Volume-6
Issue- II
December-2021

Rajarata University Journal

ISSN: 2362-0080
www.ruj.ac.lk/journals/

Category: Research Article

Perceived Stress and Preferred Music Genres of Sri Lankans in urbs and sub-urbs- A pilot study

[1]Palihaderu PADS,[1]Mendis BILM,[1]Satharasinghe DA, [2]Premarathne JMKJK, [3]Dissanayake AS, [4]Rajapakse IH, [5]Karunanayaka P, [6]Senarath U, 7Wijesuriya W, [8]Yeap SK, [9]Ho WY, 1[0]Subasinghe W & [11*]Dias WKRR

[1]*Department of Basic Veterinary Sciences, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya, Peradeniya (20400), Sri Lanka*

[2]*Department of Livestock and Avian Sciences, Faculty of Livestock, Fisheries and Nutrition, Wayamba University of Sri Lanka, Makandura, Gonawila (NWP) (60170), Sri Lanka*

[3]*Department of Clinical Medicine, Faculty of Medicine, University of Ruhuna, Galle (80000), Sri Lanka*

[4]*Department of Psychiatry, Faculty of Medicine, University of Ruhuna, Galle (80000), Sri Lanka*

[5]*Department of Clinical Medicine, Faculty of Medicine, University of Colombo, Colombo 08 (00800), Sri Lanka*

[6]*Department of Community Medicine, Faculty of Medicine, University of Colombo, Colombo 08 (00800), Sri Lanka*

[7]*Biometry Section, Rubber Research Institute of Sri Lanka, Dartonfield, Agalawatta (12200), Sri Lanka*

[8]*China-ASEAN College of Marine Sciences, Xiamen University Malaysia Campus, Jalan Sunsuria, Bandar Sunsuria, Sepang, Selangor (43900), Malaysia*

[9]*Division of Biomedical Sciences, Faculty of Medicine and Health Sciences, University of Nottingham (Malaysia Campus), Semenyih (43500), Malaysia*

[10]*Department of Sociology, University of Kelaniya. University of Kelaniya, Kelaniya (11600), Sri Lanka.*

[11]*Department of North Indian Music, Faculty of Music, University of the Visual and Performing Arts, Colombo 07 (00700), Sri Lanka*

ARTICLE DETAILS

Article History
Published Online: publisher use only

Keywords
Preference, Economic classes, Age, Visual scale

***Corresponding Author**
Email:ruwin.dias@vpa.ac.lk

ABSTRACT

The relationship between music preferences with associated stress was suggested in previous studies and music was proposed as a popular diversion strategy from stressors to resort to on a daily basis. However, the possibility of utilizing music as a potential perceived stress reducer in Sri Lanka is seldom studied. This preliminary study assesses the associations between the preference for selected music genres and the respective perceived stress of Sri Lankans in urbs and suburbs. Participants (n=75) were selected representing five economic classes (Upper, Upper Middle, Middle, Working, and Poor), and three age categories (Generation-y, x, and Baby Boomers). Ten music model tracks were selected representing ten music genres, i.e., new age, romantic instrumental, gypsy music, jazz, folk, nature music, Indian classical, western classical, rock, and hip-hop. The preferences were evaluated using a 9-point visual scale and perceived stress was evaluated using a previously validated perceived stress scale (PSS), developed by Sheldon Cohen. Results suggested that the participated individuals with high perceived stress tend to prefer romantic instrumental, rock, and hip-hop genres. The stressed individuals in the middle class and working class showed preference towards rock while in poor class, showed preference towards romantic instrumental. Interestingly, the impact of age on the observed correlations was not significant. This pilot study provides evidence that the perceived stress of the selected population in Sri Lanka does have a connection with their individual preferences for romantic instrumental, rock, and hip-hop music genres, and the findings of this study warrant a similar study in a wider population in the future.

1. Introduction

Globally, stress has emerged as a serious public health concern, mainly in developing countries. Epidemiology surveys and research have shown that rates of depression in several countries in the South Asian region were among the highest in the world. A cross-sectional study conducted in South Asia has suggested that the prevalence of self-reported depression of the middle and older-aged population in Bangladesh, India, Nepal, and Sri Lanka was 47.7%, 40.3%, 40.4%, and 11.4% respectively. Accordingly, most of them were less than 60 years old [1]. Concerning Sri Lanka, a number of studies made conclusions about the comparatively higher national prevalence of stress and depression. A national prevalence study conducted for the elderly population in Sri Lanka observed a prevalence rate of 27.8% among those who showed depressive symptoms that were clinically significant [2]. This study suggested that the recorded prevalence was higher compared to most other Asian countries. The prevalence of job-related stress among the randomly selected administrative officers in Sri Lanka was 74.6% and 80.5% in senior administrative officers and managerial assistants respectively [3]. According to a cross-sectional study conducted at a Sri Lankan public university, most of them participated undergraduate nursing students had shown "extremely severe symptoms of depression, anxiety and stress representing 51.1%, 59.8% and 82.6%, respectively [4]. Similarly, Amarasuriya and his colleagues suggested that 9.3% of Sri Lankan undergraduates showed major depressive disorders [5]. Another preliminary study on perceived stress, conducted around several selected urban and suburban areas of Sri Lanka suggested that 56% of the sample was under 'moderately stress' conditions while 8% was under 'highly stress' conditions [6].

A wide range of psychological conditions such as depressive symptoms, anxiety, and suicidal thoughts have been prevailing due to extended exposure to stress. The impact of chronic stress on the suicidal thoughts of medical students was exhibited in a study conducted in Poland [7]. A cross-sectional survey conducted for working women in China highlighted that work stress, family stress, and other stress-related factors were positively associated with suicide tendencies [8]. Moreover, it has been suggested in many studies that excessive stress if not been recovered could lead to ample kinds of psychosomatic disorders such as non-communicable diseases like cardiovascular diseases and diabetes [9,10]. A longitudinal study conducted in Australia over 12 years on women born between 1946 and 1951 has suggested that perceived stress is a strong risk factor for Type II Diabetic Mellitus [11]. Hence reducing stress has become an essential requirement in modern society. Studies have highlighted several methodologies that have been practiced clinically and in general life or both mainly based on mood regulation and diversion [12]. Despite methodological limitations, it has been proved that stress-reducing techniques such as biofeedback, relaxation, and combined interventions have blood pressure-lowering effects, [13]. These strategies help people to shift their focus from stressful events; the role of music in this regard was reviewed extensively [14–16].

Anxiety-reducing effects were interpreted in terms of the potential of music to make patients shift their focus from stressful events [17]. Another postulation was that music engenders relaxation by suppressing sympathetic nervous system inducing relaxation [18], achieving an anxiolytic effect, and decreasing neuromuscular arousal [19]. The evocation of the relaxation response through music, responsible for restoring the metabolic homeostasis, promotes stress reduction [18]. Further, the importance of music preference and the type of music on this observed stress reduction have been also evaluated. According to Jiang and his colleagues, the relaxation effect of sedative and stimulating music highly depends on the individual preference [17]. Lebbe and his colleagues had evaluated the impact of certain previously selected music genres on the reduction of stress and were able to find out that listening to classical music and self-selected music had more potential in stress reduction compared to silence and heavy metal music [20]. These findings add up to the conclusion that listeners obtain psychological recovery from stress when listening to music, depending on the type /genre of music and music preferences.

When it comes to stressed communities there was evidence to prove that certain genres were often selected as most preferred over others. For example, several studies suggested a significant trend in listening to heavy metal music like rock music among highly stressed personnel [7,21,22]. However, the variance in stress levels within a selected population with the individual preference to music genres among the people in day-to-day life has so far not been emphasized properly. Nevertheless, many of such studies focused on one age category, i.e., Adolescents. Therefore, such evidence is not sufficient to obtain a clear picture of associations between stress and individual music preferences, because other factors influence both stress and music preference, such as social class, age category, and gender [6,23–25].

This study was conducted to analyze the possible link between music genres and individual perceived stress levels among people hailing from different age groups and economic classes, who lived in urban and suburban areas in Sri Lanka.

2. Material and Methods

2.1 Ethics

Ethical clearance was obtained for this study from the Ethics Review Committee, Faculty of Medicine, Colombo, Sri Lanka under the ethical clearance number EC-19-106 (Supplement 01).

2.2 Participants

75 adult individuals from selected urban and sub-urban areas of Sri Lanka voluntarily participated in this study. The urban and suburban areas were selected based on previous literature [26]. The participants were stratified according to three age groups i.e.: age 39 or younger (Gen-Y), age 40-55 (Gen-X), and age 56-74 (Baby boomers) and five economic classes i.e.: Upper class, Upper middle class, middle class, lower-middle-class and poor [27,28] (**Table 1**). Due to the complexity of the recruitment procedure, a convenient sampling method was practiced, and the study was conducted in the western and central provinces of Sri Lanka.

2.3 Instruments

Ten music model tracks were used to test the individual genre preference of the participants. One track lasted for approximately one minute. The correspondent musical genres were new age, romantic instrumental, gypsy music, jazz, folk, nature music, Indian classical, western classical, rock and hip-hop music. The genres were selected from a preliminary study conducted by obtaining the opinion of the experts in the Sri Lankan music industry. Preferences were evaluated using a 9-point visual analog hedonic scale ranging from 1 (very much dislike) to 9 (very much like). The perceived stress of the participants was evaluated using Sheldon Cohen's perceived stress scale (PSS) (**Box 01**) which was previously used in Sri Lanka [29]. All questionnaires were interviewer oriented. Apart from those, variables such as gender and level of music education were recorded.

2.4 Procedure

After the individuals were informed about the study, written informed consent was obtained from the voluntary participants. This procedure continued until the study requirement was completed and 75 participants provided their consent during the study. Everyone listened to the music tracks via headphones (Brand - YAMAHA, Model-HPH-M82, WHITE/RED), and the tracks were played on android tablets (Brand- HUAWEI, Model-BAH2-L09). Everyone was instructed to mark on a visual analog scale, how much they like each music track. Further, each participant underwent an assessment with the perceived stress scale in order for us to assess their perceived stress scores. Participants were interviewed by trained research assistants at their houses or working places. Prior to the interviews, quite environment was ensured with minimum background sounds.

Table 1: Sample stratification based on age categories and economic classes

	Average households' income/ month* (LKR)	Age (Years)		
		39 or younger	40-55	56-74
Upper Class	≥81,372	5	5	5
Upper Middle Class	51,836-81,371	5	5	5
Middle Class	36,446-51,862	5	5	5
Lower Middle Class	23,519-36,445	5	5	5
Poor	≤ 23,518	5	5	5
Total		25	25	25

*Average household income ranges were obtained from the Department of Census and Statistics, Sri Lanka, 2016 [27].

Box 01 Sheldon Cohen's Perceived Stress scale

The Sheldon Cohen's perceived stress scale (PSS) is one of the validated tools most widely used to evaluate the perceived stress levels of individuals. The tool consists set of questions about the respondent's current levels of experienced stress. Each question is focused on the last month. The respondent must rank from 0 (never) to 4 (very often).
Based on the given responses, the PSS value can be calculated following a specific calculation (Please refer [29] for further information.

2.5 Data analysis

The analysis was conducted using IBM SPSS Statistics, Version 22 (IBM Cooperation, 2013). Graphical representations were generated using Graphpad Prism 8.0.1 (2018). To evaluate correlations between PSS values and ratings for each genre, the corresponding trends of ratings had to be at a low concordance. Thus, Kendall's W test

was conducted to see the concordance within the trends of ratings for ten selected music genres. Spearman's correlation tests were performed with bootstraps for 1000 samples with a 90% confidence interval to find out the correlations of perceived stress scores on the genre preference.

3. Results

3.1 Association between the perceived stress level on the genre preference

Low concordance results that showed up in Kendall's W test, between the ratings on each genre, allowed us to perform the Spearman test to evaluate the correlations between perceived stress scores and the ratings provided for each genre separately ($p<0.1$). Significant positive correlations were observed between the preference scores provided for romantic instrumental ($rs= 0.278$), rock ($rs=0.323$), and hip-hop ($rs= 0.246$) genres and the perceived stress scores ($p<0.1$) (**Table 2, Figure 1**). The participants with higher perceived stress levels showed more preference towards romantic instrumental, rock, and hip-hop. The participants with lower stress levels showed less preference towards these three genres. Although correlations were not significant, the preference scores of other genres showed positive correlations with the perceived stress scores (**Table 2**)**.**

3.2 Impact of economic classes and age categories to the observed correlations

Since the correlations observed between romantic instrumental, rock, and hip-hop preferences and the perceived stress scores were significant, further analyses were conducted to find any significant impact that could be observed from the corresponding economic classes and age categories for these correlations. Thus, separate Spearman's tests were conducted. Significant positive correlations were observed in preference scores of Rock music in the middle class ($rs=0.468$) and working-class ($rs=0.477$) with the corresponding perceived stress scores ($p<0.1$). Further, a significant positive correlation was observed in the preference scores of romantic instrumentals in poor class with the corresponding perceived stress scores ($rs=0.543$) ($p<0.1$). The other observed correlations were not significant in any economic class for romantic instrumental and rock preference. No significant correlation was observed between the preference scores of hip-hop with corresponding perceived stress scores in any economic class. Though not significant, correlations for other economic classes were also positive, except for poor class participants in their preferences for rock with corresponding perceived stress scores. Interestingly, none of the correlations were significant, though positive, between any of the three genre preferences and perceived stress scores in any age category ($p>0.1$)

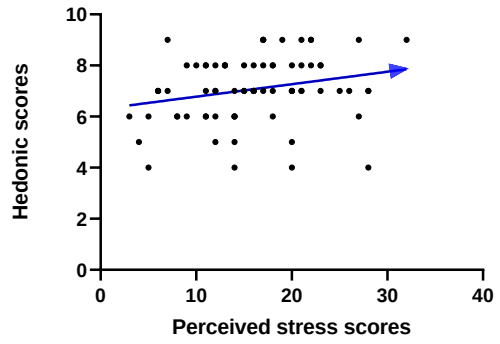
4. Discussion

Music has been identified as an effective tool to reduce stress, and the impact of music preference in this area has been proved on several occasions [17, 30, 31]. Although extensive evidence gathered around how listening to preferred music reduces stress more efficiently, how music preference for different genres varies with stress in the community has not yet been properly examined. Due to its stress-reducing effect, it can be suggested that there might be a tendency among communities to utilize music as a tool when they are stressed to perceive relaxation. Further, this trend might differ according to the genre of music and the individual preference towards those genres. As suggested by Stratton in 1984, how you liked a genre plays an important role in relaxation [32]. Therefore, the objective of this study was to determine associations between genre preferences of participants in a selected population with their perceived stress levels. Two important demographic factors were considered in this study (age and economic class) because it was suggested previously to have had an impact on both music preference and stress [6,23–25].

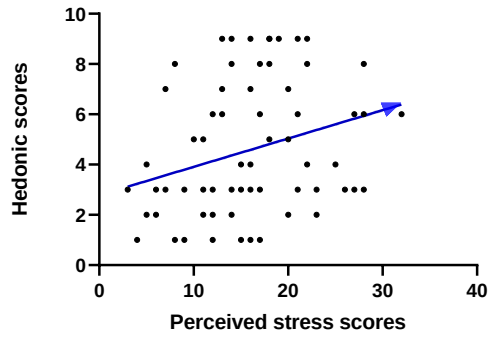
Table 2: Observed correlations between perceived stress and hedonic scores provided for each genre.

Genre	Spearman correlation coefficient with PSS scores	90% Confidence Intervals
New age	0.151	- 0.022 – 0.316
Romantic Instrumental	0.287*	0.159 – 0.406
Gypsy music	0.173	-0.012 – 0.345
Jazz	0.133	-0.007- 0.271
Folk	0.014	-0.133 – 0.161
Nature music	0.133	-0.036 – 0.306
Indian classical	0.112	-0.002 – 0.231
Western classical	0.026	-0.119 – 0.188
Rock	0.323*	0.192 – 0.459
Hip-hop	0.246*	0.099 – 0.397

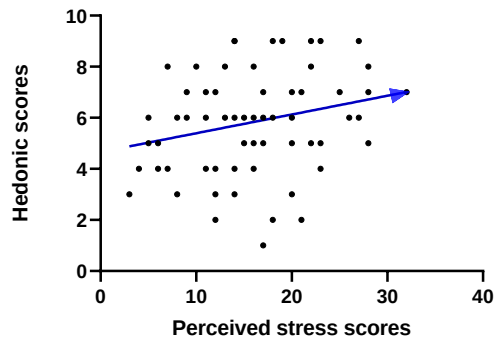
(*) indicates significant correlations.



(a) Romantic instrumental preference vs PSS (Correlation coefficient = 0.287*)



(b) Rock music preference vs PSS (Correlation coefficient = 0.323*)



(c) Hip-hop music preference vs PSS (Correlation coefficient = 0.246*)

Figure 1 Graphical representation of the observed significant correlations between music genres and perceived stress levels. The direction of the correlation was indicated using arrows.

Our findings revealed that certain genres, i.e., romantic instrumental, hip-hop, and rock in the population, attracted a greater preference, with regard to perceived stress levels. Following our results, supportive evidence found correlating rock with stress levels. Studies found that the participants listen to music that induces sadness or disruptive ideas when they were depressed or stressed even if it led to negative consequences [22,33]. Even though heavy metal music contributed least to the stress reduction [20], the trend in listening to heavy metal/ Rock music when people were stressed has been vastly suggested. This trend was observed even among adolescents and suggested as a pre-indicator for suicide vulnerability [22], while a higher level of anxiety and depression was observed among adolescent girls in Canada who often listen to heavy metal and rock music.[34].

The reasons for such a trend must be explored in future, regarding the preference for rock among stressed communities in Sri Lanka. However, less evident were in line with the other two correlations, namely preferences for romantic instrumental versus stress and preferences for hip hop versus stress. Further studies ought to target these genres and their relations with individual stress levels.

Even though the impact of age and economic classes on these associations were evaluated, the findings are not sufficient to draw a proper conclusion regarding their impact on the population. This is mainly due to a less representative sample size. Nonetheless, certain observations were found to be significant. Importantly, rock was significantly associated with the stress levels of the working class and the middle class, yet in the poor class the significantly associated genre was romantic instrumental.

There were several limitations we had to face. First, only 75 participants were enrolled, which is not enough to generalize for a total selected population. The higher confidence intervals observed in the resulted correlation coefficients, at 90% (**Table 2**), might be due to a small sample size. The data were not skewed and therefore not normally distributed. It would be interesting if future studies could be held together information from many participants. Further, this research adopted a convenient sampling technique for data collection rather than a random sampling method, which might create selective bias. Another limitation was the usage of only one music track with a running time of one minute to represent a genre. However, future studies could be planned for a wider array of music for each genre so as to obtain collective preference for those genres. Several confounding factors that would affect the individual music preference and the perceived stress have not been addressed in this study [35]. Even though data on gender and music education have been recorded, those were not statistically considered during the analysis. Another key research area for future research is the actual biological stress levels. Instead of merely using a questionnaire to predict stress levels, evaluating the stress-related physiological parameters such as heart rate, blood pressure, cortisol, and salivary alpha-amylase in the participant would bring in more valid results in future studies.

5. Conclusion

This pilot study finding provides evidence that the preferences for romantic instrumental, rock, and hip-hop music genres increase with the perceived stress and the impact of their economic classes or age category for that trend in the selected community. This study suggests that music might be a popular method that can be utilized to reduce the stress levels of stressed communities in Sri Lanka, but it must be interpreted with caution, considering their music genre preferences and the actual reason behind such preferences. The trends showed in this pilot study warrant future studies with a wider sample size and population number.

7. Acknowledgements

Special thanks are due to the World Bank for funding this study via the research grant AHEAD/DOR/STEM+HEMS No. 78, under the "Development-Oriented Research" scheme of the "Accelerating Higher Education and Expansion (AHEAD)" project.

6. References

1. Bishwajit G, O'Leary DP, Ghosh S, Yaya S, Shangfeng T, Feng Z. Physical inactivity, and self-reported depression among middle- and older-aged population in South Asia: World health survey. BMC Geriatr. 2017;17(1):1–8.
2. Malhotra R, Chan A, Østbye T. Prevalence and correlates of clinically significant depressive symptoms among elderly people in Sri Lanka: Findings from a national survey. Int Psychogeriatrics. 2010;22(2):227–36.
3. Gamage AU, Seneviratne RDA. Perceived Job Stress and Presence of Hypertension among Administrative Officers in Sri Lanka. Asia-Pacific J Public Heal. 2016;28(6):41S-52S.
4. Rathnayake S, Res N–, Ekanayaka J. Depression, Anxiety and Stress among Undergraduate Nursing Students in a Public University in Sri Lanka. Int J Caring Sci [Internet]. 2016;9(3):1020–32.
5. Amarasuriya SD, Jorm AF, Reavley NJ. Prevalence of depression and its correlates among undergraduates in Sri Lanka. Asian J Psychiatr [Internet]. 2015; 15:32–7.
6. Mendis BILM, Palihaderu PADS, Satharasinghe DA, Premarathne JMKLK, Dissanayake AS, Rajapakshe H, et al. Stress across different social demographic groups in suburban areas of Sri Lanka. In 2020.
7. Rosiek A, Rosiek-Kryszewska A, Leksowski Ł, Leksowski K. Chronic stress and suicidal thinking among medical students. Int J Environ Res Public Health. 2016;13(2).
8. Lin W, Wang H, Gong L, Lai G, Zhao X, Ding H, et al. Work stress, family stress, and suicide ideation: A cross-sectional survey among working women in Shenzhen, China. J Affect Disord [Internet]. 2020;277(3012):747–54.
9. Agardh E, Grill V, Ahlbom A, Hallqvist J, Andersson T, Norman A, et al. Work Stress and Low Sense of Coherence Is Associated with Type 2 Diabetes in Middle-aged Swedish Women. Diabetes Care. 2003;26(3):719–24.
10. Sui H, Sun N, Zhan L, Lu X, Chen T, Mao X. Association between work-related stress and risk for type 2 diabetes: A systematic review and meta-analysis of prospective cohort studies. PLoS One. 2016;11(8):1–12.
11. Walls ML, Sittner KJ, Aronson BD, Forsberg AK, Whitbeck LB, Al'Absi M. Stress exposure and physical, mental, and behavioral health among American Indian adults with type 2 diabetes. Int J Environ Res Public Health. 2017;14(9):1–8.
12. Parkinson B, Totterdell P. Classifying affect-regulation strategies. Cogn Emot. 1999;13(3):277–303.
13. Nagele E, Jeitler K, Horvath K, Semlitsch T, Posch N, Herrmann KH, et al. Clinical effectiveness of stress-reduction techniques in patients with hypertension: Systematic reviewand meta-analysis. J Hypertens. 2014;32(10):1936–44.
14. Saarikallio S. Music as Mood Regulation in Adolescence [Internet]. 2007. 1–47
15. Thomson CJ, Reece JE, Di Benedetto M. The relationship between music-related mood regulation and psychopathology in young people. Music Sci. 2014;18(2):150–65.
16. Dias RR. Music Relaxation for Music Teachers. In: UPM Book Series on Music Research. 2014. p. 216–28.
17. Jiang J, Zhou L, Rickson D, Jiang C. The effects of sedative and stimulative music on stress reduction depend on music preference. Arts Psychother [Internet]. 2013;40(2):201–5.
18. Tan X, Yowler CS, Super DM, Fratianne RB. The interplay of preference, familiarity, and psychophysical properties in defining relaxation music. J Music Ther [Internet]. 2012;49(2):150–79.

19. Chlan L. Effectiveness of a music therapy intervention on relaxation and anxiety for patients receiving ventilatory assistance. Hear Lung J Acute Crit Care. 1998;27(3):169–76.
20. Labbé E, Schmidt N, Babin J, Pharr M. Coping with stress: The effectiveness of different types of music. Appl Psychophysiol Biofeedback. 2007;32(3–4):163–8.
21. Shafron GR, Karno MP. Heavy metal music and emotional dysphoria among listeners. Psychol Pop Media Cult. 2013;2(2):74–85.
22. Garrido S, Schubert E. Music and People with Tendencies to Depression. Music Percept [Internet]. 2015;32(4):313–22.
23. Scott DB. Music and social class in Victorian London. Urban History. 2002;29(1):60–73.
24. Bonneville-Roussy A, Stillwell D, Kosinski M, Rust J. Age trends in musical preferences in adulthood: 1. Conceptualization and empirical investigation. Music Sci. 2017;21(4):369–89.
25. Cebula M. Beyond social class and status. The network embeddedness of music consumption. Prz Socjol. 2019;68(2):81–105.
26. Weeraratne B. Re-Defining Urban Areas in Sri Lanka. 2016.
27. Satharasinghe AJ. Department of Census and Statistics for the Year 2016. 2017.
28. Dimock M. Where Millennials end and Generation Z begins [Internet]. Pew Research Center. 2019.
29. Cohen, S., Kamarck, T., Mermelstein R. A global measure of perceived stress. J Health Soc Behav. 1983;24(4):385–96.
30. Thoma M V., La Marca R, Brönnimann R, Finkel L, Ehlert U, Nater UM. The Effect of Music on the Human Stress Response. PLoS One. 2013;8(8):1–12.
31. Pelletier CL. The effect of music on decreasing arousal due to stress: A meta-analysis. J Music Ther. 2004;41(3):192–214.
32. Stratton VN, Zalanowski AH. The relationship between music, degree of liking, and self-reported relaxation. J Music Ther. 1984;21(4):184–92.
33. Martin G, Clark M, Pearce C. Adolescent Suicide: Music Preference as an Indicator of Vulnerability. J Am Acad Child Adolesc Psychiatry [Internet]. 1993;32(3):530–5.
34. Miranda D, Claes M. Music listening, coping, peer affiliation and depression in adolescence. Psychol Music. 2009;37(2):215–33.
35. Droe K. Music Preference and Music Education: A Review of Literature. Updat Appl Res Music Educ. 2006;24(2):23–32.

