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Reconsidering the Role of Music in Mood Regulation and Its Relation With Age and Gender Difference in Serbian Adolescents

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Abstract

Adolescents spend a lot of time listening to music, which has various functions in their development and one of the most important is regulation of emotions (McFerran et al., 2012; Miranda, 2019; Saarikallio & Erkkilä, 2007). Saarikallio and Erkkilä (2008) developed a theoretical model that describes mood regulation thru 7 regulatory strategies (Solace, Diversion, Revival, Discharge, Mental Work, Strong sensation, and Entertainment). Our main goal was to examine the factor structure of Brief Music in Mood Regulation scale (B-MMR; Saarikallio, 2012) on 445 Serbian adolescents aged 12 to 18 and to relate obtained factors to music appreciation and time spent on music listening, as well as gender and age. Factor analysis (PAF, Promax rotation) firstly extracted 3 factors explaining 63.5% of the variance of B-MMR: Regulation of emotions, Strong sensation, and Entertainment. Since the correlation between the first 2 factors was high, the number of factors was fixed on 2 – Regulation of emotions and Entertainment, which explained 57.2% of the variance. *t*-tests showed that adolescents who spend more time listening to music, and consider it more important, use music to regulate their mood more often than their peers who do not appreciate music that much. It is shown that girls use Regulation of emotions and Entertainment more often than boys, as well as older adolescents more than younger. The results confirm the findings from previous studies (Saarikallio, 2006, 2007, 2008). However, the factor structure of B-MMR is different, which questions the original model conceptualization. The implications of the findings are further discussed, and suggestions for future research are given.

Introduction

Music has a great significance for adolescents – they spend a lot of time listening to it and consider it very important (Laiho, 2004; McFerran et al., 2012; Miranda, 2019; Saarikallio & Erkkilä, 2007). The importance of music could be related to various developmental tasks in adolescence within the social and emotional field. Young people build their own identity, separate from their parents, and bond more tightly with peers. These processes are less difficult if adolescents master self-regulation. In this sense, listening to music provides various possibilities for coping with stress and other challenging emotional states that may occur during that period (Laiho, 2004; Saarikallio, 2011; Saarikallio & Erkkilä, 2007; Wells & Hakanen, 1991).

In this context, emotional regulation includes processes by which persons monitor, evaluate, and modify the intensity and duration of various emotional reactions in order to achieve their own goals (Thompson, 1994). On those grounds, a theoretical model that describes mood regulation as a function of 7 regulatory strategies was proposed: 1) Solace, which serves for emotional validation and support when one is feeling sad or anxious, hence searching for acceptance and understanding by music; 2) Diversion, which serves as a distraction when one is trying to forget unwanted thoughts and feelings with the help of pleasant music; 3) Discharge, which serves as emotional disclosure and venting when one is releasing anger or sadness through music that expresses these emotions; 4) Mental Work, which portraits music as a framework for mental contemplation and reappraisal of emotional experiences; 5) Revival, which serves as a personal renewal when one is feeling stressed or tired, therefore focuses on relaxing and getting new energy from music; 6) Strong Sensation, which describes one's searching for intense emotional experiences in music, and 7) Entertainment, which serves for maintaining or enhancing current positive mood by creating a nice atmo-

sphere and a happy feeling via music (Saarikallio, 2007; Saarikallio & Erkkilä, 2007).

Previous studies showed that there are several important factors when it comes to using mentioned strategies by adolescents. First of all, it has been shown that adolescents who spend more time listening to music and consider it an essential part of their lives use more frequently mood regulation strategies related to music than those for whom music is not particularly important (Saarikallio, 2006, 2007, 2008). Also, girls have been found to use music as a mood-changing strategy more often than boys, and older adolescents more often than younger ones (Saarikallio, 2006, 2007, 2008). However, in adulthood, age and gender differences are vanishing, implying that regulation increases during adolescence and stabilizes at its end (Saarikallio, 2011, 2012; Thomson et al., 2014).

Aim and Research Questions

The purpose of this study is to examine the factor structure of an instrument measuring strategies for mood regulation through music in Serbian adolescents and to relate obtained factors to music appreciation and time spent on music listening. Another aim was to investigate gender and age differences in using described strategies since it has not been done in Serbian milieu yet. The following research questions guided this study:

- What is the factor structure of the Brief Music in Mood Regulation scale (B-MMR; Saarikallio, 2012), in the Serbian adolescence sample?
- Are music importance and time spent listening related to the use of music in mood regulation?
- Are there age and gender differences in usage of music in mood regulation strategies?

Method

Participants

The convenient sample consisted of 445 primary and secondary school students, aged from 12 to 18 years old ($M = 15.62$, $SD = 1.96$). Middle school students represented 146 of them, while the others (299) were secondary school students. The majority of the sample were girls (68%), almost a third of the sample were boys (30%), and the rest (2%) did not want to declare their sex.

Measures

Demographic Information. Participants were asked basic demographic questions regarding sex, age, and educational level.

Personal Music-related Information. Questions covering participants' musical engagement were also included. They answered question about how much time they spent listening to music daily on a 5-point scale. Response categories were: 1 ("I did not really listen to music every day"), 2 ("<1hrs"), 3 ("1–3hrs"), 4 ("3–5hrs"), and 5 (">5hrs"). The second question measured music's importance to the person, where participants answered on a 5-point scale ranging from, 1 (*not at all important*) to 5 (*very important*).

Brief Music in Mood Regulation Scale (B-MMR). The B-MMR is a 21-item scale developed by Saarikallio (2012) measuring 7 mood regulation strategies through music. The 7 subscales from a model mentioned earlier (Saarikallio & Erkkilä, 2007) include: Solace (e.g., "When everything feels bad, music understands and comforts me"); Diversion (e.g., "For me, music is a way to forget about my worries"); Discharge (e.g., "When I'm really angry, I feel like listening to some angry music"); Mental Work (e.g., "Music helps me to understand different feelings in myself"); Revival (e.g., "When I'm tired out, I rest by listening to music"); Strong Sensation (e.g., "I feel fantastic putting my soul fully into the music"), and Entertainment (e.g., "I usually put background music on to make the atmosphere more pleasant"). Every subscale has

3 items, and it also includes five reverse-scored items in total. Responses are made on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). B-MMR demonstrated high internal reliability with Cronbach's alpha of .94 and individual subscales ranging between .71 and .85. Since the instrument was created for English-speaking areas, in the current study B-MMR was translated into Serbian by back translation.

Procedure

Following ethical approval from the Institutional Review Board of the Department of Psychology, Faculty of Philosophy, University of Belgrade, Serbia (#2021-73), an online survey was administered via the Google Forms platform. Schools were contacted and agreements were made on conducting research, collecting parental consent, and recruiting students. When done so, a link to the online survey was delivered to the students whose participation was voluntary. Likewise, snowball sampling was conducted by sharing link to online survey on social media messengers (WhatsApp, Instagram, Facebook). A Plain Language Statement preceded the survey, which outlined the purpose of the study, the nature of the questions, and participants' rights.

Results

Factor Structure of Brief Music in Mood Regulation Scale

Exploratory factor analysis (EFA) was conducted to examine the factor structure of the B-MMR. In the initial step, EFA was performed on all 21 items related to mood regulation through music. Four factors were extracted, but since 5 items had low loadings and high cross-loadings with unacceptable reliabilities, they were excluded from further consideration. Kaiser-Meyer-Olkin value and Bartlett's test of sphericity confirmed the sampling adequacy of the remaining 16 items, KMO = .94, $\chi^2(120)$ = 3822.47, $p < .001$, supporting a rationale for performing EFA. The number of factors to ex-

tract was based on Eigenvalues greater than one rule, scree plot test and a parallel analysis. Firstly, 3 factors were obtained by factor analysis, explaining 63.5% of variance. They were named Regulation of Emotions, Strong Sensation, and Entertainment. However, given that the correlation between the Regulation of Emotions factor and the Strong Sensation factor was high, exceeding the recommended limit of .70 for extracted factors, it was decided to fix the number of factors on 2. Finally, EFA yielded a two-factor solution that explained 57.2% of music in mood regulation variance. Factor loadings of the 16 items ranged between .47 and .90, suggesting that each item substantially contributes to the factor at fair and excellent levels. Regulation of Emotions (accounted for 48.8% of variance) refers to improving the mood and solving challenging emotional states, such as removing stressful thoughts and anxiety and forgetting worries. Also, it implies the feeling of understanding and comfort that music provides, the act of expressing negative feelings through music of similar affectivity and enjoying music as such. This factor can be seen as a compound 6 previously defined strategies (Solace, Diversion, Revival, Discharge, Mental Work, Strong Sensation). On the other hand, Entertainment (accounted for 8.4% of variance) stood out as a separate factor – it includes identical items as in the original conceptualization and refers to listening to music to fill the atmosphere, as an addition in the background of other activities.

Music Importance and Time Spent on Music Listening

In order to determine the relationship between the importance of music and the time spent listening to it, and the frequency of using mood regulation strategies through music by students, we created groups of those for whom music is less important (1–3) and more important (4–5), as well as groups of those who listen to music less (less than 1 hour/day) and more (3+ and 5+ hours/day). After that, *t*-tests for independent samples were conducted. All vari-

ables violated the equality of variance assumption. Thus, we corrected the degree of freedom and reported the results based on unequal variances.

An independent sample *t*-test shows that participants who reported that music is more important to them compared to the participants for whom music is less important demonstrate significantly higher scores in using Regulation of Emotions, $t(80) = -10.49$, $p < .001$, $d = -1.53$, and Entertainment, $t(72) = -6.65$, $p < .001$, $d = -1.06$. *t*-test also shows that participants who report that they listen to music more often compared to their peers who spend less time listening to music demonstrate significantly higher scores in using Regulation of Emotions, $t(140) = -9.46$, $p < .001$, $d = -1.24$, and Entertainment, $t(108) = -7.62$, $p < .001$, $d = -1.05$.

Sex and Age Differences

An independent sample *t*-test is conducted to measure the mean scores difference in using mood regulation strategies through music between girls and boys. Statistically significant gender differences are found in terms of both Regulation of Emotions, $t(214) = 5.25$, $p < .001$, $d = .57$, and Entertainment, $t(167) = 4.92$, $p < .001$, $d = .56$, showing that girls use all of the strategies more often than boys.

In order to examine age differences in the use of the mentioned strategies, adolescents were divided into 2 categories: the first category consisted of younger adolescents (aged 12 and 13), while the second group consisted of older adolescents (aged 18). There is a statistically significant difference between younger and older adolescents for both Regulation of Emotions, $t(154) = -2.19$, $p = .03$, $d = .34$, and Entertainment, $t(129) = -2.17$, $p = .03$, $d = .34$, in a way that older adolescents use all the strategies more often than younger ones.

Discussion

The purpose of the study was to gain a better understanding of B-MMR structure in the sample of Serbian adolescents and to investigate its relations to different personal features. The results of the research confirmed most of the previous findings, but some of the results are somewhat different.

The first goal of the study was to examine the factor structure of the Brief Music in Mood Regulation scale in the Serbian adolescent sample. Different factor structure was obtained compared to previous research (Saarikallio, 2012): 6 of the originally conceptualized strategies merged into a single factor called Regulation of Emotions, while the remaining one, Entertainment, still stood out as a separate factor. The question is why did Solace, Diversion, Revival, Discharge, Mental Work, and Strong Sensation, separated in the primordial model (Saarikallio & Erkkilä, 2007), merge into one single factor? There are a few possible explanations for these results. Firstly, the small number of items (3) per dimension was used, a brief version of the scale in this study, which may have caused factor structure disturbances due to the fact that in cases like that, with the generally small number of items in the scale, it is enough that only one item does not have loading on its factor for the factor structure to be changed. Secondly, possible reasons could be related to the application of exploratory instead of confirmatory factor analysis and language adaptation of the instrument. In future studies, a longer scale version should be used, and its fit to different factor models should be checked to prevent the problems mentioned above. Thirdly, a combination of 6 strategies in one factor could be a result of the high content relatedness and similarity of the 6 strategies and, accordingly, the uniqueness of the Entertainment dimension, which seems to be qualitatively different from the others.

The suggestion that Entertainment is a qualitatively diverse dimension can be interpreted from several angles. Entertainment may be different than other strategies because its usage is different. When using Entertainment, adolescents can engage in music-listening casually, without really reflecting on feelings experienced, the so-called passive music listen-

ing. However, there are considerations that a person's initial mood is a key factor in determining whether the music is used passively or actively and that the listeners actively engage in listening when they are in a negative emotional state to improve their mood (Randall & Rickard, 2016). In that regard, we could say that Entertainment's 'baseline' is different – it is used for creating background atmosphere and pleasantness in the context of an already existing positive mood that needs to be maintained or strengthened (Thomson et al., 2014). On the other hand, the other 6 strategies mostly refer to changing strictly negative 'baselines' (Diversion, Discharge, Solace, Revival) or neutral (Mental Work, Strong Sensation) to positive ones. That being said, it is plausible that the mechanism behind Entertainment serves to maintain and amplify positive rather than transform negative moods. This idea is further supported by the finding that while, for example, Discharge and Diversion have positive correlations with high levels of psychopathology in young people, Entertainment has small to moderate negative correlations with depressive and anxious symptomatology (Thomson et al., 2014), which can be due to not containing a coping component, as suggested earlier (Andersson, 2017). This all can be taken as an indirect confirmation of the distinctiveness of the Entertainment dimension. Nevertheless, further research is needed in order to test such a hypothesis.

The second goal was to answer the question of whether the music importance and time spent listening are related to the use of music in mood regulation. It was shown that adolescents who listen to music more frequently and attach greater importance to it use all the strategies of mood regulation with music more frequently than their peers who do not value music that much, as expected (McFerran et al., 2012; Miranda, 2019; Saarikallio, 2008, 2007). Given that the mentioned group of adolescents spends a lot of time listening to music, which has been shown to be one of the most important musical activities that regulate moods (Saarikallio,

2006), they are expected to use all the mentioned strategies more frequently.

The third goal was to answer the question of whether there are age and gender differences in the usage of music in mood regulation strategies. It was shown that girls use all the strategies more frequently compared to boys. Such a finding, although repeatedly replicated in previous research (Saarikallio, 2006, 2007, 2008), may be due to: 1) a greater willingness of girls to report on their moods and ways of solving them (Saarikallio, 2006), or 2) truly greater use of the mentioned strategies for mood regulation by the females (Wells & Hakanen, 1991), which would be an expression of individual differences. In the case of the present study, it is important to note that in our sample, there were noticeably more girls (almost 2/3, compared to only 1/3 of boys), which could additionally influence obtained differences.

As regards to age differences, there were statistically significant differences regarding the use of musical mood regulation strategies depending on the age: older adolescents used all of them to a greater extent than their younger peers, which is in accordance with previous research (Saarikallio, 2006, 2007, 2008). This finding implies that the use of music in mood regulation increases with age, which is in agreement with considerations about cognitive development and maturation, where the ability of abstract comprehension increases, helping older adolescents to acquire various coping strategies (Mullis & Chapman, 2000) and to be more aware of their use of music for mood regulation purposes.

Limitations and Directions for Future Research

The following limitations of this study could be considered as future research directions. The larger shortcoming is related to the sample, which was convenient and mostly composed of female respondents. Also, in the age structure, there are slightly fewer younger adolescents compared to older ones, which, together with gender, should be equalized in the future.

Besides, it would be useful to extend the current findings by examining a longer version of the instrument for assessing mood regulation through music and re-checking the factor structure and connection with other personal features associated with the functioning of emotions.

Despite the mentioned limitations, this research can be seen as a first step towards a better understanding of the mechanisms behind Entertainment, on the one hand, and other strategies. We hope it will stimulate further investigation of this important area for adolescents' functioning and well-being.

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