional responses to music. This hypothesis will be considered for each fan group in turn:

4.4.2.1. Heavy/death metal fans. There were significant positive correlations between ratings of depression and the negative emotional responses to music of sadness, tension, and fear in heavy/death metal fans. Ratings of anxiety were also significantly positively correlated with the negative emotional response of tension. However, contrary to predictions, there was a significant positive correlation between rating of depression and the positive emotional response of nostalgia. These results support the idea that there is a relationship between heavy metal fandom music and depression and support the idea of a relationship between psychopathology and negative outcomes from negatively-valenced musical engagement in general (Baker & Bor, 2008; Martin et al., 1993). As mentioned previously however, these studies, the present study included, are correlational and thus cannot suggest what the relationship between these two constructs is.

4.4.2.2. Violent rap fans. There were significant positive correlations between ratings of depression and the negative emotional responses of sadness and anger. Ratings of anxiety were positively associated with all four negative emotional responses to music in violent rap

fans. Whilst there were a few positive correlations between ratings of anxiety and stress and positive emotional responses, as well as rap being more associated with anxiety and heavy/death metal more associated with depression, these results generally supported the idea that increased psychopathology is associated with negative outcomes from negatively-valenced music (Dillman Carpentier et al., 2008). Whilst largely not investigated using rap music, these results also support observations made by Gardstrom (1999). This study revealed that whilst rap music in delinquent teenagers often was reported as listened to a method of expression, negative outcomes from listening to rap music were only observed in those who were experiencing pre-existing negative affect (Gardstrom, 1999).

4.4.2.3. *Classical music fans.* There were significant positive correlations between ratings of depression and the negative emotional responses of sadness, anger, and fear. Ratings of anxiety were positively associated with all four negative emotional responses to music in violent rap fans. There were also significant positive correlations between ratings of stress and the negative emotional responses of sadness, anger, and fear. These results reflect some similarities to the violent music fan groups in terms of the positive correlations to negative outcomes, as well as few correlations between psychopathology and positive outcomes.

4.4.2.4 *Implications for psychopathology.* Results across all three groups indicate positive associations between all three fan groups in the presence of psychopathology and negative emotional outcomes. These results align with the previously observed relationships between increased prevalence of psychopathology and negative outcomes from negatively-valenced musical engagement. This suggests that whilst still reporting the use of music for mood regulation, fans with increased psychopathology may engage in negative mood regulation strategies and thus experience more negative emotional outcomes, as observed in sad music research (Dillman Carpentier et al., 2008; Garrido & Schubert, 2011; McFerran &

Saarikallio, 2014). Furthermore, there were some, albeit very few, correlations between psychopathology and positive or negative emotions. Therefore, the general conclusion is that the presence of psychopathology is more strongly associated with negative, rather than positive, emotional responses to both violent and non-violent music. These findings may help reveal the individuals within violent fan groups who may experience negative psychosocial outcomes from violent music engagement. This may then have clinical implications, whereby clinicians can form an understanding of the reason behind these perpetuated negative emotions and assist these individuals in developing plans to help these people use music in a more healthy and positive manner.

Whilst there has been much conversation about violent music and its relationship with psychopathologies such as depression, there has been much discussion as to the directionality of the relationship: does violent music increase the likelihood of experiencing negative outcomes or is violent music preference indicative of pre-existing issues that attract an individual to a particular violent genre of music (Baker & Bor, 2008; Lester & Whipple, 1996; Shafron & Karno, 2013)? Whilst there is support for both sides of this debate, the majority of studies are predominantly correlational and thus cannot determine a direction for this relationship. The current study suggests that there no definitive answer one way or another. Rather, people engage with violent music for a variety of reasons and the differences in emotional outcomes are influenced by a range of individual factors, including the key factor of psychopathology. Furthermore, there have been inconsistent findings surrounding the greater prevalence of depression in violent music fan groups. Whilst one study found a greater presence of depression in female metal fans but not male fans (Miranda & Claes, 2007), another found a greater prevalence of anxiety, depression, in some ‘problem’ groups like emo and ‘screamo’ music, but not in heavy and death metal fan groups (Shafron &

Karno, 2013). The present study did not observe any pre-existing psychopathological differences between the groups and thus helps to clarify this inconsistent information.

One final observation of note is that the two violent music groups differed in the kind of psychopathology that was primarily associated with negative emotional outcomes. Within the heavy/death metal fan group, negative emotional responses were predominantly associated with higher ratings of depression, whereas for violent rap fans, negative emotional responses were predominantly associated with higher ratings of anxiety. This suggests that the presence of depression in heavy/death metal fans may have a greater influence on the way they engage with the music, whereas anxiety appears to be the influencing factor for violent rap fans upon listening to their preferred music. It could be the case that heavy/death metal fans engage with the music more when feeling depressed, perhaps with the intention of achieving positive emotional outcomes. However, past research suggests that those in negative emotional states often experience maladaptive outcomes from negatively valenced music engagement, even when the music is their favourite and intentions are positive (McFerran & Saarikallio, 2014). As such, results in the present study show that fans are more likely to experience negative emotions that significantly increase in magnitude as a function of their depressive state. Therefore, it seems that although heavy/death metal fans did report experiencing a range of positive emotions – albeit to a lesser extent than classical music fans – it is those fans who are depressed that are more likely to experience negative emotional responses to the violent negatively-valenced content of the music.

A similar explanation could be applied to violent rap fans. Although violent rap fans did report experiencing a range of positive emotions, it is those fans who are anxious that are more likely to experience negative emotional responses to the negatively-valenced content of the music. From a clinical perspective, these results imply that violent music should not necessarily be promoted as a tool in which to decrease psychopathological symptoms such as

depression and anxiety. It is clear that further research is required to understand why different violent music fan groups' experience of negative emotions in response to their preferred genre is underpinned by different kinds of psychopathology, and how this can be ameliorated to promote more positive emotional engagement.

Classical music fans, in contrast to the two violent groups, reported positive correlations between all three psychopathologies and negative outcomes. This may be because classical music covers a broader emotional spectrum than heavy/death metal or violent rap music does, so fans of classical music may vary to a greater extent in their psychopathology or particular mood set, whereas the emotional "range restriction" associated with fans of violent music may mask any potential association between psychopathology and negative emotional outcomes. A combination of qualitative analyses and predictive rather than correlational analyses may further enlighten the knowledge surrounding these differences.

4.5 Strengths, Limitations, and Future Directions

This study had a series of strengths. Firstly, the design of the survey ensured that the musical stimuli were being engaged with by participants. This methodological feature was accomplished by ensuring that participants could not skip through the excerpts or move through the survey until each excerpt was heard in its entirety. Although the online format of the survey meant that the researchers could not evaluate the depth of attention paid to each excerpt, the fact that each participant was a reported fan of the genre they signed up for meant that the researchers were confident they would closely attend to the musical excerpts. Furthermore, most of the scales used in the study are well-established and frequently used measures of their relative constructs. Whilst the FMQ has only been used several times to the knowledge of the researchers, it has previously indicated construct validity and acceptable

internal reliability (Schäfer et al., 2012). All other scales have been used extensively throughout the literature. The reliability of each measure was also reflected in the internal consistencies in the present study, which were mostly very high.

The study also had some limitations. A basic limitation is that the survey was distributed online to participants who were unsupervised. Whilst it was mentioned that the study was designed in a way that maximised the confidence that the participants would complete the survey as intended, there is still the potential for the participants to respond dishonestly, pay an insufficient amount of attention, or not engage with the stimuli. Such a limitation, however, is characteristic of most investigations and accounted for in the error variance. A second limitation was the difference between the violent and non-violent musical groups in the degree of familiarity with song excerpts in the experiment. Whilst the songs were chosen using the same procedure for each genre of music, a higher number of participants were familiar with the excerpts in the classical fan group than in the other fan groups. This difference may be explained by the niche nature of the violent subgenres and the chance that people signed up having been a fan of a different metal or rap subgenre.

Finally, it was beyond the scope of the study to investigate any potential aggressive outcomes or potential longer-term effects of violent music on its fans. Therefore, whilst the short-term positive experiences reported here are important, it is equally important in future studies to understand whether violent music is capable of provoking longer-lasting negative effects on its fans.

There are a range of future research ideas that this study has elucidated. Firstly, as the study revealed some differences between the two violent music groups in terms of the functions the music serves for their fans, greater investigations into the differences between these groups is required. A more thorough direct comparison between the two groups could help to understand whether there are particular musical differences between the genres that

are responsible for the differences in their respective functional purposes. A greater understanding of the differences between these two genres could also clarify some of the aforementioned contrasting literature about the two groups and how they are utilised for mood and emotional regulation (Cook et al., 2017; Saarikallio, 2006). Furthermore, similar studies using a broader range of genres may also help inform a more nuanced understanding the capacity of the violent genres in eliciting emotional outcomes for its listeners. Classical music has often been observed to induce an intense amount – and broad range of – emotional responses (Eerola & Vuoskoski, 2013; Saarikallio, 2006). It is clear from the findings presented herein that non-conventional music such as violent music is an important domain to consider for those aiming to build holistic models of music and emotion that encapsulate the experience of a wide range of listeners.

Finally, to ensure that the desired fan groups are successfully recruited, survey studies should be conducted through online fan groups where ‘die-hard’ fans congregate to converse with other in-group members. Indeed, music fans passionately interact on music blogs and community groups on social media websites like Facebook and Reddit. Through such recruitment practices, a greater proportion of passionate and active fans across a range of violent music subgenres can be accessed to gain even greater insight into the experience of violent music fandom across a diverse sample of ages, cultural background, and country of origin; a far greater representation of fans than the participant pool of university undergraduate students used in the present study.

4.6 Conclusion

The aim of this investigation was to elucidate the cognitive, emotional, and social functions that two violent genres serve for its fan base in comparison to a group of classical music fans. The study also investigated the emotional and affective responses of each fan group directly after they engaged with excerpts from their respective favourite genres. Whilst

it was observed that violent music fans predominantly engaged with violent music for cognitive, emotional, and social functions to a similar, and sometimes greater, extent than the classical music fans, both violent music groups reported less positive and greater negative emotional outcomes than the classical music group. Several potential reasons for this result are discussed. Whilst the features of classical music may simply be more emotionally evocative than violent music, these greater positive outcomes reported by classical music fans may be due to these fans being greater fans of the particular stimuli set they heard or due to them reporting greater prior familiarity with the excerpts. The investigation also examined two potential within-group factors that might influence the nature and consequences of engaging with violent music. Results revealed that the positive type of passionate engagement, harmonious passion, predicted the majority of the cognitive and social functions of music in all groups, as well as predicting a range of the positive emotional responses to music in the heavy/death metal and classical groups. The presence of the maladaptive type of passionate engagement, obsessive passion, and increased levels of depression and anxiety were associated with some of the negative emotional outcomes after music engagement. This was evident to a greater extent in the heavy/death metal fan group than the violent music rap. The study has made a significant contribution to the media violent literature by elucidating how negatively-valenced violent music can serve a far broader range of positive functions for its fans than previously deemed possible. Furthermore, its identification of fans' passion and psychopathology as key factors in the likelihood of positive and negative emotional engagement with violent music has far reaching impact for clinical settings where music is utilised as a therapeutic tool.

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Appendices

Appendix A – Musical Stimuli Lyrics

Heavy/Death Metal Lyrics

Song 1 – Arch Enemy, We Will Rise

Tear down the walls

Wake up the world

Ignorance is not bliss

So fed up with second best

Our time is here and now

I am the enemy

I am the antidote

Watch me closely

I will stand up, now

We will rise (We will rise)

Rise above

We will rise (We will rise)

Rise

Stereotype fools

Playing the game

Nothing unique

They all look the same

Song 2 – At the Gates, Blinded by Fear

I cast aside my chains

Fall from reality

Purgatory unleashed

Now burn the face of the earth

Purgatory unleashed

Now burn the face of the earth

The face of all your fears

All your fears unleashed

The face of all your fears

Born of the demon sky

Twisting reality

Sweet nauseating pain

Is death the only release?

Nauseating pain

Is death the only release?

The face of all your fears

All your fears unleashed

The face of all your fears

Song 3 – Autopsy, Waiting for the Screams

Here we are behind soundproof doors

You and I, you're down on all fours

Locked away, you will not be found

This place is death, just look around

I slit my wrist and smear the blood on your face

A mask of horror, a clotting embrace

And now it's time for my climatic bliss

I'm ready for your screams to burst

So I rip the stitches from your lips

Song 4– Bloodbath, Eaten

I've had one desire since I was born

To see my body ripped and torn

To see my flesh devoured before my eyes

Only for you I volunteer as a human sacrifice

Carve me up, slice me apart

Suck my guts and lick my heart

Chop me up, I like to be hurt

Drink my marrow and blood for dessert

Eaten

My one desire, my only wish is to be

Eaten

The longer I live the more I'm dying to feel the pain

Song 5 – Cannibal Corpse, Hammer Smashed Face

Violence is now a way of life

The sledge my tool to torture

As it pounds down on your forehead

Eyes bulging from their sockets

With every swing of my mallet

I smash your fucking head in, until brains seep in

through the cracks, blood does leak

distorted beauty, catastrophe

Steaming slop, splattered all over me

Lifeless body, slouching dead

Lecherous abscess, where you once had a head

Avoiding the prophecy of my new found lust

You will never live again, soon your life will end

I'll see you die at my feet, eternally I smash your face

facial bones collapse as I crack your skull in half

Crushing, cranial, contents

Song 6 – Carcass, Corporal Jigsaw Quandary

Excised and anatomised, deviscerated disarray

The torso diverged with pride

Deftly amputated, evulsed limbs now defunct

The trunk imbrued, tatty stumps used as lugs

For a chondrin puzzle so quaint

Head and body decollate

A heaving mass so quiescent...

Scattered and scrambled, your teasement grows

A bloody caricature to make whole

A squirming grisly jigsaw, detrital fragments fit so snug

That missing piece will leave you stumped

Totally disassembled, nicely sliced and diced

A cold mannequin once resembled

Real cranium teaser, carved from flesh and bone

So mystifying...

Song 7 – Nile, Black Seeds of Vengeance

Plague and pestilence shall you call down upon them

You must destroy their seed utterly, you shall gash them with flints

You shall gore them with sticks, hack off their testicles

And cut their phalluses to pieces, suffer none of them to live

Dismemberment and slaughter shall you perform on them

The mighty Sekhmet will devour them

The chain of Sut is around their neck, Horus hammereth them

Nepthys hacketh them to bits, the eye of Ra eateth into their faces

Their carcasses will be consumed in the desert

The seed of Amu with perish utterly

Their filth shall never breed among you again

We shall blot out the remembrance of Amalek from under the sky.

Song 8 – Obituary, Slowly We Rot

Kill all.

Fight death.

Lesions fighting love.

Fight them all in a living hell.

Slowly rot and you die.

You fight death as you slowly realize.

Kill them all.

Fight death and slowly read in the love.

Fight them all, join me, slowly we rot.

Slowly we rot.

Violent Rap Lyrics**Song 1 – Big L, All Black**

Yo once again it's the Big L, that kid who got much props
From killin corrupt cops, with motherfuckin buck shots
So don't step to this, cause I got a live crew
You might be kinda big but they make coffins yo' size too
I was taught wise, I'm known to extort guys
This ain't Cali, it's Harlem nigga we do walkbys
No one can match me, tax me or wax me
If you want me to write you some raps G just ask me
Cause on the shelf is where your LP cold stood
Because it was no good, that shit ain't even go wood
I'm not the type to take sluts out, I just fuck they guts out
Get my nuts out, then break the fuck out
Me being a virgin, that's idiotic
Cause if Big L got the AIDS every cutie in the city got it
Once a nigga tried to stick me for six G's
And I put more holes in his ass than swiss cheese

(Thugs better scat when the gat goes click-clack)

Or I'mma have your family dressed in all black

(Thugs better scat when the gat goes click-clack)

Or I'mma have your family dressed in all black

Song 2 – Brotha Lynch Hung, Meat Cleaver

Comin' with the meat cleaver

Cut her in her neck, leave her

Put her on the ground like a beaver, see 'em

Yeah I'm comin' to get her, run up and get her, with a machete

They comin' to get her without the liver

Nigga with a meat cleaver, leavin' the street bleedin'

Heapin' a heat-seeker, nigga, I speak ether, he about to leak feces

Wipin' up the streets with her, get em' grr

Reminiscent of wako,

Take hoes, and put 'em in the box, they may chose, I hate 'em

Cook 'em in Crisco, and I filleted 'em and ate 'em,

Filleted 'em and ate 'em bakin' potatoes

Hot totties, stickin' the fork in the hot body

Hittin' the porch like a box robbery

Not sorry, I'm a nigga hotter than hot coffee, nigga

Shittin' with no potty

Mommy, tell 'em I'm a sicko psycho

Tell 'em Imma hit the night though

Tell 'em I'm nitro

Tell 'em Imma growl like a motorcycle revvin' em up like a tight rope, grr

My brain is empty, I can't think, I'm insane I'm simply

Sick in the head, get in the bed, I'm a murderer

Mannibal cannibal, niggas really never heard of her grr

He's a meat doctor
Put her in the pot, made it hot then I chopped her
I was floatin' in the air, helicopters
Put butter in the pot then the hot sauce
Yea a lot of motherfuckers wanna talk soft
All shocked when somebody else glock pop
And they layin' in the box mannibal like they right up in the grass
Operation foxtrot grr

Song 3 – Immortal Technique, Dance with the Devil

Billy yoked her up and grabbed the chick by the hair
And dragged her into a lobby that had nobody there
She struggled hard but they forced her to go up the stairs
They got to the roof and then held her down on the ground

Screaming shut the fuck up and stop moving around
The shirt covered her face, but she screamed and clawed
So Billy stomped on the bitch, until he had broken her jaw
The dirty bastards knew exactly what they were doing

They kicked her until they cracked her ribs and she stopped moving
Blood leaking through the cloth, she cried silently
And then they all proceeded to rape her violently
Billy was made to go first, but each of them took a turn

Ripping her up, and choking her until her throat burned
A broken jaw mumbled for God but they weren't concerned
When they were done and she was lying bloody, broken and bruised
One of them niggas pulled out a brand new twenty-two

They told him that she was a witness of what she'd gone through
And if he killed her he was guaranteed a spot in the crew
He thought about it for a minute, she was practically dead
And so he leaned over and put the gun right to her head

I'm falling, and I can't turn back

Song 4 – Necro, Dead Body Disposal

Let's talk about dead body disposal
My proposal take the corpse to the bathtub
And drain the blood out of the bastard
Strip ya self new first so you don't get blood on ya new shirt
And cut the fuckin' corpse up like a butcher to meat kid
And put the pieces inside trash bags
So she'll be wreaking like a fags ass
With flesh covered in leeches
And throw the bags away
In various trash bins in different areas
This shit's hilarious

Nobody notices some asshole taking out the garbage
Who would know it's a carcass?
Even if they were focusing 'cause the plastic bag is dark kid
And even the nosy bitch wouldn't open it, it make no sense
And if you do it just before a trash pick up
The bodies hauled away before it decays and stinks up
It won't be noticed but literally turns up other shit
And ya bag is in the middle buried right under it
Especially if you double-bagged it
Ya victim'll stay a faggot in fragments forever staget

Dead Body Disposal

For those that don't know what to do after ya foes are killed
Shit could get messy when the blood flow spills
You never know when you might need to know skills
In body disposal it's no frills

Dead Body Disposal

Are you interested in hearing my proposal?

Song 5 – DMX, Bring Your Whole Crew

I got blood on my hands and there's no remorse
And got blood on my dick 'cause I fucked a corpse (C'mon!)
I'm a nasty nigga, when you pass me nigga look me in my eyes (What!)
Tell me to my fuckin' face that you ready to die (C'mon!)
You be a dead motherfucker, red motherfucker

Don't get stupid, you heard what I said motherfucker

Who shot you? Aww nigga, like you don't know (Woo!)

Stickin' you for yo' dough while I'm fuckin' yo' broke ho (What!)

Yo! Don't you get the picture? Niggas can't touch me (Uh!)

'Cause I don't give a fuck G, I'll get you touched B

I got joints that with one slug could take apart a door

And enough crazy niggas behind me to start a war (C'mon!)

So what you want nigga? Help, 'cause you're about to rest (Uh!)

When I'm fed, Red Cross couldn't clean up the mess

And a vest will do nuttin' but make you look a little thicker (Yea!)

'Cause in the dark, you ain't nuttin' but a lil' nigga (What!)

And if you'd been thinkin' about that shit you did

You wouldn'ta brought the joint, wit you kid

Now I'ma have to get you kid, and split your wig, wit the machete (What!)

I bring beef to niggas, and string 'em out, like spaghetti (C'mon!)

You ain't ready, nor can you stand how I'm bringin' it (Uh!)

I'm givin' it is how I'm livin' it so I'm swingin' it (Uh!)

Red dot on your head, 'cause you're in mid range

Red dot on your chest, opens up your rib cage, nigga!

Song 6 – Eminem, Superman

First off you don't know Marshall

At all so don't grow partial

That's ammo for my arsenal

I'll slap you off that bar stool

There goes another lawsuit

Leave handprints all across you

Good lordy-wody you must be gone off that water bottle

You want what you can't have

Ooh girl that's too damn bad

Don't touch what you can't grab

End up with two back hands

Put Anthrax on a Tampax and slap you till you can't stand

Girl you just blew your chance

Don't mean to ruin your plans

But I do know one thing though

Bitches they come they go

Saturday through Sunday Monday

Monday through Sunday yo

Maybe I'll love you one day

Maybe we'll someday grow

'Til then just sit your drunk ass on that fuckin runway hoe

I know you want me baby

I think I want you too

I think I love you baby

I think I love you too

I'm here to save you girl

Come be in Shady's world

I wanna grow together

Let's let our love unfurl

You know you want me baby

You know I want you too

They call me Superman

I'm here to rescue you

I wanna save you girl

Come be in Shady's world

Oh boy you drive me crazy

Bitch you make me hurl.

Song 7 – Geto Boys, Chuckie

I told you size wasn't shit, that's why I murdered your nieces

Wasn't my fault they found they head cut in 88 pieces

Don't let 'em run, hurry up and catch 'em

You grab an arm, I grab an arm let's pull 'till we stretch 'em

Play pussy, get fucked means you're better off dead

I wanna see food so I fished in a child's head

Motherfuckers be weary 'cause I'm sick

Dead heads and frog legs, mmm cake mix!

Friday the 13th the night of the living dead
Vampire arms walking 'round givin niggas head
If you didn't die, I would say you got lucky
All bodies found dead, fuck it, blame it on Chuckie
But this is child's play, motherfucka!

Aw, fuck, Chuck's on a killin' spree
Gimme some barb and I'll start by killin me
When I murder, I tried to slack off
Now 100 missiles blew a little girl's back off

Song 8 – Kool G Rap, Executioner Style

Comin straight off the sidewalks of New York
A nigga livin foul
As I steps inside the playground
I lays down my laws at the door
And any nigga that's lookin' for trouble
Gotsta face these silver double four's
That I be packin' on my hip hollow tips inside the clip
Ready to rip a niggaz shit and make his wig slip
To the side as a homicide's committed
I gets rid of niggaz quick cause ain't no bullshit permitted
I'm a outlaw, the motherfuckin' villain doin' killings, I won't stop
Until the morgue got bodies stacked up to the fuckin' ceiling
And ain't no drivebys, a mag and a bag lady, disguised and surprise

You got a hole between your fuckin' eyes

Niggaz is grazed, catchin' strays from the blaze

Amazed by the ways I lays em down when my shit sprays

Crazy brains hangin', and niggaz veins are swingin'

Bangin' and gunslingin', even my own fuckin' ears are ringin'

'Cause what I carry's much bigger than Dirty Harry's

Do a hail Mary, I make bloody Mary's out of your capillaries

Pieces of flesh, hangin' off a niggaz chest, cause the vest

That he dress, couldn't fuck with the Smith and Wess'

Motherfuckers runnin' for miles, bodies stacked up in piles

I'm killin' executioner style

Appendix B – Functions of Music Questionnaire

Please rate the extent to which you agree with the following statements:

1. Death metal/violent rap/classical music helps me chill and tune out

I do not agree at all

I totally agree

1 2 3 4 5 6 7 8 9 10

2. Death metal/violent rap/classical music helps me forget my problems and worries

I do not agree at all

I totally agree

1 2 3 4 5 6 7 8 9 10

3. Death metal/violent rap/classical music supplies me with important or interesting information

I do not agree at all

I totally agree

1 2 3 4 5 6 7 8 9 10

4. Death metal/violent rap/classical music enables me to experiment with different sides of my personality

I do not agree at all

I totally agree

1 2 3 4 5 6 7 8 9 10

5. Death metal/violent rap/classical music enables me to better understand my thoughts and feelings

I do not agree at all

I totally agree

1 2 3 4 5 6 7 8 9 10

6. Death metal/violent rap/classical music expresses my values

I do not agree at all

I totally agree

1 2 3 4 5 6 7 8 9 10

7. Death metal/violent rap/classical music helps me express my identity

I do not agree at all

I totally agree

1 2 3 4 5 6 7 8 9 10

8. Death metal/violent rap/classical music helps me feel close to others

I do not agree at all

I totally agree

1 2 3 4 5 6 7 8 9 10

9. Death metal/violent rap/classical music can help me meet people

I do not agree at all

I totally agree

1 2 3 4 5 6 7 8 9 10

10. Death metal/violent rap/classical music enables me to identify with the artists

I do not agree at all

I totally agree

1 2 3 4 5 6 7 8 9 10

Appendix C – Brief Music in Mood Regulation Scale

Please rate the extent to which you agree with the following statements on the scale below:

- 1 – Strongly Disagree
- 2 – Disagree
- 3 – Slightly Disagree
- 4 – Neither Agree nor Disagree
- 5 – Slightly Agree
- 6 – Agree
- 7 – Strongly Disagree

1. I usually put background music on to make the atmosphere more pleasant
2. When I'm busy around the house and no one else is around, I like to have some music on the background
3. I listen to music to make cleaning and doing other housework more pleasant
4. I listen to music to perk up after a rough day
5. When I'm exhausted, I listen to music to perk up
6. When I'm tired out, I rest by listening to music
7. Music has offered me magnificent experiences
8. I want to feel the music in my whole body
9. I feel fantastic putting my soul fully into the music
10. For me, music is a way to forget about my worries
11. When stressful thoughts keep going round and round in my head, I start to listen to music to get them off my mind
12. When I feel bad, I try to get myself in a better mood by engaging in some nice, music-related activity
13. When I'm really angry, I feel like listening to some angry music
14. When everything feels bad, it helps me to listen to music that expresses my bad feelings
15. When I'm angry with someone, I listen to music that expresses my anger
16. Music helps me to understand different feelings in

17. Music has helped me to work through hard experiences
18. When I'm distressed by something, music helps me to clarify my feelings
19. When everything feels bad, music understands and comforts me
20. When I'm feeling sad, listening to music comforts me
21. I listen to music to find solace when worries overwhelm me

Appendix D - Emotional and Aesthetic Responses to the Music

Please answer the following questions:

Have you heard this song before? Yes/No

1. How engaged with the music excerpt did you feel when you were listening to it?

Not at all engaged

Extremely Engaged

1 2 3 4 5 6 7

2. How much did you like the music you heard?

Not at all

Very much

1 2 3 4 5 6 7

3. Did the music evoke an emotional reaction in you?

The music did not
evoke any
emotions in me

The music evoked
a very strong
emotional reaction
in me

1 2 3 4 5 6 7

Please read the following statements and report how much each statement reflects your emotional response to the music on the scale below:

1 – Does not describe my response at all

2 –

3 –

4 –

5 –

6 –

7 – Describes my response very well

1. Filled with wonder, dazzled, moved
2. Fascinated, overwhelmed, feelings of transcendence and spirituality
3. Strong, triumphant, energetic
4. Nostalgic, dreamy, melancholic
5. Serene, calm, soothed
6. Joyful, amused, bouncy
7. Sad, sorrowful
8. Tense, agitated, nervous
9. Angry
10. Fearful
11. Happy
12. Pleasant, good, positive
13. Unpleasant, bad, negative
14. Awake, wakeful, alert
15. Sleepy, tired, drowsy
16. Relaxed, calm, at rest

Appendix E – Positive and Negative Affect Scale

This scale consists of a number of words that describe different feelings and emotions. Please read each item and indicate to what extent you feel this way **right now, that is, at the**

present moment on the scale below:

- 1 – Strongly Disagree**
- 2 – Disagree**
- 3 – Slightly Disagree**
- 4 – Neither Agree nor Disagree**
- 5 – Slightly Agree**

- 1. Interested
- 2. Distressed
- 3. Excited
- 4. Upset
- 5. Strong
- 6. Guilty
- 7. Scared
- 8. Hostile
- 9. Enthusiastic
- 10. Proud
- 11. Irritable
- 12. Alert
- 13. Ashamed
- 14. Inspired
- 15. Nervous
- 16. Determined
- 17. Attentive
- 18. Jittery

19. Active

20. Afraid

Appendix F – Passion Scale

Please read each item and indicate to what extent each statement reflects your experiences with music

1 – Does not correspond to me at all

2 –

3 –

4 – Corresponds moderately to me

5 –

6 –

7 – Corresponds exactly to me

1. This activity allows me to live a variety of experiences.
2. The new things that I discover with this activity allow me to appreciate it even more.
3. This activity allows me to live memorable experiences.
4. This activity reflects the qualities I like about myself.
5. This activity is in harmony with the other activities in my life.
6. For me it is a passion, that I still manage to control.
7. I am completely taken with this activity.
8. I cannot live without it.
9. The urge is so strong. I can't help myself from doing this activity.
10. I have difficulty imagining my life without this activity.
11. I am emotionally dependent on this activity.
12. I have a tough time controlling my need to do this activity.
13. I have almost an obsessive feeling for this activity.
14. My mood depends on me being able to do this activity.

Appendix G – Depression Anxiety Stress Scale

Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you over the past week. The rating scale is as follows:

- 0 – Did not apply to me at all
- 1 – Applied to me to some degree, or some of the time
- 2 – Applied to me to a considerable degree, or a good part of time
- 3 – Applied to me very much, or most of the time

1. I found it hard to wind down
2. I was aware of dryness of my mouth
3. I couldn't seem to experience any positive feeling at all
4. I experienced breathing difficulty (e.g., excessively rapid breathing, breathlessness in the absence of physical exertion)
5. I found it difficult to work up the initiative to do things
6. I tended to over-react to situations
7. I experienced trembling (e.g., in the hands)
8. I felt that I was using a lot of nervous energy
9. I was worried about situations in which I might panic and make a fool of myself
10. I felt that I had nothing to look forward to
11. I found myself getting agitated
12. I found it difficult to relax
13. I felt down-hearted and blue
14. I was intolerant of anything that kept me from getting on with what I was doing
15. I felt I was close to panic
16. I was unable to become enthusiastic about anything
17. I felt I wasn't worth much as a person
18. I felt that I was rather touchy

19. I was aware of the action of my heart in the absence of physical exertion (e.g., sense of heart rate increase, heart missing a beat)
20. I felt scared without any good reason
21. I felt that life was meaningless

Appendix H – Demographic questionnaire

Age _____

Gender (tick one): Male _____ Female _____ Other _____

Do you play a musical instrument? Yes/No

If yes:

Please list each instrument you play

Please list how long you have received musical training for each instrument
