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Does music help regulate depressive symptoms for fans of violently themed music?

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Merrick Powell[1], Kirk N Olsen[1,2] and William Forde Thompson[1,2]

Abstract

Fans of extreme metal and rap music with violent themes, hereafter termed "violently themed music," predominantly experience positive emotional and psychosocial outcomes in response to this music. However, negative emotional responses to preferred music are reported to a greater extent by such fans than by fans of non-violently themed music. We investigated negative emotional responses to violently themed music among fans by assessing their experience of depressive symptoms, and whether violently themed music functions to regulate negative moods through two common mood regulation strategies: discharge and diversion. Fans of violent rap ($n = 49$), violent extreme metal ($n = 46$), and non-violent classical music ($n = 50$) reported depressive symptoms and use of music to regulate moods. Participants listened to four one-minute excerpts of music in their preferred genres and rated negative emotional responses to each excerpt (sadness, tension, anger, fear). There were no significant differences between ratings of depression between groups, but depressive symptoms predicted negative emotional responses to music across all groups. Furthermore, depression ratings predicted the use of the mood regulation strategy of discharge in all groups. The discharge strategy did not reduce (or exacerbate) fans' negative emotional responses, but may nevertheless confer other benefits. We discuss implications for the psychosocial well-being of fans of violently themed music.

Keywords

depression, emotion, mood regulation, music, violence

In recent decades, exposure to music with lyrics that depict overt acts of violence toward another individual or group (hereafter termed "violently themed music") has been of major concern to many parents, schools, religious groups, Government bodies, and other lobby

[1]School of Psychological Sciences, Faculty of Medicine, Health and Human Sciences, Macquarie University, Sydney, NSW, Australia
[2]Centre for Elite Performance, Expertise, and Training, Macquarie University, Sydney, NSW, Australia

Corresponding author:
Merrick Powell, School of Psychological Sciences, Faculty of Medicine, Health and Human Sciences, Macquarie University, Balaclava Road, Sydney, NSW 2109, Australia.
Email: merrick.powell@mq.edu.au

groups who fear the negative impacts of media violence on fans and community (Warburton & Braunstein, 2012). However, self-reported fans of violently themed music, such as fans of extreme metal with violent themes or rap with violent themes, typically report positive emotional responses to their preferred music, such as empowerment, joy, peace, and wonder (Olsen et al., 2020; Olsen & Thompson, 2021; Thompson et al., 2019). Although positive emotions dominate their response to music, fans of violently themed music also report greater negative emotions while listening to music than fans of non-violently themed genres, such as classical music (Olsen et al., 2020).

Why should such fans experience negative emotions to a greater extent than fans of non-violently themed music? It is often assumed that negative emotions are induced by the violent themes of the music. However, it is equally plausible that people who experience pre-existing feelings of frustration, anger, or depressive symptoms gravitate toward negatively-valenced music, and use this music to work through or "regulate" their symptoms. The present study investigates these issues by recruiting two fan groups of two different genres of violently themed music—extreme metal and violent rap music[1]—and one fan group of non-violently themed classical music, and assesses fans for (1) their psychopathological mood states such as depressive symptoms and (2) their use of music-related mood regulation strategies (Saarikallio, 2008).

Depressive symptoms and the experience of negative emotions from music

There is ongoing debate as to whether music with negatively valenced themes causes listeners to experience psychopathological mood states such as depressive symptoms, or conversely, whether those who are already experiencing depressive symptoms seek out negatively-valenced music (McFerran et al., 2015). Consider the relationship between depressive symptoms and emotional experiences of "sad" music. Most people who enjoy sad music will experience positive emotions while listening to this music (e.g., Eerola et al., 2018; Garrido, 2017; Sachs et al., 2015; Vuoskoski et al., 2012; see Thompson & Olsen, 2018, for a similar discussion of music with violent themes). However, some listeners report heightened feelings of negative affect and rumination after listening to sad music (Garrido & Schubert, 2013; ter Bogt et al., 2021). Individuals with depressive symptoms are more likely to listen to sad music than non-depressed participants (Millgram et al., 2015; Yoon et al., 2020), and negative affective responses to sad music are exacerbated in individuals with depressive symptoms (Garrido & Schubert, 2013; McFerran & Saarikallio, 2014; Vuoskoski et al., 2012).

One interpretation of these findings is that individuals with depressive symptoms often seek out negatively valenced music because it affirms their negative mood state, making them feel less alone in their experience (Stewart et al., 2019; Wilhelm et al., 2013). However, such a listening strategy may pose a risk if that music reinforces or exacerbates their depressive symptoms. Understanding the interplay between depressive symptoms and music listening strategies may help clinicians recognize the circumstances under which a client with psychopathological symptoms may or may not benefit from exposure to negatively valenced music.

The relationship between depressive symptoms and engagement with violently themed music is unclear, and the circumstances under which exposure can be emotionally adaptative or maladaptive for individuals with depressive symptoms are largely understudied. Previous research and public rhetoric often suggest that depressive and psychopathological symptoms may be associated with a *preference* for extreme metal music (Baker & Bor, 2008; Martin et al., 1993; McFerran et al., 2015; Roberts et al., 2003; Shafron & Karno, 2013). However, not all empirical evidence supports this conclusion. One study revealed that psychopathological symptoms are less correlated with a preference for "intense" genres, including heavy metal music,

than with a preference for "non-intense" musical genres (Merz et al., 2020). Another study revealed that heavy metal fans had comparable or lower levels of depressive and anxious symptoms than those evident in the general population (Recours et al., 2009). Furthermore, it is an open question as to whether or not experiences of depressive symptoms significantly predict negative emotional *outcomes* in response to violently themed music.

Hence, a key step in understanding the complex relationship between depressive symptoms and negative emotions in response to violently themed music is to establish whether fans of violently themed music exhibit comparatively higher levels of depressive symptoms than fans of non-violently themed music. Although the existing evidence is mixed, we tested the hypothesis that fans of violently themed music will exhibit greater depressive symptoms (in a non-clinical sample) than fans of non-violently themed music (H1). Moreover, it is important to determine whether ratings of depression predict negative emotional responses to music for fans of violently themed and non-violently themed music, as has been previously observed in listeners of sad music (Garrido & Schubert, 2013). Hence, we tested the hypothesis that self-reported depressive symptoms in a non-clinical sample will significantly predict negative emotions (sadness, tension, fear, and anger) for fans of extreme metal and violent rap music (H2). These predictions were assessed to bring clarity to the connection between depressive symptoms and music listening. However, fans' strategies for using music to regulate mood may also influence predictive relationships between depressive mood states and negative emotional outcomes.

The role of mood regulation in the emotional experience of music

Mood regulation is a primary motivation for engaging with music (Carlson et al., 2015; Saarikallio, 2008; Taruffi & Koelsch, 2014). Positive mood-regulation strategies can lead to mood improvement and enhanced well-being (Carlson et al., 2015; Chin & Rickard, 2014; Gross & John, 2003), whereas negative mood-regulation strategies can lead to rumination and depressive symptoms (Garrido & Schubert, 2013; Saarikallio et al., 2015). While there are a range of different music in mood-regulation strategies (Saarikallio, 2006), there are two distinct strategies associated with negative and depressive moods that are the focus of this investigation: *discharge* and *diversion* (Carlson et al., 2015; Saarikallio & Erkkilä, 2007). Discharge is a strategy where a listener discharges negative emotions by engaging with music that expresses similar negative emotions, such as sadness or anger (Saarikallio & Erkkilä, 2007). It is proposed that through the expression of negative emotions, such emotions can be alleviated (Saarikallio, 2008). In contrast, diversion refers to an engagement with music that facilitates a detachment from emotional concerns such as worry and stress (Saarikallio & Erkkilä, 2007). Hence, it is proposed that when listeners employ diversion, the music alleviates negative emotions through distraction (Saarikallio, 2008; Saarikallio & Erkkilä, 2007).

Although both strategies were originally conceived as effective ways to regulate mood using music, there is some evidence that discharge may be maladaptive and akin to rumination, which is commonly associated with depression (Carlson et al., 2015; Garrido & Schubert, 2013; Thomson et al., 2014). However, diversion has been associated with cognitive reappraisal, a widely regarded positive mood regulation strategy (Chin & Rickard, 2014; Gross & John, 2003; Saarikallio, 2012). Therefore, diversion may be an adaptive strategy serving to redirect negative thoughts, whereas discharge may instead act to reinforce them (Carlson et al., 2015).

If discharge is indeed akin to maladaptive strategies such as rumination, it would be expected to be associated with depressive symptoms and further exacerbate fans' negative emotional responses to violently themed music. If the diversion strategy is akin to the dissociation from

negative thoughts, it would not be expected to be associated with depressive symptoms and instead could attenuate fans' negative emotional responses to violent music. We hypothesized that ratings of depression in a non-clinical sample of fans of violently themed music significantly predict the use of the discharge mood regulation strategy, but not the diversion strategy (H3). Furthermore, we hypothesized that both mood regulation strategies significantly moderate the positive relationships between ratings of depression and negative emotional outcomes in fans of violently themed music. More specifically, that discharge exacerbates this relationship and diversion attenuates this relationship (H4).

Method

Participants

The sample contained 145 first-year psychology students from Macquarie University from three different music fan groups: 46 fans of extreme metal (59% female, 39% male, 2% other), 49 fans of violent rap (80% female, 20% male), and 50 fans of non-violently themed classical music (76% female, 22% male, 2% other), ranging from 18 to 55 years of age. Participants self-identified as fans of one of the three genres. An a priori power analysis was conducted using G*Power (Version 3.2). This power analysis indicated that the aforementioned sample size was sufficient to detect medium effects sizes of roughly .35, for a between-subjects design with three groups (Cohen, 1988). This sample size was also sufficient for the regression analyses including the necessary control variables. The demographic information for all participants is presented in Table 1.

Table 1. Demographic Information.

Fan group	*n*	Male | Female | Other	Group, *M* (*SD*)	
			Age	Years of training
Extreme metal	46	18 | 27 | 1	19.90 (2.25)	3.02 (4.70)
Violent 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. "Other" was selected by participants who did not identify as male or female.

Stimuli

Each group of fans completed an online survey that consisted of rating scales and excerpts of music. Eight one-minute excerpts of extreme metal, violent rap, and classical music were used in the study. The extreme metal music was mostly characterized by distorted, dissonant guitar tones and note choices, fast tempo, fast "blast beat" drumming, and screaming vocalizations (Mayer & Timberlake, 2014; Olsen et al., 2018; Tsai et al., 2010). The violent rap music, however, was mostly characterized by a slower tempo, recurrent and often digital drumbeat, and a strong emphasis on spoken vocal delivery (Fried, 2003; Travis, 2013). The classical music was selected from Baroque, Classical, and Romantic eras spanning from 1600 to 1820. Extreme metal stimuli were excerpts from songs used in Thompson et al. (2019) and Olsen et al. (2020). Excerpts of violent rap music and classical music were excerpts from songs used by Olsen et al. (2020). Fans of extreme metal only heard extreme metal stimuli, and so on for the other two

fan groups. Participants in each group were randomly assigned to hear four of the eight excerpts, with all eight excerpts equally distributed across participants in each group. The 24 music excerpts are listed in the Appendix. More information on the steps involved in stimulus selection is reported in Thompson et al. (2019) and Olsen et al. (2020).

Measures

Emotional and experiential responses to music. These items were derived from an amalgamation of scales designed to measure a range of emotional and experiential responses to each of the musical excerpts. This selection of items was first used by Vuoskoski et al. (2012) and again in Thompson et al. (2019). First, there were 10 "emotional response" items on 7-point scales, including 8 from the Geneva Emotional Music Scale (GEMS-9; Zentner et al., 2008): wonder, transcendence, power, nostalgia, peacefulness, joyful activation, tension, and sadness. For these items, participants responded to how well a group of descriptors for each emotion reflected their emotional response to the music. For example, the experience of wonder was described as feeling "filled with wonder, dazzled, moved." Two additional negative emotion items, anger and fear, were added. As violently themed music was not included in the development of the GEMS-9 subscales, it is possible that the GEMS-9 does not capture the full range of responses to music with violent content. Anger and fear were added as they encompass potential emotional responses to music with violent themes not represented in the GEMS-9. Thus, there were a total of six "positive emotion" items and four "negative emotion" items. The focus of the present study was on the four negative emotions. Positive emotional responses are published in Olsen et al. (2020) and analyzed in the context of the Dualistic Model of Passion (Vallerand et al., 2003) and fans' functional use of music (Schäfer & Sedlmeier, 2009). "Experiential" response items were also used to measure overall engagement and enjoyment. All items were scored on 7-point Likert scales, consistent with Thompson et al. (2019). A binary yes/no question was presented after each excerpt to assess prior familiarity with any excerpt of music (0 = *unfamiliar*, 1 = *familiar*).

The Brief Music in Mood Regulation Scale. The Brief Music in Mood Regulation Scale (B-MMR; Saarikallio, 2012) is a 21-item concise refinement of the original 40-item Music in Mood Regulation Scale that assesses participants' use of a range of different mood regulation strategies through music (Saarikallio, 2008). Three items are included for each of the seven mood regulation strategies of entertainment, revival, strong sensation, diversion, discharge, mental work, and solace. The present study focussed on diversion and discharge. Participants were given a series of statements about the uses of music and asked how much they agreed with each on a 7-point Likert-scale ranging from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*). An example of a diversion item was: "For me, music is a way to forget about my worries." An example of a discharge item was: "When I'm really angry, I feel like listening to some angry music." Scores were summed for each subscale, meaning that scores ranged from 3 to 21, with a greater score indicating the greater use of each particular mood-regulation strategy. The internal consistency scores for all subscales of the B-MMR are presented in Table 2.

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. Only scores on the depression subscale were analyzed in the present study. The internal consistency scores for each fan group are presented in Table 2. Participants were asked how many times they felt a certain way over the past week, with responses

Table 2. Internal Consistency Coefficients for the Brief Music in Mood Regulation Scale and Depression Anxiety Stress Scale.

Scale set	Scale item	Internal consistency (α)		
		Extreme metal	Violent rap	Classical
Brief Music in Mood Regulation Scale				
	Diversion	.86	.86	.88
	Discharge	.85	.85	.78
Depression Anxiety Stress Scale				
	Depression	.94	.91	.93

Table 3. Number of Participants with Depressive and Non-Depressive Symptoms (DASS-21).

Depression subscale categories	Extreme metal	Violent rap	Classical	Total
Symptomatic				
Mild	3	3	5	11
Moderate	6	5	9	20
Severe	6	10	8	24
Extremely severe	8	5	3	16
Total	23	23	25	71
Non-symptomatic	23	26	25	74

made 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*. Scores on the depression subscale range from 0 to 21. Specifically, scores fall into five categories of depressive symptoms, including none (0–4), mild (5–6), moderate (7–10), severe (11–13), and extremely severe (14+). As can be seen in Table 3, all categories of the DASS-21 depression subscale were represented in the study's sample.

Procedure

Participants signed up to complete the survey that represented their particular music genre fan group. That is, fans of extreme metal signed up to the extreme metal survey, and so on for the other two fan groups. Each survey was presented using the Qualtrics web platform. The inclusion criteria were stated explicitly in the title of each survey: that participants must be fans of "extreme metal *with violent themes*," "rap music *with violent themes*," or "classical music." Furthermore, a categorical yes or no question regarding fan status of each particular genre being placed at the start of each survey. If participants were unfamiliar with all four excerpts *and* disliked all four excerpts that were presented to them in the music listening phase of the study, they were excluded from the sample, as it was determined that they did not adequately meet the criteria of a fan. Participants were not permitted to complete more than one survey to ensure independence of observations.

After obtaining informed consent, participants completed a demographic questionnaire, the B-MMR, and the DASS-21.[2] Participants were then informed that the music listening component was about to start and to concentrate on each excerpt and the emotions they experienced

in response to each excerpt. They then heard their four prescribed musical excerpts. After the conclusion of each excerpt, participants completed the emotional and experiential response questions and the familiarity item.

Results

Descriptive statistics for each fan groups' mean ratings of music training, depression, and mood regulation strategies are presented in Table 4. To test our first hypothesis, that fans of extreme metal and violent rap would exhibit greater depressive symptoms than fans of classical music, a one-way ANOVA was conducted. There were no significant differences between the three groups on ratings of depression, $F(2, 142) = 0.13$, $p = .875$, partial $\eta^2 < .01$. Hence, the first hypothesis was not supported.

One-way ANOVAs were conducted to assess differences between groups for music training, use of the diversion strategy and use of the discharge strategy. There were no significant differences between the three groups in any of these factors (all p-values $> .05$). Therefore, all three groups reported statistically equivalent levels of music training and their tendency to use either diversion or discharge as mood regulation strategies while listening to music.

There were, however, significant differences between the three music fan groups on how engaged they were while listening to the music, their familiarity with the music they listened to during the study, and how much they enjoyed the music. Specifically, there was a significant effect of fan group on ratings of familiarity with the music in the study, $F(2, 142) = 46.43$, $p < .001$, partial $\eta^2 = .40$, and ratings of engagement with the music in the study, $F(2, 142) = 13.79$, $p < .001$, partial $\eta^2 = .16$. Using pairwise-comparisons with a Bonferroni adjusted alpha of .017, results showed that classical music fans ($M = 5.52$, $SD = 0.93$) were significantly more engaged with the music than fans of extreme metal ($M = 4.52$, $SD = 0.98$), $p < .001$, 95% CI = [0.62, 1.38], and fans of violent rap ($M = 4.95$, $SD = 0.89$), $p = .003$, 95% CI = [0.19, 0.94]. Furthermore, classical music fans reported a significantly greater proportion of familiar excerpts ($M = 0.75$, $SD = 0.31$), than fans of extreme metal ($M = 0.24$, $SD = 0.25$), $p < .001$, 95% CI = [0.39, 0.61], and fans of violent rap ($M = 0.33$, $SD = 0.26$), $p < .001$, 95% CI = [0.30, 0.52]. There was also a significant main effect of fan group on enjoyment ratings, $F(2, 142) = 21.61$, $p < .001$, partial $\eta^2 = .23$. Bonferroni adjusted pairwise comparisons showed that the enjoyment of classical music excerpts by its fans ($M = 5.57$, $SD = 0.98$) was significantly greater than the enjoyment of extreme metal excerpts ($M = 4.46$, $SD = 1.06$), $p < .001$, 95% CI = [0.79, 1.61], and violent rap excerpts ($M = 4.56$, $SD = 0.99$), $p < .001$, 95% CI = [0.69, 1.50] by their respective fans.

Table 4. Descriptive Statistics Comparing Fans of Extreme Metal, Violent Rap, and Classical Music on Ratings of Depression and Mood Regulation Strategies.

Fan group	*n*	Group, *M* (*SD*)		
		DASS-D	Diversion	Discharge
Extreme metal	46	6.28 (5.74)	15.67 (3.65)	14.65 (4.40)
Violent rap	49	6.20 (5.08)	16.69 (3.20)	13.88 (4.31)
Classical	50	5.76 (5.25)	16.22 (4.38)	12.40 (5.23)

Note. "DASS-D" = score on the depression subscale of the DASS-21, "Diversion" = score on the diversion subscale of the B-MMR, "Discharge" = score on the discharge subscale of the B-MMR.

Table 5. Descriptive Statistics Comparing Fans of Extreme Metal, Violent Rap, and Classical Music on Ratings of Sadness, Tension, Anger, and Fear.

Scale item	Group, *M* (*SD*)		
	Extreme metal	Violent rap	Classical
Sadness	1.93 (.89)	2.36 (1.19)	1.74 (.97)
Tension	2.33 (1.07)	2.23 (1.22)	1.84 (.84)
Anger	2.48 (1.44)	2.30 (1.30)	1.42 (.66)
Fear	2.22 (1.03)	2.05 (1.12)	1.45 (.64)

Table 6. Depression as Predictor of Negative Emotional Responses to Music Across All Fans of Violently Themed Music ($N = 95$).

Negative emotional responses	*M*	*SD*	Depression	*t*	*p*	*F*	R^2
Sadness	2.16	1.07	.38***	3.93	< .001	15.43	.14
Tension	2.28	1.15	.34***	3.36	.001	11.30	.11
Anger	2.39	1.23	.23*	2.30	.024	5.28	.05
Fear	2.13	1.08	.37***	3.81	< .001	14.52	.14

Note. Coefficients in the column labeled "Depression" are standardized beta weights from multiple regression analyses. *$p < .05$; ***$p \leq .001$.

Hence, differences in engagement, familiarity, and enjoyment were controlled as covariates in subsequent analyses involving all three fan groups. As there were no significant differences in engagement, familiarity, or enjoyment between the two fan groups of violently themed music, these factors were not controlled as covariates when the two groups were analyzed independent of the classical music fan group.

Ratings of depression and emotional outcomes

We next examined whether ratings of depression predicted negative emotional outcomes in response to music. Table 5 reports descriptive statistics for each fan groups' mean ratings of sadness, tension, anger and fear. Originally reported using Bonferroni corrected pairwise comparisons in Olsen et al. (2020; $\alpha = .017$), fans of extreme metal and fans of violent rap reported significantly higher ratings of anger and fear than classical music fans (p-values $< .008$). Fans of violent rap music also reported significantly higher ratings of sadness than classical music fans ($p = .011$). There were no significant differences between fans of violent rap music and fans of extreme metal music ($p = .026$).

Simple regression analyses were conducted in the present study with ratings of depression as the predictor and sadness, tension, anger, and fear as dependent variables. This analysis was conducted first with the two fan groups of violently themed music combined, and second with a combination of fans of violently themed music and fans of classical music. This analytical approach was designed to test hypotheses with the sample of fans of violently themed music specifically, as well as the larger sample of combined music fans to assess generalizability across violently themed and non-violently themed music genres.

Table 6 displays the results of the first regressions for the two fan groups of violently themed music. Ratings of depression were a significant predictor of all four negative

Table 7. Depression as Predictor of Negative Emotional Responses to Music Across Fans of Violently Themed Music and Fans of Non-Violently Themed Music ($N = 145$).

Negative emotional responses	*M*	*SD*	Depression	*t*	*p*	*F*	R^2
Sadness	2.01	0.97	.37***	4.90	< .001	9.09	.21
Tension	2.13	1.07	.31***	4.14	< .001	9.08	.21
Anger	2.06	1.16	.20**	2.63	.009	7.96	.19
Fear	1.90	1.00	.30***	3.94	< .001	9.02	.21

Note. Coefficients in the column labeled "Depression" are standardized beta weights from multiple regression analyses; "Engagement," "Enjoyment," and "Familiarity" were entered as predictors to account for between-group differences in these two variables; Significance values correspond only to the independent variables of interest, whereas the *F*-statistic and R^2 values refer to the whole model with covariates included.
**$p < .01$, ***$p \leq .001$.

emotional outcomes, meaning that higher ratings of depression predicted the experience of sadness, tension, anger, and fear in response to violently themed music for both fan groups, supporting predictions. Table 7 displays the results of these regressions with all three music fan groups combined, with engagement, familiarity, and enjoyment entered as predictors to control for their influence when all groups were analyzed together. Results again reveal ratings of depression as a significant predictor of all four negative emotional outcomes in the study.

Mood regulation: diversion and discharge

Simple regression analyses were conducted with ratings of depression as the predictor and diversion and discharge subscales of the B-MMR as dependent variables. This was again first conducted with only the two fan groups of violently themed music combined, and then all three fan groups combined. Familiarity, engagement, and enjoyment were entered as predictors to control for their influence when all three groups were analyzed together. Table 8 displays the results of these multiple regressions with the two fan groups of violent music combined. Ratings of depression significantly predicted the use of the discharge mood regulation strategy but not the use of the diversion mood regulation strategy, as predicted.

Table 8 also displays the results of these multiple regressions with all three fan groups combined. Similar to the results of the two fan groups of violently themed music, ratings of depression with all three groups combined significantly predicted the use of the mood regulation strategy of discharge, but not diversion.

Finally, we examined whether mood regulation strategies moderated the relationship between depressive symptoms and negative emotional outcomes. The PROCESS 3.5 macro for SPSS was utilized, first with ratings of depression as the predictor, diversion and then discharge as moderators, and ratings of sadness, tension, anger, and fear as dependent variables. This was conducted first with the two fan groups of violently themed music combined and with all three fan groups combined, with engagement, familiarity, and enjoyment entered as covariates in the three-group analysis.

For the two fan groups of violently themed music combined, there were no significant effects from the moderation analyses using diversion or discharge as moderators, ratings of depression as the predictor and negative emotional outcomes as dependent variables (all *F*-values < 1.41, all *p*-values $> .239$). For the three fan groups combined, there was a significant moderating effect of diversion on the relationship between ratings of depression and the emotional response

Table 8. Depression as Predictor of Music in Mood Regulation Strategies.

	Depression	*t*	*p*	*F*	R^2
Fans of violently themed music					
Diversion	.06	0.53	.598	0.28	.00
Discharge	.23*	2.27	.028	4.96	.05
Three fan groups combined					
Diversion	.09	1.12	.263	5.71	.14
Discharge	.25**	3.09	.002	2.82	.08

Note. Coefficients in the column labeled "Depression" are standardized beta weights from multiple regression analyses; "Engagement," "Enjoyment," and "Familiarity" were entered as predictors to account for between-group differences in these variables only when the three fans groups were combined; For the three fan groups combined, the significance values correspond only to the independent variables of interest, whereas the *F*-statistic and R^2 values refer to the whole model with covariates included.
*$p < .05$; **$p < .01$.

of fear, $F(2, 142) = 4.27$, $p = .041$. This details that a tendency to use music as a means of distracting oneself from negative emotions somewhat decreased the strength of this positive association between depressive symptoms and fear responses to music.

However, there were no other significant effects from the moderation analyses for diversion or discharge when all three fan groups were combined (all *F*-values < 1.85, all *p*-values $> .176$). These results suggest that although ratings of depression significantly predict the use of discharge as a mood regulation strategy, the use of discharge did not significantly moderate the predictive relationship between depressive symptoms and negative emotional outcomes. This is the case when fans of violently themed music were analyzed independently and also in combination with fans of non-violently themed music, providing evidence that these findings are not genre specific. Furthermore, the use of the diversion strategy did not significantly moderate the predictive relationship between depressive symptoms and negative emotional outcomes in fans of violently themed music. While diversion did significantly moderate the relationship between depressive symptoms and fear when all three groups were analyzed together, there was no significant effects for the emotional outcomes of sadness, tension, and anger. Therefore, H4 was not supported.

Discussion

The present study aimed to investigate the experience of negative emotions in fans of violently themed music and fans of non-violently themed music, and the role that depressive symptoms and mood regulation strategies may have on these emotional experiences. By comparing the experience of fans of extreme metal with violent themes, fans of rap music with violent themes, and fans of classical music, it was observed that fans of violently themed music reported greater ratings of negative emotions than fans of classical music (i.e., anger, fear, and sadness). Furthermore, there were no significant differences between fans of violently themed music and non-violently themed music for self-reported ratings of depression. However, as hypothesized, ratings of depression significantly predicted all four negative emotional outcomes of sadness, tension, anger, and fear. These findings were observed for both fan groups of violently themed music, and also when fans of violently themed music and fans of non-violently themed music were combined. As hypothesized, it was further observed that ratings of depression significantly predicted the use of the discharge mood regulation strategy, but not the use of the diversion strategy.

Contrary to predictions, there was no significant moderating influence of the diversion or discharge mood regulation strategies on the predictive relationship between ratings of

depression and negative emotional outcomes for fans of violently themed music, and only one significant moderating effect of diversion in the relationship between depressive symptoms and ratings of fear. This significant effect was observed when fans of violently themed music and fans of non-violently themed music were combined in the analysis. Therefore, across all participants there was a positive association between depressive symptoms and fear responses to music, and perhaps not surprisingly, a tendency to use music as a means of distracting oneself from negative emotions somewhat decreased the strength of this relationship—an effect that requires investigation in future research.

Olsen et al. (2020) report that fans of violently themed music experience a significantly greater magnitude of negative emotions in response to their favorite music when compared to the experience of fans of classical music. The results of the present study show that this phenomenon is not due to fans of violently themed music exhibiting greater depressive symptoms than fans of non-violently themed music. However, depressive symptoms do predict fans' experience of negative emotional responses to their preferred music, regardless of which genre they prefer. In particular, emotional responses in fans of violently themed music appear to follow similar patterns to fans of sad music. While sad music often facilitates a host of positive emotional outcomes for its listeners (Sachs et al., 2015; Vuoskoski et al., 2012), those experiencing psychopathological symptoms such as depression and distress are more likely to experience negative emotional outcomes from sad music (Garrido & Schubert, 2013). This can occur even when fans listen to sad music with the explicit intention of mood improvement (McFerran & Saarikallio, 2014).

However, individuals with greater depressive symptoms do not appear to seek out violently themed music, as has been suggested of fans of sad music (Millgram et al., 2015; Yoon et al., 2020). As sad music is commonly characterised as low-arousal (Eerola & Vuoskoski, 2011; Sachs et al., 2015), individuals with depressive symptoms may find that sad music aligns with their internal state and provides comfort. Individuals with depressive symptoms may not seek out violently themed music, especially extreme metal music, as it is commonly highly energetic and thus potentially incongruent with their internal state (Susino & Schubert, 2019). Further studies that focus on individuals with clinical levels of depressive symptoms would be required to investigate the potential role of musical arousal in the context of clinical depression and preference for violently themed music. Future research could also experimentally induce a negative mood and then evaluate perceived and experienced emotional response to self-selected violently themed music. Such an investigation will shed further light on whether fans gravitate toward music with negatively valanced themes to work through negative moods and associated symptoms.

Our results regarding music in mood-regulation suggest that discharge is associated with depressive symptoms across all groups. The higher the ratings of depressive symptoms in fans of all genres, the more likely they would use their preferred music to discharge negative emotions. This result corroborates previous evidence that discharge and psychopathological symptoms are significantly correlated (Carlson et al., 2015; Thomson et al., 2014), and that a tendency to employ discharge predicts higher levels of depression (Thomson et al., 2014). However, the use of the discharge strategy did not moderate the relationship between depressive symptoms and negative outcomes, suggesting that while ratings of depression predict the use of discharge as a mood regulation strategy, the use of that strategy neither attenuates nor exacerbates the relationship between ratings of depression and the experience of negative emotions in response to violently themed music. This finding does not support previous evidence suggesting the discharge strategy is a strategy akin to rumination (Carlson et al., 2015).

Interestingly, discharge did not influence the strength of the predictive relationship between depressive symptoms and experience of negative emotions in response to music. However, a previous within-subjects study revealed that fans of extreme metal music experienced decreases in subjective hostility and irritability when exposed to extreme metal music after an anger

induction (Sharman & Dingle, 2015). Furthermore, heavy metal fans commonly report that they listen to such music for a healthy, purgative purpose that discharges any aggressive or violent feelings (Arnett, 1991; Thompson et al., 2019). As fans of violently themed music respond to violent imagery and threat signals in the music to a similar extent to non-fans, and show no evidence of reduced empathic concern (Ollivier et al., 2019; Slade et al., 2021; Sun et al., 2019), it appears that one key reason that fans listen to violently themed music is to experience and express negative states, often with the intention of modulating them into positive affective experience.

This body of evidence highlights that further investigation is required into the role of discharge as an efficacious mood regulation strategy in the context of music. For example, it is imperative to clarify whether discharge does help facilitate positive outcomes through a purgative catharsis, or whether it may exacerbate negative outcomes similar to rumination. It is also possible that the mood management strategies were effective, but the measures employed in our study—which focused on short-term emotional responses to the *music*—were unable to capture these benefits. Conducting an experiment that measures emotional responses at different time points may help gain a greater understanding of how mood regulation strategies serve to regulate emotions over a greater period of time. Furthermore, measuring levels of depression pre- and post-exposure to one's preferred violently themed music would provide another way to understand whether the discharge strategy does indeed alleviate depressive symptoms.

Future research can also investigate whether discharge is a more commonly employed strategy for fans of violently themed music than for fans of other non-violently themed music. In the present study, there were no statistically significant differences between fan groups on their use of the discharge strategy. However, mean scores of discharge in fans of violently themed music were numerically greater than fans of classical music, and this difference approached significance ($p = .058$). This finding suggests that nuanced differences in mood regulation strategies likely exist between groups and further investigation is required.

The present study also sought to understand whether diversion, a strategy commonly associated with adaptive outcomes, would moderate the relationship between depressive symptoms and negative emotional outcomes. While higher diversion scores did reduce the strength of the predictive relationship between depressive symptoms and the emotional response of fear when all groups were combined, there was no evidence of moderation for the emotional responses in fans of violently themed music. This suggests that the diversion strategy for mood regulation in fans of violently themed music may not be as successful in managing the experience of depressive symptoms as it has been for the management of emotions in other domains. It is possible that when an individual is experiencing depressive symptoms, they may be incapable of utilizing music as a means of effective distraction from such symptoms. This difficulty could be especially compounded when an individual is attempting to distract themselves with content that contains the violent, gruesome lyrics and distorted, dissonant and aggressive sonic features of extreme metal presented in this study.

Although both mood regulation strategies did not significantly influence the relationship between depressive symptoms and negative emotional outcomes, a greater tendency to use the discharge strategy may nevertheless reflect depressive tendencies. Incorporating assessments of mood regulation strategies like discharge into pre-screeners in a clinical context will help therapists understand whether particular music listening strategies and mood-related tendencies reflect vulnerabilities to depressive symptoms. Also, by educating individuals with depressive tendencies about how they are engaging with music, maladaptive experiences with music during negative mood states can be minimized (Stewart et al., 2019). Therefore, if mood regulation strategies are measured in a clinical context, they can inform psychoeducation for clients and assist in the therapeutic process. Indeed, developing a greater understanding of fans'

intentions and strategies when using music for mood regulation is vitally important for clinicians who strive to utilize the benefits of music listening for individuals with depressive symptoms.

One important limitation of the study is that the subjective magnitude of perceived violence within the lyrical themes of each musical excerpt was not recorded. Non-fans are likely to perceive violently themed music genres as violent, due to the lyrical content or distorted, dissonant sonic features. However, fans may perceive these excerpts differently and may consider the violent imagery as authentic or true to the genre, rather than focusing on the specific depictions of violence (Kahn-Harris, 2007). However, fans may selectively attend to positive affective experiences of the music, such as empowerment, joy, and peacefulness (Thompson & Olsen, 2018). Future research should measure perceived violence and perceived emotional valence in response to both the sonic elements and lyrical content of violent music, as well as expanding the range of excerpts to include other subgenres (e.g., doom metal and black metal). Finally, it is important to note that the ratings of depression reported in the present study vary in symptomology across a non-clinical, first-year university student sample. Future research can therefore build on the present study and further investigate a clinically depressed sample of participants.

In sum, while there appears to be no differences in the presence of depressive symptoms between fans and non-fans of violently themed music, it does appear that the higher the rating of depressive symptoms, the more likely a listener will experience negative emotions in response to music they enjoy, and the more likely they are to use the discharge strategy to attempt to regulate negative emotions. Although in these circumstances listeners gravitate toward using discharge as a mood regulation strategy, both discharge and diversion did not significantly reduce (or exacerbate) the heightened negative emotional responses to music that are predicted by depressive symptomology.

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ORCID iDs

Merrick Powell https://orcid.org/0000-0001-8215-5206
Kirk N Olsen https://orcid.org/0000-0002-8238-8816

Notes

1. The present study specifically recruited "fans of extreme metal music with violent themes," and "fans of rap music with violent themes." Hence, use of the term "extreme metal" hereafter refers to extreme metal music with violent themes and use of the term "violent rap" refers to rap music with violent themes. It is also important to note that violence is not inherent to extreme metal music or rap music and not all of this music contains violent themes. Due to the study's aims, we specifically recruited fans of metal music with violent themes and fans of rap music with violent themes.
2. Participants also completed the Functions of Music Scale (Schäfer & Sedlmeier, 2009) and the Passion Scale (Vallerand et al., 2003), the findings from which are published in Olsen et al. (2020).

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Appendix

Track list

Extreme Metal Group
Arch Enemy, "We Will Rise" (Century Media, 2003)
At the Gates, "Blinded by Fear" (Earache Records, 1995)
Autopsy, "Waiting for the Screams" (Peaceville Records, 2015)
Bloodbath, "Eaten" (Century Media, 2004)
Cannibal Corpse –Hammer Smashed Face" (Metal Blade Records, 1993)
Carcass, "Corporal Jigsaw Quandary" (Earache Records, 1993)
Nile, "Black Seeds of Vengeance" (Relapse Records, 2000)
Obituary, "Slowly We Rot" (Roadrunner Records, 1989)
Violent Rap Group
Big L, "All Black" (Columbia Records, 1995)
Brotha Lynch Hung, "Meat Cleaver" (Strange Music, 2013)
DMX, "Bring Your Whole Crew" (Def Jam Records, 1998)
Eminem, "Superman" (Interscope Records, 2002)
Geto Boys, "Chuckie" (Rap-A-Lot Records, 1991)
Immortal Technique, "Dance with the Devil" (Viper Records, 2001)
Kool G Rap, "Executioner Style" (Cold Chillin' Records, 1995)
Necro, "Dead Body Disposal" (Psycho$Logical Records, 2001)
Classical Music Group
Chopin, "Nocturne op. 9 no. 2"
Georges Bizet, *Carmen Suite no. 2*, "Habanera"
Johan Sebastian Bach, *Double Violin Concerto in D Minor*, "1st Movement Vivace" BWV 1043
Ludwig van Beethoven, *Symphony no. 5 in C Minor op. 67*, "I. Allegro con brio"
Mozart, *Piano Sonata no. 11 in A Major, K. 331*, "iii. Rondo alla Turca"
Pachelbel, *Canon in D Major*
Richard Wagner, "Ride of the Valkyries"
Vivaldi, *Violin Concerto in E, Op. 81, "The Four Seasons (Spring)", RV 269* "I. Allegro"