I Get Knocked Down but I Get Up Again:

The Effects of Listening to Music When Sad on Young Adults

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Abstract

Listening to music is a strategy many people use to regulate their emotions, especially sadness. However, there is disagreement about whether listening to music is a healthy way to regulate emotions, with some research finding that sad music worsens a sad state, especially for people high in rumination. To further explore the immediate consequences of music listening when sad 128 young adults (41% male, aged 18 to 25 years) were induced into a sad emotional state prior to random assignment to listening of either self-selected music, experimenter-selected sad music, or no music. Results revealed that listening to either self-selected or experimenter-selected music led to a decrease in sadness. No difference was found between groups at post-listening. However, participants who listened to self-selected music reported a return to baseline levels of sadness, while this did not occur for participants who listened to experimenter-selected or were in the no music control. Rumination was also measured but did not moderate the impact of music listening on sadness for either music condition. Furthermore, there was no impact of rumination on participants' perceptions of sadness in music. These results support the notion that listening to sad music does not worsen a sad state—even for those high in rumination—although it does appear to slow the emotion - regulation process in cases where sad music is not self-selected.

Keywords: emotion regulation, music, sadness, young people, rumination

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In daily life we frequently come into contact with music, either serendipitously while in shops or other public spaces, or deliberately while listening to music on personal devices. Experience sampling and survey studies have demonstrated that listeners readily perceive emotions in music, and that music impacts our emotions in approximately two-thirds of listening episodes (Juslin & Laukka, 2004; Juslin, Liljeström, Västfjäll, Barradas, & Silva, 2008). Juslin and Lauka found that the key motivation behind music use was to "express, release, and influence emotions" (p. 232, 2004). However, in the case of listening to sad music during times of sadness to feel better there seems to be an inconsistency. If sad music can make you feel sad when in a neutral emotional state (Clark, 1983; Västfjäll, 2002), then surely listening to sad music when sad would make listeners feel worse?

The notion that music can have adverse effects on mental health is not a new one. For example, 'problem music' (a term describing genres such as heavy metal, punk and rap/hip-hop) has been associated with poor mental health, however this link does not appear to be a causal one (Martin, Clarke, & Pearce, 1993; North & Hargreaves, 2006; Stack, Lester, & Rosenberg, 2012; Till, Tran, Voracek, & Niederkrotenthaler, 2016). Considering all musical genres, Saarikallio, Gold, and McFerran (2015) argued that using music in unhealthy ways—such as to avoid people and situations—predicts poor psychological wellbeing. Furthermore, it has been suggested that for people at risk of depression listening to music may actually heighten and exacerbate a negative emotional state (Garrido & Schubert, 2015a). Using music for this purpose represents ineffective emotion regulation, in circumstances when the goal of emotion regulation is to reduce unpleasant or unwanted emotions (Gross, Richards, & John, 2006; Saarikallio & Erkkilä, 2007).

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Music and Emotion Regulation

The ability to effectively regulate emotions has been linked to increased social and psychological functioning (Aldao, Nolen-Hoeksema, & Schweizer, 2010; Lopes, Salovey, Côté, & Beers, 2005). In a seminal study, Thayer, Newman, and McClain (1994) surveyed over 400 participants in three samples (college students, general public, and psychotherapists) and found music to be the third most commonly used and second most effective way to change a negative mood. Similarly, the Australian Psychological Society (APS) surveys a nationally representative sample of around 1,500 Australians, aged 18 and onward, each year on the causes of stress and strategies used to manage stress (2011-2015). These surveys consistently report that listening to music is used by 80% of participants to manage stress, and it is rated in the top four most effective stress management strategies (APS, 2015).

An experience sampling study by Randall and Rickard (2016) found that when participants were listening to music during an unpleasant emotional state it was for emotional reasons in nearly two-thirds of occasions. Randall and Rickard (2017) further found that both felt arousal and valence (or pleasantness) moved towards neutral when music was listened to when the listening occurred while experiencing negative emotions. This shift was seen for music that could be considered to express positive (i.e. happiness) or negative emotions (i.e. sadness), although the effect was more pronounced for music that was positively valenced. Such a finding is important as it empirically supports the use of music for emotion regulation in negative states, even when emotionally congruent music is listened to. Similar results have been reported in an experimental study in which participants were induced to feel sad, and then listened to their favourite song: they felt better after music listening regardless of whether it was happy or sad music (Zavoyskiy, Taylor, & Friedman, 2016).

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Saarikallio provided an emotion regulation model specific to music drawing on her earlier study (Saarikallio & Erkkilä, 2007), and reflected in the items of the *Music for Mood Regulation* (MMR) measure (Saarikallio, 2008). The MMR includes seven types of music listening strategies to regulate a variety of emotions. Five of these strategies are applicable to the regulation of sadness: strong sensation (listening to music to strengthen or engage in sadness), diversion (using music to distract from felt sadness), discharge (listening to music as a way to express felt sadness), mental work (listening to music in order to cognitively process sadness), and solace (using music to feel understood). This model has been used for both adolescents and adults with evidence suggesting that the use of music for regulation increases through adolescence and remains throughout adulthood (Saarikallio, 2008; 2011). Our research using the MMR revealed that people in a sad emotional state use these strategies approximately 40% of the time (regardless of music listening goal) and when listening to either sadness congruent or incongruent music ([blinded for review], *in prep*). The mechanisms captured by the MMR suggest that music can be used to shift negative emotions such as sadness to positive emotions through two processes: music assisted change to a desired emotional state (Knobloch & Zillmann, 2002; Zillman, 1988) or by emotional immersion through listening to emotionally congruent music that assists in processing the emotion (Dingle, Sharman, & Larwood, 2018; Papinczak, Dingle, Stoyanov, Hides & Zelenko, 2015).

Self-selected versus experimenter-selected music

One factor that may play an important role in determining the emotional effect of music listening is whether the music is selected by the participant or by the experimenter. Listening to self-selected sad music has been linked to hedonic enjoyment and positive emotions, which are considered important for drawing solace from song (Eerola, Peltola, & Vuoskoski, 2015; Hanser, ter Bogt, Van den Tol, Mark, & Vingerhoets, 2016; Sachs, Damasio, & Habibi, 2015; Taruffi & Koelsch, 2014; Van den Tol & Edwards, 2013). Van den

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Tol and Edwards (2015) also found that listening to self-selected sad music perceived as having high aesthetic value predicted affective enhancement. Eerola et al. (2017) also highlight the potential benefits of listening to sad music as bringing about a sense of connection to others, either the musician or loved ones in past memories. In other words, rather than making listeners feel unpleasant, sad music made listeners feel pleasant emotions. Vuoskoski and Eerola (2017) have also demonstrated that sad music evoked pleasure is fully mediated by a sense of being moved. These feelings of being moved have been shown to occur with unfamiliar sad music, and no evidence suggests to suggest that the feelings of being moved would be smaller with self-selected sad music (Eerola, Vuoskoski & Kautiainen, 2016). However, the use of sad music when sad could also be problematic. Results of an international online survey study of 372 adults aged 17 to 68 years (65% female) revealed that difficulties in emotion regulation were significantly correlated with their selection of music to immerse in sadness ($r = .205$, $p < .001$), in anger ($r = .166$, $p < .01$) and in anxiety ($r = .131$, $p < .05$) (Dingle and Sharman, unpublished; cited in Dingle et al., 2018). In addition, people at risk of depression have been suggested as less likely to benefit from listening to sad music (Garrido & Schubert, 2015b, 2015a). In this latter study, scores on a measure of rumination were used as an indicator of depression risk, because rumination is known to be a predictor of depression (Aldao et al., 2010).

Music Listening and Rumination

Rumination describes the tendency to focus on the symptoms, causes, and possible consequences of distress, without taking an active problem solving approach (Trapnell & Campbell, 1999). Rumination has also been implicated in music listening behaviours and emotional outcomes. Chen, Zhou, and Bryant (2007) demonstrated that adult participants high in rumination were more likely to listen to songs that were low in positivity and liveliness when making a choice from a pre-determined playlist. Beyond this, Garrido and

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Schubert (2013) found that high ruminators were attracted to listening to sad music despite not enjoying it *per se*, or being likely to benefit from listening to sad music.

In two pre-to-post studies Garrido and Schubert (2015a, 2015b) measured the effect of sad music listening as moderated by rumination. In one study (2015b) they found both an initial and moderating effect of rumination, such that those high in rumination were higher in sadness at baseline and experienced a greater increase in sadness after music listening than participants low in rumination. Another study by Garrido and Schubert (2015a) found an initial effect of rumination, such that high ruminators reported greater sadness at baseline and post-listening. However, participants high in rumination did not experience a greater increase in sadness compared to participants low in rumination.

One limitation of these studies is that participants were asked to listen to music during a baseline state rather than a sad state. This is problematic as music has been shown to shift felt emotions towards the emotion conveyed in song when listening occurs at baseline, but not when listening occurs in a negative state and regulation is potentially happening (Randall & Rickard, 2017). Participants were asked to listen to a song that they knew to make them sad, and as such may have chosen songs that for them had inductive qualities (i.e. reminded them of a sad memory, see Juslin & Västfjäll, 2008), rather than regulatory qualities (i.e. made them feel comforted). Given this, the results could be interpreted as reflecting a process of musical emotion induction, rather than maladaptive regulation while listening to music during sadness (Västfjäll, 2002). In addition, based on these results it is not possible to know whether the increased sadness associated with rumination is due to participants' personal relationship with the song or to musical emotion contagion (where the listener takes on the emotion expressed by the song, Juslin & Västfjäll, 2008). Given that ruminators are suggested to be inclined to listen to sad music when sad (Garrido & Schubert, 2013) it is pertinent to test for the possible moderation by rumination in both explicitly sad music and music that has been self-selected during sadness.

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The Current Study

In summary, there is strong support for the notion that music is used for the regulation of negative emotions. However, there are conflicting accounts of whether music-based emotion regulation is an effective way to manage sadness. Some evidence suggests that ruminating when listening to sad music results in an increase in sadness, however this has not been tested when participants are in an induced state of sadness when listening occurs. It is also not known if self-selected music and experimenter-selected sad music might influence sadness in the same or different ways. Subsequently, the purpose of this paper was to replicate the study by Garrido and Schubert (2015b) but adding a mood induction first (sad or neutral mood), and then randomly assigning participants to one of three conditions: experimenter-selected music (ESM), self-selected music (SSM), or control (no music). A number of hypotheses were made. First, it was hypothesized that listening to music (either SSM or ESM) would lead to a decrease in sadness. Second, people who selected their own music (SSM) would show a greater decrease in sadness than those in the ESM or control condition. Finally, we hypothesised that rumination would moderate the relationship between music listening and sadness post-listening for both music conditions. We expected the moderation to exist because (a), people high in rumination are more susceptible to the emotional effects of music (ESM condition), and (b) ruminators are more likely to select sad songs (SSM condition).

Method

Participants

We collected data from 128 participants, aged 18 to 25 ($M_{age} = 20.09$, $SD_{age} = 1.87$) of which 76 identified as female. Participants were first year psychology students who received course credit for their involvement (85 participants) and general community members who were able to enter a prize draw for one of two AU\$100 *Amazon* gift vouchers (43 participants). Sixty-eight percent of participants were Caucasian, with the remaining being from Asia (22%), the middle east (2%), or elsewhere (8%).

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Measures

Demographics. Participants provided their age, gender, ethnicity, and whether they were participating for course credit.

Rumination. Rumination was measured using the rumination sub-scale of the Rumination Reflection Questionnaire (Rum-RRQ; Trapnell & Campbell, 1999). The rumination sub-scale included 12 items (i.e. "Sometimes it is hard for me to shut off thoughts about myself") rated on a five-point scale from 1 (*strongly disagree*) to 5 (*strongly agree*). Three items were reverse coded. The final score was the mean response to all items, with a higher score indicating higher levels of rumination. The Rum-RRQ demonstrated very good reliability in this sample, Cronbach's alpha = .89

Sadness. The depression sub-scale of the Profile of Mood States - Short Form (POMS-D-SF; Shachman, 1983) was used to measure sadness. Participants were asked to "describe how you feel right now" by selecting the most appropriate response after each of the following words" for eight negatively valenced adjectives (i.e. "hopeless"). Each item was responded to on a five-point scale from 0 (*not at all*) to 4 (*extremely*) The final score was the sum of responses to each item at that timepoint. The POMS-D-SF showed excellent internal consistency across all three time points in our sample, Cronbach's alphas > .92.

Music Emotion. Participants were asked to respond to the item "The song I just listened to was sad" on a five-point scale from 1 (*strongly disagree*) to 5 (*strongly agree*).

Stimuli

Sadness induction video. To induce sadness in participants two scenes from *The Lion King* and *The Champ* were played, replicating Rottenberg, Ray, and Gross's (2007) methodology. The two clips were combined into one video that had a duration of 301 seconds.

Sad song. The song *You Don't Know What Love Is* performed by Chet Baker was used as the experimenter-selected music (ESM) condition and played for 288 seconds. The song

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has a slow tempo, is in a minor mode, has sad lyrics, and was used as sad music in Ali and Peynircioglu's (2006) study.

Control video. The non-music control video displayed 32 neutral Velten-type statements, such as it "Santa Fe is the capital of New Mexico" taken from Jennings, McGinnis, Lovejoy, and Stirling (2000). Each statement was presented in white font on a black background for nine seconds, resulting in a 288 second control video.

Design and Procedure

The study was a mixed between and within subjects design, with participants randomly assigned to one of three conditions: self-selected music (SSM) experimenter-selected sad music (ESM), or no music (Control), and sadness ratings collected at multiple time points (baseline, post-induction, post-listening). The entire study was conducted online, with the mood induction and music elements embedded into an online survey hosted on the Qualtrics platform. On the first web page of the study participants were asked if they had access to their personal music collection, and those who did not were directed to the end of the study and thanked for their interest. Participants then completed demographic information and a baseline sadness measure. Following this, participants viewed the induction video, which they were unable to skip before completing the study. Participants then completed a second sadness rating and were randomly assigned by computer to either the SSM, ESM, or control condition. Participants in the SSM condition were instructed to listen to any song they felt like listening to for the next five minutes and told the web page would advance when this time was over (288 seconds). Participants were then asked to identify which song, or songs (in the case of the first song finishing before page advancement). Those in the ESM condition listened to an embedded recording of 'You Don't Know What Love Is' while those in the control condition viewed the control video featuring the Velten-type statements. In both cases the participant could not skip the music or video. Participants were asked to refrain from other activities. Participants in the music conditions were asked to respond to the music emotion

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item. All participants then completed a final sadness rating (and the Rum-RRQ) before undergoing a counter-induction. Participants who did not identify as participating for course credit could leave their contact details if they wished to go into the prize draw for one of two AU\$100 *Amazon* gift vouchers at the end of the study.

Results

To check that randomisation was successful and that participants did not systematically differ across conditions their responses to non-manipulated measures were compared. No differences were found, $p < .064$. A comparison of group characteristics can be seen in Table 1.

[INSERT TABLE 1 HERE]

A mixed 3 x 3 x 2 repeated measures ANOVA was conducted, with timepoint (baseline, post-induction and post-listening) as the within subjects factor; condition (SSM, ESM and Control) as a between subjects factor, and rumination (low and high, split by median split at 3.75) as a between subjects factor. The dependent variable was scores on the POMS-D-SF. A three-way interaction was not found, $F(4, 244) = 0.86, p = .488, \eta_p^2 = .01$, indicating that rumination did not have a conditional impact on final levels of sadness at a meaningful effect size. Thus, hypothesis 3 was not supported. Subsequently, the significant two-way interaction between timepoint and condition was followed up, $F(4, 244) = 2.76, p = .028, \eta_p^2 = .04$ (see Figure 1).

Follow up tests revealed that there was a significant increase in sadness from baseline to post induction, $t(127) = 9.77, p < .001, d = 0.86$, with there being no difference between conditions post-induction, $F(2, 125) = 0.49, p = .613, \eta_p^2 < .01$. Thus the mood induction was successful. As no baseline differences were seen the significant interaction occurred from post-mood induction (time 2) to post listening (time 3). Considering first the participants in the ESM condition, a significant decrease in sadness was reported from post-induction to

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post-listening $t(42) = -3.17, p = .003, d = -0.48$. Likewise, a significant decrease was seen for SSM, $t(41) = 6.32, p < .001, d = 0.96$ and the control condition, $t(42) = 5.75, p < .001, d = 0.87$. Thus, hypothesis one was supported.

The effect of condition at post-listening was subsequently investigated, and was found to be close to significance, $F(2, 125) = 2.91, p = .058, \eta_p^2 = .04$. As the effect was marginal and trending in the predicted direction we compared the post-listening scores of each group to their baseline scores. These exploratory tests revealed that both the control and self-selected music conditions returned to baseline, $t(41) = 0.44, p = .663, d = 0.07$ and $t(42) = 0.30, p = .764, d = 0.05$ respectively. However, those in the experimenter-selected condition had higher levels of sadness post-listening compared to baseline $t(42) = 3.93, p < .001, d = 0.59$. In other words, the SSM was more effective at regulating sad emotion than the ESM.

[INSERT FIGURE 1 HERE]

To test perceived sadness in music listened to a 2 x 2 between groups ANOVA was conducted, with condition (SSM and ESM) and rumination (low and high) as the between factors, and music emotion as the dependent variable. A significant interaction was not observed $F(1, 74) = 0.53, p = .470, \eta_p^2 < .01$, nor was a main effect of rumination $F(1, 74) = 0.71, p = .401, \eta_p^2 < .01$. This indicated that levels of rumination did not affect ratings of sadness. A significant effect of condition was observed $F(1, 74) = 27.36, p < .001, \eta_p^2 = .27$, such that those in the ESM condition perceived greater sadness in the song listened to ($M = 3.94, SD = 0.63$) than the average self-selected song ($M = 2.86, SD = 1.09$), $t(76) = 5.26, p < .001, d = 1.19$, see figure 2.

[INSERT FIGURE 2 HERE]

Discussion

The purpose of this study was to establish whether music can be listened to in a way that allows listeners to feel less sad. Building on this we aimed to replicate the findings of Garrido and Schubert (2015b) using experimenter-selected music, while also looking at the impact of self-selected music that had been selected while sad.

We first hypothesised that listening to music that was either self-selected or experimenter-selected would allow for a decrease in sadness. This was supported with both music listening conditions showing lower self-rated sadness post-listening than post-induction. These results contradict Garrido and Schubert's (2015a, 2015b) argument that listening to sad music perpetuates a dysphoric state and may not be an effective way of regulating emotions. However the results do support the notion that when in negative state music of happy or sad emotionality allows for reductions in experienced sadness (Randall & Rickard, 2017; Zavoyskiy et al., 2016). As these studies featured sad music that was not self-selected, our results also suggest that for a shift towards neutral self-selected music does not have to be listened to. This pattern of results also fits with the alternative interpretation of Garrido and Schubert (2015a, 2015b) that the increase in sadness post-sad music listening were due to inductive processes stemming from listening to music known to induce sadness. Subsequently, it appears these processes are not as pertinent when music listened to is not selected with the explicit purpose of induction and in a context when reduction of a sad state is desired.

As no difference was found between music listening groups at post-listening the second hypothesis predicting those who listened to their own music to have the lowest sadness scores at final measurement was not supported. These results are counter to previous findings highlighting the importance of self-selection of music for emotion (Eerola et al., 2015; van den Tol & Edwards, 2013, 2015). This is potentially due to a lack of self-relevance of the

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sadness-induction, where participants were not selecting music with the goal of engaging cognitively with their emotions, as has been observed when music is listened to for consolation in times of loss (Hanser et al., 2016). However, this explanation of the results does not account for self-selected music being the preferred music of participants, and presumably having greater aesthetic value to them which is implicated in inducing positive emotions (Juslin, 2013). As such, the failure to support this hypothesis may come from a lack of statistical power, given the trend in the data, where our data set was not large enough to find the difference between listening conditions when a meaningful effect size may have existed.

In light of this we have also looked at comparisons to baseline, acknowledging this as a post-hoc exploration of the observed data. These analyses found that those who listened to their own music or no music returned to their baseline levels of sadness, which on average were near the floor of the POMS-D-SF indicating participants were not in any pre-experiment dysphoric mood. Similar results were found by Sharman and Dingle (2015) where people who listened to no or preferred music following an anger induction also returned to baseline heart rate and negative emotionality. Interestingly they also found that people who listened to music felt more inspired post listening compared to baseline and those who listened to no music. Considering experimenter selected sad music, Vuoskoski, Thompson, McIlwain and Eerola (2012) also found positive emotions such as nostalgia and wonder. Drawing from these results, music listening during sadness may not provide benefits when considering negative emotions compared to no music but may serve to increase concurrent positive emotions, which would not be experienced without the presence of music. An empirical investigation of this speculation is warranted, given the wide variety of studies reporting listeners finding positive emotions in music, even when music is sad (Taruffi & Koelsch, 2014, Vuoskoski et al., 2015).

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Participants who listened to experimenter-selected music did not return to their pre-experiment levels of sadness. These results indicate that while listening to emotionally congruent sad music did allow the evoked sad state to reduce, it also kept it at an increased level (compared to the other conditions and baseline). However people have expressed using music as a way of fully experiencing and immersing themselves in emotions (Dingle et al., 2018; Papinczak, Dingle, Stoyanov, Hides, & Zelenko, 2015; Saarikallio & Erkkilä, 2007), and adaptive emotion regulation is not always characterised by a rapid shift towards hedonic pleasure (Campos, Walle, Dahl, & Main, 2011). In addition, it is important to note that listening to unfamiliar music when sad does lack ecological validity, and future research should measure this explicitly with self-selected sad music (where selection has occurred in the sad state). Future research should also explore the long term effects of using emotionally congruent music for immersion for extended periods of time, where music may be being used as a device to wallow in sadness (Saarikallio et al., 2015).

Interpretation of the difference between self and experimenter-selected music is further complicated as, on average, self-selected music was rated as less sad. As such the differences observed between conditions could be a product of the experimenter-selected music conveying a sadder emotion and resulting in a slower shift away from sadness, in line with Randall and Rickard's (2017) results. However, the difference could also be in-part due to familiarity and preference for the song listened allowing for a faster return to baseline than music which does not have prior associations (van Goethem & Sloboda, 2011; van den Tol, 2016). As such future studies on emotion congruent music should make greater efforts to hold emotion consistent across self and experimenter-selected music (i.e. by instructing participants to listen to a sad song of their choosing). Such a study would also allow occurrences of Saarikallio's (2008) *MMR* strategies to be measured so to evaluate the importance of self-selection in accessing a music-based regulation repertoire, as self-selection may allow for easier access through past experiences.

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Our final hypothesis was that rumination would moderate the change in sadness post music listening. This hypothesis was not supported, as shown by the non-significant three-way interaction. These results are in contrast to Garrido and Schubert's (2015b) findings where sad music was listened to from a baseline state. We also found no evidence of greater perceptions of sadness in music for those high in rumination, and this is consistent with there being a lack of difference in post-listening scores for participants listening to experimenter-selected music as a product of their levels of rumination. This lack of difference in perception of sadness in the same piece of music indicated that ruminators did not have a greater bias towards cues of sadness in the song or internalize the song in a different manner to those low in rumination. There was also no evidence that participants high in rumination selected music that expressed greater levels of sadness than those low in rumination. This compliments the Sakka and Juslin (2018) who found depression levels did not influence the music-based regulation strategies used by participants. This absence of difference in expressed sadness in self-selected also music suggests that rumination does not impact the type of music selected during sadness, counter to Garrido and Schubert (2013), at least in terms of expressed emotion.

Given there was no difference in the emotion expressed in the song it is not surprising that rumination did not influence changes in sadness from pre-to-post listening. This null result also indicates that statements of concern regarding negative effects of music listening for the regulation of sadness in high ruminators may be due to methodological aspects of previous studies rather than listening behaviours of those high in rumination. This does not discount the increase in sadness observed by Garrido and Schubert (2015b) seen in a baseline state but does suggest the effect found was a product of those high in rumination selecting a song that had greater inductive qualities than those low in rumination. In an applied sense the current findings also does not mean that when people high in rumination do select a sad song

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for regulation engage in the same regulatory processes as their counterparts low in rumination.

While conclusions cannot not be made from this study on the long term impact of sustained sad music listening when sad on psychological health and the sample size is small tentative suggestions can be made. No evidence has been found in the current study to suggest that people experiencing sadness should not engage with self-selected music or, when a maintenance or immersion in sadness is desired, unfamiliar sad music. However based on previous evidence (i.e. Saarikallio *et al*, 2015 and Garrido & Schubert, 2013) people should be discouraged from listening to music to elicit past negative memories or distance them from reality. The finding of no adverse reaction to listening to experimenter-selected music is also of promise with regards to using sad music to identify or immerse in the sadness as it allows for congruent music to be listened to without adding to or compounding sadness. This could be of particular use in educational settings, where music has been shown to be an effective tool for teaching emotion regulation (Dingle & Fay, 2016; Dingle, Hodges, & Kunde, 2016). While results did not support an effect of rumination in the short term, given the significance of rumination as a risk factor of clinical disorders future studies should be conducted to test that there is not an insidious effect of regulatory music listening for those high in rumination, such that it contributes to increased depression symptomology .

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Table 1:

Participants Characteristics by condition

	SSM (<i>n</i> = 42)	ESM (<i>n</i> = 43)	Control (<i>n</i> = 43)
Age	19.71 (1.35)	20.28 (2.09)	20.26 (2.07)
Male	16 (38%)	16 (37%)	20 (47%)
Caucasian	27 (64%)	35 (83%)	25 (58%)
First-year students	29	29	27
Baseline POMS-D-SF	1.23 (1.03)	1.03 (0.92)	1.22 (0.89)

Note: Data are displayed as Number (%) or Mean (*SD*)

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Figure 1: *Changes in sadness scores across the duration of the experiment for each music condition.*

Figure 2. *Differences in perceived sadness of music listened to according to level of rumination and self or experimenter selection.*