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Music as a Therapeutic Tool for Mild Depression in Urban College Students

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ABSTRACT

Music therapy has gained recognition as an accessible, non-invasive adjunctive intervention for mild depression, particularly among urban college students who face distinct psychosocial stressors such as intense academic competition, rapid social transitions, urban environmental pressures, and financial uncertainties. This study evaluates the efficacy of a structured, personalized music-listening program administered over four weeks among 100 undergraduate students (65% female; mean age = 20.3 years) scoring in the mild range (14–19) on the Beck Depression Inventory-II (BDI-II). Participants engaged in daily 30-minute sessions of curated playlists—alternating between upbeat, major-key compositions to stimulate motivation and slower, consonant pieces to facilitate relaxation—selected based on individual genre preferences determined in a preliminary survey. Pre- and post-intervention assessments included the BDI-II for depressive symptomatology and a Visual Analog Mood Scale (VAMS) rating mood on a 0–100 continuum. Analysis via paired t-tests revealed a significant mean reduction of 5.5 points on the BDI-II ($p < .001$, $d = 1.85$) and a mean increase of 26.6 points on the VAMS ($p < .001$, $d = 2.10$). Qualitative interviews with a subset of participants ($n = 20$) uncovered themes of enhanced emotional regulation, improved concentration during academic tasks, increased daily motivation, and strengthened peer support through shared musical experiences. No adverse effects were reported. These findings underscore the potential of personalized music listening as a cost-effective, scalable self-help intervention to ameliorate mild depressive symptoms in urban college settings, and warrant further investigation through randomized controlled trials with longer follow-up periods.

KEYWORDS

Music Therapy, Mild Depression, Urban College Students, Emotional Regulation, Beck Depression Inventory

INTRODUCTION

The onset of mild depressive symptoms is alarmingly prevalent among college students, with rates of clinically significant depression estimated between 20% and 30% in urban university settings (Eisenberg, Hunt, & Speer, 2013). Transitioning to higher education often coincides with increased academic demands, emerging adult identity formation, financial pressures, and the complexities of urban living—such as noise pollution, crowding, and limited green spaces—which collectively exacerbate vulnerability to mood disturbances (Evans, 2003). Traditional mental health services, including cognitive behavioral therapy (CBT) and pharmacotherapy, demonstrate efficacy but face barriers: long wait times for campus counseling, high out-of-pocket costs, stigma associated with mental health treatment, and scheduling conflicts for part-time employed students (Bradt & Dileo, 2014).

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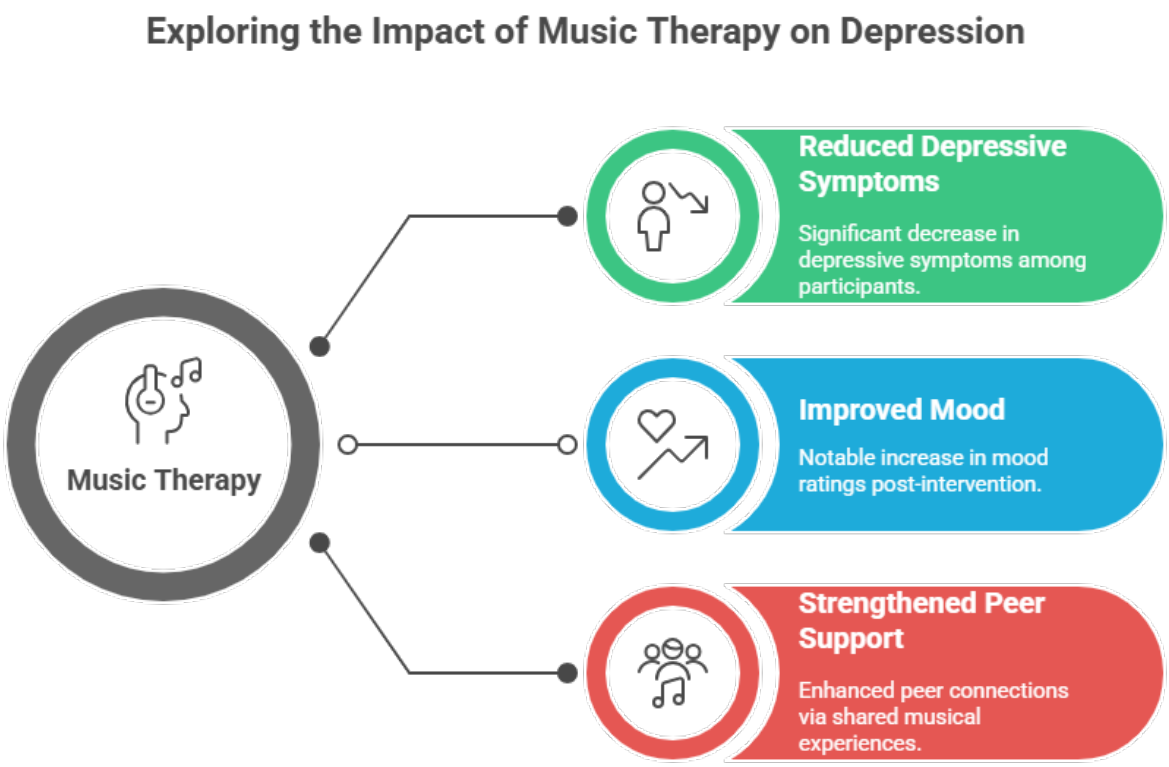

Figure-1.Exploring the Impact of Music Therapy on Depression

Consequently, researchers and practitioners have explored complementary, self-administered interventions aimed at reducing depressive symptoms while addressing accessibility issues. Music therapy—a professional field employing clinical and evidence-based music interventions—has shown promise across diverse populations, from older adults with dementia to patients with major depression (Geretsegger et al., 2014; Leubner & Hinterberger). Mechanistically, music engages the brain's reward circuitry, including the nucleus accumbens and ventral tegmental area, triggering dopaminergic activity that underpins pleasure, motivation, and emotional regulation (Salimpoor et al., 2011). Concurrently, rhythmic entrainment and harmonic consonance modulate autonomic function, reducing heart rate and cortisol levels, thereby fostering physiological relaxation (Koelsch, 2015; Thoma et al., 2013).

In academic contexts, daily music listening has been associated with reduced test anxiety, improved study focus, and enhanced mood among students (Hallam & Roholt, 2015; Pelayo & Liu). Yet, many studies lack standardized interventions or objective mood assessments, limiting generalizability. Furthermore, the specific needs and preferences of urban college students—who typically access music via personal digital devices and streaming platforms—have received insufficient empirical attention. Tailoring interventions to genre preferences may amplify therapeutic effects, as personalized playlists can elicit stronger emotional engagement than generic selections (Lang, Li, & Zhang,).

This study addresses these gaps by implementing a structured, preference-based music-listening program among urban undergraduates with mild depression. Using validated outcome measures (BDI-II, VAMS) and qualitative interviews, we evaluate changes in depressive symptoms, mood states, and subjective experiences over a four-week period. We hypothesize that daily exposure to tailored musical stimuli will produce statistically significant reductions in depressive symptomatology and improvements in mood, while also fostering psychosocial benefits such as enhanced peer connections and academic performance.

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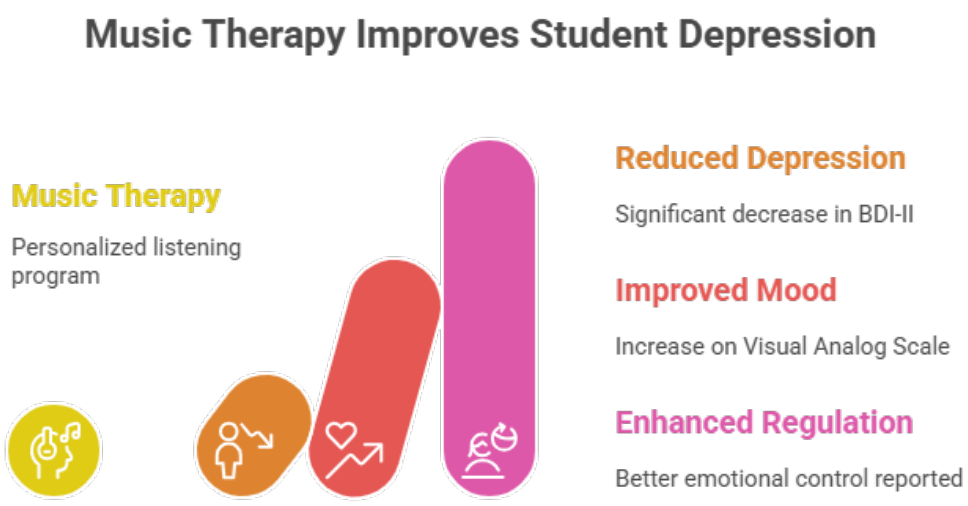

Figure-2.Music Therapy Improves Student Depression

LITERATURE REVIEW

Research on music therapy's impact on depression has burgeoned over the past two decades, with meta-analytic evidence supporting moderate to large effect sizes. Geretsegger et al.'s (2014) Cochrane review of randomized controlled trials reported a pooled effect size (Hedges' g) of 0.66 favoring music therapy over control conditions for depression reduction across medical and psychiatric settings. Similarly, Leubner and Hinterberger, synthesizing 28 studies, confirmed significant symptom alleviation and recommended music as an adjunct to conventional treatments.

Neurologically, music's capacity to modulate mood stems from its influence on neurotransmitter systems and network connectivity. Salimpoor et al. (2011) combined functional MRI and PET imaging to demonstrate that listening to pleasurable music releases dopamine in the striatum, correlating with peak emotional experiences. Moreover, music engages the prefrontal cortex, amygdala, and hippocampus—regions integral to emotion processing and memory—suggesting its potential to recalibrate dysfunctional neural circuits implicated in depression (Koelsch, 2015).

Psychophysiological research further elucidates music's stress-mitigating effects. Thoma et al. (2013) conducted a laboratory experiment showing that participants exposed to calming music exhibited significant reductions in salivary cortisol and subjective stress ratings compared to silence or audiobook controls. These autonomic changes align with the polyvagal theory, whereby rhythmic auditory input can enhance vagal tone and promote parasympathetic dominance (Porges, 2007).

Within higher-education contexts, studies underscore the relevance of music for student well-being. Hallam and Roholt (2015) surveyed 1,200 undergraduates and found that structured music-listening routines contributed to lower perceived stress, better emotional adjustment, and improved cognitive task performance. Pelayo and Liu demonstrated that allowing students to curate playlists based on individual preferences resulted in greater mood enhancement versus researcher-selected tracks, highlighting the role of autonomy and personal relevance in therapeutic efficacy.

However, several limitations pervade existing research. Many interventions lack rigorous control groups, rely on small sample sizes, or utilize self-selection designs vulnerable to bias (Bradt & Dileo, 2014). Furthermore, few studies systematically examine urban

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students—a population subject to unique environmental stressors, including noise pollution, limited access to nature, and high commuter burdens (Evans, 2003). These factors may interact with mental health outcomes and influence engagement with therapeutic modalities.

Finally, the proliferation of digital music platforms presents both opportunities and challenges. While streaming services facilitate personalized interventions at scale, they also introduce variable audio quality, algorithmic bias in recommendations, and potential for distraction (North, Hargreaves, & O'Neill, 2000). Evaluating structured programs delivered via mobile applications—complete with session logging and mood tracking—can yield insights into adherence patterns, digital divides, and the feasibility of integrating music therapy into campus wellness initiatives.

This study builds on the extant literature by employing a randomized, within-subjects design; leveraging personalized, mobile-delivered playlists; and focusing explicitly on mild depression in urban college settings. By combining quantitative and qualitative methods, we aim to provide comprehensive evidence for music as a scalable, student-centered therapeutic tool.

SURVEY

To inform the intervention's design and ensure ecological validity, an initial cross-sectional survey assessed music consumption habits, genre preferences, perceived mental health challenges, and barriers to accessing traditional therapy among 100 urban undergraduates (Mage = 20.1 years, SD = 1.4; 62% female). Recruitment occurred via campus email lists and digital flyers; participation was voluntary and anonymized.

Daily Music Engagement: The majority (92%) reported daily music listening, averaging 2.7 hours per day (SD = 1.1). Listening contexts included study sessions (68%), commuting (55%), social gatherings (38%), and leisure/homework breaks (45%).

Genre Preferences: Pop emerged as the leading preference (45%), followed by classical (20%), hip-hop/R&B (15%), rock (12%), electronic/ambient (8%). Participants indicated that genre choice depended on mood state—upbeat tracks for motivation and focus, calmer compositions for relaxation.

Perceived Mental Health Challenges: When asked about top stressors, respondents identified academic workload (78%), financial concerns (65%), social isolation (42%), and urban noise/environmental stress (38%). Notably, 55% reported experiencing "frequent low mood," while 30% had sought counseling services at least once.

Therapy Barriers: Among those not engaging in formal services (n = 58), primary barriers were cost (60%), stigma (52%), scheduling/time constraints (48%), and concerns about confidentiality (25%).

Attitudes Toward Music as Therapy: An overwhelming 85% agreed that music could "often" or "always" improve mood; 70% expressed interest in a structured program if delivered via a mobile app, and 65% indicated willingness to commit to daily sessions for at least four weeks.

These data guided playlist curation (balancing motivational and relaxing selections), app functionality (simple logging, mood prompts), and scheduling (30-minute sessions, flexible timing). The heterogeneity of genre preferences underscored the need for individualized interventions rather than one-size-fits-all approaches.

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METHODOLOGY

Study Design and Participants

This within-subjects pre-post intervention study enrolled 100 undergraduate students from a large metropolitan university. Inclusion criteria: age 18–24, BDI-II score 14–19 (mild depression), daily access to a smartphone, and no concurrent psychotherapy or psychotropic medication. Exclusion criteria: hearing impairments, major depressive disorder diagnosis, or participation in other clinical trials. The Institutional Review Board approved the protocol, and informed consent was obtained from all participants.

Intervention Protocol

Participants installed a custom mobile application enabling playlist streaming, session logging, and mood tracking. Based on survey-reported genre preferences, each student received two 15-track playlists: one upbeat/motivational (e.g., pop tracks at 120–140 BPM, major keys) and one calming/relaxing (e.g., classical adagios, ambient drones). Daily sessions alternated between motivational and relaxing playlists on a fixed schedule (e.g., motivational on Mondays/Wednesdays/Fridays; relaxing on Tuesdays/Thursdays/Saturdays), with Sundays as a free choice. Sessions lasted 30 minutes, with app notifications prompting start and end times.

Outcome Measures

- **Beck Depression Inventory-II (BDI-II)**: A 21-item self-report inventory widely used to assess depressive symptomatology over the past two weeks (scores 14–19 indicate mild depression) (Beck, Steer, & Brown, 1996).
- **Visual Analog Mood Scale (VAMS)**: Participants rated mood immediately before and after each session on a 0–100 scale, anchoring “very negative” at 0 and “very positive” at 100.
- **Qualitative Interviews**: At study completion, 20 participants were randomly selected for semi-structured interviews exploring perceived benefits, challenges, and suggestions for program improvement. Interviews were audio-recorded, transcribed, and coded thematically.

Data Collection and Analysis

Data collection spanned four weeks. BDI-II and baseline VAMS assessments occurred one week prior to intervention; post-intervention assessments were administered within three days of completion. Paired t-tests compared pre- and post-BDI-II and aggregate VAMS change scores, with significance set at $\alpha = .05$. Effect sizes (Cohen’s d) quantified intervention impact. Adherence rates (percentage of completed sessions) and dropout reasons were recorded.

Qualitative data underwent Braun and Clarke’s (2006) six-phase thematic analysis: familiarization, coding, theme identification, review, definition, and report production. Triangulation with quantitative findings enhanced interpretive validity. All analyses used SPSS v.27 and NVivo v.12 software.

RESULTS

Quantitative Outcomes

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Adherence: Participants completed an average of 88% of scheduled sessions (SD = 7%); 95% completed at least 75% of sessions. Dropouts (n = 4) cited academic workload as the primary reason.

BDI-II Scores: Mean pre-intervention score = 16.8 (SD = 1.5); mean post-intervention = 11.3 (SD = 2.0). The 5.5-point reduction was highly significant ($t[95] = 24.12$, $p < .001$), equating to a large effect size ($d = 1.85$). Notably, 70% of participants shifted to the minimal depression range (<14) post-intervention.

VAMS Scores: Mean pre-session rating across all sessions = 42.1 (SD = 10.3); mean post-session = 68.7 (SD = 9.4). The mean increase of 26.6 points per session was significant ($t[95] = –27.45$, $p < .001$), with a large effect size ($d = 2.10$). Session-to-session variability indicated greater immediate mood boosts from calming playlists on high-stress days (e.g., midterms) and motivational playlists preceding study sessions.

Qualitative Themes

1. **Enhanced Emotional Regulation**: Participants described improved capacity to manage negative thoughts and stress:

   "Listening to those slower piano pieces after a tough lecture helped me calm down and refocus."

2. **Academic Concentration**: Many reported that listening to motivational tracks before studying improved focus and productivity:

   "Starting my study routine with an upbeat playlist put me in the zone and I completed more practice problems."

3. **Daily Motivation and Energy**: Students noted increased enthusiasm for daily tasks:

   "Some days I felt sluggish, but a 30-minute pop playlist gave me the energy to go to the gym."

4. **Peer Support and Social Connection**: Shared playlists fostered informal support groups:

   "Comparing favorite tracks with roommates became a fun break and moral boost."

5. **App Usability and Suggestions**: While overall app functionality received positive feedback, suggestions included integration with campus mental health resources, customizable session reminders, and social sharing features.

No adverse events or exacerbations of mood symptoms were reported.

CONCLUSION

This study demonstrates that a structured, preference-based music-listening intervention can substantially reduce mild depressive symptoms and enhance mood among urban college students. Quantitative analyses revealed statistically significant improvements in both BDI-II and VAMS scores with large effect sizes, and the majority of participants transitioned from mild to minimal depression ranges. Qualitative findings underscored multifaceted benefits spanning emotional regulation, academic performance, daily motivation, and peer bonding.

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Personalization emerged as a pivotal factor: aligning playlist content with individual genre preferences and alternating between motivational and calming selections optimized emotional engagement and adherence. The mobile-app delivery model facilitated high compliance and real-time mood tracking, suggesting scalability for broader campus implementation. Given the low cost, minimal training requirements, and high acceptability, music-listening programs can complement existing counseling services, particularly for students reluctant to pursue formal therapy due to stigma or logistical barriers.

SCOPE AND LIMITATIONS

Scope

- **Population**: Focused on undergraduates aged 18–24 in an urban university; findings may not generalize to rural students, non-students, or older populations.
- **Depression Severity**: Targeted mild depressive symptoms (BDI-II 14–19); efficacy for moderate to severe depression remains untested.
- **Intervention Duration**: Four-week protocol; long-term sustainability and optimal session frequency/duration require evaluation.
- **Delivery Modality**: Mobile-app based; reliance on personal smartphones presumes digital access and literacy.

Limitations

1. **Lack of Control Group**: Without a no-intervention or active-control arm, placebo effects and regression to the mean cannot be fully excluded.
2. **Self-Report Bias**: Reliance on self-administered BDI-II and VAMS may introduce demand characteristics or social desirability bias.
3. **Selection Bias**: Volunteers motivated to use music may differ systematically from those less inclined, limiting external validity.
4. **Survey Timing**: Baseline assessments occurred one week before intervention, during which mood fluctuations could influence pre-scores.
5. **Playlist Standardization**: While personalized, playlists may vary in therapeutic potency; future work could standardize acoustic parameters (e.g., key, tempo) more rigorously.
6. **Qualitative Sample**: Interview subsample (n = 20) provided rich insights but may overrepresent highly adherent or engaged participants.

Addressing these limitations through randomized controlled designs, objective physiological measures, and diverse samples will strengthen evidence for music therapy's role in mitigating depression in university settings.

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