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Avatars' Phygital Social Presence in the Metaverse: An Engaged Theory Perspective

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ABSTRACT

While prior authors have explored the notions of human and/or automated social presence, these concepts have been predominantly assessed either individually or as mutually exclusive theoretical entities. However, we draw on engaged theory to develop the hybrid concept of *phygital social presence* that comprises aspects of *both* the human and automated social presence of metaverse avatars. We define phygital social presence as the degree to which a metaverse avatar instils the feeling in other users that they are in the company of a social entity, as elicited by the avatar's (a) human social presence (i.e., the actions taken by its human user, in line with engaged theory's "ways of acting"), and (b) automated social presence (i.e., the avatar's embodiment or its appearance, look, design, and the character that these emit, in line with engaged theory's "ways of being"). We next propose a conceptual framework and a set of propositions, which suggest that metaverse avatars' (a) human social presence primarily impacts metaverse users' positive or negative behavioral engagement in the metaverse, and (b) automated social presence chiefly influences users' positive or negative cognitive and emotional engagement. Moreover, an avatar's *ways of relating*, as also informed by engaged theory, primarily impact users' positive or negative social engagement.

1 | Introduction

The *metaverse*, a set of "immersive three-dimensional virtual worlds in which people interact as avatars with each other and with software agents" (Davis et al. 2009, p. 90), has not only seen rapid growth in the last decade (Farah, Ramadan, and Nassereddine 2024; Hadi, Melumad, and Park 2024), but is also expected to continue growing at an annual compound growth rate of 37.73% until 2030, yielding a projected market volume of US $507.8 billion by 2030 (Statista 2024). With its seamlessly connected augmented, virtual, or mixed-reality spaces and advanced interaction and immersion capabilities (Kalender and Guzmán 2024), metaverses are poised to radically transform the way that people work and play, including by changing how consumers interact

with one another and with specific objects (e.g., brands; Giang Barrera and Shah 2023; Dwivedi et al. 2023).

Metaverses have an elevated capacity to foster users' *social presence*, or "the feeling of being there with a real person" (Oh, Bailenson, and Welch 2018). Unlike some communication media (e.g., email), metaverses adopt a range of real-time (e.g., visual, auditory, and motion-based) cues that instil a sense of the *actual* presence of one's remote interaction partner, represented by their virtual avatar (Miao et al. 2022; Krishna, Luangrath, and Peck 2024). While the concept of social presence, traditionally, referred to the felt presence of one's human interaction partner (i.e., *human* social presence; Short, Williams, and Christie 1976), it has since been recognized that

non-human agents (e.g., service robots) may *likewise* engender users' sense of social presence (Biocca and Harms [2002]). Correspondingly, Van Doorn et al. ([2017], p. 44) conceptualize *automated social presence* as "the extent to which machines (e.g., robots) make consumers feel that they are in the company of another social entity."

Recognizing this social presence-based duality (i.e., comprising both human *and* automated social presence sub-forms), the social presence generated by avatars in the metaverse reflects aspects of *both* human and automated social presence, revealing its *phygital* nature (Batat [2024]; Mele and Russo-Spena [2022]), as opposed to yielding these social presence forms in isolation or them being mutually exclusive, as suggested in prior research (e.g., Čaić et al. [2020]; Liao et al. [2024]), exposing an important gap in the literature. Specifically, while metaverse avatars contain an important human social presence aspect (i.e., the actions of its human user; Farah, Ramadan, and Nassereddine [2024]; Fribourg et al. [2020]), they *also* feature a key automated aspect in terms of their computer-generated appearance, look, and design (e.g., the avatar's anthropomorphism or attractiveness level) and the character that these emit (e.g., the avatar's observed agreeableness, aggression, or credibility that emerge, for instance, through its posture or its conversational content; Zhu and Yi [2024]; Lin, Doong, and Eisingerich [2021]; Heerink et al. [2010]). Reconciling this duality, we conceptualize the hybrid notion of *phygital social presence* as *the degree to which a metaverse avatar instils the feeling in other users that they are in the company of a social entity, as elicited by the avatar's (a) human social presence (i.e., the actions taken by its human user), and (b) automated social presence (i.e., the avatar's embodiment or appearance, look, and design, and the character that these emit).*

To explore the phygital social presence of metaverse avatars, we draw on engaged theory, which—as a form of critical theory—originates in the realm of social studies (e.g., sociology, anthropology, and philosophy; James and Steger [2021]). Engaged theory comprises different analytical modes to explain social complexity, including by assessing a focal subject's (e.g., an avatar's) (i) *ways of acting*, or its actions and activities (Steger and James [2019]), (ii) *ways of being*, or its embodiment (e.g., its physical appearance/posture and the character that these exude; Ernstson, Lawhon, and Duminy [2014]), and (iii) *ways of relating*, or the extent of, and dynamics characterizing, its interactions and relationships (Anderson [2003]). Though the theory also incorporates *empirical analysis* as a fourth analytical mode (e.g., James and Verrest [2015]), we exclude this from our purely conceptual analyses (see Section [2.1]).

Engaged theory has primary relevance to avatars' phygital social presence in the metaverse, which comprises their human and automated social presence. First, *human social presence* reflects the extent to which an avatar instils a sense in other users that they are in the presence of a social entity through its human- or user-controlled actions (Dinh and Park [2023]; Hollebeek, Sprott, and Brady [2021]). For example, users may collaborate with avatars they meet in metaverse environments like Fortnite, leading them to perceive their social presence (e.g., by playing with or receiving help from them). In other words, human social presence is mainly felt through the actions taken by the avatar's human user, corresponding to engaged theory's *ways of acting* (James [2017]).

Second, *automated social presence* refers to the degree to which a metaverse avatar evokes the feeling in other users that they are in the company of another social entity through its computer-generated embodiment or physical appearance and the character that these emit (Heidicker, Langbehn, and Steinicke [2017]; Zhu and Yi [2024]). For example, gamers may feel they are in the presence of another social entity owing to their avatar's computer-generated powerful physical appearance (Aldred [2011]; Lin, Doong, and Eisingerich [2021]), illustrating the parallel importance of its *automated* social presence that aligns with engaged theory's *ways of being* (James [2017]). We thus link engaged theory's *ways of acting* to human social presence, and its *ways of being* to automated social presence, which collectively comprise phygital social presence.

This conceptual article makes the following contributions to the social presence, metaverse, and engaged theory literatures. First, extending prior work on human and automated social presence, which are largely viewed as disparate or mutually exclusive theoretical entities to date, phygital social presence recognizes the co-existence (vs. mutual exclusivity) of these concepts in the context of metaverse avatars. The development of phygital social presence is important, given the human *and* automated social presence tenets that characterize avatars' interactions in the metaverse and beyond, which are not fully captured by the extant, disparate concepts of human and automated social presence *individually*. In other words, to holistically capture social presence in the metaverse, it is necessary to collectively examine human and automated social presence, as captured by the proposed integrative concept of phygital social presence. We expect phygital social presence to have applicability in an expansive and growing range of (metaverse) contexts, including work (e.g., online conferences) and leisure metaverses (e.g., video-gaming, metaverse shopping and retailing, live streaming, and online communities), among others (e.g., Zhu and Yi [2024]; Luo et al. [2024]).

Though prior social presence (theory) authors have typically assumed that greater social presence will yield progressively positive communicational or relational outcomes (Short, Williams, and Christie [1976]; Zeng et al. [2024]), our work suggests that other metaverse users may view an avatar's human and/or automated social presence as *either* positive *or* negative, generating more nuanced insight into the concept. Specifically, though other users may enjoy an avatar's human and/or automated social presence (in line with prior insight), they may *also* negatively evaluate one or both of these, extending extant social presence research. While a handful of authors has recognized the potential existence of *negative social presence* (e.g., Sivunen and Nordbäck [2015]; Tu et al. [2012]), in-depth exploration of the concept lags behind, particularly in the metaverse context (Frank et al. [2024]), as therefore undertaken in this research from an engaged theory perspective. Specifically, we suggest that an avatar's positively (negatively) perceived *ways of acting*, *ways of being*, and *ways of relating*, as informed by engaged theory, generate other users' positive (negative) engagement, reflecting a novel addition to the literature.

Second, MacInnis ([2011], p. 141) posits: "Knowledge advancement occurs not only by studying and developing constructs but also by conceptualizing their relationship to other concepts,

often in a nomological network." Correspondingly, we develop a conceptual framework and an associated set of propositions that outline the predicted effects of metaverse avatars' phygital social presence on other users' *engagement*, or their cognitive, emotional, behavioral, and social resource investments in their interactions in the metaverse (Hollebeek, Srivastava, and Chen 2019; Arya, Sethi, and Hollebeek 2024), highlighting the strategic importance of avatars' human *and* social presence on metaverse environments and communities (Oh et al. 2023). Specifically, as consumer engagement has been shown to favorably impact customer metrics, including loyalty, positive (electronic) word-of-mouth, and purchase behavior (So et al. 2024), exploration of the effect of an avatar's phygital social presence on other users' engagement in the metaverse is of pivotal strategic value (Clark, Lages, and Hollebeek 2020).

Overall, our analyses suggest that an avatar's (i) human social presence (*ways of acting*) primarily impacts (i.e., exerts the strongest effect on) other metaverse users' positive or negative behavioral (vs. their cognitive, emotional, or social) engagement (e.g., Roy et al. 2018), while its (ii) automated social presence (*ways of being*) chiefly influences other users' positive or negative cognitive and emotional engagement (e.g., Claffey and Brady 2019). Moreover, an avatar's engaged theory-informed *ways of relating* (James and Steger 2021) are proposed to primarily influence other users' positive or negative social engagement in the metaverse (Yang, Jun, and Ting 2024). From these findings, we derive key implications in Section 4.

We next review key literature on engaged theory and human/automated social presence in Section 2, followed by the proposed conceptual development, including the conceptualization of phygital social presence, its placement in its broader nomological network, and the development of the propositions, as informed by engaged theory, in Section 3. Section 4 concludes by discussing our main findings and by deriving pertinent implications and future research avenues from our work.

2 | Literature Review

2.1 | Engaged Theory

Engaged theory explains or predicts social complexity of specific environments (e.g., in the metaverse; James and Verrest 2015). The theory analyzes individuals and the items, artefacts, and processes they deploy in their social interactions (James and Steger 2021), as grounded in social research (e.g., sociology, anthropology, history, and/or philosophy; Ernston, Lawhon, and Duminy 2014; Garry 2008).

Engaged theory contains four analytical modes (James 2017). First, *ways of being* (also known as *categorical analysis*) address individuals' embodiment or their physical presence, appearance, or shape in time and space (Cudworth and Cudworth 2005; James and Steger 2021). Individuals' embodiment is important, given its capacity to influence their social interactions and/or the outcomes thereof. For example, an avatar's degree of similarity (homophily) to the user (i.e., a particular aspect of its embodiment), has been identified as core in shaping other users' satisfaction or affiliation with the avatar's computer-generated representation (Aljaroodi

et al. 2019; Bozkurt, Gligor, and Hollebeek 2021). Overall, the theory's *ways of being* suggest that individuals' physical appearance is important in shaping the way that others in the social environment view and interact with them.

Second, *ways of acting* (also known as *conjunctural analysis*) examine individuals' actions or activities (Steger and James 2019) and the meaning they have to people, which may differ across contexts (Falchuk, Loeb, and Neff 2018). For example, while avatars in video-gaming contexts may act assertively or aggressively (e.g., to win the game), those in work or shopping metaverses are likely to act in more supportive ways. Avatars' *ways of acting* are likewise expected to generate different effects on other users (e.g., as contingent on their respective personality, insecurities, etc.; Sowmya et al. 2023).

Third, *ways of relating* (also known as *integrational analysis*) examine individuals' social relationships, their complexity, and their desire to express their individuality in the metaverse (Berman and Slobin 2013; Hutson and Ratican 2023). Given the multifaceted nature of human relationships, people may experience key tensions in the way they relate to others. For example, though individuals may on the one hand wish to belong to a specific collective or group, they may on the other desire differentiating themselves from its members.

Finally, *ways of doing* (also known as *empirical analysis*) use detailed descriptions based on observation, recordings, or experimentation, among others, of specific spatial or temporal contexts to understand the world (Magee et al. 2013). In this purely conceptual research, we analyze the dynamics characterizing avatars' phygital social presence in the metaverse (Giang Barrera and Shah 2023), rendering the lesser relevance of engaged theory's *ways of doing* (empirical analysis) and leading us to focus on its first three elements. We next review key literature on human social presence.

2.2 | Human Social Presence

Debate surrounds the conceptualization of (human) *social presence*, which represents a key constituent of social presence theory (Short, Williams, and Christie 1976; Fukuda, Nomura, and Akamatsu 2024; Hollebeek, Clark, and Macky 2020). For example, while Biocca, Harms and Gregg (2001) define the concept as "the moment-by-moment awareness of the co-presence of another sentient [i.e., human, animate, or artificial] being accompanied by a sense of engagement with the other" Gunawardena (1995, p. 151) conceptualizes it as "the degree to which a person is perceived as a 'real person' in mediated communication."

However, despite this definitional dissent, authors tend to agree on several social presence aspects. First, social presence reflects the extent to which a digital communications medium or interface (e.g., a social media platform or virtual world) is able to shape participants' sense of actually or physically being with another (Jin and Youn 2023; Yoganathan et al. 2021). Social presence theory posits that while face-to-face communications optimize social presence (i.e., given the *actual* physical presence of one's interaction partner), technology-mediated communicative media or platforms tend to feature a lower perceived social presence of one's

interaction partner (i.e., given the remoteness characterizing their communication; Baek, Choo, and Lee 2018).

The perceived social presence of one's interaction partner is also likely to vary across technology-mediated communication platforms (Kim and Park 2024). For example, while face-to-face platforms (e.g., Apple's FaceTime) offer highly immediate video communication in real-time, raising interaction partners' sense of human social presence, other platforms (e.g., email) lack such immediacy and real-time communication, lowering their social presence instigating capacity (Dinh and Park 2023; Ghali, Rather, and Khan 2024). In the metaverse, an avatar's human social presence is primarily reflected through its actions or activities, in line with engaged theory's *ways of acting* (James and Verrest 2015), which are controlled or directed by its *human user* (hence, *human* social presence). Conversely, automated social presence is that portion of an avatar's perceived social presence (by other users) that is *computer-generated* (hence, *automated* social presence; Van Doorn et al. 2017; Biocca and Harms 2002), as chiefly reflected by its computer-generated appearance and the character that it emits, as discussed further in the next section.

2.3 | Automated Social Presence

Extending the (human) social presence concept, Van Doorn et al. (2017) suggest that not only humans but also other sentient (e.g., artificially intelligent) agents like service robots are able to generate an individual's sense of their social presence (Čaić et al. 2020; Liao et al. 2024). While the capabilities of early artificial intelligence (AI), including those deploying robotic process automation, remain limited (i.e., by lacking the ability to learn), subsequent AI generations are increasingly able to mimic human behavior, display warmth or empathy, and offer immediate, personalized responses to user queries, among others (Hollebeek et al. 2024; Hollebeek, Sprott, and Brady 2021; Yoganathan et al. 2021), facilitating the development of their automated social presence (Ruiz-Equihua et al. 2023). Likewise, prior studies suggest that technologies featuring high automated social presence tend to boost firm performance (e.g., by raising sales/profitability; Mishra, Ewing, and Cooper 2022; Davenport et al. 2020), exposing their strategic importance.

Van Doorn et al. (2017, p. 44) define *automated social presence* as "the extent to which machines (e.g., robots) make consumers feel that they are in the company of another social entity." For example, robotic waiting staff or receptionists are able to converse with and serve customers, instilling a sense of their social presence in patrons. From an engaged theory perspective, a technology's capacity to generate high *automated* social presence primarily arises from its *computer*-generated attributes and capabilities. In the metaverse, an avatar's computer-generated (i.e., automated) social presence is chiefly observed through its physical embodiment or appearance and/or the character that these emit (Suk and Laine 2023; Yoganathan et al. 2021), unlike its human social presence, which primarily emerges through its actions and activities (see Section 2.2).

3 | Conceptual Development: Phygital Social Presence

In this section, we conceptualize phygital social presence, which assimilates the concepts of human and automated social presence, followed by an assessment of phygital social presence in its broader nomological network informed by engaged theory (e.g., Steger and James 2019; see Figure 1).

3.1 | Phygital Social Presence Conceptualization

As a theoretical hybrid of human and automated social presence, phygital social presence comprises aspects of both these social presence sub-forms. While prior authors have addressed *either* human (e.g., Short, Williams, and Christie 1976) *or* automated social presence (e.g., Yoganathan et al. 2021), or have studied human (vs. automated) social presence as theoretical alternatives or mutually exclusive entities (e.g., by examining the perceived social presence of service employees vs. service robots; Graf et al. 2023), understanding of a social entity's (e.g., an avatar's) *concurrent* human *and* automated social presence lags behind to date. Addressing this gap, we develop the integrative phygital social presence concept, which (using engaged theory) covers an avatar's human- or user-controlled actions (i.e., *human* social presence) *and* its computer-generated appearance and observed character (i.e., *automated* social presence).

Specifically, *human* social presence, or the felt presence of another sentient being (Jin and Youn 2023), emerges predominantly through an avatar's actions and activities (e.g., its fulfillment of role-related tasks, making recommendations, or learning; Roy et al. 2018) that are controlled by its human user (i.e., its *ways of acting*), as shown in Figure 1. Conversely, an avatar's *automated* social presence, or other users' felt presence of an avatar's computer-generated character (Van Doorn et al. 2017) resides in its virtual embodiment (i.e., its appearance, design, or look (e.g., its perceived anthropomorphism or attractiveness; Blut et al. 2021) and the character that these emit (e.g., through the avatar's observed agreeableness, aggression, or credibility that emerge, for instance, through its posture or conversational content; Cheng et al. 2024; Lin, Doong, and Eisingerich 2021; Heerink et al. 2010), reflecting engaged theory's *ways of being* (James and Steger 2021; see Figure 1). While users have a level of input in the design of their avatar (e.g., by being able to personalize it), the avatar's appearance is subject to design specifications, options, and limitations offered by the metaverse platform, reflecting its *automated* nature and rendering the primary relevance of the avatar's *automated* social presence in this context.

Though avatars' *ways of acting* and *ways of being* comprise their phygital social presence, engaged theory also recognizes the role of avatars' *ways of relating* (James and Steger 2021), which are likewise relevant in the metaverse context. Specifically, user-controlled avatars engage in (e.g., collaborative or adversarial) social interactions with others (Hennig-Thurau et al. 2023), illustrating the relevance of *ways of relating* here (Oh et al. 2023). However, while an avatar's *ways of relating* may influence, or may be influenced by, its human and/or
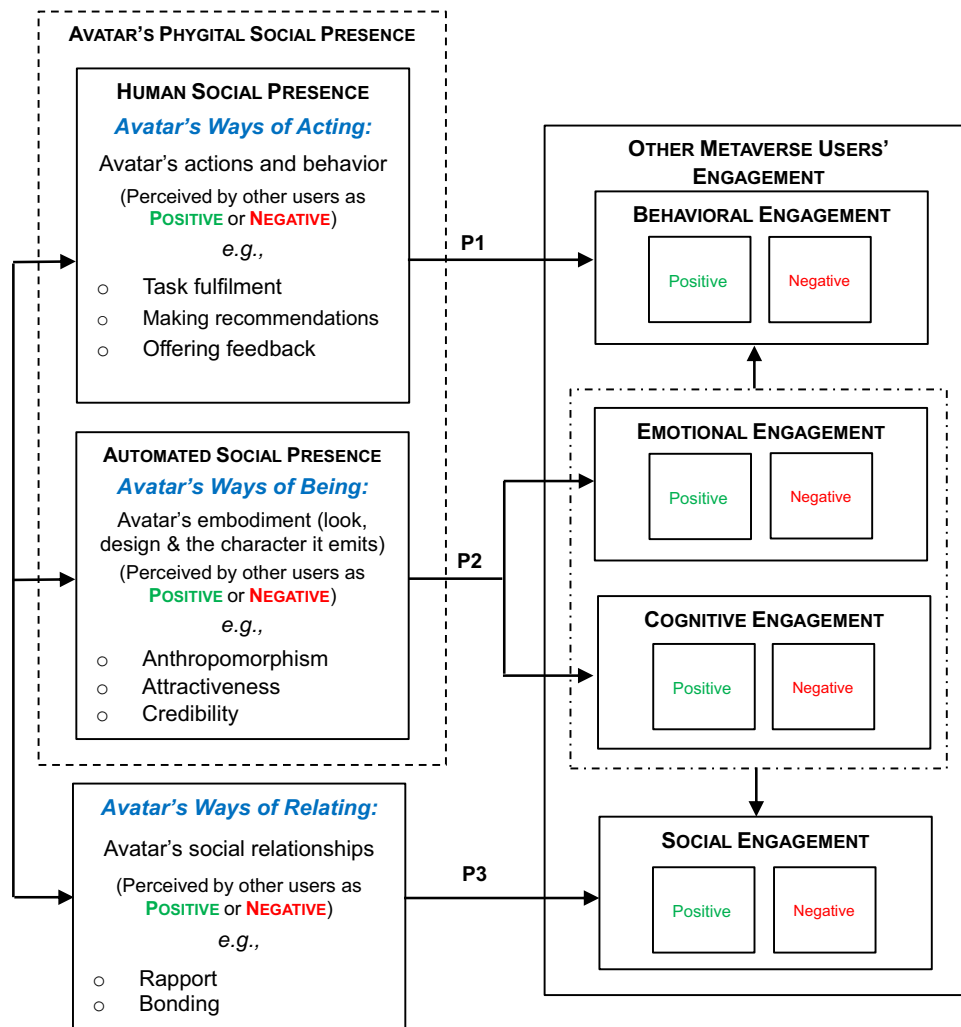
FIGURE 1 | Conceptual Framework. *Note:* Blue font: Engaged theory facets.

automated social presence, the latter do not form a theoretical part of these social presence sub-forms, nor of phygital social presence (see Figure 1).

We conceptualize phygital social presence as the degree to which a metaverse avatar instils the feeling in other users that they are in the company of another social entity, as elicited by the avatar's (a) human social presence (i.e., the actions taken by its human user, in line with engaged theory's "ways of acting"), and (b) automated social presence (i.e., the avatar's appearance, look, and design, and the character that these emit, in line with engaged theory's "ways of being").

3.2 | Conceptual Framework

We next introduce the proposed conceptual framework and its associated propositions that predict that a metaverse avatar's positively or negatively-perceived human and automated social presence, which collectively comprise its phygital social presence, impact other metaverse users' positive or negative *engagement*, or their cognitive, emotional, behavioral, and/or social resource investments in their interactions in the metaverse (Kumar et al. 2019; Arya, Sethi, and Hollebeek 2024). The model thus

suggests that human-controlled avatars may influence the engagement of other users (Hollebeek et al. 2022; Clark, Lages, and Hollebeek 2020), positively or negatively (Bowden et al. 2017). Overall, the framework uniquely links engaged theory's *ways of acting*, *ways of being*, and *ways of relating* to an avatar's positively or negatively perceived human and/or automated social presence in the metaverse, which is in turn envisaged to impact other users' positive or negative engagement (Bowden et al. 2017; Hollebeek et al. 2023a). While an avatar's *ways of acting*, *being*, and *relating* may influence multiple facets of other users' engagement, the propositions address their respective proposed *primary* or strongest effect (Table 1).

3.2.1 | Avatar's Human Social Presence → Other Users' Behavioral Engagement

An avatar's human social presence reflects its felt presence by other metaverse users (Biocca and Harms 2002; Jin and Youn 2023; Li et al. 2024), which transpires primarily through its actions and activities controlled by its human user (e.g., by fulfilling role-related tasks; Dwivedi et al. 2023; Flavián et al. 2024). From an engaged theory perspective, an avatar's human social presence focuses on its *ways of acting* (i.e., actions

TABLE 1 | Definitions of the Framework's Constituent Concepts.

Concept	Definition
Avatar's social presence	
Phygital social presence	The degree to which a metaverse avatar instils the feeling in other users that they are in the company of another social entity, as elicited by the avatar's (a) human social presence (i.e., the actions taken by its user, in line with engaged theory's *ways of acting*), and (b) automated social presence (i.e., the avatar's appearance, look, and design, in line with engaged theory's *ways of being*) (This study).
Human social presence	The feeling of being there with a real person (Oh, Bailenson, and Welch 2018).
Automated social presence	The extent to which machines (e.g., robots) make consumers feel that they are in the company of another social entity (Van Doorn et al. 2017).
Engaged theory tenets	
Avatar's *ways of acting*	An avatar's user-controlled actions or activities (Aldred 2011; Arya, Sethi, and Hollebeek 2024; James and Verrest 2015).
Avatar's *ways of being*	An avatar's computer-generated embodiment or physical appearance in the metaverse (James and Verrest 2015; Lin, Doong, and Eisingerich 2021).
Avatar's *ways of relating*	The ways in which an avatar relates to others in the metaverse (e.g., through its rapport or bonding; Steger and James 2019; Hennig-Thurau et al. 2023).
Other users' metaverse engagement	
Cognitive engagement	The extent of a user's investment of positive or negative cognitive (mental) resources in their metaverse interactions (Hollebeek, Glynn, and Brodie 2014; Hollebeek, Srivastava, and Chen 2019).
Emotional engagement	The extent of a user's investment of positive or negative emotional (affective) resources in their metaverse interactions (Kumar et al. 2019; Hollebeek, Srivastava, and Chen 2019).
Behavioral engagement	The extent of a user's positive or negative investment of time, energy, and effort-based resources in their metaverse interactions (Hollebeek, Glynn, and Brodie 2014; Hollebeek, Srivastava, and Chen 2019).
Social engagement	The extent of a user's investment of positive or negative social, shared, or communal resources in their interactions in the metaverse (Hollebeek, Srivastava, and Chen 2019; Brodie et al. 2013).

and activities; Ernstson, Lawhon, and Duminy 2014; James 2017), as shown in Figure 1.

We propose an avatar's *ways of acting* to primarily influence other metaverse users' positive or negative *behavioral* (rather than their cognitive, emotional, or social) engagement in the metaverse (Bozkurt et al. 2025; Groeger, Moroko, and Hollebeek 2016; Roy et al. 2018). For example, in physics, Newton's influential law posits that action begets re-action (Capecchi 2023), which (despite its primary applicability to the physical sciences) also has relevance in interpersonal interactions and relationships. For example, in the political relations between nations, acts that are perceived as supportive (hostile) are likely to trigger the recipient's favorable (defensive) engagement and responses, impacting the parties' relational stability (Syailendra 2024). We expect these dynamics to *also* apply to micro-level or individual relationships, including avatars' interactions in the metaverse.

When other users perceive an avatar's *ways of acting* as favorable, this is predicted to yield their (more) positive engagement (Heinonen 2018; Hollebeek and Chen 2014), or their positive resource investments in their interactions in the metaverse, as indicated by the green text in the box titled "Human Social Presence" that we propose to exert a primary positive effect on other users' "Behavioral Engagement" (i.e., positive [green] → positive [green] effect for "Human Social Presence" in Figure 1). An avatar's perceived positive human social presence (*ways of acting*) is expected to yield users' positive engagement (e.g., by

collaborating with or helping them, disseminating positive (electronic) word-of-mouth, and/or intending to continue using the metaverse; Bowden et al. 2017; Hollebeek et al. 2023a). Conversely, when other users unfavorably interpret an avatar's human social presence, this is likely to (somewhat) taint their behavioral engagement or turn it more negative, even just temporarily (e.g., by triggering their defensive or less agreeable behavior or by rendering their (electronic) word-of-mouth more negative; Clark, Lages, and Hollebeek 2020; Lievonen, Bowden, and Luoma-Aho 2023), as shown by the negative [red] → negative [red] effect for "Human Social Presence" in Figure 1. We propose:

P1. *An avatar's favorably (unfavorably) perceived human social presence primarily drives the development of other metaverse users' positive (negative) behavioral engagement in their metaverse interactions.*

3.2.2 | Avatar's Automated Social Presence → Other Users' Cognitive and Emotional Engagement

An avatar's automated social presence reflects the extent to which its computer-generated appearance and the character it emits makes other users feel they are in the company of another social entity (Lei and Liu 2024; Van Doorn et al. 2017). Drawing on engaged theory, an avatar's automated social presence predominantly occurs through its *ways of being* (James and Verrest 2015) or its embodiment, including its appearance, design, and look, and the

character that these exude (Lin, Doong, and Eisingerich 2021), as outlined in Section 3.1 and also shown in Figure 1.

We propose avatars' *ways of being* to primarily influence other metaverse users' positive or negative *cognitive* and *emotional* (vs. behavioral or social) engagement in their metaverse interactions (Kumar, Vrontis, and Pallonetto 2024; Claffey and Brady 2019). An avatar's *ways of being* are chiefly observed through its appearance, look, and design, and the character that these emit (Cheng et al. 2024; Heerink et al. 2010), as opposed to its actions that are captured by its *ways of acting* (James and Steger 2021). When other metaverse users interact with an avatar, they are likely to form an impression of its appearance by cognitively assessing its look (e.g., its degree of anthropomorphism, perceived attractiveness, or perceived credibility; Blut et al. 2021; Sestino and D'Angelo 2023). Over time, users may also learn (e.g., about the ways in which an avatar's appearance may impact its behavior), further shaping their cognitive engagement, positively or negatively (Hollebeek et al. 2023a). Users are also likely to evaluate avatars with a degree of favorable or unfavorable affect (e.g., by liking or disliking these; Riva and Wiederhold 2022), leading us to incorporate the notions of *positive* (i.e., favorable assessment, shown in green) and *negative* (i.e., unfavorable assessment, shown in red) in the box titled "Automated Social Presence" in Figure 1.

When other users favorably perceive an avatar's *ways of being*, this is envisaged to yield their positive cognitive and emotional engagement (Dhaoui and Webster 2021), as shown by the green text in the box titled "Automated Social Presence" that is proposed to exert a chief positive effect on other users' "Cognitive and Emotional Engagement" (i.e., positive [green] → positive [green] effect for "Automated Social Presence" in Figure 1). Specifically, we anticipate an avatar's perceived favorable automated social presence (*ways of being*) to generate other users' positive cognitive and emotional engagement (e.g., by being motivated to cooperate with the avatar or by viewing it as an exemplar for (re)designing their own avatar; Lin, Doong, and Eisingerich 2021). By contrast, other users who form an unfavorable impression of an avatar's automated social presence (*ways of being*) are predicted to experience negative cognitive and emotional engagement (e.g., through avatar-related privacy concerns or negative assessments of it looking *too human* (c.f., the *uncanny valley* concept); Cheng et al. 2023; Gutuleac et al. 2024), as indicated by the negative [red] → negative [red] effect for Automated Social Presence in Figure 1. We postulate:

P2. *An avatar's favorably (unfavorably) perceived automated social presence primarily drives the development of other metaverse users' positive (negative) cognitive and emotional engagement in their metaverse interactions.*

3.2.3 | Avatar's Ways of Relating → Other Users' Social Engagement

While engaged theory's third component, *ways of relating* (e.g., James 2017), does not form a theoretical part of phygital social presence, we envisage it to influence avatars' human and automated social presence (Gooch and Watts 2015), as also shown in Figure 1 and discussed further below.

An avatar's *ways of relating* refer to its capacity to form social relationships in the metaverse, bond with others, develop a sense of identification (e.g., to a group or community), and to differentiate the self from others (e.g., by pursuing one's sense of individuality; Hutson and Ratican 2023; Steger and James 2019). Other users may favorably interpret an avatar's *ways of relating*, which we predict to positively impact their *social* engagement, in particular (Yang, Jun, and Ting 2024), given the shared social or communal nature of these concepts.

For example, users who favorably interpret an avatar's *ways of relating* will be more likely to commit to having an ongoing relationship with them in the metaverse (Khan et al. 2020), as illustrated by the positive [green] → positive [green] effect in the box titled "Avatar's Ways of Relating" in Figure 1. However, we anticipate that users who unfavorably interpret an avatar's *ways of relating* will experience more negative social engagement. For example, individuals who dislike a specific (e.g., salesperson) avatar may avoid them (Malodia et al. 2022), seek an alternative representative, and/or distribute negative (electronic) word-of-mouth about them, as the negative [red] → negative [red] effect in the box titled "Avatar's Ways of Relating" in Figure 1 illustrates. We theorize:

P3. *An avatar's favorably (unfavorably) perceived ways of relating primarily drive the development of other metaverse users' positive (negative) social engagement in their metaverse interactions.*

4 | Discussion, Implications, and Limitations

4.1 | Discussion and Theoretical Implications

Drawing on and extending the concepts of human (e.g., Dinh and Park 2023; Short, Williams, and Christie 1976) and automated social presence (Lei and Liu 2024; Van Doorn et al. 2017), we developed the hybrid concept of avatars' *phygital social presence* in the metaverse, thus extending the work of prior authors addressing *phygital* dynamics in marketing (e.g., Batat 2024; Mele and Russo-Spena 2022) and previous social presence research (e.g., Hollebeek, Sprott, and Brady 2021). While prior studies have tended to either explore human or automated social presence in isolation or have viewed them as mutually exclusive concepts (Liao et al. 2024; Van Doorn et al. 2017), we suggest that an avatar's social presence in the metaverse comprises aspects of *both* human *and* automated social presence, which collectively comprise its phygital social presence. Drawing on engaged theory (e.g., James and Steger 2021), we propose that an avatar's (a) human social presence is reflected in its *ways of acting* (i.e., the actions taken by its human user; Dwivedi et al. 2023), and (b) automated social presence is reflected through its *ways of being* (e.g., its physical appearance, look, design, and the character that these emit; e.g., Lin, Doong, and Eisingerich 2021).

Our analyses raise a wealth of implications for further theory development. First, prior social presence (theory) research largely rests on the assumption that greater social presence generates increasingly positive outcomes (e.g., by boosting other

users' positive engagement with or perceived closeness to the avatar; Hollebeek, Sprott, and Brady 2021; Zeng et al. 2024). However, our work indicates that other users may view an avatar's human and/or automated social presence as *either* positive *or* negative (see Figure 1), thus extending the work of authors including Frank et al. (2024), who identify a customer-perceived negative social presence effect of employees in the context of making embarrassing (condom) purchases. Specifically, by systematically exploring avatars' phygital social presence from an engaged theory perspective, our analyses further advance emerging insight into the positively *or* negatively valenced nature of social presence. Our findings yield pertinent implications for further theory development. Sample questions include: What is the relative importance of an avatar's positive or negative human (vs. automated) social presence in generating other users' (un)favorable perceptions or evaluations of them? What factors are conducive to aligning avatars' human and automated social presence (vs. what factors tend to reduce or prohibit their alignment)?

Second, we developed a conceptual model and an associated set of propositions that assess the theoretical association of phygital social presence with other metaverse users' positive and negative engagement (e.g., Heinonen 2018; Hollebeek, Glynn, and Brodie 2014; Lievonen, Bowden, and Luoma-Aho 2023). P1 proposes that an avatar's favorably (unfavorably) perceived *human* social presence chiefly influences other metaverse users' positive (negative) *behavioral* engagement, respectively. i.e., if an avatar's actions (taken by its human user), which are referred to as the avatar's *ways of acting* in engaged theory (James and Steger 2021), are viewed as favorable (unfavorable), the behavioral engagement of other users who interact with the avatar is expected to also turn more positive (negative).

Therefore, users' social interactions in the metaverse (through their avatars) have the capacity to influence the valence of other users' behavioral engagement, positively or negatively (Bowden et al. 2017; Clark, Lages, and Hollebeek 2020), raising important issues for further theory development. For example, to what extent does an avatar's favorably (unfavorably) perceived human social presence impact other users' positive or negative behavioral engagement? What aspects of positive (vs. negative) human social presence are particularly conducive to shaping other users' positive (vs. negative) behavioral engagement in the metaverse? How can users' positive behavioral engagement be maintained, while minimizing negative behavioral engagement through users' metaverse journeys (Hollebeek et al. 2023b)?

P2 suggests that an avatar's favorably (unfavorably) perceived *automated* social presence chiefly triggers the development of other metaverse users' *cognitive* and *emotional* engagement. Therefore, an avatar's engaged theory-informed *ways of being* are expected to predominantly impact other users' cognitive and emotional engagement (e.g., Claffey and Brady 2019), at least initially (e.g., by them assessing the avatar's appearance and forming an impression of its attractiveness; Cheng et al. 2024), influencing its perceived trustworthiness (Machneva, Evans, and Stavrova 2022). This proposition likewise raises significant issues for further theory development. For example, to what extent and how does an avatar's favorably (unfavorably) perceived automated social presence affect other users' cognitive (vs. emotional) engagement in particular

contexts? To what degree may other users' cognitive and emotional engagement influence their behavioral and/or social engagement in the metaverse and how are these processes best managed?

Finally, P3 sets forth that an avatar's favorably (unfavorably) perceived *ways of relating*, as informed by engaged theory (James 2017), primarily drive the development of other users' positive (negative) *social* engagement. i.e., if avatars relate to and interact with others in the metaverse in perceived agreeable, constructive, or supportive (vs. adversarial, harmful, or opportunist) ways, this will not only raise their own positive engagement, but also that of the other users it interacts with (Clark, Lages, and Hollebeek 2020), suggesting the metaverse as a prime context for the transmission of social influence (Al-Kfairy et al. 2024; Kumar and Shankar 2024). This finding also yields pertinent issues for theory development, including: What *ways of relating* are particularly conducive for an avatar in triggering other users' positive (vs. negative) social engagement? How can an avatar's perceived unfavorable *ways of relating* be turned around to cultivate other users' more positive engagement?

4.2 | Managerial Implications

This work also raises notable implications for metaverse developers and managers. First, our analyses raise practitioners' awareness of the joint importance of metaverse avatars' human *and* automated social presence, which collectively comprise their phygital social presence. We thus recommend managers to concurrently and synergistically develop and leverage both these social presence sub-forms to optimize avatars' phygital social presence, which we suggest impacts other metaverse users' engagement (e.g., their purchase behavior; Payal, Sharma, and Dwivedi 2024).

To boost an avatar's phygital social presence, its *ways of acting* (i.e., its actions) and *ways of being* (i.e., its appearance and observed character) should be designed for consistency with one another, akin to the requirement for communicational synergy in integrated marketing communications (Finne and Grönroos 2017). To this end, developers are advised to offer users a range of personalizable avatar options to suit their needs (Ribeiro et al. 2024), which may be offered in specific attribute templates, packages, scripts, or guidelines that ensure the avatar's synergistic *ways of acting* and *ways of being*. This could see an emerging *Proteus effect* (Yildiz et al. 2024), in which metaverse users change their *ways of acting* based on their awareness of other users' knowledge of their avatar's *ways of being*.

The propositions also raise key implications for managers, as illustrated in Table 2. For example, P1 posits that an avatar's favorably (unfavorably) perceived human social presence chiefly stimulates the development of other users' positive (negative) behavioral engagement, respectively. Based on this proposition, managers are advised to predominantly nurture avatars' favorably (vs. unfavorably) perceived human social presence (*ways of acting*) in the metaverse, *given* its predicted beneficial effect on other users' positive behavioral engagement (Hollebeek, Glynn, and Brodie 2014). To this end, they may

TABLE 2 | Managerial Implications.

Proposition	Sample managerial implications
P1: *An avatar's favorably (unfavorably) perceived human social presence primarily drives the development of other metaverse users' positive (negative) behavioral engagement in their metaverse interactions.*	o Managers are advised to cultivate the positively-perceived human social presence of their users' avatars (while minimizing their negatively-perceived human social presence), given its expected primary positive (negative) effect on their *behavioral* engagement, respectively (Clark, Lages, and Hollebeek (2020); Heinonen (2018)). o To this end, we recommend practitioners to shape and monitor their metaverse users' positively-perceived human social presence, including by cultivating the perceived kind, empathetic, responsive, interesting, and stimulating actions and activities of their avatars (e.g., Hollebeek and Macky 2019) and/or by educating users to utilize their avatars to foster equity and inclusion (Grewal, Kopalle, and Hulland (2024)).
P2: *An avatar's favorably (unfavorably) perceived automated social presence primarily drives the development of other metaverse users' positive (negative) cognitive and emotional engagement in their metaverse interactions.*	o We advise practitioners to nurture the positively-perceived automated social presence of their users' avatars (while minimizing their negatively-perceived automated social presence), given its expected primary positive (negative) effect on their *cognitive* and *emotional* engagement, respectively (e.g., Claffey and Brady (2019)). o To this end, we recommend managers to shape and monitor metaverse users' positively-perceived automated social presence by encouraging them to choose widely favorably (vs. unfavorably)-viewed physical avatar attributes (i.e., in terms of the avatar's look, appearance) by other users, including by providing a range of stylish, smart avatar design options, scripts, templates, and/or guidelines (Lin, Doong, and Eisingerich (2021)).
P3: *An avatar's favorably (unfavorably) perceived ways of relating primarily drive the development of other metaverse users' positive (negative) social engagement in their metaverse interactions.*	o Managers are also advised to shape and monitor their users' avatars' positively-perceived *ways of relating* (James and Steger 2021), given the expected primary effect of these on other users' positive *social* engagement (James (2017)). o To this end, we advise managers to monitor and shape their users' avatars' favorably-perceived *ways of relating*, including by stimulating the alignment of their avatars' actions with community standards and norms or by facilitating the development of rapport and bonded, close interactions and relationships in metaverse environments.

require users to learn about and agree to the metaverse's community standards (e.g., prior to using it), commit to adhering to these standards (e.g., by rewarding their positive actions, such as by helping others; Roy et al. 2018), by penalizing or disincentivizing their undesirable or unacceptable behavior (e.g., by temporarily banning those violating particular standards from specific metaverse activities or the metaverse altogether), and/or by establishing an explicit user code of conduct (e.g., Dia 2023).

Finally, our analyses raise pertinent implications for policymakers. Specifically, the findings suggest that other users' positive (negative) perceptions of an avatar's human and automated social presence will yield their positively (negatively)-valenced engagement in the metaverse (Bowden et al. 2017), respectively. Strategically, the development of users' positive (vs. negative) engagement is paramount (Heinonen 2018; Lievonen, Bowden, and Luoma-Aho 2023), given its documented beneficial effect on desirable customer metrics like loyalty or positive word-of-mouth (Brodie et al. 2011; Ferdous et al. 2024). To this end, we recommend officials to make policy that either nudges or regulates metaverse users toward developing favorable (vs. unfavorable) perceptions of other avatars' human and automated social presence, given their respective predicted positive effect on other users' engagement. For example, legislation that penalizes cyber-bullying or cyber-stalking may be used to improve specific users' negative *ways of acting* in these environments (e.g., Bryson and Fissel 2024).

4.3 | Limitations and Further Research

Despite its contribution, this research also has specific limitations that offer additional opportunities for future investigation. First, the purely conceptual nature of our analyses (e.g., P1–P3) raises a need for their future empirical testing and validation. For example, the propositions may be tested in quantitative research designs (e.g., through structural equation models or experiments testing the effects of phygital social presence, e.g., for specific metaverse users). Moreover, exploring the evolution of the theorized dynamics over time may (through longitudinal inquiry) is also of interest (So et al. 2024).

Second, while we deployed engaged theory to conceptualize and explore avatars' phygital social presence in the metaverse, other theoretical perspectives may also be used to further investigate this concept, including social identity theory or social conflict theory, among others (e.g., Teng, Dennis, and Dennis 2023). For example, social conflict theory suggests that individuals tend to interact based on conflict (vs. consensus; Jia et al. 2011), which has particular relevance in metaverse environments characterized by conflict (e.g., video-games like Fortnite that are designed to have a winner). Therefore, further exploration of avatars' human and automated social presence using social conflict theory is expected to yield novel insight. Moreover, while we explored the association of phygital social presence and other users' positive or negative cognitive, emotional, behavioral, and social engagement in the

metaverse, future researchers may explore phygital social presence in other or broader nomological networks (MacInnis 2011) featuring unique sets of phygital social presence antecedents (e.g., users' involvement with the metaverse or their need for closeness in their metaverse interactions; Huang, Wei, and Xiang 2024), additional consequences (e.g., by examining the effect of phygital social presence on user stickiness or their social influence exerted or received in the metaverse; e.g., So et al. 2024), and boundary conditions or moderators. For example, researchers may explore phygital social presence-based differences in collaborative (vs. competitive) or more (vs. less) relational metaverse environments (Ball 2022), or the effect of (e.g., individual, stimulus-based, or situational) factors in shaping the positively or negatively-perceived effect of avatars' *ways of acting*, *ways of being*, and *ways of relating* on other users' positive or negative engagement, respectively.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The authors have nothing to report.

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