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Impact of Music Engagement on the Well-Being of University Students: A Case Study of Northern Sindh

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ABSTRACT

This study explores the impact of music engagement (ME) on the psychological, social, and emotional wellbeing of university students in northern Sindh. Despite music's recognized therapeutic potential, there is limited historical research examining its role in the psychological and academic lives of students in this region. The primary objective of this research is to assess the impact of music engagement on students' overall wellbeing. A quantitative, cross-sectional survey design was adopted, involving a purposive sample of 350 university students. Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The findings reveal that music engagement significantly influences students' psychological, social, and emotional wellbeing, contributing to improved mental health and enhancing overall student wellbeing. These results underscore the importance of integrating music engagement into student wellbeing strategies to support positive psychological development.

Keywords: *Music Engagement, Psychological wellbeing, Emotional wellbeing, social wellbeing, University Students, Northern Sindh*

INTRODUCTION

In order to express rhythm, melody, and harmony through voices, instruments, or both, musicians use the art of music to convey their thoughts and feelings in meaningful sound forms. In every person's life, music has a remarkable impact. As per Jain and Gada (2019), it provides us with leisure activities and promotes tranquility in our lives. Both individuals and groups of people are influenced by the moods, emotions, and behaviors of music. One way to establish a good mood is using melody. Background music has the potential to affect educators' behavior in addition to their emotional, cognitive, and physiological states (Freedom, K.K., 2019).

Research has proven that music is good and has long term positive effects on the brain (Kuzmich, 2010). While many previous studies show the positive effects of music with regard to increased cognitive abilities (Southgate, 2009), memory boosting (Kang & Williamson, 2014), expanded attention span, and

inspiration and motivation of learners, it also helps in multisensory learning (Brewer, 2005; Brunken, Plass & Leutner, 2004). Aktaş and Gündüz (2004) elaborate further by stating there are two negative effects on the focus on a subject when listening to music improperly. First of all, allocating time for listening music reduces the time for studying. It tends to be more pervasive amongst learners with lower ages. Second, listening to music during reading does not allow the individuals to read critically and understand the text in-depth (Aktaş and Gündüz, 2004). Odabaş et al. The results (2008) provide no support for the claim that listening to music could help reading comprehension of the text. In fact, listening to music hampers that process, reading in the presence of external stimuli must divert attention from the text and so no independent critical reading setting (Odabaş et al., 2008). Exposure to structured music lessons significantly boost children language-based reasoning, temporary memory, preparation and inhibition, which translates into a better academic performance (A.P) (Freedom, K.K., 2019).

The result of the study shows that learners have a favorable view on listening to music but they are confused to think that Music has helped in their academic result. Moreover, type of listening music while studying is out of gender biasness (Jain, M., and Gada, J., 2019). Education about music at educational institutes promotes creativity of thought. This type of education can begin by imagining theory on the regulating emotion of psychology in the harmonization of music for the goodness of pupils. This in turn would assist them in lowering their anxiety and would be beneficial for their psychological wellbeing and thus promote sound health (Ling et al., 2020).

In this modern era, we see learners keep their earphones/headsets or headphones for almost whole day (Jain, M., and Gada, J., 2019). Youth in Pakistan listen to music in various ways, reflecting the country's diverse musical landscape and technological advancements. With widespread smartphone usage, youth in Pakistan primarily listen to music on their mobile devices, using music running APKs, such as Spotify, SoundCloud, or YouTube Music. Online platforms like Patari, Taazi, and Reverb have gained popularity, offering a vast library of Pakistani and international music. Social media platforms like Instagram, TikTok, and Facebook have become essential for discovering new music, with many artists and music influencers sharing their work. FM radio remains a popular medium, with many youths tuning in to popular radio stations like FM 89, FM 91, and City FM. Pakistan has seen a surge in music festivals and concerts, providing youth with opportunities to experience live music and connect with fellow music enthusiasts. Sharing and discovering music through friend networks is common, with youth often exchanging playlists and recommendations.

Few studies exist on the characteristics and perceived importance of music in Pakistani sample, one such study was carried out by Rana, S. A., Ajmal, M., & North, A. C., (2011) which found similar results to those reported in the West reflecting relatively high levels and important function for music among young Pakistanis as well. Meanwhile, 98.1% of the subjects took pleasure in hearing music; their average exposure was 1.45 hours daily. Daily 1.69 hour play a musical instrument with 8.9 % and listening to music was preferred to all indoor activities considered (Rana, S.A., Ajmal, M & North, A.C., 2011)

Statista states that 86% people listen the music digitally in Pakistan. “Statista Consumer Insights” Digital Music Users in Selected Countries (2023) Insights provide the results of Surveys, based on more than 2 million interviews. This study has been planned to observe the effect of M.E on wellbeing and A.P of learners of SALU in Sindh Pakistan while keeping above factors into consideration.

LITERATURE REVIEW

M.E (performance, singing, instrument playing), both passively (e.g., listening) and actively, featuring factors that involve socio-emotional growth throughout the life span (e.g., socialization, individual/ cultural uniqueness, mood regulation etc.) is closely correlated with many mental and behavioral traits (Mankel K, Bidelman GM, 2018; Mosing MA, Pedersen NL, Madison G, Ullen F., 2014 & Swaminathan

S, Schellenberg EG, 2018). Literature also shows that engagement in music is positively related to quality of life, well-being, pro-social behaviour, social acceptance and emotional competence (Weinberg MK, Joseph D., 2017; Theorell TP, Lennartsson AK., Mosing MA., Ullen F., 2014; Cirelli LK., Trehub SE., Trainor LJ., 2018; Zentner M., Eerola T., 2010 & Lense MD., Beck S., Liu C., Pfeiffer R., Diaz N., Lynch M., et al., 2020)

Despite these advancements connecting family music involvement with various health indicators, to date little is known about the ways in which family M.E may work directly or indirectly toward supporting mental health, both at the level of traits (e.g., depression and anxiety symptoms, substance use behaviors), clinical diagnosis (i.e., associations with major depressive disorder (MDD) or substance use disorder (SUD) diagnoses), or as a therapeutic activity. Evidence from increasingly diverse samples relate M.E to general measures of mental health (including improved well-being or emotional competence) further suggesting that higher levels of specific mental health may also be linked with participation in musical activities. For examples in adults, more hours of music practice and self-reported music achievement were associated with superior emotional competence in a large representative study on over 8000 Swedish twins (Theorell TP., Lennartsson AK., Mosing MA., Ullen F., 2014).

Likewise, in a meta-ethnography of 46 qualitative studies, participation in music activities was associated with well-being through facilitation of emotion management, self-development, respite from problems and social connectivity (Perkins R., Mason-Bertrand A., Fancourt D., Baxter L., Williamon A.2020). Among 1000 Australian adults, those who interacted with music (e.g., singing or dancing with someone present; attending a concert) enjoyed greater well-being than those who flew solo or had no experience (Krause et al. 2021). By contrast, other M.E behaviors such as playing an instrument or creating music were not significantly related to well-being within this sample (Weinberg MK., Joseph D., 2017)

Social music experiences (such as song familiarity and synchronized dance music) earlier in life are correlated with several pro-social behaviors in infants and children (Cirelli LK., Trehub SE., Trainor LJ., 2018) and positive affect (Zentner M., Eerola T., 2010).These findings provide some preliminary evidence for the positive relationships between M.E and healthy general mental health outcomes in both children and adults, with some variation depending on the specific type of M.E examined. The results disclosed by Sun, J. (2022) indicated that M.E could inspire Learners' passions, generic sentiments and other non-intellectual traits while eliciting their vision and imagination to contribute empowering Learner’s ferry into the goal of nurturing an inventive identity or identities. Sun, J. (2022).

Music Engagement & Psychological Effects

Examining the relationship between M.E and learners psychological and academic outcomes: The mediating variable of self-efficacy and self-esteem Frontiers in Psychology, 13, 841204.

M.E and Evaluation of the Effect of M.E on the Learners’ Wellbeing and Learners’ A.P in Universities: A Review, Based on an Amplitude Survey with a High-Level Research According to past studies there is super clip relationship about M.E. The music instruction at colleges and universities can facilitate the enhancement of learners’ “poorly functioning” personalities (Arora and Singh, 2020). Furthermore, through (M.E) learners can develop their unique identities as innovators and a sense of self and self-efficacy that goes beyond personality flaws brought on by the negative forces in society today. With regard to attempts to streamline music learning in higher education (Chen et al., 2019).

In a different study, post-matriculation learners were also advised to engage a lot in such kinds of M.E initiatives so that they can become proficient in music. Besides, one of the things that would help is if the above social level understanding of others and their sense of self control is implanted in them in this level at this stage open-mindedness among the student studying at that grade will be developed and inter-

communication regarding learning will be improved. This will also assist them in overcoming anxiety and attain psychological wellbeing, so that they can live their life as per with sound health (Ling et al., 2020). Educational music is a kind of learning because it usually considered a style or method of art that plays an example in psychological stabilization and regulation, so teaching M.E will have special position to being bridge in function healing disease at educational institutions due to main job; form learners' standalone personality. Others scholarship announced that some music masters use their skills to daunt pupils with information (Bagozzi and Yi, 1988; Hair et al., (2014).

A significant proportion of learning outcomes are now attributable to contextual motives (Bagozzi and Yi, 1988; Hair et al., 2014; Sun, J., 2022). If outside motives are removed, the learners at this level would consider it a challenge for keeping a pace in learning in this discipline. Colorful music teaching activities have been widely applied in college Learners' mental health work practice and function with psychological adjustment role (Zupan, K. D., &Gadpaille, W. J., 2020); Thus, colleges and universities should take the starting point from Learners' real situation of psychological existence。 It indeed helps children within developing their psychological fitness by attractive song schooling rooms and equipping teaching gear at college degree. Providing relevant music psychology elective courses about topics related to their learning and lives might help them recognize the importance of positive mindset in developing metacognitive skills. It will help learners to have positive circles of friends (Le Prell et al, 2018) In addition, if we find it possible to utilize the Internet resources to do digital mental encounters, support the learners in supplementing some adorable and encouragement facilitated music compositions and introduce some essential kind of knowledge about (M.E) like that they appreciate absorbing psychological sense luxury from musical notes. Meanwhile, the psychological elements of the institute that uses music as a medium and games, performances etc., to enhance communication between learners creates a good atmosphere of helping people, cooperation and love is such an easy way to monitor Learners' burden-free study pressure, help each other to avoid depression and promote stable mental condition (Chen et al., 2019b; Wang et al., 2019).

Related Work on Music Engagement

Well-known concepts such as self-esteem and self-efficacy may mediate the relationships between M.E and either wellbeing, psychological or academic outcomes of the learners. Self-efficacy refers to the personal belief in one's capabilities to organize and execute the courses of action required to manage prospective situations. Self-esteem is the overall evaluation of a person as someone who perceives themselves positively or negatively. Several studies have established a direct positive relationship between self-esteem and happiness, a sense of purpose, good stress coping skills, and the ability to cope with adverse conditions (Bandura 1977; Yıldırım et al. 2017).

Some studies have focused on the direct effect of (M.E) some the relationship between M.E and A.P. Very little work has been done directly or indirectly on the effect of engagement with music, perhaps due to its non-negligible structurally nature. The intriguing association of the academic achievement with Learner's ability to regulate their psychological health has been explored and established significantly on many occasions (Bhat & Siddiqui, 2015; Alkhatib, 2020; Amholt et al., 2020; Gökalp, 2020; Chaudhry & Ikram, 2021). It has now been made clear that psychological pain is one of the most dangerous and worrying issues facing learners at universities around the globe. One American survey has reported that psychology accounts for five of the six highest-impact health problems. These include classifications such as high psychological distress and low psychological wellbeing which may be used to describe university learners enduring a high burden of mental illness.

A study by experts found high levels of psychological wellbeing was tied with lower-depression in university learners in Australia. But it most cases the absence of a good psychological wellbeing strengthens despair. This discomfort is a component of the psychological well-being we are introduced in

the literature (Bhullar et al., 2014; Roslan et al., 2017; Sharp and Theiler, 2018). This accompanying literature was suggestive of a relationship between learners' wellbeing and A.P, so in this respect we would propose the following hypothesis. Many times, studied previously, the strong link between A.P and Learners psychological wellbeing remained significant (Bhat & Siddiqui, 2015; Alkhatib, 2020; Amholt et al., 2020; Gökalp, 2020 & Chaudhry & Ikram, 2021).

Psychological suffering is increasingly recognized as a significant and urgent issue among university learners worldwide. A study in the U.S. noted that psychology was responsible for five of the six top health-related problems. For example, there is a potential category of learners who have high psychological distress and low psychological wellbeing i.e. Characterized by high levels of mental illness. After conducting a research experts found that the university learners in Australia with high level of psychological wellbeing were less suffered from depression. But lack of psychological wellbeing, makes despair high. The learners' psychological wellbeing and psychological discomfort were assessed using a two-domain scale. This association between an uncomfortable and well-being is are highlighted in the literature (Bhullar et al. So, we suggest the research questions in this regard as above since all the supporting literature hinted about a link of performance and wellbeing but not necessarily

Table 1: Construct Measurement

Construct	Items	Description	Reference
ME1	Listen	Did you listen to music during last semester?	Weinberg, M. K., & Joseph, D. (2017 Sun, J. (2022). Groarke, J. M., & Hogan, M. J. (2016).
ME2	Play	Did you play an instrument during the last semester?	
ME3	Dance	Did You Dance during the last semester?	
ME4	Concert	Did you attend musical concerts, theatre or events during the last semester?	
ME5	Singing	Did you sing during the Engineering last semester?	
EWB1	Happiness	During the last semester, how often did you feel Happy?	Keyes, C.L.M. (2009; Keyes, C.L.M. (2005). Faradiba, A. T., Paramita, A. D., Triwahyuni, A., & Purwono, U. (2023). Söderqvist, F., & Larm, P. (2023). de Carvalho, J. S., Pereira, N. S., Pinto, A. M., & Marôco, J. (2016). Pir, S., Hashemi, L., Gulliver, P., & Fanslow, J. (2023).
EWB2	Interest	During the last semester, how often did you feel Interested in Life?	
EWB3	Life satisfaction	During the last semester, how often did you feel Satisfied with your life?	
SWB1	Social contribution	During the last semester, how often did you feel that you had something important to contribute to the society?	
SWB2	Social integration	During the last semester, how often did you feel that you belonged to the (community or a social group your neighborhood, city, school)?	
SWB3	Social actualization	During the last semester, how often did you feel that our society is a good place or becoming better place, for all people?	
SWB4	Social acceptance	During the last semester, how often did you feel that people are basically good?	
SWB5	Social coherence	During the last semester, how often did you feel that the way our society works makes sense to you?	
PWB1	Self-acceptance	During the last semester, how often did you feel that you like most parts of your personality?	Guo, C., Tomson, G., Guo, J., Li, X., Keller, C., & Söderqvist, F
PWB2	Mastery	During the last semester, how often did you feel	

		good at managing the responsibilities of your daily life?	
PWB3	Positive relations	During the last semester, how often did you feel you had warm and trusting relationships with others?	
PWB4	Personal growth	During the last semester, how often did you feel you had experiences that challenged you to grow and become a better person?	
PWB5	Autonomy	During the last semester, how often did you feel confident to think or express your own ideas and opinions?	
PWB6	Purpose in life	During the last semester, how often did you feel that your life has a sense of direction or meaning to it?	

Research Model

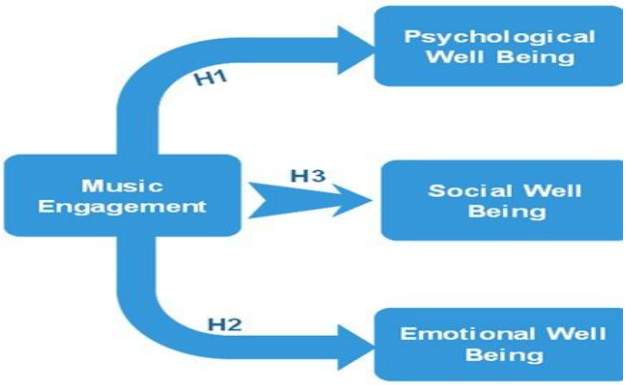


Figure 01: The Above figure shows the variables and the relationship among each other.

Research Questions

R1: Is there any relation between M.E and psychological well-being?

R2: Is there any relation between M.E and social well-being?

R3: Is there any relation between M.E and emotional well-being?

METHODOLOGY

Research Design

This study is based on a quantitative research design, which is appropriate for examining relationships between measurable variables. The purpose of adopting a quantitative approach is to obtain structured, numerical data that can be statistically analyzed to determine the impact of music engagement on the psychological, emotional, and social well-being of university students. The use of a survey allowed for the collection of responses from a large number of participants in a relatively short period, ensuring the reliability and generalizability of the findings within the defined population.

Data Collection

Data for this study were collected through a structured questionnaire distributed via Google Forms, an accessible and efficient method given the digital literacy and internet access of university students. A total of 500 questionnaires were distributed among students from seven universities located in northern Sindh. Out of these, 350 fully completed responses were received, yielding a 70% response rate, which is considered acceptable for social science research.

The questionnaire was designed to assess two main areas: students' level of music engagement (e.g., listening, playing, singing, attending concerts, dancing) and their well-being (psychological, social, and emotional). Responses were recorded using a 5-point Likert scale to ensure ease of interpretation and statistical analysis.

The sampling strategy used for this research was random sampling. This technique was chosen to give every student within the population an equal chance of being selected, thus minimizing sampling bias. The target population consisted of students from the following seven public universities in northern Sindh, with an estimated total student population of 31749. From this population, a sample of 350 respondents was finalized based on the returned and valid questionnaires. This sample size is considered statistically sufficient for analyzing the variables and testing the hypotheses set out in the research.

According to Bryman and Bell (2007), quantitative research allows the researcher to obtain facts rather than abstract ideas about the research's aim.

Data Collection Source

The data for this research was collected directly from undergraduate and postgraduate students enrolled in seven public universities located in northern Sindh, Pakistan. These students were chosen as the primary source of data because they represent a diverse and relevant population actively engaged in academic life and commonly exposed to music in various forms.

The selected universities included:

1. Shah Abdul Latif University, Khairpur
2. Sukkur IBA University, Sukkur
3. Shaikh Ayaz University, Shikarpur
4. Aror University of Art, Architecture, Design & Heritage, Sukkur
5. Begum Nusrat Bhutto Women University, Sukkur
6. Quaid-e-Awam University of Engineering, Science & Technology, Nawabshah
7. Shaheed Mohtarma Benazir Bhutto University, Nawabshah

These institutions collectively have an estimated student population of around 31749 Participants were approached via digital platforms such as WhatsApp, email, university groups, and social media forums where the Google Form link to the questionnaire was shared. The survey was voluntary and designed to ensure complete anonymity and confidentiality **of** the participants.

Only students who were currently enrolled in any of the above-listed universities during the time of data collection were eligible to participate. The rationale for selecting these sources was to ensure that the data

reflects a broad representation of university students from the northern Sindh region, enabling the findings to be both regionally relevant and academically meaningful.

RESULTS

Descriptive Results

The study drew on responses from 350 university students, offering a well-rounded glimpse into the lives of young adults navigating academics, personal well-being, and the subtle yet profound influence of music. The gender distribution skewed male, with 243 male (69.4%) and 107 female (30.6%) participants, reflecting a moderately imbalanced but representative sample from co-educational institutions. Most respondents were single (85.4%), with a smaller group, 14.6%, indicating they were married. The participants' ages ranged from 18 to 25 years, with an average age of 21.91 years (SD = 2.02). A large portion were between 21 and 23, which aligns with typical undergraduate and early postgraduate enrollment ages.

When it came to living arrangements, 280 students (80%) identified as day scholars, commuting from home, while the remaining 70 students (20%) resided in hostels a factor that may subtly affect social dynamics and psychological stability. Participants also reported varying degrees of financial stability. Although income brackets varied, a substantial number fell into the low to middle-income range, suggesting a modest economic background common among students in developing regions. This socioeconomic status often intersects with stress levels and access to leisure or creative outlets such as music.

In terms of academic commitment, students were asked about their study habits. Most reported dedicating 2 to 4 hours daily to their studies, while a smaller group indicated more intensive routines of 5 hours or more, often correlating with higher academic aspirations or competitive programs. Employment status added further depth to the sample. Nearly half (47.1%) of the students were unemployed, relying on family support or scholarships. Others were engaged in part-time roles (29.4%), self-employed (14.9%), or even full-time jobs (5.7%), balancing academics with professional responsibilities a reality that can influence stress, time management, and personal well-being. Altogether, these demographic insights paint a vivid backdrop for understanding how musical engagement weaves into the broader tapestry of students' emotional, psychological, and social well-being.

Table 2: Demographic Characteristics of Respondents (N = 350)

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	243	69.4%
	Female	107	30.6%
Marital Status	Single	299	85.4%
	Married	51	14.6%
Age Range	18–20 years	41	11.71%
	21-22	109	31.14%
	23-24	122	34.85%
	25-26	43	12.3%
Living Arrangement	Day Scholar	280	80.0%
	Hostel Resident	70	20.0%
Employment Status	Unemployed	165	47.1%
	Part-time Job	103	29.4%
	Self-employed	52	14.9%
	Full-time Job	20	5.7%

Statistical Analysis

To explore the hypothesized relationships between musical engagement and various dimensions of well-being, Partial Least Squares Structural Equation Modeling (PLS-SEM) was employed. This approach was selected for its robustness in handling complex models and its suitability for predictive research in social sciences.

Measurement Model Assessment

The measurement model was first evaluated to ensure reliability and validity of the constructs. All latent variables demonstrated satisfactory internal consistency, with most outer loadings exceeding the recommended threshold of 0.70. For instance, indicators ME03, ME04, and ME05 for Musical Engagement showed strong loadings of 0.90, 0.85, and 0.90, respectively, suggesting high item reliability. Although ME01 had a slightly lower loading of 0.64, it was retained due to its conceptual relevance and acceptable statistical performance.

Similarly, all observed variables for Psychological Well-being (e.g., PWB02 = 0.87, PWB03 = 0.79), Social Well-being (e.g., SWB03 = 0.80, SWB04 = 0.84), and Emotional Well-being (e.g., EWB02 = 0.90, EWB03 = 0.89) exhibited strong loadings, all significant at $p < .001$. These results confirm the convergent validity of the measurement model.

Table 3: Cronbach's alpha, composite reliability, and Average variance extracted.

Variable	Cronbach's α	CR-rho_a	R-rho_c	AVE
ME	0.88	0.90	0.92	0.69
PWB	0.89	0.99	0.91	0.64
SWB	0.86	0.90	0.90	0.64
EWB	0.80	0.80	0.89	0.72

Abbreviations: ME; Music Engagement, PWB, Psychological Well-Being, SWB; Social Well-Being, EWB; Emotional Well-Being.

Structural Model Evaluation

The structural model was then examined to test the hypothesized relationships. Musical Engagement emerged as a significant predictor of all three well-being constructs, though with varying effect sizes. The path from Musical Engagement to Psychological Well-being was the strongest, with a standardized coefficient of $\beta = 0.50$ ($p < .001$). This relationship accounted for 25% of the variance ($R^2 = 0.25$), indicating a moderate explanatory power.

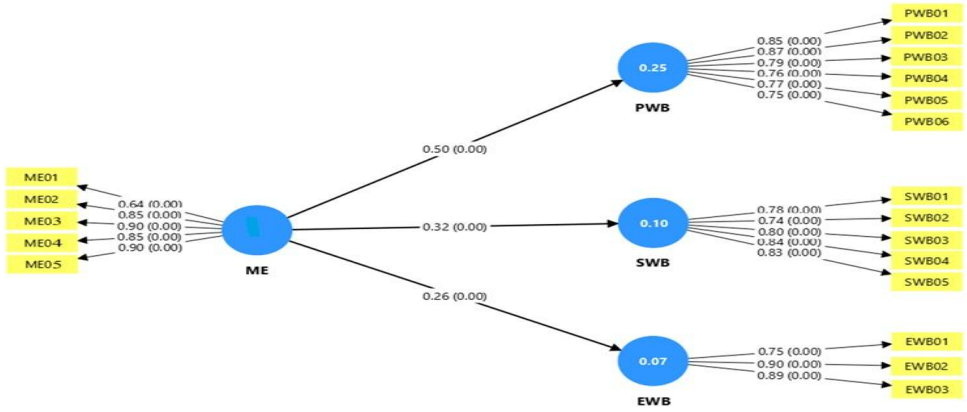
A moderate yet significant effect was also observed from Musical Engagement to Social Well-being ($\beta = 0.32$, $p < .001$), explaining 10% of the variance ($R^2 = 0.10$). While the effect was weaker compared to psychological outcomes, it still highlights the social benefits of engaging with music. The relationship between Musical Engagement and Emotional Well-being was significant but relatively smaller in magnitude ($\beta = 0.26$, $p < .001$), with an R^2 value of 0.07, indicating a modest contribution.

Collectively, these results suggest that students who engage more deeply with music tend to report higher levels of psychological, social, and emotional well-being. The findings reinforce the potential of music as a meaningful psychosocial resource, especially in high-stress academic environments.

Table 4: Path coefficients

Direct Effects	β	Sample Mean(M)	STDEV	T Statistic	p
ME → PWB	.500	.500	.030	16.990	0.00
ME→ SWB	.230	. 330	.040	7.060	0.00
ME→EWB	.260	.270	.050	5.210	0.00

Abbreviations: ME; Music Engagement, PWB, Psychological Well-Being, SWB; Social Well-Being, EWB; Emotional Well-Being.



DISCUSSION

The present study aimed to examine the influence of music engagement (ME) on the psychological, social, and emotional wellbeing of university students in Northern Sindh. The findings provide robust evidence that music engagement has a significant and positive impact across all three domains of wellbeing, though the magnitude of impact varied among them.

The strongest relationship was observed between music engagement and psychological wellbeing. This aligns with previous research suggesting that music can serve as a coping mechanism, mood enhancer, and therapeutic outlet (Ling et al., 2020; Weinberg & Joseph, 2017). University students who actively or passively engaged with music through listening, singing, dancing, or attending concerts—reported increased self-esteem, reduced stress, and improved self-identity. These findings are particularly important in the context of Northern Sindh, where limited access to professional mental health resources makes informal psychological support methods, such as music, even more valuable.

Social wellbeing also demonstrated a meaningful connection with music engagement. Students reported feeling a stronger sense of community, increased belongingness, and better social coherence when they engaged in musical activities. This supports the notion that music serves as a medium for social interaction and bonding (Cirelli et al., 2018; Krause et al., 2021). Group activities like singing, dancing, and attending music events appeared to foster collaboration, mutual respect, and communication skills among students, thereby contributing to their social development.

Emotional wellbeing showed the weakest but still statistically significant relationship with music engagement. Students who frequently engaged with music reported a greater ability to regulate emotions, experience positive feelings like joy and hope, and reduce emotional distress. These findings align with earlier research indicating music's role in emotional expression and catharsis (Zentner & Eerola, 2010).

However, the relatively lower effect size might indicate that emotional wellbeing is influenced by a wider range of personal and contextual factors beyond music alone.

It is also important to note that although passive listening was the most common form of engagement, students who participated in more active forms—such as playing instruments, singing, or attending musical events—tended to report higher overall wellbeing. This reinforces the idea that deeper or more participatory engagement may offer greater psychological and social benefits. Taken together, the findings confirm the proposed hypotheses and are consistent with the conceptual framework developed for this study. They also offer new insights into the cultural context of Northern Sindh, where traditional and modern musical practices coexist. Despite socio-economic and infrastructural limitations, music continues to serve as a universal language that supports students' holistic development.

In conclusion, this study not only validates global findings on the psychological and social utility of music engagement but also localizes them in a Pakistani context. It highlights the potential of integrating music-based interventions into university wellbeing strategies and provides a strong foundation for further research and practical application in student affairs, mental health services, and campus life programming.

CONCLUSION

The study explored the impact of music engagement on the wellbeing of university students, with a specific focus on three dimensions: psychological, social, and emotional wellbeing. The results revealed that music engagement (ME) significantly predicts overall wellbeing across all three domains. More specifically, the analysis indicated that music engagement had the strongest predictive effect on psychological wellbeing. Students who engaged more frequently with music, whether through listening, playing instrument, dance, singing, or attending live music events, reported higher levels of self-acceptance, personal growth, environmental mastery, autonomy, and a sense of purpose in life. This suggests that music serves not only as a leisure activity but also as a powerful tool for fostering mental resilience and personal development among university students.

In addition to its psychological benefits, music engagement was also found to significantly enhance social wellbeing. Participants reported that musical activities strengthened their interpersonal relationships, increased their feelings of belonging, and promoted community participation. These findings emphasize music's role as a social connector, facilitating positive social interactions and support networks within the university environment.

Similarly, emotional wellbeing was positively influenced by music engagement. Students involved with music reported more frequent experiences of positive emotions such as joy, hopefulness, and contentment, alongside better regulation of negative emotions like stress and anxiety. Music appeared to function both as a mood enhancer and a coping strategy for emotional challenges. Overall, the findings highlight music's psychosocial potential demonstrating that music engagement is not merely a recreational activity, but a meaningful contributor to the psychological, social, and emotional dimensions of wellbeing. This underscores the importance of promoting musical opportunities within university settings to support the holistic health of students

RECOMMENDATIONS

Based on the results of this study, several key recommendations can be made to leverage music engagement (ME) as a means of enhancing student wellbeing: Integrate Music Engagement Programs into Campus Life**;** Universities should develop structured programs that encourage music participation, such as music clubs, student bands, choir groups, open mic events, and music therapy sessions. These initiatives can provide accessible outlets for emotional expression, stress relief, and social connection.

Incorporate Music into Mental Health Strategies; Counseling centers and student wellbeing services should consider integrating music-based interventions (e.g., music listening sessions, guided music therapy) as complementary tools for supporting students' psychological and emotional health. Create Inclusive Music Spaces. Institutions should establish spaces where students can engage with music informally, such as listening lounges, practice rooms, or creative studios. These spaces should be open to students of all skill levels to promote inclusivity and reduce barriers to participation

FUTURE DIRECTION FOR FURTHER STUDY

While this study highlights the significant impact of music engagement (ME) on the psychological, social, and emotional wellbeing of university students, several avenues for future research are suggested: Exploring the Link Between Music Engagement and Academic Performance Future studies should directly investigate whether improvements in wellbeing through music engagement translate into measurable gains in academic achievement, such as higher grades, better concentration, or reduced dropout rates. Examine Different Forms of Music Engagement Research could differentiate between various types of engagement (e.g., active participation like playing an instrument vs. Passive engagement like listening) to identify which forms most strongly influence specific aspects of wellbeing.

LIMITATIONS

Although this research provides meaningful insights into how music engagement affects the well-being of university students in northern Sindh, certain limitations need to be recognized for a balanced understanding. One of the primary limitations is the geographical focus of the study. The research was conducted only within selected universities in northern Sindh, which restricts the generalizability of the findings. Students from other provinces, regions, or cultural settings might have different patterns of music engagement and different perceptions of well-being. Another limitation lies in the methodological approach. The study used a cross-sectional design, meaning data was collected at one specific time. While this helped in capturing a snapshot of the situation, it does not reflect any changes in behavior or well-being over time. Long-term effects of music engagement on students' well-being were not explored. Furthermore, the data was collected through self-reported questionnaires**.** This approach depends heavily on the honesty, memory, and self-awareness of the respondents. There is always a risk of bias in self-reporting, as participants might either overstate or understate their actual behaviors and emotions.

Also, the study did not examine the different types or genres of music that students engaged with. It treated all forms of music engagement as equal, whereas in reality, the emotional and psychological effects of music may vary depending on the type of music or the mode of engagement (e.g., listening vs. performing). Lastly**,** time and resource constraints limited the scope of data collection. Although 350 responses were gathered, a larger and more diverse sample could have increased the strength and applicability of the findings. Similarly, limited funding and access made it difficult to include qualitative methods, which could have provided more depth and context to the results. Despite these limitations, the research offers a valuable starting point for further investigation and contributes to the growing understanding of how music can influence student well-being in the Pakistani academic context.

Declaration

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Abbreviations

(ME) Music Engagement, (PW) Psychological Wellbeing (EWB) Emotional wellbeing (SW) Social Wellbeing (PLS-SEM) Partial Least Squares Structural Equation Modeling.

Ethics approval and consent to participate

Ethical approval was not required for this study in accordance with the policies of *Shah Abdul Latif University Khairpur Mirs, Sindh* and national regulations, as it involved voluntary participation in a non-interventional questionnaire survey. The study was conducted in accordance with the ethical principles of the Declaration of Helsinki. Participants were informed about the purpose of the study, the voluntary nature of their involvement, and their right to withdraw at any time. Informed consent to participate was obtained from all participants prior to the completion of the questionnaire.

Consent for Publication

Not Applicable.

Availability of Data and Materials

No, I do not have any research data outside the submitted manuscript file.

Competing Interests

The authors declare that they have no competing interests.

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Authors' Contributions

Ali Sher Burdi has conceived & designed the study

Abdul Razzaque collected data, and performed the analysis.

Mujeeb-ur-Rehman Abro read and approved the final manuscript.

Sahib Oad contributed to data interpretation & manuscript drafting.

Sakhawat Ali has helped find the literature review and work with methodology.

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Questionnaire

The questionnaire employed in this study was adapted from previously published and validated instruments rather than being newly developed. The items and conceptual framework were selected and modified from prior research on music engagement, psychological well-being, and related constructs (Weinberg & Joseph, 2017; Sun, 2022; Groarke & Hogan, 2016; Keyes, 2005, 2009; Faradiba et al., 2023; Söderqvist & Larm, 2023; de Carvalho et al., 2016; Pir et al., 2023; Guo et al., 2015). Full bibliographic details of these sources are provided in the References section of this manuscript.

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