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Student perceptions of virtual reality meditation for mental health support in higher education

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Abstract

The mental health crisis among college students has reached unprecedented levels, with approximately 20% experiencing serious psychological distress, 35% diagnosed with anxiety, and 25% with depression. As traditional counseling services struggle to meet demand, information systems offer scalable channels for delivering mental health support, and virtual reality (VR) meditation in particular provides immersive, stigma-reduced experiences that can be deployed through existing campus IS infrastructure. This study examined student perceptions of VR-based meditation as a classroom-deployed mental health resource at a mid-sized public university in the southeastern United States. Using pre- and post-intervention surveys (N = 228 pre, N = 217 post), results indicated overall positive perceptions, with significant pre-to-post reductions in stress and improvements in calmness after Bonferroni correction. Tension showed no aggregate change; within-gender analyses revealed a pattern in which female students reported lower tension and male students reported higher tension after the session. While this pattern did not stay statistically significant after the Bonferroni correction, the results should be interpreted as exploratory. Both genders showed pre-to-post improvements in stress and mental health perception that continued as significant with the Bonferroni correction. Findings support the integration of VR meditation into IS-mediated campus wellness initiatives and suggest that gender may function as a moderator of intervention response warranting further investigation.

Keywords: Virtual Reality, Mental Health, Higher Education, VR Meditation, Student Perceptions

Introduction

The mental health crisis among college students has reached unprecedented levels, with approximately 20% experiencing serious psychological distress, 35% diagnosed with anxiety, and 25% with depression (American College Health Association, 2024). As traditional methods fail to engage students, new information system mediated approaches are needed to promote their well-being and actively connect them to support services. Virtual reality (VR), already shown to enhance engagement and learning in education, offers a scalable IS-delivered channel for mental health services and promotion.

Immersive VR meditation experiences could help students practice stress-reduction techniques in a safe environment, reduce stigma, and encourage help-seeking. However, little research has examined how students perceive the use of VR in this context. Understanding these perceptions and potential demographic

differences matters to designing effective and inclusive interventions. This study addresses that gap by examining student perceptions of VR-based meditation as a method for introducing mental health support services in classroom settings.

Research Questions

This study examined the following research questions:

RQ 1: How will students perceive using VR for meditation as a possible means to support their mental health?

RQ 2: Will students perceive a difference in their mental health state after a VR meditation experience?

RQ 3: Does gender play a role in a student's perception of using VR for meditation?

Background and Literature Review

Mental Health Crisis and Traditional Support Barriers

With the mental health crisis among college students reaching unprecedented levels, two in five students report their mental health significantly impacts their ability to focus and learn, and one in ten rating their mental health as poor (Inside Higher Ed, 2024). Traditional campus counseling services, while essential, face substantial barriers including long waitlists, limited service hours (typically 6–12 sessions per year), inconvenient locations, and persistent stigma surrounding mental health care (Lipson et al., 2022; Legislative Analyst's Office, 2023). These systemic constraints have created urgent demand for scalable, accessible, and stigma-reduced mental health interventions that can reach students in educational settings where they spend most of their time.

VR Technology in Educational Settings and Mental Health Applications

Virtual reality has emerged as a promising educational technology, with studies showing 94% of students report learning better in VR environments, 90% reporting increased engagement, and 25% higher confidence in knowledge retention (Meta for Work, 2024). Beyond academic applications, VR technology has demonstrated effectiveness in mental health interventions, particularly for anxiety reduction and stress management among college students. Systematic reviews of VR nature experiences show promise for delivering short-term mental health benefits to higher education students without requiring access to real nature (Hubbard et al., 2025), while VR gaming and meditation environments effectively alleviate anxiety and fear by providing safe, controlled spaces for therapeutic intervention (Zhang et al., 2025). The immersive quality of VR creates a sense of presence that facilitates deeper engagement with mindfulness practices compared to traditional video or audio-based delivery methods.

Evidence for VR Meditation Interventions in College Students

Empirical evidence supports the effectiveness of VR-based mindfulness interventions for university students. A systematic review of 14 studies found VR mindfulness interventions effectively reduce anxiety, depression, and stress among university students, with substantial improvements in quality of life (Puentes-Torre et al., 2024). Randomized controlled trials further demonstrate that VR meditation outperforms video-based delivery in reducing pre-exam anxiety and improving exam performance (Kaplan-Rakowski et al., 2021), and that VR-enhanced mindfulness programs produce medium-to-large effect sizes in reducing stress and anxiety while improving adherence relative to conventional delivery (Modrego-Alarcón et al., 2021). Brief single-session VR mindfulness interventions have produced immediate reductions in anxiety and depression symptoms that persist for up to one week post-intervention (Ma et al., 2025).

Student Perceptions, Acceptability, and Engagement

Student perceptions of VR meditation are largely positive. In a study of 93 university students receiving six short VR mindfulness sessions, participants reported significant improvements in state mindfulness and emotional states, a moderate-to-strong sense of presence in the VR environments, and high satisfaction scores (Modrego-Alarcón et al., 2023). A pilot study found high usability scores and confirmed VR's effectiveness as a relaxation tool, though researchers identified practical barriers including hardware portability concerns and privacy issues that affected sustained engagement (Lewis & Rorstad, 2019). Students consistently rate VR meditation as more engaging than traditional video or audio-based alternatives, citing reduced embarrassment compared to face-to-face instruction and enhanced ability to focus without distraction.

Comparative Effectiveness and Implementation Considerations

Direct comparisons between VR and alternative delivery methods show mixed results. Crosswell & Yun (2020) found that while meditation generally reduced stress and heart rate, no significant differences emerged between VR-guided, audio-only, and self-guided formats, with a slight numerical trend favoring audio-only on heart rate reduction. Real-world adoption requires addressing equipment costs, privacy concerns, and the need for user-friendly interfaces for novice meditators (Modrego-Alarcón et al., 2023), but the overall evidence positions VR-based mindfulness as a scalable, evidence-informed approach to delivering mental health support in classroom settings.

Research Questions and Hypotheses

This study was guided by five hypotheses examining student perceptions of VR meditation as a classroom-based mental health support tool:

H1: Student perception scores for using immersive VR meditation experiences as a method for introducing mental health support services in the classroom will exceed the scale midpoint of 4.0

H2: The VR meditation session will be associated with a significant reduction in student-reported stress (pre vs. post).

H3: The VR meditation session will be associated with a significant change in student-reported tension (pre vs. post).

H4: The VR meditation session will be associated with a significant increase in student-reported calmness (pre vs. post).

H5: Gender will moderate students' perceptions of VR meditation and the magnitude of pre-to-post change in self-reported psychological states.

Methodology

Participants and Setting

For the purpose of this study, students from a variety of majors participated, drawn from freshman experience courses, sophomore Big Data classes, and junior-level Introduction to Enterprise Systems courses. A total of 228 participants completed the pre-intervention survey and 217 participants completed the post-intervention survey. Of the post-intervention respondents, 134 identified as male and 81 as female;

two respondents did not report gender. This diverse sample allows for examination of student perceptions across different stages of their college experience. Participants include one freshman class, providing insight into students in their first year of college, a period associated with heightened stress, adjustment challenges, and increased vulnerability to mental health concerns, as well as upperclassmen who bring more experience navigating college life and existing mental health resources.

Regarding prior experience with the technologies used in the study, 62 participants reported having previous experience with VR technology (score ≥ 3 on a 7-point scale, $M = 2.96$, $SD = 1.58$), while 39 indicated prior meditation experience ($M = 2.34$, $SD = 1.44$). Prior VR experience showed no significant correlation with any baseline outcome variable (all $r < .04$, all $p > .60$), confirming that VR familiarity did not systematically differentiate participants at baseline. Prior meditation experience was positively correlated with baseline stress ($r = .23$, $p < .001$) and mental health perception ($r = .41$, $p < .001$), as expected given that experienced meditators tend to hold stronger prior beliefs about meditation's benefits. Supplementary ANCOVA analyses, reported in the Results section, confirm that these covariate relationships do not confound the primary pre-to-post findings.

Power Analysis

Statistical power was calculated after the fact for the three pre-to-post comparisons for H2–H4. For the stress comparison, power was essentially perfect (power = 1.00, $d = 0.59$, $n_1 = 228$, $n_2 = 216$). For calmness, power was strong (power = .84, $d = 0.28$, $n_1 = 228$, $n_2 = 217$). For tension, however, power was low (power = .28, $d = 0.13$, $n_1 = 228$, $n_2 = 217$). In practical terms the sample sizes in this study could reliably detect effects of about $d = 0.27$ or larger which is why the stress and calmness findings are trustworthy. The null result for tension (H3) is a different story. Low power means the study was not large enough to confidently rule out a small but real tension effect, so the absence of a significant aggregate finding should not be read as evidence that tension was truly unaffected. This matters particularly for the within-gender tension results reported under H5, where opposite-direction patterns were seen for males and females that ultimately canceled each other out in aggregate. Those findings should be interpreted with this limitation in mind.

Ethical Considerations

This study was reviewed and approved by the university's Institutional Review Board. Participation was voluntary; students were informed prior to using the headset that they could remove it and discontinue at any time without penalty. Survey responses were collected anonymously and stored on secure university-managed servers. No deception was used. Because participants were enrolled through coursework, care was taken to separate the instructor and researcher roles in recruitment messaging to reduce the risk of perceived coercion.

Procedure

Upon entering the VR Lab, students were instructed how to put on the Oculus Quest 3 VR headsets and use the hand controllers. Once in the headsets, students completed the "First Steps" orientation application, as most participants had limited or no prior exposure to VR technology. This introductory application is used to familiarize users with the VR controllers through interactive activities that engage various buttons and functions. The application presented a variety of virtual tools that participants manipulated, allowing them to become comfortable with controller mechanics in an engaging, low-pressure environment. Specifically, First Steps guides students through basic VR functions, including moving their virtual hands, picking up and throwing objects, and adjusting the headset fit and lens spacing to ensure a clear visual experience. This orientation ensured all participants had a baseline level of comfort and competency with the VR equipment before proceeding to the main study activities. Participants completed the pre-intervention survey immediately before using the headset, then engaged in a single 30-minute guided meditation session within the Hoame meditation app, followed immediately by the post-intervention survey.

The university implemented a phased launch of its Quality Enhancement Program, designed to improve student success by promoting emotional, physical, social, and intellectual well-being through campus-wide initiatives. Specifically, the university launched Bobcats FIRST on July 26, 2023, a campus-wide effort to support student wellness. As part of this initiative, the MIS Department's Lab initiated a study examining student perceptions of VR technology as a mental health resource. To support this research, guided meditation applications were incorporated to expose students to both VR technology and accessible mental health tools.

VR Meditation Applications

The meditation application used in this study was Hoame, a commercially available VR-based wellness platform that provides immersive meditation experiences designed to promote relaxation, stress reduction, and emotional well-being. Hoame functions as a virtual meditation studio offering guided and on-demand meditation sessions, breathwork exercises, sound baths, and sleep meditations in immersive virtual environments. Users complete an initial mood survey upon opening the app, then select from live studio classes or a library of pre-recorded sessions. Each participant in this study completed a single 30-minute guided meditation session in Hoame. The platform's reliance on commercially available hardware and software lowers barriers to adoption for institutions seeking to deploy VR-based wellness interventions through existing IS infrastructure.

Measures

Pre- and post-intervention surveys were administered using a 7-point Likert scale (1 = Strongly Disagree / Not At All to 7 = Strongly Agree / Very Much). Pre-intervention items assessed baseline levels of stress, tension, and calmness, as well as prior familiarity with VR and meditation. Post-intervention items assessed overall positive experience (Q4), satisfaction and calm focus (Q5), perceived mental health benefit (Q20), post-stress (Q7), post-tension (Q9), and post-calmness (Q8). Descriptive statistics, one-sample t-tests against the scale midpoint, independent-samples t-tests (Welch's, assuming unequal variances), and supplementary ANCOVA analyses were used to analyze hypotheses. To address multiple comparisons, a Bonferroni correction was applied in two tiers: (1) confirmatory analyses covering the nine tests corresponding to the five pre-specified hypotheses (H1a–H1c, H2, H3, H4, H5a–H5c), with a corrected threshold of $\alpha = .006$ ($k = 9$); and (2) exploratory within-gender pre-to-post comparisons, likewise corrected at $\alpha = .006$ ($k = 8$). Both raw and Bonferroni-corrected p-values are reported; significance is evaluated against the corrected threshold.

Results

A total of 228 participants completed the pre-intervention survey and 217 participants completed the post-intervention survey. Of the post-intervention respondents, 134 identified as male and 81 as female; two respondents did not report gender. All participants experienced the VR meditation intervention. Pre-intervention responses were measured using a 7-point Likert scale; post-intervention responses were likewise measured on a 7-point Likert scale (1 = Strongly Disagree / Not At All to 7 = Strongly Agree / Very Much).

Student Perceptions of VR Meditation (H1)

The first hypothesis predicted that students would report positive perceptions of using immersive VR meditation experiences as a method for introducing mental health support services in the classroom. Three dimensions of perception were assessed: overall positive experience, satisfaction with the VR meditation, and perceived impact on mental health awareness.

Descriptive statistics revealed consistently positive perceptions across all three dimensions (see Table 1). Students reported favorable ratings for their overall positive experience with VR meditation ($M = 4.97$, $SD = 1.51$), satisfaction with the experience ($M = 4.94$, $SD = 1.54$), and perceived mental health benefits ($M = 4.84$, $SD = 1.57$). All mean scores exceeded the scale midpoint of 4.0, indicating overall positive perceptions. Satisfaction with the VR meditation experience yielded the highest mean score, suggesting consistent positive evaluations across participants.

Table 1. Descriptive Statistics for Student Perceptions of VR Meditation (N = 217)

Measure	M	SD	Variance
Positive Experience	4.97	1.51	2.27
Satisfaction	4.94	1.54	2.37
Mental Health Awareness	4.84	1.57	2.47

Note. Responses measured on a 7-point Likert scale (1 = Strongly Disagree to 7 = Strongly Agree). Scale midpoint = 4.0.

One-sample t-tests confirmed that each perception mean differed significantly from the scale midpoint of 4.0: positive experience, $t(215) = 9.49$, $p < .001$, $p_2 < .001$; satisfaction, $t(216) = 8.94$, $p < .001$, $p_2 < .001$; mental health awareness, $t(216) = 7.90$, $p < .001$, $p_2 < .001$. All three H1 tests stayed statistically significant with the Bonferroni correction, providing strong inferential support for H1.

VR Meditation Effects on Stress, Tension, and Calmness (H2–H4)

To examine whether pre-to-post differences in psychological states were associated with the VR meditation session, independent-samples t-tests (Welch's, assuming unequal variances) were conducted comparing pre- and post-intervention scores on stress, tension, and calmness. Pre-intervention data were collected from 228 participants and post-intervention data from 217 participants; participant responses varied slightly for some items due to lack of response for those items. Bonferroni-corrected p-values ($k = 9$, $\alpha = .006$) are reported alongside raw p-values for all confirmatory tests.

H2: Stress. Pre-intervention stress levels ($M = 3.64$, $SD = 1.38$, $n = 228$) were significantly higher than post-intervention stress levels ($M = 2.79$, $SD = 1.53$, $n = 216$), $t(431) = 6.20$, $p < .001$ (two-tailed), Cohen's $d = 0.59$, $p_2 < .001$. These findings support H2: pre-to-post differences in self-reported stress were significant and survived Bonferroni correction, representing a medium-to-large effect.

H3: Tension. Pre-intervention tenseness scores ($M = 3.33$, $SD = 1.38$, $n = 228$) and post-intervention tenseness scores ($M = 3.55$, $SD = 1.97$, $n = 217$) did not differ significantly, $t(385) = -1.35$, $p = .177$ (two-tailed), Cohen's $d = 0.13$, $p_2 = 1.000$. H3 is not supported at the aggregate level; no statistically significant pre-to-post difference in tension was observed, and the result does not stay statistically significant with the Bonferroni correction. Given observed power of only .28 to detect an effect of this size, this null result should be read as inconclusive rather than as evidence that tension was unaffected. As detailed in H5 below, the aggregate null masks a significant and opposite-direction pattern when the sample is stratified by gender.

H4: Calmness. Post-intervention calmness scores ($M = 4.88$, $SD = 1.73$, $n = 217$) were significantly higher than pre-intervention calmness scores ($M = 4.44$, $SD = 1.42$, $n = 228$), $t(418) = -2.96$, $p = .003$ (two-tailed), Cohen's $d = 0.28$, $p_2 = .029$. H4 is supported: pre-to-post differences in calmness were statistically significant and survived Bonferroni correction, though the effect size was small-to-medium.

Gender Differences in VR Meditation Perceptions (H5)

To examine gender as a moderator, we used two complementary comparisons. First, we compared male and female students' post-session perception scores directly. Second, we looked at how each gender's scores changed from before to after the session. The first approach tells us whether males and females ended up in different places. The second tells us whether they traveled different distances or in different directions. This combined approach was adopted because cross-sectional post-only comparisons did not fully capture how men and women differed in their rate of change, and preliminary analyses revealed substantial differences in pre-to-post trajectories between genders, most notably an opposite-direction interaction on tension that is masked at the aggregate level (H3).

Cross-sectional comparisons of post-intervention scores revealed gender differences on two of three perception measures that were significant at the raw level but did not survive Bonferroni correction ($k = 9$, $\alpha = .006$). Females reported higher positive experience scores (Female $M = 5.29$, Male $M = 4.76$), $t(168) = 2.54$, $p = .012$, $p_2 = .108$; and higher satisfaction scores (Female $M = 5.29$, Male $M = 4.70$), $t(156) = 2.71$, $p = .008$, $p_2 = .068$. These differences represent trend-level effects ($d = 0.36$ and 0.39 , respectively) that warrant replication with larger samples and adequate power for Bonferroni-corrected gender comparisons. No significant difference was found for perceived mental health benefit (Female $M = 4.99$, Male $M = 4.74$), $t(176) = 1.14$, $p = .255$, $p_2 = 1.000$.

Exploratory within-gender pre-to-post analyses ($k = 8$, $\alpha = .006$) revealed significant changes for both groups, with notably different patterns. Among females, changes that survived Bonferroni correction were observed for mental health perception (pre $M = 4.22$, post $M = 4.99$), $t(165) = -3.34$, $p = .001$, $p_2 = .008$, $d = 0.52$; and stress (pre $M = 4.16$, post $M = 3.07$), $t(154) = 4.72$, $p < .001$, $p_2 < .001$, $d = 0.73$. Tension showed a pattern of decrease among females (pre $M = 3.71$, post $M = 3.18$), $t(155) = 2.05$, $p = .042$, but this did not survive correction ($p_2 = .339$, $d = 0.32$) and should be treated as exploratory. Female calmness change was likewise non-significant after correction (pre $M = 4.15$, post $M = 4.54$), $t(150) = -1.56$, $p = .121$, $p_2 = .969$, $d = 0.24$. Among males, changes surviving Bonferroni correction were observed for mental health perception (pre $M = 4.17$, post $M = 4.74$), $t(272) = -2.97$, $p = .003$, $p_2 = .026$, $d = 0.36$; stress (pre $M = 3.33$, post $M = 2.58$), $t(270) = 4.54$, $p < .001$, $p_2 < .001$, $d = 0.55$; tension (pre $M = 3.09$, post $M = 3.79$), $t(221) = -3.43$, $p = .001$, $p_2 = .006$, $d = 0.42$, an increase; and calmness (pre $M = 4.62$, post $M = 5.13$), $t(266) = -2.76$, $p = .006$, $p_2 = .049$, $d = 0.33$. The most notable pattern across genders is the tension contrast: males showed a significant increase in tension after correction while females showed a trend toward decrease that did not survive correction. This directional divergence is invisible in the aggregate H3 result and merits replication. H5 is partially supported: gender is associated with exploratory differences in within-session tension trajectories and trend-level differences in post-intervention perception scores, though the primary perception-score comparisons do not survive Bonferroni correction.

Concerns for Prior VR and Meditation Experience

One reasonable question about these findings is whether students who already had VR or meditation experience going in might have responded differently and whether that could explain some of the pre-to-post differences observed in this study. To address this concern, we ran supplementary ANCOVA analyses for all four primary outcomes (stress, tension, calmness, and mental health perception), entering prior VR experience and prior meditation experience as covariates. Because these variables were only collected in the pre-survey, we assigned post-survey participants the sample average for each covariate — a standard conservative approach when pre and post participants cannot be individually matched.

Our findings showed that prior VR experience had essentially no relationship with any of the baseline outcome measures (all $r < .04$, all $p > .60$) and contributed nothing to the adjusted models (all $\beta < .09$, all $p > .22$). Prior meditation experience was a different story. Students with more meditation background entered

the session already reporting higher stress and stronger beliefs about meditation's benefits ($r = .23$ and $r = .41$, respectively), which makes sense. How this impacts the interpretation of our findings is that controlling for this made no difference to the pre-to-post comparisons. The group effect for stress ($\beta = -0.858$, $p < .001$), calmness ($\beta = +0.446$, $p = .003$), and mental health perception ($\beta = +0.655$, $p < .001$) was identical before and after covariate adjustment. Tension remained non-significant either way ($p = .173$). In short, the primary findings hold up regardless of how much VR or meditation experience students brought with them.

Discussion of Findings

This study's findings are consistent with the feasibility of VR-based meditation as a tool for mental health promotion in higher education. Students at the university reported consistently positive perceptions of the VR meditation experience, with all three perception dimensions, positive experience, satisfaction, and perceived mental health benefit, exceeding the scale midpoint. This aligns with previous research demonstrating high acceptability of VR mindfulness interventions among university students (Modrego-Alarcón et al., 2023; Puente-Torre et al., 2024).

The pre-to-post reduction in stress is the largest effect observed. Pre-to-post stress differences ($p < .001$, $p_2 < .001$) corroborate findings from prior studies showing immediate psychological benefits associated with brief VR mindfulness interventions (Ma et al., 2025). Likewise, the significant pre-to-post difference in calmness ($p = .003$, $p_2 = .029$) indicates a meaningful change in perceived relaxation state. The most theoretically interesting pattern, however, involves tension. In the aggregate, tension showed no significant pre-to-post change. The within-gender exploratory analyses reveal a divergent pattern: male participants showed a significant increase in tension that survived Bonferroni correction ($p_2 = .006$), while female participants showed a trend toward decreased tension that did not survive correction ($p_2 = .339$). These patterns partially cancel in the aggregate, producing a combined result that obscures a potentially meaningful gender difference. Several mechanisms could account for this divergence. First, the tension item may capture somatic activation rather than purely negative affect; immersive VR may be physiologically arousing for novice users, and male participants in this sample reported lower baseline meditation experience on average. Second, the strong sensory novelty of VR, new hardware, unfamiliar visual environments, and continuous auditory guidance, may elicit alertness rather than relaxation in users less familiar with mindfulness practice. Third, gendered differences in self-report calibration around stress and tension items are well-documented in the broader wellness literature. Distinguishing among these mechanisms is beyond the scope of this single-session study, and the within-gender tension pattern should be interpreted cautiously given that the female finding did not survive correction and the exploratory analyses were not pre-registered.

Beyond the tension pattern, gender was associated with trend-level differences in evaluative perception. Female participants reported higher positive experience and satisfaction scores than males at the raw level. Since these differences were not seen with the Bonferroni correction, they should be interpreted cautiously. Both genders showed pre-to-post improvements in stress and mental health perception that were seen with the correction, indicating that the VR experience was broadly associated with positive psychological change for both groups, even where specific response patterns differed. Taken together, the findings suggest that gender may influence both how students experience VR meditation and how their psychological states change during it, especially regarding tension. That said, these gender-related patterns are exploratory findings, not confirmed conclusions, and future studies should test them directly with larger samples and stronger research designs before drawing firm conclusions.

Future research should investigate whether tailored VR meditation content with different visual environments, voice profiles, or session pacing can optimize outcomes for diverse student populations, and

whether the gender tension pattern observed here replicates across platforms or with longer repeated-session designs.

Implications for Research and Practice

This study has several important implications for both research and practice. From a practical standpoint, findings support piloting VR meditation stations in campus wellness programs, student orientation activities, and classroom environments, particularly in courses where student stress levels are elevated, such as exam-preparation periods or high-stakes project courses. The use of a commercially available application (Hoame) that requires minimal technical expertise lowers barriers to adoption for institutions without dedicated VR research infrastructure. Crucially, the present deployment was led by an MIS department, demonstrating that information systems units, often already equipped with the hardware, technical staff, and instructional integration pathways required, are well-positioned to lead campus wellness technology adoption, rather than treating such interventions as the exclusive domain of counseling or student affairs.

Scaling beyond a single research deployment, however, raises practical costs that institutions should plan for. Standalone headsets comparable to the Oculus Quest 3 used here cost approximately \$400–\$500 per unit at the time of writing, plus the cost of a meditation application license. Institutions deploying shared headsets across large student populations also need a hygiene protocol (disposable or washable foam face-cushion covers, lens-safe disinfectant wipes between users, and a defined turnaround time) and a dedicated, supervised space with technical support available, since novice users typically require orientation assistance. These costs are modest relative to adding counseling staff capacity but are not negligible, and should be weighed against expected reach and frequency of use when planning a pilot program.

For practitioners in higher education, the results suggest that even a single brief VR meditation session is associated with meaningful pre-to-post reductions in self-reported stress and improvements in calmness. This positions VR meditation as a scalable, stigma-reduced complement to existing counseling services, particularly valuable given persistent waitlist and resource constraints faced by campus mental health centers. The strong student acceptability scores further indicate that students are open to and engaged by VR-delivered mental health programming, addressing one of the key adoption barriers.

From a research perspective, this study contributes to the information systems literature by establishing an institutional baseline for IS-mediated wellness interventions in higher education and by demonstrating that rather than a control variable in VR mediation response, gender operates as a moderator. Future IS research should examine the longitudinal effects of repeated VR meditation sessions, explore differences across academic year, major, and technology familiarity, investigate the organizational and infrastructural conditions under which campus IS units can sustainably deliver wellness programming, and assess whether VR-mediated introductions to mental health resources translate into increased help-seeking behavior through other campus systems.

Limitations

These findings have seven limitations. First, the study utilized a single-session design, which precludes conclusions about the long-term effectiveness or sustained perceptual changes associated with VR meditation. All pre-to-post differences observed here reflect immediate post-session responses and should not be interpreted as evidence of durable effects. Second, the absence of a randomized control condition means that observed pre-to-post differences cannot be attributed solely to the VR meditation experience itself. Observed changes may reflect demand characteristics, novelty effects, or regression to the mean. Future work should employ active control conditions such as a non-immersive video meditation comparison

to isolate the contribution of VR immersion specifically. Third, 11 students completed the pre-session survey but not the post-session survey, reducing the sample from 228 to 217. In theory, students who did not complete the post-session survey could differ from those who did complete it. However, the dropout rate was small (4.8%) and there is no indication that those students were systematically different from the rest of the sample. Fourth, the sample was drawn from a single midsized public university in the southeastern United States, limiting generalizability to other geographic regions, institution types (community colleges, HBCUs, research universities), or international student populations. Fifth, the study relied on self-report measures, which are subject to social desirability bias, particularly for mental health items assessed in a classroom setting where peer observation is present. Future research should incorporate physiological measures (e.g., heart rate variability, galvanic skin response) to provide convergent validity. Sixth, the VR application used (Hoame) represents a specific commercial offering; results may differ with other platforms or custom-developed interventions. Seventh, the exploratory within gender analyses and post-hoc gender perception comparisons were not pre-registered and should be interpreted with appropriate caution, particularly given that several findings reaching conventional significance thresholds did not survive Bonferroni correction. While supplementary ANCOVA analyses confirm that prior VR and meditation experience do not confound the primary outcomes, individually matched pre-post covariate data were unavailable due to the independent-samples design, which limits the precision of the covariate adjustment.

Future research should employ longitudinal and randomized controlled designs, incorporate physiological measures (e.g., heart rate variability, cortisol), pre-register gender moderation analyses, and expand sampling to more diverse institutional contexts.

Conclusions

This study investigated student perceptions of VR-based meditation as a classroom tool for introducing mental health support services at a midsized public university in the southeastern United States. Results revealed that students hold largely positive perceptions of VR meditation, with significant pre-to-post reductions in self-reported stress ($p < .001$, $p_2 < .001$) and improvements in calmness ($p = .003$, $p_2 = .029$) that were also seen with the Bonferroni correction. Exploratory analyses considering gender revealed a pattern in which male participants showed a significant increase in tension after correction while female participants showed a trend toward decreased tension. This was not observed with the Bonferroni correction. This directional divergence is invisible at the aggregate level and warrants replication with pre-registered designs. Both genders showed pre-to-post improvements in stress and mental health perception that survived correction, while post-session perception score differences between genders reached only trend-level significance. Taken together, these findings support the potential of VR meditation as a component of IS-mediated campus wellness strategies, while underscoring the need for controlled longitudinal research to establish the durability and mechanism of observed effects.

As the mental health crisis among college students continues to grow, institutions must explore innovative, scalable, and evidence-based approaches that meet students where they are. VR meditation represents a promising and increasingly accessible option that reduces stigma, promotes engagement, and complements existing mental health infrastructures. Continued interdisciplinary research at the intersection of immersive technology, mental health, and higher education is critical to refining and expanding these interventions for maximum impact.

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