

Digital Avatar Therapy as an Innovative Counselling Intervention: A Mixed-Methods Case Study at an Indian University

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Abstract

Digital therapeutic interventions represent an emerging frontier in mental health services, particularly within university counselling contexts where traditional face-to-face therapy may face barriers related to stigma, accessibility, and self-disclosure challenges. This mixed-methods case study examines the implementation and effectiveness of Avatar Therapy, a digital intervention utilising virtual representations to facilitate emotional expression and psychological healing, among ten university students at the Indian Institute of Technology Kanpur. Grounded in Symbolic Interactionism (Mead, 1934) and the Online Disinhibition Effect (Suler, 2004), this research employed pre- and post-intervention psychological assessments (the Perceived Stress Scale and the Self-Expression Inventory), semi-structured interviews, and a thematic analysis of therapist observations and session transcripts. Findings indicate that Avatar Therapy significantly enhanced emotional expression, reduced perceived stress, and facilitated cognitive restructuring through the externalisation of internal conflicts. Students reported increased therapeutic engagement and reduced anxiety related to judgment, attributing these improvements to the avatar's dissociative properties. Therapist observations documented enhanced self-disclosure, role-playing effectiveness, and moments of cognitive insight, alongside challenges including technological discomfort and initial resistance. This study contributes to the growing body of literature on digital mental health interventions and demonstrates the potential of Avatar Therapy as a structured, evidence-based tool in university counselling services. The interdisciplinary nature of this

intervention, bridging technology, psychology, and therapeutic practice, positions it within broader discussions of innovation in mental health service delivery.

Keywords: Avatar Therapy, Digital Therapeutic Interventions, University Counselling, Symbolic Interactionism, Online Disinhibition Effect, Mixed-Methods Research, Emotional Expression, Mental Health Technology

1. Introduction

1.1 Background and Context

The intersection of technology and psychological intervention has opened unprecedented opportunities for enhancing mental health service delivery, particularly in contexts where traditional therapeutic approaches face significant barriers. University students represent a population experiencing heightened psychological distress, yet they often underutilise counselling services due to stigma, fear of judgment, and challenges with self-disclosure. Digital therapeutic interventions offer potential solutions by creating psychologically safe environments that reduce these barriers while maintaining therapeutic efficacy.

Avatar Therapy represents an innovative form of digital intervention wherein individuals engage with virtual representations (avatars) to express emotions, confront distressing thoughts, and facilitate psychological healing. Originally developed for populations experiencing psychosis and auditory hallucinations, Avatar Therapy has demonstrated effectiveness in reducing symptom severity and enhancing therapeutic engagement by allowing individuals to externalise their internal experiences onto a controllable digital medium. Research by Craig et al. (2018) demonstrated that avatar-based interventions can significantly reduce distress symptoms while increasing self-awareness by projecting experiences onto virtual platforms.

Despite growing evidence supporting digital therapeutic modalities, limited research has examined the application of Avatar Therapy within university counselling contexts, particularly in non-Western educational settings. This study addresses this gap by investigating the implementation of Avatar Therapy at the Indian Institute of Technology Kanpur, where ten students voluntarily

participated in avatar-based counselling sessions. The research employs a mixed-methods approach, combining quantitative psychological assessments with qualitative analysis of therapeutic processes, to provide comprehensive insights into both outcomes and mechanisms of change.

1.2 Theoretical Foundations

This research is anchored in two complementary theoretical frameworks that explain how Avatar Therapy facilitates therapeutic change: Symbolic Interactionism and the Online Disinhibition Effect.

Symbolic Interactionism (Mead, 1934; Blumer, 1969) posits that individuals construct self-identity through social interactions mediated by symbols, including language, gestures, and representational objects. Within Avatar Therapy, the digital avatar serves as a symbolic extension of the self, allowing students to externalise emotions within a safe and controlled environment. The three core principles, meaning, language, and thought, align with the therapeutic mechanisms of Avatar Therapy. The avatar represents inner emotional states, creating visual and interactive mediums for communication. Therapeutic dialogue emerges through the avatar's verbal and nonverbal interactions, and avatar engagement promotes self-reflection and narrative reframing in ways that depersonalise threatening content while maintaining personal relevance. Research demonstrates that role-playing through digital mediums enhances emotional disclosure, particularly among individuals experiencing difficulty in conventional therapeutic settings (Williams et al., 2018).

The Online Disinhibition Effect (Suler, 2004) explains how digital environments influence self-expression and behavioural patterns through six contributing factors: dissociative anonymity, invisibility, asynchronicity, solipsistic introjection, dissociative imagination, and minimisation of authority. These factors create conditions in which individuals feel more comfortable expressing their deep-seated emotions. In Avatar Therapy, dissociative anonymity allows students to perceive the avatar as a protective mask, reducing vulnerability; invisibility eliminates direct eye contact, decreasing social anxiety; asynchronicity enables emotional processing at individual paces;

dissociative imagination permits students to view avatars as separate from their real identities, facilitating unrestricted emotional exploration; and minimization of authority reduces intimidation in therapist-client power dynamics, fostering egalitarian therapeutic relationships. Empirical evidence confirms that anonymity in online environments facilitates greater emotional self-disclosure (Barak et al., 2008), with particular benefits for individuals experiencing social anxiety (Gilat & Shahar, 2009).

The integration of these frameworks provides a comprehensive theoretical model wherein Symbolic Interactionism explains avatars' identity extension and meaning-making functions. At the same time, the Disinhibition Effect clarifies why digital representations enhance therapeutic comfort and disclosure. This dual-faceted model has profound implications for counselling psychology, particularly in university settings where stigma and judgment fears significantly impede help-seeking behaviours.

1.3 Research Objectives

This study pursues four primary objectives:

1. To examine Avatar Therapy's impact on emotional expression and psychological well-being among university students undergoing counselling
2. To analyse how avatar utilisation influences self-disclosure patterns and therapeutic engagement levels
3. To assess Avatar Therapy's perceived effectiveness from both student and therapist perspectives
4. To explore Avatar Therapy's potential as a structured, evidence-based intervention in university counselling services

2. Methodology

2.1 Research Design

This study employed a convergent parallel mixed-methods design, integrating qualitative case study methodology with an exploratory quantitative assessment to provide comprehensive insights into the effectiveness and therapeutic mechanisms of Avatar Therapy. Mixed-methods approaches

are particularly valuable in intervention research, as they capture both measurable outcomes and nuanced experiential processes that quantitative methods alone cannot fully illuminate.

2.2 Participants and Sampling

Ten students at IIT Kanpur voluntarily opted for Avatar Therapy as part of their counselling process during the study period. Participants were selected through purposive sampling based on their willingness to engage with digital therapeutic modalities. All participants provided informed consent after receiving comprehensive information about the study's purpose, procedures, confidentiality measures, and their right to withdraw without consequences. Ethical approval was obtained from the institutional review board, ensuring compliance with ethical standards for research involving human participants.

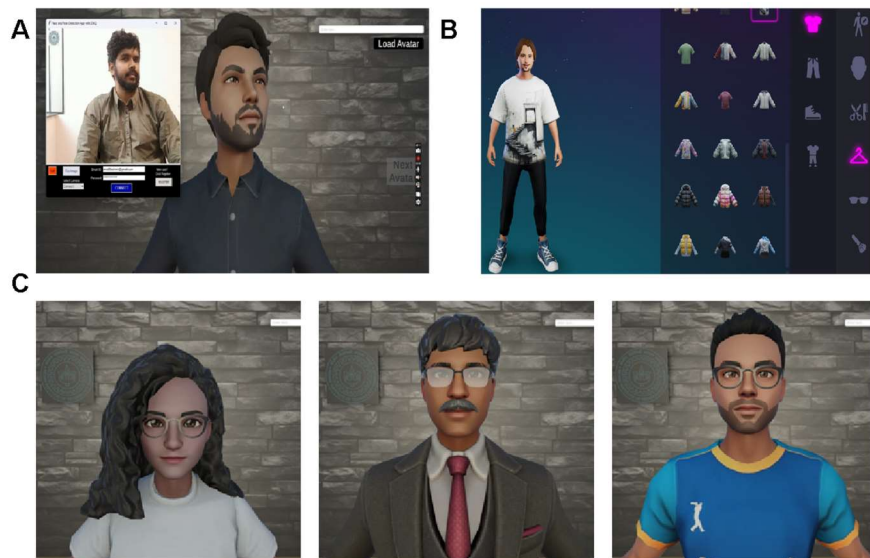
2.3 Avatar Therapy Implementation Protocol

The Avatar Therapy protocol involved the following structured components:

Avatar Customisation:

Students were provided access to digital avatars developed by the institution's Cognitive Science research team, with options to customise visual representations according to their preferences and therapeutic needs (See Figure 1). The personalised avatar is developed using the open-source online tool, ReadyPlayerMe, that can load the uploaded image

Figure 1: A) The facial expressions and the head rotation of the user are mapped onto the avatar interface based on webcam input. The picture is presented with consent from the co-author, AJAF. B) ReadyPlayerMe setup for designing avatars. C) Sample avatars presented in the interface. D) Extraction of facial action units from the avatar.



file and return an avatar whose facial structure matches the image. The avatar is completely customizable based on the needs of the user. Mediapipe model detection results for facial keypoints and pose estimation. The blue dots correspond to the 468 facial keypoints, and the green dots correspond to the 33 pose keypoints (not all are visible). Using the 468 facial keypoints, 52 blendshape values are estimated that shall control the facial expressions of the avatar. The facial transformation matrix is used to rotate the head of the avatar depending on the yaw, pitch and roll of the detected face in the frame.

Therapeutic Framework: Avatars served as symbolic masks, allowing students to express their thoughts, emotions, and psychological distress within non-judgmental, safe environments. The therapeutic process emphasised externalisation, projecting internal conflicts onto avatars to facilitate examination and restructuring.

Session Structure: Sessions followed flexible yet structured formats, allowing participants to communicate through their avatars rather than through direct face-to-face interactions. Therapists guided interactions, facilitating dialogue, role-playing, and emotional processing while maintaining therapeutic presence.

Duration and Frequency: Students participated in multiple sessions over the counselling period, with the number of sessions tailored to individual therapeutic needs and progress.

2.4 Data Collection Instruments

2.4.1 Quantitative Measures

Perceived Stress Scale (PSS): The PSS, a widely validated instrument, measures individuals' perceptions of life unpredictability, uncontrollability, and overload. Pre- and post-intervention administration assessed changes in perceived stress levels, with reductions indicating therapeutic effectiveness in alleviating emotional distress and enhancing overall well-being.

Self-Expression Inventory (SEI): The SEI assesses individuals' ability to express emotions, thoughts, and feelings effectively across personal and social contexts. Pre- and post-intervention assessments evaluated changes in emotional openness, comfort with vulnerability, and self-

disclosure capacity. Improvements suggest enhanced comfort with emotional expression through avatar-mediated communication.

2.4.2 Qualitative Data Collection

Semi-Structured Interviews: In-depth interviews explored participants' experiences with Avatar Therapy, focusing on: initial perceptions and expectations; overall experiences compared to traditional face-to-face therapy; emotional expression influences; emotional challenges before treatment and how Avatar Therapy addressed difficulties; specific breakthrough moments or cognitive shifts; avatar roles in enhancing self-awareness; discomfort or uncertainty navigation; effectiveness in reducing distress; and lasting changes in emotional well-being and self-expression.

Therapist Observations and Session Transcripts: Therapists maintained detailed observations, documenting emotional expression levels, engagement patterns, and changes over time, as well as role-playing effectiveness, instances of cognitive restructuring, barriers to progress, and shifts in power dynamics within therapeutic relationships. Session transcripts were collected for thematic analysis, providing rich textual data on therapeutic processes and interactions between students and avatars.

2.5 Data Analysis

Quantitative Analysis: Pre- and post-intervention PSS and SEI scores were compared using appropriate statistical methods to identify significant improvements in psychological outcomes. Linear regression Models were run using MATLAB R2022B software (fitlm command) to find the statistical estimates.

Qualitative Analysis: Thematic analysis was conducted on interview transcripts and therapist observations following established protocols. The study involved familiarisation with the data through repeated reading; initial code generation to identify meaningful units; theme identification through code pattern recognition; theme review and refinement; theme definition and naming; and report production with illustrative quotations.

Integration: Quantitative and qualitative findings were integrated during interpretation to provide a comprehensive understanding of both Avatar Therapy outcomes and underlying mechanisms.

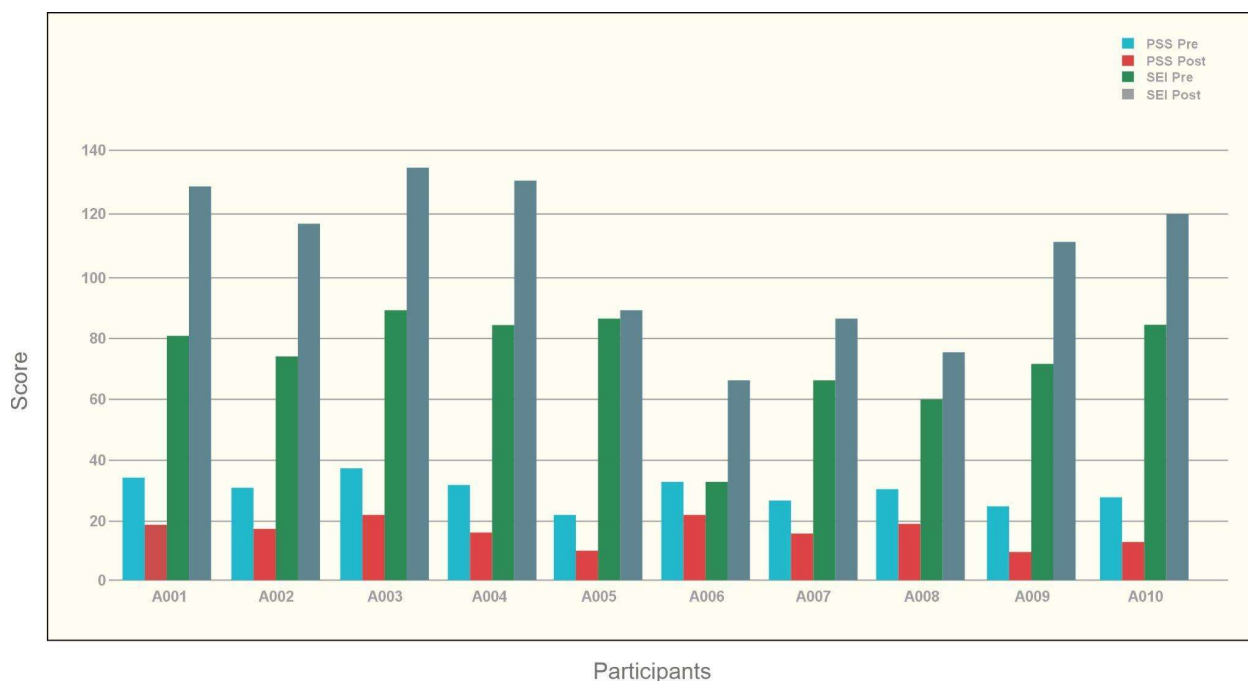
3. Findings

3.1 Quantitative Outcomes

Pre- and post-intervention assessments revealed measurable improvements in both perceived stress levels and self-expression capacity among participants.

Chart - 1

Shows the comparison of Pre and Post Scores of PSS and SEI



Comparison of Pre- and Post- Scores for PSS and SEI Across Ten Participants

Reductions in PSS scores indicated that Avatar Therapy effectively alleviated emotional distress, while increases in SEI scores demonstrated enhanced comfort with emotional expression and self-disclosure. These quantitative findings provide empirical support for the therapeutic efficacy of Avatar Therapy within university counselling contexts.

Table 1 below presents the regression results for Change in PSS (Post-Pre). We analysed the change through a linear regression model containing factors such as comfort to interface, history of mental illness, simultaneous medication, seniority level of study: $\text{ChangePSS} \sim 1 + \text{Comfort}$ (Likert 1-5) + PriorMH_num (categorical-yes/no) + Med_num (categorical-yes/no) + YearStudy [1 4]. The model trended to significance, with simultaneous medication, comfort experienced with the interface, as well as senior level of study contributing to decreased stress perception. The comfort levels were significantly related to the change in PSS (t-stat = -5.6, p = 0.002). When controlled for age and gender, SES factors in particular, the SES model was found to significantly contribute to the observed changes in PSS (p = 0.037).

	<i>Estimate</i>	<i>SE</i>	<i>tStat</i>	<i>pValue</i>
<i>(Intercept)</i>	0	0	NaN	NaN
<i>Comfort</i>	-1.9129	0.33867	-5.6484	0.0024147
<i>PriorMH_num</i>	2.3829	1.8154	1.3126	0.24633
<i>Med_num</i>	-4.0551	1.6585	-2.445	0.058292
<i>YearStudy</i>	-1.6612	0.68344	-2.4306	0.059338

Table 1. Change in the PSS regression model. The sample number of observations: 10, Error degrees of freedom: 6, Root Mean Squared Error: 2.17, R-squared: 0.667, Adjusted R-Squared: 0.501, F-statistic vs. constant model: 4.01, p-value = 0.0698, suggesting close to significant levels of relationship between post-pre changes in PSS to comfort, simultaneous medication (med_num) and seniority (yearstudy). The history of mental health issues did not contribute to the changes in stress perception.

Similarly, below Table 2 presents the regression results for Change in SEI (Post-Pre). We analysed the change through a linear regression model containing factors such as comfort to interface, history of mental illness, simultaneous medication, seniority level of study: $\text{ChangeSEI} \sim 1 + \text{Comfort}$ (Likert 1-5) + PriorMH_num (categorical-yes/no) + Med_num (categorical-yes/no) + YearStudy [1 4]. The model wasn't significant (p=0.7). However, when controlled for gender

(gender_num, female=1), factors such as comfort (tstat=7.2, p=0.002) significantly contributing to the observed increase in SEI.

	<i>Estimate</i>	<i>SE</i>	<i>tStat</i>	<i>pValue</i>
(Intercept)	0	0	NaN	NaN
Comfort	8.7577	1.2056	7.2639	0.0019077
PriorMH_num	-10.255	6.1209	-1.6755	0.16915
Med_num	2.6569	5.5417	0.47945	0.65666
YearStudy	1.5985	2.2921	0.6974	0.52396
gender_num	-25.358	4.7649	-5.3218	0.0059985

Table 2. Change in the SEI regression model. The sample number of observations: 10, Error degrees of freedom: 5, Root Mean Squared Error: 7.17, R-squared: 0.879, Adjusted R-Squared: 0.783

F-statistic vs. constant model: 9.12, p-value = 0.0161, suggesting a significant relationship between post-pre increase in SEI to comfort, when controlled for gender (gender_num, female=1).

3.2 Qualitative Themes from Student Interviews

3.2.1 Enhanced Emotional Expression

Students consistently reported that avatars facilitated emotional expression that would have been difficult or impossible in traditional therapy. The avatar's dissociative properties allowed students to distance themselves from emotions while simultaneously engaging with them meaningfully. Representative quotes included students describing feelings of safety and reduced vulnerability when communicating through avatars, which enabled them to disclose thoughts they typically suppressed.

3.2.2 Reduced Fear of Judgment

Participants emphasised that avatars significantly reduced judgment-related anxiety. The symbolic mask created psychological distance from perceived evaluation, allowing more authentic self-expression. Students noted feeling "on the same level" as therapists when communicating through avatars, contrasting with traditional therapy, where power imbalances were felt to be more pronounced.

3.2.3 Increased Therapeutic Engagement

Initial scepticism often gave way to genuine engagement as students became comfortable with the avatar medium. Students described avatars evolving from feeling like "games" to becoming meaningful extensions of themselves that didn't judge. This shift in engagement represented crucial therapeutic milestones.

3.2.4 Cognitive Restructuring and Insight

Students experienced cognitive shifts when confronting negative self-beliefs through the use of avatars. Externalising self-critical thoughts onto avatars allowed students to hear these beliefs from new perspectives, often leading to realisations that internalised narratives were not absolute truths. Role-playing with avatars facilitated the development of self-compassion and forgiveness.

3.3 Therapist Observations and Thematic Analysis

3.3.1 Emotional Expression and Disclosure Patterns

Therapists observed that students frequently expressed emotions through avatars that they struggled to articulate in traditional settings. The avatar provided emotionally safe spaces for externalising distressing thoughts without fear of judgment or ridicule. Session transcripts revealed that students projected their internal struggles onto avatars, articulating anger, shame, and other difficult emotions that might otherwise remain suppressed.

3.3.2 Therapeutic Engagement Evolution

Therapists documented the progression of engagement from initial hesitation to full participation. Students initially uncertain about the utility of avatars gradually came to embrace the medium, with avatars becoming extensions of themselves. The dissociative nature enabled deeper engagement as students expressed emotions they typically suppressed or avoided.

3.3.3 Cognitive Restructuring Processes

Therapists witnessed cognitive restructuring moments in which students gained new insights about their emotional states, thoughts, and behaviours. Avatars provided powerful media for this process,

as students projected struggles onto avatars and then observed and interacted with them in novel ways. Externalising negative beliefs through avatars often led to cognitive shifts, with students recognising that internalised beliefs were not absolute truths.

3.3.4 Role-Playing and Self-Exploration

Role-playing through avatars facilitated significant self-exploration. Students examined various personality facets, confronted fears, and explored alternative behaviours in safe environments. Therapists observed increased playfulness and creativity in avatar interactions, leading to deeper self-understanding. Role-playing enabled students to interact with past, future, or alternative versions of themselves, fostering self-compassion and emotional healing.

3.3.5 Barriers and Challenges

While Avatar Therapy demonstrated substantial benefits, therapists also observed barriers, including technological discomfort, resistance to the process, and avoidance behaviours. Some students struggled with fully embracing avatar-mediated communication, finding it "fake" or disconnected. These resistance moments, however, provided valuable therapeutic opportunities when therapists gently guided students to explore the underlying sources of discomfort.

3.3.6 Power Dynamics and Therapeutic Relationship

Therapists noted that avatars reduced traditional power dynamics between therapists and students. Students reported feeling less intimidated when communicating through avatars, creating more egalitarian therapeutic relationships. This equality allowed students to feel more empowered and in control of their therapeutic processes, leading to deeper emotional exploration and healing.

4. Discussion

4.1 Interpretation of Findings

This study provides compelling evidence that Avatar Therapy represents an effective and innovative intervention within university counselling services. Both quantitative and qualitative findings converge in demonstrating Avatar Therapy's capacity to enhance emotional expression,

reduce psychological distress, facilitate cognitive restructuring, and increase therapeutic engagement. These outcomes align with existing literature on digital therapeutic interventions while extending understanding to university populations in non-Western contexts.

The theoretical frameworks of Symbolic Interactionism and the Online Disinhibition Effect effectively explain the mechanisms of Avatar Therapy. Avatars functioned as symbolic extensions of self, enabling meaning-making and identity exploration consistent with Symbolic Interactionist principles. Simultaneously, the disinhibition factors, particularly dissociative anonymity and minimisation of authority, created conditions facilitating unprecedented self-disclosure and emotional vulnerability. The integration of these frameworks provides robust theoretical grounding for understanding how digital representations enhance therapeutic processes.

4.2 Implications for Practice

Avatar Therapy's demonstrated effectiveness suggests significant implications for university counselling services. Traditional counselling approaches often fail to reach students experiencing high levels of stigma-related anxiety or self-disclosure difficulties. Avatar Therapy offers an accessible alternative that reduces these barriers while maintaining therapeutic integrity. University counselling centres should consider integrating avatar-based interventions into service portfolios, particularly for students who may be reluctant to engage with traditional face-to-face therapy.

Implementation requires careful consideration of technological infrastructure, therapist training, and ethical protocols. Therapists must develop competencies in guiding avatar-mediated interactions while maintaining therapeutic presence and attunement to the client. Ethical frameworks must address confidentiality, data security, and informed consent within digital therapeutic contexts.

4.3 Interdisciplinary Contributions

This research exemplifies interdisciplinary collaboration between psychology, cognitive science, and technology. Avatar Therapy's development required integration of therapeutic theory, digital

design, and implementation science. The findings contribute to multiple fields: counselling psychology benefits from evidence supporting innovative intervention modalities; cognitive science gains insights into how digital representations influence self-perception and emotional processing; and technology design receives feedback on user experience and therapeutic utility. Such interdisciplinary approaches are essential for advancing mental health service innovation.

4.4 Limitations

Several limitations warrant acknowledgement. The sample size of ten participants, while appropriate for case study methodology, limits generalizability. Future research should employ larger samples and include control or comparison groups to strengthen causal inferences. The study was conducted at a single institution with a specific student population, which may limit its transferability to other contexts. Additionally, the study did not include long-term follow-up assessment, leaving questions about Avatar Therapy's sustained effects unanswered.

The quantitative component, while providing valuable preliminary evidence, would benefit from more comprehensive statistical analysis with larger samples. Future research should also investigate which student populations benefit most from Avatar Therapy and under what conditions, enabling more targeted implementation.

4.5 Future Research Directions

Future research should pursue several important directions. Longitudinal studies examining the long-term effects of Avatar Therapy on psychological well-being, coping skills, and academic outcomes would provide crucial evidence of its sustained impact. Comparative effectiveness research contrasting Avatar Therapy with traditional counselling approaches would clarify relative benefits and appropriate selection criteria. Investigating the effectiveness of Avatar Therapy across diverse student populations, including various cultural contexts, academic disciplines, and mental health presentations, would enhance our understanding of generalizability and the cultural adaptation needs of this approach.

Research exploring technological enhancements, such as virtual reality integration, artificial intelligence-guided avatars, or mobile platform accessibility, could expand the reach and effectiveness of Avatar Therapy. Additionally, studies examining implementation factors, including cost-effectiveness, scalability, therapist training requirements, and student satisfaction, would inform broader adoption decisions.

5. Conclusion

Avatar Therapy at IIT Kanpur represents a significant advancement in university counselling practices, demonstrating how digital innovation can address longstanding barriers to mental health service utilisation. Grounded in Symbolic Interactionism and the Online Disinhibition Effect, this intervention utilises avatar technology to create psychologically safe environments that foster emotional expression, alleviate distress, and facilitate cognitive restructuring. The mixed-methods findings provide robust evidence of Avatar Therapy's effectiveness from both outcome and process perspectives, with quantitative assessments documenting measurable improvements and qualitative analysis revealing nuanced therapeutic mechanisms.

As students engaged with their avatars, they navigated alternative self-expression landscapes promoting emotional regulation, cognitive insight, and psychological relief. Therapist observations documented profound therapeutic moments, emotional breakthroughs, increased engagement, self-discovery, and transformation, alongside challenges that provided valuable learning opportunities. These insights establish Avatar Therapy as a transformative intervention in digital counselling, with potential applications extending beyond university settings to diverse clinical and community contexts.

The interdisciplinary nature of this research, bridging psychology, cognitive science, technology, and therapeutic practice, exemplifies the collaborative approaches necessary for advancing mental health innovation. As digital therapeutic interventions continue to evolve, Avatar Therapy stands as a promising model for how technology can enhance, rather than replace, human connection in the healing process. Future research investigating the long-term effects, comparative effectiveness,

and broader applicability of Avatar Therapy will further solidify its role in the expanding landscape of evidence-based digital mental health interventions.

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Funding: The study is supported by the IITK lab seed fund, Pawan Tiwari angel funds to PPB

Acknowledgements: The authors acknowledge the students who participated in this study and the Cognitive Science research team at IIT Kanpur for their support with avatar development.

Conflict of Interest: The authors declare no conflicts of interest.