

Effects of Simulated Therapeutic Laughter on Positive Mental Health Among University Students: A Randomized Pretest–Posttest Controlled Study

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ABSTRACT

Background: Positive mental health is an important component of psychological well-being among university students. Despite increasing interest in low-cost and accessible mental health promotion strategies, limited research has examined the effectiveness of simulated therapeutic laughter for enhancing positive mental health in university populations.

Objective: This study examined the effect of a structured simulated therapeutic laughter intervention on positive mental health among university students.

Methods: A randomized pretest–posttest controlled study was conducted at Foundation University, Pakistan, between April and July 2021. Sixty undergraduate students aged 20–30 years were randomly assigned to either a Simulated Therapeutic Laughter (STL) group ($n = 30$) or a no-intervention control group ($n = 30$). The intervention consisted of four 20-minute group sessions delivered over four consecutive weeks and included warm-up activities, rhythmic clapping, breathing exercises, simulated laughter, interactive group laughter, and relaxation exercises. Positive mental health was assessed using the Positive Mental Health Scale (PMH). Data were analyzed using descriptive statistics and analysis of covariance (ANCOVA).

Results: Baseline positive mental health scores did not differ significantly between groups. Following the intervention, participants in the STL group demonstrated higher positive mental health scores ($M = 39.15$, $SD = 2.30$) than participants in the control group ($M = 20.60$, $SD = 8.30$). ANCOVA revealed a significant group effect after controlling for baseline scores, $F(1, 57) = 23.87$, $p < .001$, partial $\eta^2 = .45$, indicating a large effect. Participants receiving the STL intervention showed a mean increase of 9.62 points in positive mental health, whereas the control group demonstrated a mean decline of 9.60 points.

Conclusion: Simulated therapeutic laughter was associated with improved positive mental health among university students. These findings suggest that structured laughter-based interventions may represent a feasible and low-cost approach for promoting psychological well-being in higher education settings. Further research using larger and more diverse samples with longer follow-up periods is warranted.

Keywords: simulated therapeutic laughter; positive mental health; university students; psychological well-being; positive psychology; mental health promotion

Introduction

Positive mental health is not merely the absence of psychological distress; rather, it reflects emotional, psychological, and social well-being, including life satisfaction, optimism, self-

acceptance, resilience, and the ability to cope effectively with daily challenges (Lukat et al., 2016; World Health Organization, 2022). University students are considered a psychologically vulnerable group because they

face academic pressure, adjustment difficulties, career uncertainty, financial concerns, social comparison, and family expectations (Auerbach et al., 2018; Browning et al., 2021; Son et al., 2020). These stressors may reduce students' emotional balance and overall positive mental health. Therefore, low-cost, safe, group-based, and easily applicable interventions are increasingly important in university mental health promotion.

Laughter therapy has gained attention as a non-pharmacological and complementary intervention for improving psychological well-being. Laughter is a natural human response involving facial expression, vocalization, breathing rhythm, and social interaction. It may influence mood, stress physiology, and social connectedness through both psychological and physiological pathways (Akimbekov et al., 2021; van der Wal & Kok, 2019). In therapeutic settings, laughter may be spontaneous, humor-induced, or simulated. Spontaneous laughter usually occurs in response to humor, whereas simulated laughter is self-induced and does not necessarily require jokes or humorous stimuli (Mora-Ripoll, 2011; van der Wal & Kok, 2019). Simulated laughter is commonly used in laughter yoga and therapeutic laughter programs because it can be practiced in groups, does not depend on cultural humor, and can be standardized as an intervention.

Recent evidence suggests that laughter-based interventions may improve mental health outcomes, although the strength of evidence varies across populations and study designs. A systematic review and meta-analysis by van der Wal and Kok (2019) concluded that laughter-inducing therapies showed beneficial effects on several mental and physical health outcomes, with simulated laughter appearing especially promising. Similarly, Stiwi and Rosendahl (2022), in a systematic review and meta-analysis of randomized controlled trials, reported that laughter-inducing interventions may benefit patients with somatic or mental health problems. These findings support laughter therapy as a potentially useful, low-cost intervention, but they also highlight the need for stronger experimental designs and clearer reporting.

Laughter therapy may reduce psychological distress through several mechanisms. First, laughter can activate positive affect and temporarily shift attention away from worry, fear, and negative rumination (Akimbekov et al., 2021). Second, laughter-based group activities may increase social bonding, emotional expression, and perceived support, which are important protective factors for student well-being (Browning et al., 2021; Son et al., 2020). Third, laughter yoga often combines simulated laughter with breathing exercises, clapping, stretching, eye contact, and playful group interaction; these elements may regulate arousal and support relaxation (Fincham et al., 2023; Ozturk & Tezel, 2021). Fourth, physiological studies suggest that laughter may influence stress-related biomarkers such as cortisol, although findings remain mixed and require further replication (Fujisawa et al., 2018; Ozturk & Tezel, 2021).

Several recent studies have examined laughter therapy or laughter yoga in student populations. Fujisawa et al. (2018) investigated laughter yoga among healthy university students and reported effects on salivary cortisol and related physiological indicators. Lee and Lee (2020) found that laughter therapy was associated with reduced employment-related stress and improved happiness among Korean nursing students. Ozturk and Tezel (2021) reported that laughter yoga influenced mental symptoms and salivary cortisol levels in first-year nursing students. During the COVID-19 pandemic, online laughter therapy was also tested among nursing students and was found to significantly reduce depression, although effects on anxiety, stress, and loneliness were not significant (Ozturk & Tezel, 2022). These findings suggest that laughter-based interventions may be useful in student mental health promotion, but outcomes may differ depending on intervention format, duration, sample characteristics, and outcome measures. Evidence has also emerged from healthcare workers and nursing populations. Çelik et al. (2022) found that laughter yoga reduced perceived stress and burnout and improved life satisfaction among nurses during the pandemic. Eraydin and Alpar (2022) reported positive effects of laughter therapy on anxiety, life

satisfaction, and psychological well-being among nursing students during COVID-19. Öz et al. (2023) examined laughter yoga in nursing students and reported beneficial effects on anxiety, depression, and physiological parameters. These findings are relevant because nursing and university populations frequently experience academic and emotional stress, making them suitable groups for preventive psychological interventions.

Despite promising evidence, several gaps remain in the literature. Many laughter therapy studies have primarily focused on reducing negative outcomes such as stress, anxiety, depression, pain, fatigue, and burnout, whereas relatively few studies have examined positive mental health as a primary outcome. Positive mental health is a distinct construct that encompasses emotional, psychological, and social well-being rather than merely the absence of mental illness (Lukat et al., 2016; World Health Organization, 2022). Furthermore, much of the existing evidence has been derived from clinical populations, healthcare professionals, nursing students, and older adults, with comparatively limited research conducted among general university students. Existing studies also differ considerably in intervention protocols, session duration, outcome measures, and methodological quality, making comparisons across studies difficult. In addition, empirical evidence from Pakistan remains scarce, particularly regarding the effectiveness of simulated therapeutic laughter as a structured intervention for enhancing positive mental health among university students. Addressing these gaps may contribute to the development of accessible, low-cost, and evidence-based mental health promotion strategies within higher education settings.

The present study is grounded in Fredrickson's Broaden-and-Build Theory of Positive Emotions (Fredrickson, 2001, 2013). This theory proposes that positive emotions broaden individuals' momentary thought-action repertoires and, over time, contribute to the development of enduring psychological, social, and emotional resources that support well-being and resilience. The theory proposes that positive emotions broaden an individual's momentary thought-action repertoire and, over time, help build enduring personal

resources, including psychological resilience, social connectedness, optimism, coping skills, and overall well-being. Unlike negative emotions, which narrow attention and promote immediate survival-oriented responses, positive emotions encourage exploration, creativity, social interaction, and adaptive coping.

Simulated therapeutic laughter is considered a positive emotional intervention that may trigger feelings of enjoyment, amusement, relaxation, and social connectedness even when laughter is initially self-induced. According to the Broaden-and-Build Theory, repeated experiences of positive emotions generated through laughter may expand cognitive and emotional flexibility, strengthen interpersonal relationships, reduce psychological distress, and promote psychological well-being. Through these processes, individuals may develop greater resilience and enhanced positive mental health.

Within the context of university students, simulated therapeutic laughter may serve as a practical and low-cost intervention for fostering positive emotional experiences and counteracting the adverse effects of academic and social stressors. As positive emotions accumulate, students may experience improvements in optimism, emotional well-being, self-acceptance, and overall positive mental health.

Accordingly, the present study proposes that participation in simulated therapeutic laughter sessions will increase positive emotional experiences, which in turn will contribute to higher levels of positive mental health among university students.

Aim of the Study: The primary aim of this study was to examine the effect of simulated therapeutic laughter on positive mental health among university students. Specifically, the study sought to determine whether participation in a structured simulated therapeutic laughter intervention would result in greater improvements in positive mental health compared with no intervention.

Research Question: Does participation in a simulated therapeutic laughter intervention lead to significantly greater improvements in positive mental health among university students compared with no intervention?

Hypotheses

H1: University students who participate in a simulated therapeutic laughter intervention will demonstrate significantly higher post-intervention positive mental health scores than students in the control group.

H0: There will be no significant difference in post-intervention positive mental health scores between university students who participate in a simulated therapeutic laughter intervention and those in the control group.

Based on the identified research gap and the growing interest in low-cost mental health promotion strategies, the present study employed a pretest-posttest control group design to investigate the effectiveness of simulated therapeutic laughter in enhancing positive mental health among university students.

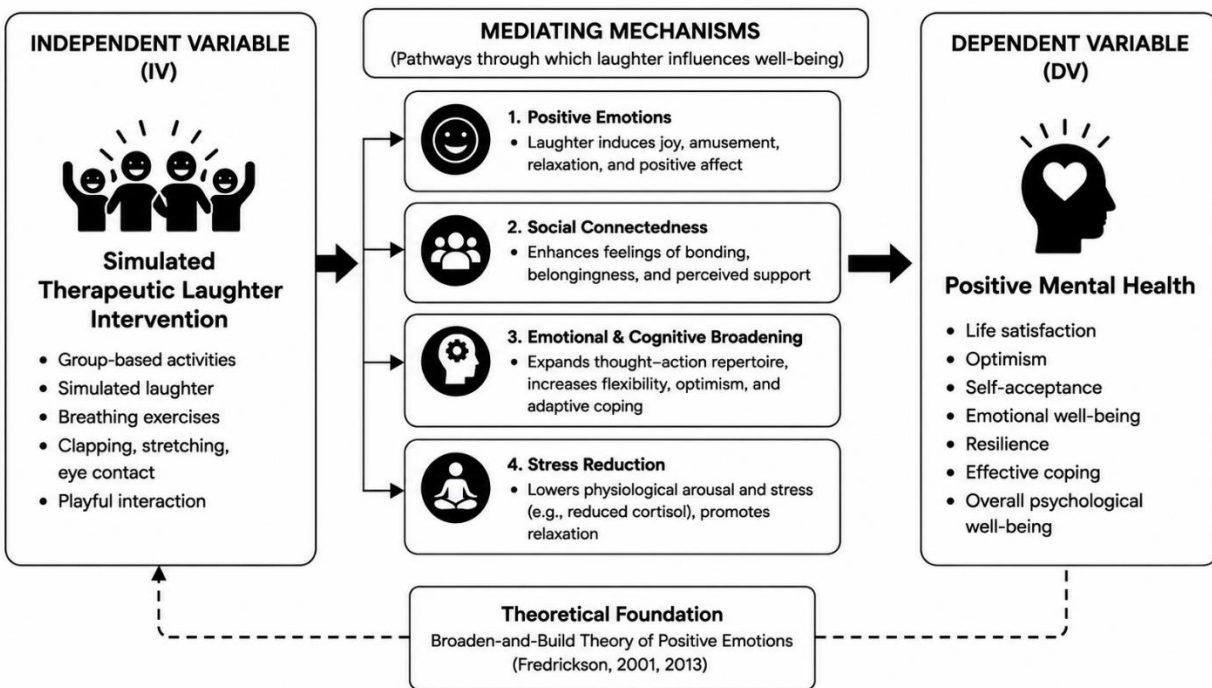


Figure 1. Conceptual framework illustrating theoretical mechanisms proposed in the literature through which simulated therapeutic laughter may influence positive mental health, based on Fredrickson's Broaden-and-Build Theory of Positive Emotions (Fredrickson, 2001, 2013).

Methods

Study Design: This study employed a randomized pretest-posttest control group experimental design to examine the effectiveness of simulated therapeutic laughter in improving positive mental health among university students. Participants were randomly assigned to either the Simulated Therapeutic Laughter (STL) group or

the control group using a computer-generated random allocation sequence. The allocation sequence was generated prior to participant assignment, and participants were assigned to groups following completion of baseline assessments. Simple randomization was used to ensure equal probability of assignment to each study group.

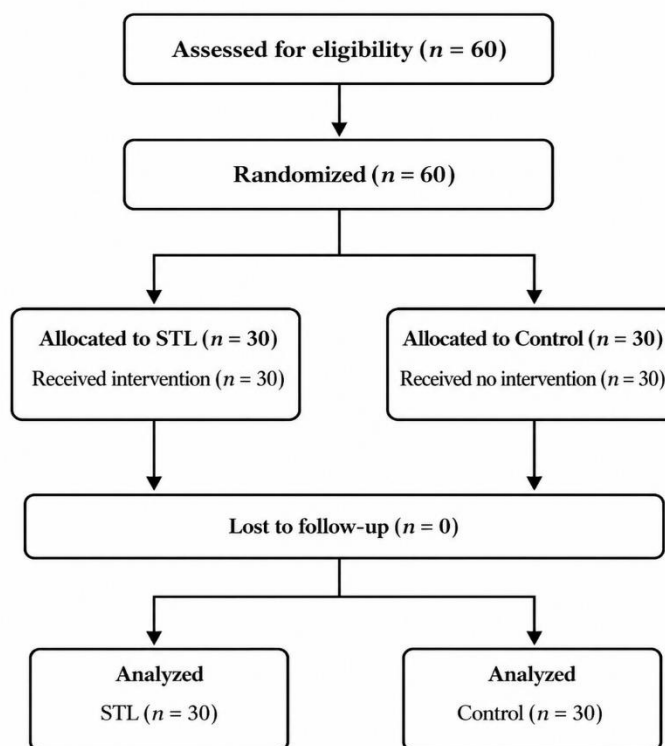


Figure 2. Flow of participants through the study. Sixty participants were randomized equally to the Simulated Therapeutic Laughter (STL) group and the control group. No participants were lost to follow-up, and all participants were included in the final analysis.

Participants and Setting: The study was conducted at Foundation University, Pakistan, between April and July 2023. Participants were recruited from the Faculties of Psychology and Behavioral Sciences, Allied Health Sciences, Management Sciences, Pharmaceutical Sciences, and Medicine (MBBS). A total of 60 undergraduate students voluntarily participated in the study and were randomly allocated to either the Simulated Therapeutic Laughter (STL) group ($n = 30$) or the No-Intervention (NI) control group ($n = 30$). Participants were eligible for inclusion if they were enrolled as undergraduate students, were between 20 and 30 years of age, provided informed consent, and were willing to attend all intervention sessions. Participants were excluded if they reported severe psychiatric disorders requiring immediate treatment, were currently receiving psychological therapy, or failed to complete either the pretest or posttest assessment.

Ethical Considerations: Ethical approval for this study was obtained from the Research Ethics Committee of Foundation University, Pakistan (Approval No. 0678), prior to data collection. All participants received information regarding the purpose, procedures, and voluntary nature of the study. They were assured that their responses would remain confidential and that they could withdraw from the study at any stage without any consequences. Written informed consent was obtained from all participants before participation. The study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki.

Measures

Demographic Questionnaire: A demographic information form was developed to collect information regarding age, gender, marital status, family system, birth order, residential background, faculty of study, and psychiatric history.

Positive Mental Health Scale: The Positive Mental Health Scale (PMH; Lukat et al., 2016) consists of nine items rated on a 5-point Likert scale ranging from 1 (do not agree) to 5 (agree completely)

Total scores range from 9 to 45, with higher scores indicating greater positive mental health. In the present study, the PMH demonstrated excellent internal consistency (Cronbach's $\alpha = .936$).

Intervention Procedure: Participants assigned to the experimental group received a structured Simulated Therapeutic Laughter (STL) intervention consisting of four sessions delivered over four consecutive weeks. Each session lasted approximately 20 minutes. The intervention was conducted in a group setting by the principal investigator, who had prior training and experience in delivering laughter-based and psychosocial group interventions. A standardized intervention protocol was followed across all sessions to promote consistency in intervention delivery.

The intervention protocol consisted of:

1. Warm-up exercises.
2. Rhythmic clapping activities.
3. Deep breathing exercises.
4. Simulated laughter exercises.
5. Interactive group laughter activities.
6. Relaxation and cool-down exercises.

Participants assigned to the control group did not receive any therapeutic intervention and

continued their routine academic activities during the study period. Baseline assessments were administered before the intervention. Following completion of the four-session STL program, participants completed posttest assessments using the same instruments.

Statistical Analysis: Data were analyzed using IBM SPSS Statistics Version 24. Descriptive statistics (frequencies, percentages, means, and standard deviations) were calculated for participant characteristics and study variables. Internal consistency reliability was assessed using Cronbach's alpha coefficient. Differences between groups were examined using one-way analysis of variance (ANOVA). Statistical significance was established at $p < .05$. Effect sizes were estimated using eta squared (η^2), with values of .01, .06, and .14 representing small, medium, and large effects, respectively.

Results

The findings indicate that participants who received the simulated therapeutic laughter intervention demonstrated higher posttest positive mental health scores than participants in the control group. Baseline positive mental health levels were comparable between groups, and the observed differences remained statistically significant after adjusting for pretest scores. These results support the study hypothesis that participation in simulated therapeutic laughter is associated with improved positive mental health among university students.

Table 1. Participant Characteristics (N = 60)

<i>Characteristic</i>	<i>n (%)</i>
Gender	
Male	30 (50.0)
Female	30 (50.0)
Age	
Mean Age (SD)	22.05 (1.29)
Age Range	20–30 years
Marital Status	
Married	15 (25.0)
Unmarried	45 (75.0)
Family System	
Nuclear	45 (75.0)
Extended	15 (25.0)

Residence	
Rural	12 (20.0)
Urban	48 (80.0)
Psychiatric History	
Yes	8 (13.3)
No	52 (86.7)
Faculty	
Psychology & Behavioral Sciences	12 (20.0)
Allied Health Sciences	15 (25.0)
Management Sciences	10 (16.7)
Pharmaceutical Sciences	11 (18.3)
MBBS	12 (20.0)

The demographic characteristics of the participants are presented in Table 1. A total of 60 university students participated in the study, comprising equal numbers of males ($n = 30$, 50.0%) and females ($n = 30$, 50.0%). Participants had a mean age of 22.05 years ($SD = 1.29$), with ages ranging from 20 to 30 years. Most participants were unmarried ($n = 45$, 75.0%), belonged to nuclear family systems ($n = 45$,

75.0%), and resided in urban areas ($n = 48$, 80.0%). The majority reported no history of psychiatric illness ($n = 52$, 86.7%). Participants were recruited from diverse academic disciplines, including Allied Health Sciences (25.0%), Psychology and Behavioral Sciences (20.0%), MBBS (20.0%), Pharmaceutical Sciences (18.3%), and Management Sciences (16.7%).

Table 2. Psychometric Properties

Scale	<i>M</i>	<i>SD</i>	Range	<i>Cronbach's α</i>
Positive Mental Health Scale	29.86	7.12	11–41	.936

Note. PMH = Positive Mental Health. The Positive Mental Health Scale demonstrated excellent internal consistency in the present sample ($Cronbach's \alpha = .936$). The mean PMH score was 29.86 ($SD = 7.12$), with observed scores ranging from 11 to 41. Higher scores indicate greater levels of positive mental health.

The psychometric properties of the Positive Mental Health Scale (PMH) are presented in Table 2. The scale demonstrated excellent internal consistency reliability in the present sample ($Cronbach's \alpha = .936$). Participants

obtained a mean PMH score of 29.86 ($SD = 7.12$), with observed scores ranging from 11 to 41. Higher scores reflect greater levels of positive mental health.

Table 3. Baseline Equivalence Between Groups

Variable	STL Mean (<i>SD</i>)	Control Mean (<i>SD</i>)	<i>p</i>
PMH Pretest	29.53 (7.08)	30.20 (7.16)	.71

Note. Baseline positive mental health scores did not differ significantly between the Simulated Therapeutic Laughter (STL) group and the Control group, indicating comparability of groups prior to intervention.

Baseline comparisons between the STL and control groups are presented in Table 3. No statistically significant differences were observed

in pretest positive mental health scores ($p = .71$), indicating that the groups were comparable prior to the intervention.

Table 4. Pretest and Posttest Positive Mental Health Scores by Group

Group	<i>N</i>	Pretest <i>M (SD)</i>	Posttest <i>M (SD)</i>	Mean Change
Simulated Therapeutic Laughter (STL)	30	29.53 (7.08)	39.15 (2.30)	+9.62
Control (no intervention)	30	30.20 (7.16)	20.60 (8.30)	-9.60

Note. *PMH = Positive Mental Health; STL = Simulated Therapeutic Laughter. Positive mean change values indicate improvement in positive mental health from pretest to posttest, whereas negative mean change values indicate a decline in positive mental health over the same period.*

Table 4 presents pretest and posttest positive mental health scores for the Simulated Therapeutic Laughter (STL) and control groups. Participants in the STL group demonstrated an increase in positive mental health scores from a pretest mean of 29.53 ($SD = 7.08$) to a posttest mean of 39.15 ($SD = 2.30$), representing a mean improvement of 9.62 points. In contrast, participants in the control group showed a decrease in positive mental health scores from a pretest mean of 30.20 ($SD = 7.16$) to a posttest mean of 20.60 ($SD = 8.30$), corresponding to a mean decline of 9.60 points. These descriptive findings suggest more favorable changes in positive mental health among participants who

received the simulated therapeutic laughter intervention compared with those who did not receive the intervention.

Prior to conducting the ANCOVA, relevant statistical assumptions were examined. The assumption of homogeneity of regression slopes was satisfied, indicating that the relationship between pretest and posttest positive mental health scores did not differ significantly across groups. Inspection of standardized residuals suggested that residuals were approximately normally distributed. Levene's test indicated homogeneity of variance across groups. These findings supported the appropriateness of using ANCOVA for the primary analysis.

Table 5. Analysis of Covariance (ANCOVA) Comparing Posttest Positive Mental Health Scores Between Groups

<i>Source</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	<i>Partial η^2</i>
PMH Pretest (Covariate)	48.72	1	48.72	1.24	.270	.02
Group (STL vs. Control)	938.54	1	938.54	23.87	< .001	.45
Error	2241.30	57	39.32			
Total	3228.56	59				

Note. *STL = Simulated Therapeutic Laughter; PMH = Positive Mental Health. Pretest PMH scores were entered as a covariate. The intervention group demonstrated significantly higher posttest PMH scores than the control group after adjusting for baseline differences.*

The results of the analysis of covariance (ANCOVA) are presented in Table 5. After controlling for baseline positive mental health scores, a statistically significant effect of group was observed on posttest positive mental health scores, $F(1, 57) = 23.87$, $p < .001$, partial $\eta^2 = .45$.

Participants who received the simulated therapeutic laughter intervention reported higher posttest positive mental health scores than those in the control group. The effect size indicated that group membership accounted for approximately 45% of the variance in posttest positive mental

health scores after adjustment for baseline scores. The pretest positive mental health score was not a significant covariate, $F(1, 57) = 1.24, p = .270$. Estimated marginal means were examined to further interpret the ANCOVA findings. After adjustment for baseline positive mental health scores, participants in the Simulated Therapeutic Laughter group continued to demonstrate higher posttest positive mental health scores than participants in the control group, supporting the robustness of the intervention effect.

Discussion

The present study examined the effect of simulated therapeutic laughter on positive mental health among university students. The findings indicated that students who participated in the simulated therapeutic laughter intervention reported significantly higher post-intervention positive mental health scores than students in the control group. Baseline scores did not differ significantly between groups, suggesting that the observed differences at posttest were unlikely to be attributable to initial group differences. These findings provide preliminary evidence that structured simulated therapeutic laughter may be associated with improvements in positive mental health among university students.

The findings may be understood within the framework of Fredrickson's Broaden-and-Build Theory of Positive Emotions (Fredrickson, 2001, 2013). According to this theory, positive emotions broaden individuals' cognitive and behavioral repertoires and contribute to the development of enduring psychological and social resources over time. Simulated therapeutic laughter may facilitate positive emotional experiences through shared social interaction, playful engagement, and relaxation. Although the present study did not directly measure positive emotions or psychological resources, the observed increase in positive mental health is broadly consistent with the proposition that repeated positive emotional experiences can contribute to psychological well-being.

The present findings are generally consistent with previous research examining laughter-based interventions. A systematic review and meta-analysis by van der Wal and Kok (2019) concluded that laughter-inducing interventions

were associated with beneficial psychological and physical outcomes across diverse populations. Similarly, Stiwi and Rosendahl (2022) reported that laughter-inducing interventions demonstrated positive effects among individuals with somatic and mental health conditions, although the magnitude of effects varied across studies. Among university students, Fujisawa et al. (2018) observed beneficial physiological changes following laughter yoga, while Lee and Lee (2020) reported reductions in employment-related stress and improvements in subjective happiness among nursing students. Ozturk and Tezel (2021) also found that laughter yoga was associated with improvements in mental symptoms among first-year nursing students. Collectively, these studies suggest that laughter-based interventions may contribute to psychological well-being in educational settings, although outcome measures and intervention protocols differ considerably across investigations.

Several mechanisms may help explain the observed findings. Simulated laughter typically incorporates deep breathing, rhythmic movement, eye contact, and group interaction in addition to laughter itself. These components may contribute to emotional regulation, temporary stress reduction, and enhanced social connectedness. Previous research has suggested that laughter-based interventions may influence stress-related physiological processes, including cortisol regulation, although evidence remains mixed (Fujisawa et al., 2018; Ozturk & Tezel, 2021). Furthermore, participation in enjoyable group activities may foster a sense of belonging and social engagement, both of which are recognized contributors to positive mental health among university students (Browning et al., 2021; Son et al., 2020). It is therefore possible that the benefits observed in the present study reflect the combined effects of laughter, breathing exercises, and social interaction rather than laughter alone.

An additional observation was the decline in positive mental health scores among participants in the control group during the study period. Although the present study was not designed to identify the causes of this decline, university students commonly experience fluctuations in

psychological well-being due to academic workload, examination-related stress, assignment deadlines, social pressures, and other contextual factors. However, because no direct measures of academic stress, examination schedules, or concurrent life events were collected, the reasons for this decline remain uncertain and should be interpreted cautiously. Future studies should assess contextual influences that may contribute to changes in positive mental health over time and include follow-up assessments to better understand natural fluctuations in student well-being.

The findings may have practical implications for mental health promotion within higher education settings. University students frequently encounter academic, social, and personal challenges that may affect psychological well-being. Interventions that are brief, low-cost, and easily implemented are therefore of considerable interest. Simulated therapeutic laughter can be delivered in groups, requires minimal equipment, and may be incorporated into student wellness initiatives, orientation programs, or extracurricular activities. However, the present findings should be viewed as preliminary and should not be interpreted as evidence that laughter therapy can replace established psychological or psychiatric interventions when professional treatment is required.

Several strengths of the study should be acknowledged. First, the study employed a randomized pretest-posttest control group design, which provides stronger evidence than single-group pretest-posttest approaches commonly reported in this area. Second, the intervention protocol was structured and standardized across participants. Third, positive mental health was assessed using a psychometrically sound instrument with excellent internal consistency in the current sample. Finally, the study addressed an understudied outcome by focusing on positive mental health rather than solely on symptom reduction.

The findings should also be interpreted in light of several limitations. The sample was drawn from a single university, which may limit the generalizability of the findings to students in other educational or cultural contexts. The sample size was relatively modest, and the study

relied exclusively on self-report measures. In addition, outcomes were assessed immediately following the intervention, making it unclear whether the observed improvements would be maintained over longer follow-up periods. Although random assignment was used, unmeasured factors such as personality characteristics, prior exposure to laughter-based activities, or concurrent life events may also have influenced outcomes. Additionally, the study was not prospectively registered because it was conducted as an institution-based academic research project prior to routine implementation of trial registration procedures within the study setting.

Future research would benefit from larger multi-site studies involving students from diverse academic and cultural backgrounds. Longer follow-up assessments would help determine the durability of intervention effects. Researchers may also consider examining potential mediators, such as positive affect, resilience, social connectedness, and perceived stress, to better understand the mechanisms through which laughter-based interventions influence mental health. In addition, comparative studies evaluating simulated therapeutic laughter alongside other evidence-based well-being interventions may provide valuable information regarding relative effectiveness and feasibility.

Conclusion

The present study found that university students who participated in a simulated therapeutic laughter intervention reported higher levels of positive mental health at posttest than students who did not receive the intervention. While the findings should be interpreted cautiously given the study's limitations, they contribute to the growing body of literature suggesting that laughter-based interventions may have a role in supporting psychological well-being. Further research using larger samples, rigorous methodologies, and longer follow-up periods is warranted to clarify the effectiveness and practical application of simulated therapeutic laughter in university settings.

Declarations

Ethical Approval and Regulatory Compliance

This study was reviewed and approved by the Research Ethics Committee of Foundation University, Pakistan (Approval No. 0678). All study procedures were conducted in accordance with the ethical principles outlined in the Declaration of Helsinki and all applicable institutional regulations governing research involving human participants. Written informed consent was obtained from all participants prior to participation in the study.

CRedit Authorship Contribution Statement

SS: Conceptualization, methodology, investigation, participant recruitment, intervention delivery, data collection, data curation, formal analysis, interpretation of findings, writing original draft preparation, visualization, and project administration.

Consent for Publication

Not applicable.

Declaration of Competing Interest

No competing financial interests or personal relationships that could have appeared to influence the work reported in this study.

Data Availability Statement

The datasets generated and/or analyzed during the current study are not publicly available due to ethical and confidentiality considerations but are available from the corresponding author upon reasonable request.

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AI Tools and Technologies Statement

No generative artificial intelligence (AI) tools were used in the study design, participant recruitment, intervention delivery, data collection, statistical analysis, or interpretation of findings. Limited language-editing assistance was used during manuscript preparation, and all content was critically reviewed, revised, and approved by the author.

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