

User Behavior and Emotional Responses in Social Media Avatar: Exploring Empathy, Attitudes, and Social Norms



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1 Introduction

In the modern digital era, social media platforms have revolutionized the way individuals communicate, interact, and express themselves. One of the intriguing aspects of this paradigm shift is the introduction and proliferation of avatars—digital representations or personas that individuals adopt in their virtual interactions. An avatar is a digital representation of a user in a virtual environment or digital platform. It serves as a visual and often interactive embodiment of the user, allowing them to engage with various online spaces, such as virtual worlds, social media platforms, video games, and other online communities [1]. Avatars can take many forms, from realistic human likenesses to imaginative creatures, and they play a significant role in shaping online interactions and experiences.

As social media continues to shape our social landscapes, understanding how users behave and emotionally respond within these avatars' contexts has become a critical area of research. This study delves into the multifaceted dynamics of user behavior and emotional responses within social media avatars, with a specific focus on empathy, attitudes, and the influence of social norms. The allure of avatars lies in their capacity to grant users newfound freedoms of self-presentation and identity expression. Online platforms allow individuals to craft avatars that can embody ideals, alter egos, or even entirely fictional identities, diverging from their real-world selves. This discrepancy between the virtual and physical self opens avenues for exploring how users perceive and engage with empathy—the ability to understand

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and share the feelings of others—within the context of avatars. Understanding how empathetic responses manifest in avatar-mediated interactions contributes to a deeper comprehension of how technology reshapes human emotional connections.

Attitudes, both towards others and oneself, play a pivotal role in shaping online interactions. Avatars serve as canvases upon which users project their attitudes, reflecting not only how they view themselves but also how they perceive their peers and the digital environment. Exploring the linkage between avatar-mediated attitudes and user behavior can shed light on the mechanisms driving online engagements, leading to insights into the formation of online communities, social hierarchies, and the propagation of digital narratives.

Likewise, the influence of social norms in avatar-mediated interactions is a compelling facet of online behavior. While avatars can grant anonymity, users still operate within the framework of broader societal norms and expectations, albeit with potential alterations due to the digital realm's unique characteristics. Investigating how users conform to, deviate from, or transform social norms within avatar contexts unveils the intricate interplay between virtual and real-world norms and how they shape digital social dynamics.

This study embarks on a comprehensive exploration of the intricate interrelationships between user behavior, emotional responses, empathy, attitudes, and social norms in the realm of social media avatars. By researching into these dimensions, we seek to unravel the mechanisms that underlie online interactions, the factors that drive engagement and disengagement, and the implications for individuals' emotional well-being. Through a combination of qualitative and quantitative methodologies, this research aims to provide a nuanced understanding of how users navigate the complex landscape of avatars, offering insights that are valuable for both academia and the design of future online platforms.

The research paper follows a structured flow, beginning with an introduction that highlights the significance of the Metaverse and its interplay with avatar-driven environments. A comprehensive literature review enquires into theories surrounding avatars, virtual interactions, and user behavior, while the theoretical background section establishes the foundation for the study's conceptual framework. Research questions and hypotheses are presented, guiding the investigation into the patterns and trends arising from demographic variables, user behavior, and emotional responses within the combined context of the avatar-driven social platforms. The research methodology outlines the chosen approach, population, sampling, and data collection. Subsequently, the data analysis and interpretation section analyzes collected data and draws conclusions, leading into discussions on limitations and avenues for future research. Finally, the conclusion reiterates key findings and their implications, solidifying the contribution of the study to the understanding of user dynamics in this evolving digital landscape.

2 Related Work Social Media Avatar: The Current Landscape

The investigation of user behavior and emotional responses within social media avatars necessitates a comprehensive review of existing literature in related fields. This section examines key themes, concepts, and findings from prior research that contribute to the understanding of empathy, attitudes, social norms, and digital interactions. Previous research has predominantly unfolded within virtual realms, wherein avatars stand as digital representations guiding users through three-dimensional landscapes. The concept of avatars dates back to early computer games and virtual communities, where users would select or create characters to navigate and interact within digital spaces [2]. Over time, avatars have evolved to become more sophisticated, dynamic, and customizable, reflecting advancements in technology and user expectations. Today, avatars are central to the immersive nature of virtual reality (VR), augmented reality (AR) [3].

Avatars are widely in usage as they have multifaceted roles- enabling creative self-expression through customizable appearances and personalities; facilitating virtual social interactions akin to real-life engagements; enhancing immersion in VR and AR by embodying users in the digital environment; playing a central role in gaming, empowering players in narrative shaping; representing users on social media platforms, fostering connections and discussions; acting as a canvas for identity experimentation; and eliciting emotions and empathy, forging meaningful virtual connections. While interactions may eventually lead to the development of friendships, initial communication often transpires among individuals who were previously unfamiliar to each other. In a more contemporary context, avatars have found integration within social media platforms. Individuals utilizing prevalent social networking platforms such as Facebook, Snapchat, Instagram, and WhatsApp engage with these sites to either revive connections with past acquaintances or cultivate ongoing friendships [4]. Scholars have dissected the societal consequences of avatars by exploring how individuals handle self-representation within this emerging medium, as well as the degree to which an avatar's visual attributes can influence digital interactions [5]. The visualization of avatars holds the potential to influence individuals' actions and perspectives within digital settings [6]. Utilizing an avatar to engage in actions has the capacity to impact real-world behavior and induce behavioral transformations [7]. Consumers with less expertise or familiarity are more prone to form unfavorable assessments of human-like avatars [8]. A positive link was identified between technology familiarity and the overall attitude toward avatars.

Empathy in online interactions involves the capacity of individuals to understand, share, and respond to the emotions and experiences of others within digital platforms. It encompasses the ability to convey compassion, emotional support, and connection despite the limitations of mediated communication channels. Empathy can be fostered in online interactions [9, 10]. Avatars, as digital representations, have been found to influence users' empathy levels, with some research suggesting that anonymity provided by avatars may lead to reduced emotional inhibition [11].

Avatars facilitate experimentation with self-presentation and identity projection [12]. Avatars have been identified as vehicles for attitude expression, enabling users to portray attitudes and values that might differ from their offline persona [13].

Attitude refers to how an individual's opinions, beliefs, and evaluations influence their actions, choices, and engagement with a particular technology or platform. It involves the alignment between one's attitudes and their actual usage patterns, reflecting the impact of personal preferences and perceptions on their behavior. Avatars have been identified as vehicles for attitude expression, enabling users to portray attitudes and values that might differ from their offline persona [13].

Social norms within online communities refer to the unwritten rules, behaviors, and expectations that guide interactions and influence the conduct of members within digital platforms. These norms develop through shared experiences and serve as the framework for acceptable behavior, communication styles, and community engagement. The dynamics of social norms in online communities have been a subject of comprehensive investigation [14]. Avatars can influence users' conformity to group norms, leading to the emergence of unique online social norms within digital spaces [15].

As the digital landscape evolves, researchers increasingly acknowledge the multi-dimensional impact of avatars on user interactions, empathy, attitudes, social norms, and emotional experiences. The synthesis of existing literature provides a foundation for understanding the complexities of user behavior in avatar-mediated contexts, thereby informing the current study's research objectives and questions. Studies demonstrate that Limited scholarly exploration has been undertaken to investigate the factors impacting user's behavior and emotional responses.

3 Research Questions and Objectives

As the digital landscape continues to evolve, this research provides timely insights into the evolving nature of human interaction in the digital age, making valuable contributions to various academic disciplines and addressing the challenges and opportunities presented by these emerging communication paradigms. This study is relevant because it investigates the complex interplay between empathy, attitudes, social norms on user behavior, and emotional responses while interacting with social media platforms. The present study aimed to comprehend the subsequent inquiries. Does empathy, attitude and social norm govern interactions within avatar-based contexts as they engage virtually? And To what extent does empathy, attitude and social norm manifest in avatar-mediated interactions, and how does it stimulus behavior and emotions of users?

Based on the above research questions the following two objectives are framed.

1. To examine the influence of empathy, attitudes, and social norms on interactions within avatar-based contexts during virtual engagements.

2. To investigate the manifestation of empathy, attitudes, and social norms in avatar-mediated interactions and their potential impact on users' behaviors and emotional responses.

4 Research Methodology

This study employs a quantitative research approach to explore the interaction between empathy, attitudes, social norms, behavior, and emotional experiences within avatar-mediated interactions. The research involved surveying a sample of 300 participants from diverse demographic backgrounds through probability convenience sampling method to recruit participants. A structured online survey consisting of validated scales and items was used through a survey method to gather data on participants' demographic profile and levels of empathy, attitudes, adherence to social norms, avatar-based behaviors, and emotional experiences during virtual interactions through various digital platforms. Quantitative data was analyzed using descriptive statistics to provide an overview of participants' responses and inferential statistics—SEM analysis to show the relationship between empathy, attitudes, and adherence to social norms, avatar-based behaviors, and emotional experiences.

5 Data Analysis and Interpretation

The demographic analysis provides crucial insights into the characteristics of the study participants. By examining factors such as age, gender, and engagement patterns, this analysis contextualizes the research findings within specific user groups. Understanding the demographic profile enhances the comprehension of user behavior and emotional responses within the context of the study's focus.

Table 1 presents the comprehensive profile of avatar users based on their demographic characteristics and engagement patterns. The distribution of participants across different age groups demonstrates a notable presence of young adults, with the 18–24 age group being the most prominent (35%). Gender distribution reveals a majority of male participants (57%), indicating a gender imbalance in avatar engagement. Regarding frequency of avatar use, participants exhibit varying levels of engagement, with 66% reporting using avatars either very often or sometimes. An examination of social media platform preferences highlights a diversified landscape, where Facebook, Instagram, and Twitter are more widely embraced, while platforms like TikTok, Snapchat, and WhatsApp contribute to a substantial portion of users' engagement (46% combined). Additionally, avatar customization habits reflect a diverse range of approaches, with 46% dedicating some degree of time to personalize their avatars, while 54% allocate minimal or no time. These insights provide a comprehensive understanding of avatar users' profiles and engagement dynamics,

Table 1 Avatar users profile: demographic information

Demographic info	Group	Percentile
Age	Under 18	14
	18–24	35
	25–34	27
	35–44	12
	45–54	9
	55 and above	3
Gender	Male	57
	Female	43
Frequency of avatar use	Very often	27
	Sometimes	39
	Rarely	22
	Never	12
Social media platforms	Facebook	11
	Instagram	23
	Twitter	22
	TikTok	11
	Snapchat	15
	WhatsApp	18
Avatar customization	A lot of time	14
	Some time	32
	Very little time	35
	None at all	19

paving the way for further exploration into the relationships between demographics, behaviors, and emotional responses in the realm of avatars on social media platforms.

5.1 Avatar-Influenced User Behavior and Emotional Responses Model Analysis:

Structural Equation Modeling (SEM) is a powerful statistical methodology used to analyze complex relationships among variables and their underlying constructs. It’s a versatile approach that allows researchers to examine not only direct relationships between variables but also the underlying theoretical framework governing those relationships. SEM is widely applied in various fields, including social sciences, psychology, economics, and more, to gain deeper insights into intricate phenomena.

This study employs Structural Equation Modeling (SEM) to uncover the complex relationships between user behavior and emotional responses in the context of social

media avatars. By examining the influence of avatar users' empathy, avatar users' attitude, and social norms on user behavior, as well as the impact of empathy and attitude on emotional responses, this research aims to illuminate the intricate dynamics at play. SEM offers a powerful lens through which to understand the connections between these variables, contributing to a deeper comprehension of how avatars and emotional interactions shape user behavior in virtual environments.

According to the results shown in the Table 2, the model fit analysis for the Avatar-Related User Behavior and Emotional Responses reveals a chi-square value of 53.06 with a significance of 0.051, suggesting a relatively acceptable fit. Goodness-of-fit indices, including GFI (0.911) and AGFI (0.901), indicate a reasonable alignment of the proposed model with the data. The comparative fit index (CFI) at 0.927 and the normed fit index (NFI) at 0.903 further affirm the model's coherence with the observed data. The root mean square error of approximation (RMSEA) stands at 0.039, reflecting a close fit of the model to the underlying covariance structure. Collectively, these indices suggest a favorable overall fit of the model, indicating its appropriateness in representing the complex relationships among avatar-related user behavior and emotional responses.

Table 3 exhibits the factor loadings obtained from the analysis indicate the strength of the relationships between the variables in the study. The results suggest that users who frequently leave encouraging comments and show understanding through interactions with others' posts (Avatar Users Empathy) have a strong inclination toward empathetic behavior (Factor loading: 0.94). Similarly, users more likely to engage with content in line with their positive attitudes and beliefs (Avatar Users Attitude) are also influenced by their personal attitudes when interacting on the platform (Factor loading: 0.85). While the active engagement with posts reflecting personal values is positively related to this factor, its factor loading is comparatively lower (Factor loading: 0.6). The consideration of social norms and cultural expectations when selecting avatars (Social Norms) is moderately related to conforming avatars to prevailing social group norms (Factor loading: 0.68). Additionally, users who frequently create new posts or share content with their avatars (User Behaviour) also tend to frequently like or share content from others (Factor loading: 0.83). The Emotional Response factor is associated with users feeling a sense of happiness after positive interactions (Factor loading: 0.6) and experiencing frustration or anger when encountering opposing beliefs (Factor loading: 0.59) while using their avatars. These findings provide insights into the interplay between avatars, empathy, attitudes, social

Table 2 Avatar-related user behavior and emotional responses model fit analysis

Chi-square and significance	53.06 and 0.051
Goodness-of-fit index (GFI)	0.911
Adjusted goodness-of-fit index (AGFI)	0.901
Comparative fit index (CFI) 1	0.927
Normed fit index (NFI)	0.903
Root mean square error of approximation(RMSEA)	0.039

norms, user behavior, and emotional responses within the context of social media platforms, illustrating the complex relationships among these factors.

The results of the path analysis, presented in Table 4, reveal significant relationships between the dependent variables (User Behavior and Emotional Response) and the independent variables (Avatar User’s Empathy, Avatar User’s Attitude, and Social Norms). These same results are visually represented in pictorial form in Fig. 1.

Table 3 Factor loadings of avatar-related user behavior and emotional responses model

Particulars (Constructs and items)	Factor loading
<i>Avatar users empathy</i>	
Encouraging comments with empathy	0.94
Kindness in interactions	0.88
<i>Avatar users attitude</i>	
Engagement with aligned content	0.78
Influence of personal attitudes	0.85
Engagement with resonating posts	0.6
<i>Social norms</i>	
Avatar appearance and norms	0.68
Avatar conformity	0.67
<i>User behaviour</i>	
Post and content creation	0.88
Engagement with others’ content	0.83
<i>Emotional response</i>	
Positive interactions (happiness/anxiety)	0.6
Engaging with conflicting content (feelings of frustration or anger)	0.59

Table 4 Regression weight of avatar-related user behavior and emotional responses model

Dependent variable	Independent variable	Path co-efficient	SE	CR	Sig
User behaviour	Empathy	0.095	0.03	3.116	0.002
	Attitude	0.215	0.047	4.562	0.001
	Social norms	1.136	0.077	14.688	0.000
Emotional response	Empathy	0.293	0.036	8.036	0.000
	Attitude	0.611	0.07	8.701	0.001
	Social norms	0.392	0.055	7.16	0.000

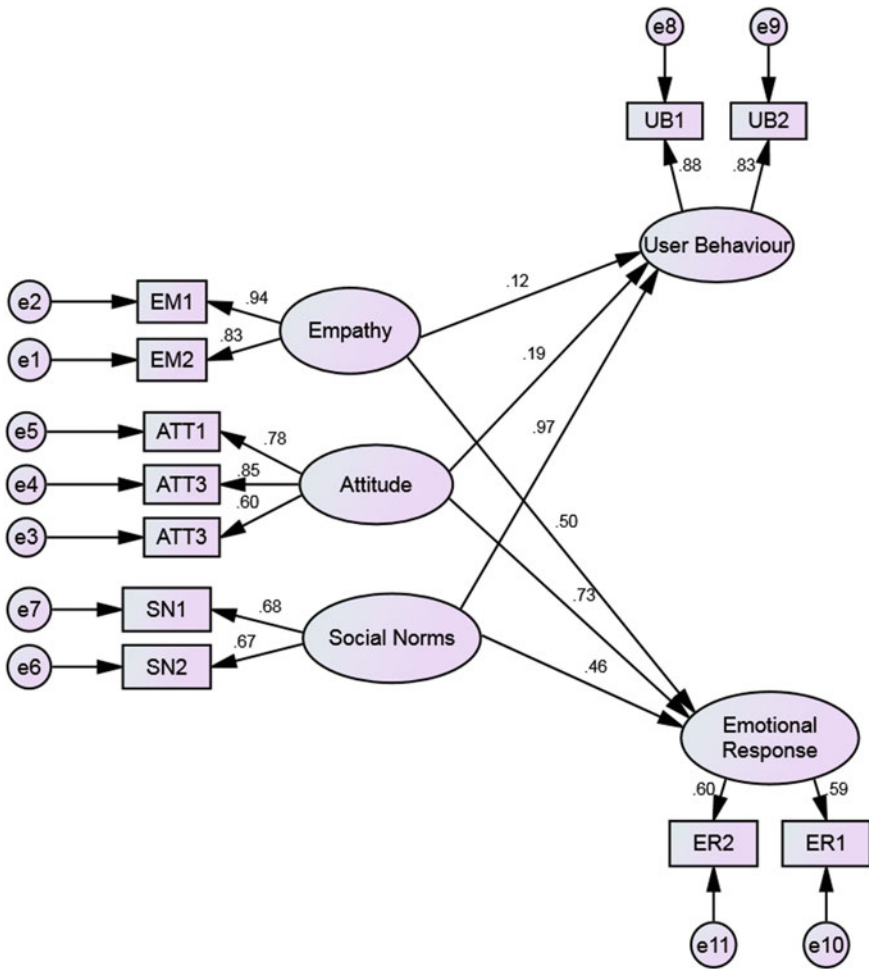


Fig. 1 SEM of avatar-related user behavior and emotional responses

5.2 Interplay Between Avatar Users Empathy, Attitude, Social Norms and Behaviour

Avatar Users Empathy

The path coefficient between Avatar Users Empathy and User Behavior is 0.095 (SE: 0.03), indicating a positive relationship. This suggests that users who frequently engage in empathetic behaviors, such as leaving encouraging comments and showing understanding in their interactions, tend to exhibit increased user behavior on the platform (CR: 3.116, $p = 0.002$). Higher empathy appears to foster more active participation and engagement.

Avatar Users Attitude

The relationship between Avatar Users Attitude and User Behavior is notably stronger, with a path coefficient of 0.215 (SE: 0.047). This positive relationship implies that users who have positive attitudes towards content alignment are more likely to engage in higher levels of user behavior (CR: 4.562, $p = 0.001$). A favorable attitude seems to drive increased interaction and engagement with content.

Social Norms

The path coefficient for the relationship between Social Norms and User Behavior is substantial, at 1.136 (SE: 0.077). This suggests a significantly positive association between conforming to social norms and higher user behavior (CR: 14.688, $p < 0.001$). Adhering to the prevailing norms within the platform's community strongly influences increased user participation and engagement.

5.3 Interplay Between Avatar Users Empathy, Attitude, Social Norms and Emotional Responses

Empathy

Regarding Emotional Response, the path coefficient between Empathy and Emotional Response is 0.293 (SE: 0.036). This positive relationship indicates that users who exhibit higher levels of empathy tend to experience more intense emotional responses to content (CR: 8.036, $p < 0.001$). Greater empathy contributes to heightened emotional reactions.

Attitude

The path coefficient between Attitude and Emotional Response is 0.611 (SE: 0.07), reflecting a strong positive relationship. Users with positive attitudes towards content alignment experience stronger emotional responses (CR: 8.701, $p = 0.001$). A positive attitude appears to enhance the emotional impact of content interactions.

Social Norms

Similarly, the relationship between Social Norms and Emotional Response is also significant, with a path coefficient of 0.392 (SE: 0.055). This positive relationship suggests that users who conform more to social norms experience heightened emotional responses (CR: 7.16, $p < 0.001$). Conforming to social norms contributes to more intense emotional reactions to content.

The analysis demonstrates that the independent variables—Avatar Users Empathy, Avatar Users Attitude, and Social Norms—significantly impact both User Behavior and Emotional Response. Each variable uniquely contributes to shaping users' engagement and emotional reactions on the social media platform, highlighting the complex interplay of factors that influence online interactions and experiences.

6 Conclusion

In the digital era, avatars have become integral elements of the social media landscape, transforming the way individuals express themselves and engage with online platforms. Avatars, personalized digital representations of users, bridge the gap between real-life identities and virtual interactions, offering a customizable medium through which users navigate the online world. These virtual embodiments go beyond mere aesthetics; they encapsulate users' preferences, personalities, and aspirations, serving as vehicles for self-expression and identity construction. Avatars enable individuals to project facets of their character that align with their online persona, fostering a sense of agency and creative expression. This study delved into the intricate dynamics of user behavior and emotional responses within the context of social media avatars. The path analysis results unveil a web of significant relationships between key variables. The findings underscore the critical role of empathy, attitudes, and social norms in shaping user behavior and emotional experiences on the platform. Empathetic behaviors, aligned attitudes, and adherence to social norms emerge as strong drivers of increased user engagement, highlighting the importance of positive interactions and community adherence. Moreover, the study reveals the profound impact of empathy, attitudes, and social norms on emotional responses. Users who exhibit higher empathy, hold positive attitudes, and conform to social norms tend to experience more intense emotional reactions to content, underlining the empathetic and attitudinal elements that resonate within the virtual environment. Overall, this research offers valuable insights into the complex interactions that drive online behaviors and emotional experiences, shedding light on the multifaceted dynamics that define interactions within the realm of social media avatars.

6.1 Limitations

While this study contributes significant insights, several limitations should be considered. Firstly, the research relies on self-reported data, which might be subject to response bias and may not fully capture participants' true behaviors and emotions. Additionally, the study's cross-sectional nature prevents establishing causal relationships, warranting caution in drawing definitive conclusions. The scope of the study is limited to a specific set of independent variables, potentially overlooking other influential factors in user behavior and emotional responses. The demographic composition of the sample could affect the generalizability of findings, thus requiring replication across diverse populations. Lastly, the study focuses on avatars within social media, omitting potential differences across various online platforms and their distinct user behaviors.

6.2 Further Study

To address these limitations and extend the research, future studies could employ longitudinal designs to better explore causal relationships over time. Incorporating objective behavioral data, such as tracking actual interactions, could enhance the accuracy of findings. Broader and more diverse samples would enable a comprehensive examination of user behavior across demographics and platforms. Exploring the interplay between avatars and content characteristics could provide a deeper understanding of how emotional responses are triggered. Moreover, investigating the influence of technological advancements, such as virtual reality, on avatar-mediated interactions remains a promising avenue for research. Lastly, qualitative methods could uncover nuanced user experiences and motivations that quantitative measures might overlook. Collectively, future studies can build upon these findings to unravel deeper layers of user behavior and emotional responses within the evolving landscape of social media avatars.

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