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Avatars are (sometimes) people too: Linguistic indicators of parasocial and social ties in player–avatar relationships

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Abstract

As principal links between players and many gameworlds, avatars are of central importance in understanding human behavior and communication in play. In particular, the connection between player and avatar is understood as influencing a range of cognitive, affective, and behavioral play phenomena. Divergent approaches examine this connection from both parasocial (one-way, non-dialectical) and social (two-way, dialectical) perspectives. This study examined how player–avatar connections may be better understood by integrating an existing parasocial approach (character attachment [CA]) with a social approach (player–avatar relationships [PARs]). A quantitative linguistic analysis of massively multiplayer online game (MMO) player interviews revealed statistically robust associations among language patterns, dimensions of CA, and PAR types. Validating and extending prior research, findings highlight the importance of self-differentiation and anthropomorphization in suspending disbelief so that the avatar may be taken as a fully social agent.

Keywords

Anthropomorphism, avatar, character attachment, massively multiplayer online game, parasocial, relationship, social, suspension of disbelief, video game

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Humans have relationships with objects they encounter in everyday life, and these objects often take on unique agencies (Latour, 1992). Sometimes, object-agencies are similar to human agencies, as when the Siri iPhone application responds to voice commands (Lee and Kwon, 2013). In the case of digital games, it may be that human-like agencies of avatars potentially allow for rich player–avatar relationships (PARs).

Avatars are prominent digital objects that humans engage in digital discourse. Avatars are interactive, graphic, and social representations of users in digital spaces (Meadows, 2008), from screen names or social network profile photographs to complex three-dimensional bodies in video games. Because video game avatars are principal links between human players and gameworld characters, spaces, and tasks (Taylor, 2002), the connection between players and their own avatars is important in understanding human behavior and communication in these spaces. Recent scholarship has examined this connection from a range of perspectives, suggesting them to be a function of identification (Yee et al., 2009), merging psyches (Lewis et al., 2008), social presence (De Kort et al., 2007), self-presence (Ratan, 2012), performance (Galanxhi and Nah, 2007), functionality (Castronova, 2005), or emotion and agency (Banks, 2013).

In understanding the potential for meaningful relationships between players and their avatars, most common is a parasocial interaction perspective (PSI; Horton and Wohl, 1956) in which the player–avatar connection is one-way, non-dialectical, unilaterally controlled and exists in the user's mind. In other words, players act, think, and feel *toward* avatars. Exploratory scholarship challenges the assumption that all player–avatar connections are parasocial, since games and avatars increasingly take on independent agencies and act toward players, revealing relations that in many ways mirror human–human social relationships (Banks, 2013)—two-way, dialectical, mutually influenced connections. From this theoretical tension, the aim of this study is to explore, through linguistic word-count analysis, how dimensions of both parasocial interaction and social relationships may intersect in players' stories about their avatars.

Player-avatar relations

Inquiries into humans' connections with technologies engender a range of characterizations. Technologies are seen as systemic actors (Latour, 1992), continuously constituted realities (Introna and Ilharco, 2003), and negotiations of realities (Baudrillard, 1983). Through these lenses, technologies are sometimes liberating and democratizing (Turkle, 1995) and sometimes tyrannical, dystopic, and dehumanizing (Carr, 2010). Much of our understanding of human–technology relations is rooted in how and why technologies are taken up as tools (e.g. Rogers, 1962).

While such approaches focus on how humans act toward technologies, other perspectives highlight how technologies act toward humans, inducing emotion or shaping experiences of the world. Object-oriented ontologies (Harman, 2002) posit that all objects—technologies, cultures, ideas, people, and institutions—are separate, equal, and related to each other in different but relevant ways. It is possible that because humans cannot understand how objects exist independently (Bogost, 2012), we treat technologies as we treat humans, applying social rules and expectations to technologies (e.g. gender and race stereotypes, politeness, and reciprocity) and engaging them based on those expectations (Reeves and Nass, 1996).

Integrating these perspectives on human–technology relations (from user–tool to social interactions) opens the potential for avatars to be distinct social actors—entities "capable of changing their environment and reinforcing their autonomy" (Touraine, 2000: 902). To this end, we examine for variance in language related to parasocial character attachment (CA, a psychological merging of player and avatar; Lewis et al., 2008) as well as social PARs (a psychological differentiation; Banks, 2013). Although other characterizations of player–avatar connections exist—such as identification (Klimmt et al., 2009) and resource considerations (Castronova, 2005)—they are theoretically subsumed in CA and PAR.

CA as parasocial interaction

The classic PSI paradigm suggests that audiences identify with noninteractive media characters, developing sense of kinship and friendship with on-screen personas (Horton and Wohl, 1956). CA (Lewis et al., 2008) extends this notion to digital games, accounting for the ways that interactivity influences the connection between the audience (i.e. player) and the on-screen character (i.e. avatar). When players develop attachments to their video game avatars, these perceived relationships are reinforced because players actively induce characters' actions and suffer the consequences, rather than being passive witnesses as with movies or television (Lewis et al., 2008). Research suggests that players may thus experience a "temporal shift of [their] self-perceptions" (Klimmt et al., 2009: 351). The connection between player and avatar is a psychologically merged monad (a single, cohesive actor), and strongly merged players experience greater agency in gameplay.

CA consists of four dimensions: (a) identification: seeing oneself as similar to or the same as the game character, (b) control: feeling a strong sense of governance over the avatar's actions, (c) suspension of disbelief (SoD): accepting the virtual world as real, and (d) responsibility: feeling obligation to ensure the avatar's well-being. Dimensions of CA are useful in explaining playstyle motivations, including tendencies toward prosocial (helping, cooperating) or antisocial (trolling, playing alone) playstyles (Bowman et al., 2012), and higher senses of gameplay enjoyment (hedonic/pleasurable response) and appreciation (eudaimonic/introspective response) (Bowman et al., 2013; cf. Oliver and Raney, 2011). Overall, the CA perspective considers the closest connection between player and avatar to be unification, in which the player and avatar are indistinguishable, occupying the same in-game space.

PARs as social relationships

Broadly, social relationships are valenced connections between two people through which each party influences or acts upon the other (Berscheid and Peplau, 1983). Substituting the exclusive "people" in this definition with the more inclusive "actors" (entities that function independently, with unique potentials to act; see Latour, 1992), player–avatar connections may fulfill criteria for fully social relationships. Through interactive information exchanges (e.g. players' keyboard inputs, avatars' verbal/gestural/functional responses), each actor has the potential to influence the other, resulting in perceived or actual emotional responses (von Scheve, 2014). In contrast to CA, the PAR approach takes the connection as dyadic and dialectical.

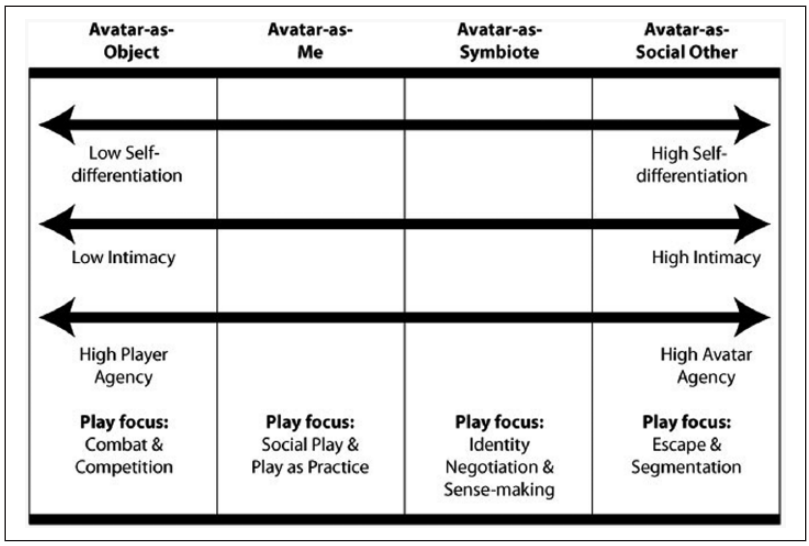

Figure 1. Typology of player–avatar relationship (PAR) sociality.
Source: Adapted from Banks (2013).

By examining PARs from this perspective, Banks (2013) found three relationship features distinguishing how player–avatar dyads differently emerge. First, relationships vary in degrees of self-differentiation or the extent to which the player and avatar enact distinct identities (Bowen, 1978)—some avatars are extensions or representations of players, and others are seen as independent entities that have separate lives in the gameworld. Second, relationships vary in levels of emotional intimacy or perceptions of closeness giving rise to feelings of mutual understanding and care (Sinclair and Dowdy, 2005)—some relations are void of emotion, and others feature intimate ties through senses of mutual appreciation and shared experience. Finally, relationships vary in perceived agencies of each actor—that is, how players and/or avatars are experienced as morally or functionally "in charge" of gameplay activities (note that this is distinct from the notion of an "agent" as an algorithm-driven game character). Sometimes, players feel entirely in control, and sometimes avatars are perceived as driving gameplay through their personalities, abilities, or behaviors. Experiencing avatars as gameplay authorities requires seeing them as having authentic histories and presences in the gameworld narrative, qualities imbued by the player through a character narrative or by the game design through encoded postures or lore.

Heightened self-differentiation, emotional intimacy, and perceived avatar agency tend to co-occur. When these features are qualitatively stronger and more frequent in players' stories about avatars, the more closely PARs mirror human social relationships. Furthermore, relationships with different degrees of sociality tend to coincide with different gameplay practices: combat and competition, social play and rituals identity negotiation, and sense-making, escape, and segmenting off the digital space. These play emphases offer demarcation points along the sociality continuum such that four PAR types are evident: avatar-as-object, avatar-as-Me, avatar-as-symbiote, and avatar-as-other (see Figure 1).

At one extreme, some relationships are purely functional and exhibit no sense of sociality: avatar-as-object relationships feature low self-differentiation, low emotional intimacy, high player agency, and focus on combat and competition. At the other extreme, some relationships are highly social and resemble close human relationships: avatar-as-other relationships feature high self-differentiation, high emotional intimacy, high avatar agency, and a focus on escaping to the gameworld and protecting it as a distinct, real space. In the middle of this spectrum, player–avatar connections exhibit limited sociality: avatar-as-Me and avatar-as-Symbiote relationships feature moderate self-differentiation, moderate emotional intimacy, mixed agencies, and a range of attentions to social play, gaming rituals, and identity expression and negotiation.

Language and the nature of player-avatar relations

The current study is an effort to unpack parasociality and sociality in how one half of the dyad (the player) phenomenally experiences the other (the avatar). Personal narratives—such as responses to interview questions—shed light on how people experience life events by serving as symbolic representations of those events (Gergen and Gergen, 1983). Furthermore, the architecture of such narratives is a construction of and a claim to a particular identity (Linde, 1986), which is important in understanding the dynamics of both psychological merging (identifying) and differentiation (othering) of two social actors. In particular, stories and the words that constitute them are tools to make sense of lived experience (Webster and Mertova, 2007) such that understanding patterns in how those tools are used offers clues as to the latent nature of that experience. In this vein, this study evaluates patterns in players' language for clues to the associations among social and parasocial features of player–avatar connections.

If the social PAR typology developed through interpretive analysis is objectively valid, there should be measurable variations in player language aligning with PAR dimensions. For example, players in highly social avatar-as-other relationships should feature more third-person pronouns as an indicator of social self-differentiation (i.e. the avatar is "she" rather than "it"); conversely, players in non-social avatar-as-object relationships should feature more first-person and utilitarian language (i.e. the player uses the avatar as a tool). Appendix 1 details all anticipated language variations. Toward validating the PAR typology, we predict:

H1. Player language will differ as a function of PAR type.

Furthermore, although CA is defined as psychological merging and PAR as social differentiation, some of their factors are theoretically related. SoD and care/responsibility (CA) are copacetic with emotional intimacy (PAR). Conversely, identification (CA) and differentiation (PAR) are divergent, as are player control (CA) and avatar agency (PAR). Indeed, an exploratory investigation (Banks and Bowman, 2013) revealed empirical support for those associations, with the exception of a curvilinear (rather than negative) association between sociality and identification (see Figure 2). In other words, when engaging avatars as distinct social actors, it may be that players suspend disbelief and perceive their avatars as materially real, feeling responsible for their well-being.

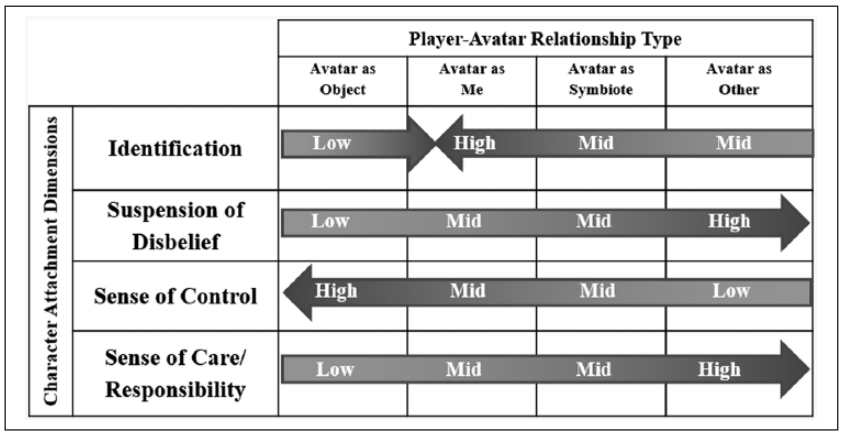

Figure 2. Relationship between PAR types/sociality and dimensions of character attachment.
Source: Adapted from Banks and Bowman (2013).
PAR: player–avatar relationship.

Based on these findings, we suggest that although PAR dimensions are useful in understanding the social factors of player–avatar associations, the fact that CA and PAR are theoretically divergent yet encompass some convergent dimensions suggests that there is explanatory variance not accounted for in a single approach. In particular, PAR does not account for game-specific variables, such as perceived realism and narrative involvement (SoD, from CA) and ludic experiences (sense of control, from CA); conversely, CA does not account for social variables (differentiation and emotional intensity, from PAR). These tensions necessitate examination of how dimensions of psychological merging and social differentiation may align, with the potential of integrating them into a more comprehensive and explanatory model. Thus, we ask the following:

RQ1. Can variations in language used to describe PAR types be attributed to dimensions of CA?

Method

To explore how parasocial interaction and social relationship features manifest in player language, we reanalyzed the transcripts of in-depth interviews with 25 players of the massively multiplayer online (MMO) game World of Warcraft (WoW), evaluating language variations using word-count analysis software.

Recruitment and participants

Participants were recruited through a combination of Facebook ads and group posts, forum posts, and invitations to WoW players known to the researchers. Players were invited to visit a website with informed consent information and a screening survey with items measuring demographics, gameplay habits, and thoughts, feelings, and memories

regarding a favorite WoW avatar. Compensation for completing the survey was an entry into a drawing for 1 year of WoW game time (US$180 value). Of 404 recruitment survey responses, 25 players were selected; these players had been preclassified in prior thematic analysis work (Banks, 2013) as engaging in one of the four different PAR types: avatar-as-object ($n=7$), avatar-as-Me ($n=9$), avatar-as-symbiote ($n=5$), and avatar-as-other ($n=4$). The prior analysis was an interpretive and iterative process of identifying and integrating themes in players' accounts of their avatars, within and across cases. Although the same data are analyzed in this study, the previous investigation focused on broad narrated themes; this study sought, in part, to validate those interpretive findings by subjectively analyzing discrete word frequencies. Interview participants included a broad spectrum of individuals, with 12 players identifying as male, 9 as female, and 4 as genderqueer. In all, 18 identified as Caucasian. Ages ranged from 19 to 49 years, with an average of 29.68 years (standard deviation [*SD*] = 7.64 years).

Data collection

Two in-depth interviews—one traditional and semi-structured and the other incorporating gameplay and largely unstructured—were conducted with each of the 25 participants. Each was invited via email to participate and to complete a web-based informed consent review and endorsement.

The first interview was conducted via Skype through voice only or voice and webcam, depending on the participant's preference. The semi-structured question guide began with players' undirected thoughts and feelings about their avatars (e.g. "In your survey you mentioned that <avatar name> is your favorite avatar. Please tell me about <avatar name>.") and then moving "outward" from the dyad with questions about the PAR in relation to play activities, social groups, environments, cultures, and technologies, and how it is situated across digital and physical spaces. For example, questions included the following: "Is there something that <avatar name> always has in inventory?" "Does <avatar name> come out in your everyday life outside of the game?" and "When you think about <avatar name>, where do you picture him/her/it/class/name?" (with question language adjusted to match the player's own terminology). The second interview combined a largely unstructured Skype conversation with cooperative gameplay led by the participant (e.g. completing quests, participating in player versus player (PvP) battlegrounds, and visiting roleplay locations).This second interview began with a very open question in order to engage players in familiar activities: "What would you like to do today?" This approach was taken to elicit stories that might not have been salient outside of active gameplay. The interviews lasted 45–120 minutes each, depending on participant comfort and openness. The sessions were audio recorded using a Skype plug-in (approximately 70 hours) and professionally transcribed (approximately 1500 pages).

Data analysis

To explore how language varied by PAR type and whether those variations may be attributed to dimensions of CA, interview transcripts were analyzed for language patterns using the Linguistic Inquiry and Word Count (LIWC) application (Pennebaker et al., 2007). Of 64 possible language categories native to LIWC (e.g. words connoting positive

affect or cognitive processes), 43 categories were analyzed as theoretically related to dimensions of CA or of PAR (see Appendix 1). Transcripts were aggregated according to each player's PAR type as identified in a prior study (Banks, 2013) and were then subjected to the LIWC analysis. Univariate analysis of variance (ANOVA) was conducted separately for each of the 43 language categories (dependent variable) to examine for potential frequency variance across each of the four PAR types (independent variable). Given the small sample size and the numerous tests performed, only tests with a "large" effect size Cohen's *f* above .40 were considered meaningful (equal to an η^2 of .14; Cohen, 1992). For interpretation of observed mean differences within each ANOVA, we conducted pairwise comparisons between the highest and lowest two means, and only those pairwise comparisons with a "moderate" effect size Cohen's *d* of .50 or above (equal to an η^2 of .06; Cohen, 1992) were retained for analysis. Focusing on observed effect size supported conservative conclusions without risking Type II errors due to low statistical power as a function of small sample size.

After identifying language patterns for each PAR type, the word lists for each category were then cross-referenced with characterizations of PAR types (Banks, 2013) and theoretical and empirical foundations of CA dimensions (Bowman et al., 2012, 2013; Lewis et al., 2008). Then, language patterns were interpreted and mapped to an intersection between CA dimension and PAR type. This analysis yielded meaningful, interpretable, statistically robust patterns indicating intersections of parasocial CA dimensions and social PAR types.

Results

LIWC analysis reports frequencies of categorized words as instances per 100 words of analyzed text. These reports were analyzed to see if player language differed as a function of PAR type (H1) and if these differences could be attributed to dimensions of CA (RQ1), with frequencies reported in Appendix 1. Note that we did not interpret the context of the language used (this was done in prior interpretive work; Banks and Bowman, 2013), but evaluated decontextualized frequencies to objectively validate the initial interpretive analysis.

Variance in language by PAR type

Univariate ANOVA revealed variance in 17 different language categories across PAR types with an effect size greater than .40 (Table 1); within each of these pairwise comparisons, the difference in means between the highest and lowest two means (depending on the largest absolute difference) had an effect size larger than Cohen's $d = 0.50$. Below, we discuss language patterns within each of the four PAR types.

Language patterns in avatar-as-object relationships. Player language for avatar-as-object relationships is marked by the absence of high-frequency language categories. Rather, characteristic reduced frequencies suggest that these players considered sexuality, motion, and family as less relevant to their avatars, compared to other players. Language about avatar-as-object relationships showed a higher frequency of "filler" words (*I mean, you know, like*) as well as greatest variance in the use of these words ($M = 1.10$, $SD = 0.55$,

Table 1. Language category means as a function of PAR types.

	Avatar-as-object	Avatar-as-Me	Avatar-as-symbiote	Avatar-as-other	Comparison *M* difference	Observed effect size	
	M (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)		(Cohen's *f*)	(Cohen's *d*)[a]
Third-person singular	0.95 (0.58)	1.05 (0.56)	**1.30 (0.64)**	**1.66 (0.67)**	0.36	0.151 (L)	0.54 (M)
Third-person plural	**0.89 (0.14)**	**1.12 (0.13)**	0.78 (0.24)	0.88 (0.24)	0.23	0.351 (L)	0.83 (L)
Impersonal pronouns	8.69 (0.73)	**8.20 (0.96)**	**7.56 (0.40)**	8.86 (0.70)	0.64	0.262 (L)	0.87 (L)
Numbers	**1.09 (0.23)**	1.00 (0.17)	**1.20 (0.15)**	0.97 (0.10)	0.11	0.199 (L)	0.57 (M)
Social processes	7.89 (0.94)	**8.59 (1.67)**	8.47 (1.62)	**10.07 (1.88)**	1.48	0.181 (L)	0.83 (L)
Family	**0.03 (0.02)**	0.12 (0.11)	**0.12 (0.15)**	0.17 (0.12)	0.09	0.178 (L)	1.14 (L)
Humans	**0.87 (0.17)**	0.88 (0.23)	**0.70 (0.22)**	1.00 (0.21)	0.17	0.166 (L)	0.86 (L)
Anxiety	0.13 (0.03)	0.12 (0.04)	**0.13 (0.07)**	**0.20 (0.06)**	0.07	0.221 (L)	1.07 (L)
Causation	2.02 (0.25)	**1.86 (0.29)**	**1.72 (0.26)**	2.04 (0.22)	0.14	0.175 (L)	0.51 (M)
Tentative	3.88 (0.86)	**3.56 (0.74)**	**2.99 (0.61)**	4.00 (0.82)	0.57	0.178 (L)	0.84 (L)
Hearing	0.38 (0.07)	**0.49 (0.15)**	**0.39 (0.08)**	0.53 (0.11)	0.10	0.237 (L)	0.83 (L)
Sexual	**0.08 (0.03)**	0.15 (0.12)	0.17 (0.07)	**0.13 (0.09)**	0.05	0.148 (L)	0.75 (M)
Motion	**1.56 (0.23)**	1.83 (0.35)	1.92 (0.10)	**1.70 (0.22)**	0.14	0.213 (L)	0.62 (M)
Work	**0.92 (0.16)**	1.05 (0.22)	1.12 (0.33)	**0.70 (0.13)**	0.22	0.297 (L)	1.44 (L)
Home	0.14 (0.04)	**0.21 (0.08)**	0.14 (0.06)	**0.15 (0.05)**	0.06	0.222 (L)	0.90 (L)
Religion	0.33 (0.23)	**0.20 (0.08)**	**0.29 (0.09)**	0.16 (0.05)	0.09	0.199 (L)	1.06 (L)
					Average sample-wide effect size	0.211 (L)	0.85 (L)

SD: standard deviation.
Effects sizes are marked with an "M" for moderate, or "L" for large using Cohen's (1992) criteria.
[a]Cohen's *d* refers to the observed effect size of the difference between bolded means within each row.

Cohen's $f = 0.40$) compared to the other PAR types. Although not statistically significant, the high *SD* for this filler language (being half the mean) suggests that these players equivocate when asked about an avatar's meaning and importance. For example, a Horde raider mused, "It's really nice to try and rank and be *like*, 'Oh, *you know*—I was top—*you know* 50 or whatever in the World!' *I don't know. I don't know* why it was so much fun for us." These patterns align with the notion that such players engage avatars principally as tools—manipulated, optimized gamepieces—rather than relational bodies, and that the game is a space for competition rather than socializing or immersion.

Language patterns in avatar-as-Me relationships. Among avatar-as-Me relationships, player language featured significantly more third-person plural pronouns (*they, those*) compared to other PAR types, aligning with this relationship's tendency to revolve around social interaction with players. These players tend to value being recognized and known inside and outside the gamespace to specific and generalized others (the "they"), as when a social player recounted his position in a notorious guild: "I started talking to people in the Guild and stuff, and really, *they're* really not so bad. *They're* misunderstood … *they're* all nice, we have fun." These players' language also had high frequencies of home references (*family, bathroom*), aligning with the notion that such players integrate play and everyday life into cohesive social reality and see avatars as themselves (rather than as a separate entity) across both spaces.

Language patterns in avatar-as-symbiote relationships. For avatar-as-symbiote relationships, player language was less tentative (*unsure, wonder, vague*) and less causal (*because, effect*) than language for other PAR types, consistent with the relationship's characteristic problem-solving and negotiation practices. Low frequencies of impersonal pronouns (*it, those*) and infrequent references to humans (*boy, lady, people*) align with those players' sometimes antisocial or introverted orientations during play. That is, in engaging avatars as digital problem-solving partners, these players may be not only more confident in digital negotiations but also less sure about their implications in everyday life. For example, a Horde player posited that his avatar represented pieces of himself that had "disintegrated" during a hard time of his life. "I was using virtual worlds as a place where I could put that aside and just be someone less burdened and more personable," without integrating those pieces into his daily demeanor. These patterns align with this PAR's tendency to engage avatars not as tools or identities but as somewhat-differentiated personas kept at a distance so that their characteristics may be rejected or assimilated into players' everyday lives.

Language patterns in avatar-as-other relationships. Among avatar-as-other relationships, player language frequently contained social process words (*ask, talk*) and third-person singular pronouns (*he, she*), which together support the notion that these players take up their avatars as independent social actors. For example, one player said of her avatar's confession: "*He told* his new *friend* everything about what *he* had done when *he* was younger." Furthermore, frequent anxious language (*afraid, confused*) suggests that players in highly social PARs have weak senses of personal agency, consistent with the PAR characteristic escapism to avoid lack of control in everyday life.

Table 2. Large correlations (r = .50 or above) between language categories.

Language category	
Third-person singular	Social processes (.663), family (.564)
Impersonal pronouns	Tentative (.588), motion (−.504)
Social processes	Family (.678), hearing (.588), humans (.559), motion (.554)
Family	Sexual (.535)
Humans	Hearing (.642)
Tentative	Motion (−.648)

As noted, LIWC does not use mutually exclusive coding categories. For example, the word "heaven" can be both a metaphor for ideal situations and a religious reference and so is included in positive affect, emotion, religion, and metaphor categories. Thus, we completed a sample-wide analysis of LIWC categories to examine the degree to which language categories were correlated with each other regardless of PAR type. Using a Pearson correlation above .50 as our criterion for a strong effect size (cf. Cohen, 1992), we do find some language categories' prevalence to be positively associated with prevalence of other categories (see Table 2); however, these correlations are largely subsumed by PAR type. For example, third-person singular pronouns were correlated with references to social ($r = .663$) and family ($r = .564$), and all three of these categories were most prevalent in avatar-as-other PARs. Use of impersonal pronouns was correlated with cognitive tentativeness ($r = .588$); both categories were most prevalent for avatar-as-symbiote PARs. Family and sexual references were correlated ($r = .535$), but both categories were least prevalent in avatar-as-object PARs. These data suggest that even in the face of covariant language categories, player language still varies as a function of PAR type. Thus, H1 is supported, with particularly strong support for language indicating high sociality in avatar-as-other relationships.

Attributing language variance to CA dimensions

Initial analysis revealed robust and meaningful variance in language patterns of players with known PAR types as they described avatars and gameplay. However, as the quantitative linguistic analysis presented here is intended to be an objective proof of concept to support interpretative thematic coding from prior work (see Figure 2; Banks, 2013; Banks and Bowman, 2013), these data are meaningful only to the extent they represent CA dimensions nested within the PAR typology. Figure 3 presents the language categories (e.g. "impersonal" pronouns, "anxiety") whose prevalence in a particular PAR type was significantly different from other types and that mapped theoretically to CA dimensions; these categories are shown in relation to the anticipated patterns among PAR types and CA dimensions suggested in prior exploratory investigations (Banks and Bowman, 2013).

Identification language. Variations in the CA dimension of identification—the degree to which players saw avatars as the same as themselves—can most readily be seen in prevalence of pronouns. Avatar-as-object PARs featured no pronouns, avatar-as-Me had more

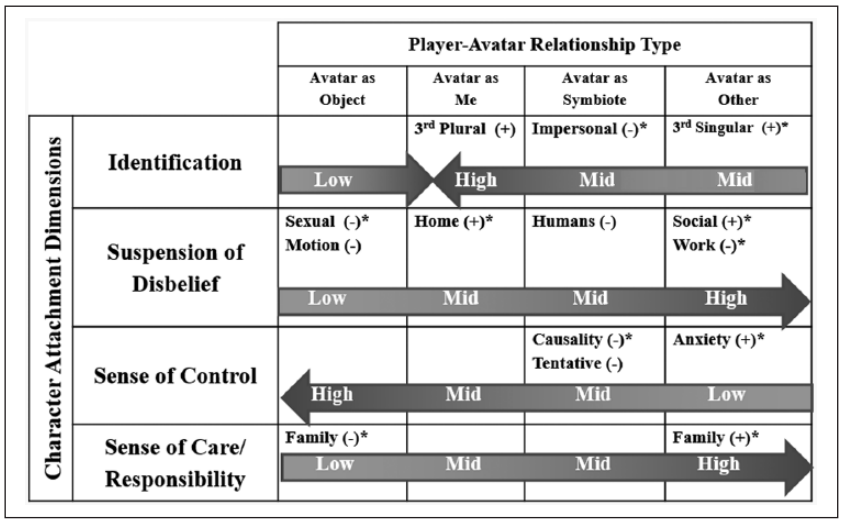

Figure 3. Relationships among language modules and PAR type and CA dimension, superimposed on exploratory results (arrows) from Banks and Bowman (2013).
PAR: player–avatar relationship; (−): lower frequency compared to other PARs; (+): higher frequency compared to other PARs.
*Maps explicitly to exploratory results in Banks and Bowman (2013).

third-personal plural pronouns (*they, them*) than other PAR types, and avatar-as-other had more third-person pronouns (*he, she*) than other PAR types. In other words, non-social relations are characterized by *not* referencing self or other (since the focus is on gameplay), and the highly social PAR is marked by the anthropomorphizing "he" or "she." Although it was expected that the high-identifying avatar-as-Me relationship would have high frequencies of first-person singular pronouns (*I, me*), the prevalence of "they" and "them" aligns with that PAR type's tendency to focus on friends—it is interpreted that these players are describing themselves in relation to their play cohorts as "they." Overall, highly social PARs featured more self-differentiation language than identification language.

SoD language. PAR variations in SoD—refraining from judging the implausibility of the gameworld—are evident in language categories representing physical-world phenomena. Avatar-as-object PARs are marked by low frequencies of sexual and motion language (both physically embodied phenomena), while avatar-as-other PARs have high frequencies of hearing/sound and social process language (both suggesting immersion in the digital world as a sensory, social space). From these patterns, it is interpreted that higher PAR sociality is associated with greater SoD.

Sense of control language. Surprisingly, there were no significant differences in language categories representing heightened sense of control—the feeling of having governance over avatar actions. However, more social PARs did feature language suggesting *low*

senses of control. In particular, avatar-as-other PARs had more anxious language, and avatar-as-symbiote PARs had less causal language than did other PAR types. In other words, players engaging avatars as distinct social actors may feel less in control of avatars or gameworld events.

Sense of care/responsibility language. PAR differences in care and responsibility were manifested in language variations related to family. Specifically, non-social avatar-as-object PARs has significantly less family-related language, and highly social avatar-as-other PARs had significantly more family-related language compared to other PAR types. It may be that care-taking, responsibility, and emotional intimacy are latent factors that players tend to present narratively in terms of family roles—that is, the avatar must be "looked after" during play as one would tend to be a child or sibling.

In addressing RQ1, these data suggest that CA dimensions vary as a function of PAR types. Specifically, SoD and care/responsibility appear to be stronger among more social PARs, and identification and sense of control decrease among more social PARs.

Discussion

This study examined the linguistic indicators of two divergent approaches to PARs: CA as a psychological merging of player and avatar and player–avatar sociality (PAR) as a social and functional differentiation of player and avatar. Results offer support for the PAR sociality typology by validating differences in language related to self-differentiation, agency, and gameplay. Furthermore, results suggest that language variations among PAR types can be attributed in part to parasocial dimensions of identification, SoD, sense of control, and care/responsibility. These findings offer partial support for the anticipated associations among CA dimensions and PAR sociality: identification is lowest for highly differentiated avatars, heightened SoD and care/responsibility align with engaging avatars as social actors, and sense of control over avatars is inversely associated with perceived avatar agency.

In understanding the association between the theoretically divergent notions of parasocial and social connections with one's own avatar, variance in language patterns suggests interplay between differentiation and anthropomorphization. Low PAR sociality is grounded in focusing on gameplay (with no significant patterns in avatar–referent language), and high PAR sociality is linked to approaching avatars as gendered others, suggesting that engaging avatars as autonomous social actors requires players to differentiate *and* personify avatars as human or human-like. These tendencies manifest in increased frequencies of relational language (i.e. gendered pronouns, socializing, and family roles). Although anthropomorphism has been deeply addressed in how humans relate to machines and to virtual agents (e.g. Nowak and Biocca, 2003), its importance to PAR is not well understood. Increased anthropomorphization of machines is associated with heightened care and concern, trust and assigned responsibility, and increased influence on the user (Waytz et al., 2010), suggesting that anthropomorphizing avatars may result in similar types of social "othering."

That differentiating/anthropomorphizing pronouns co-occurred with higher frequencies of social language suggests that humanizing avatars in highly social PARs may be grounded in suspending disbelief in avatars as fictional personas. The shift from seeing an avatar as "tool" or "it" to "him" or "her" requires disregarding the notion that avatars are collections of pixels. Conversely, the fact that non-social PARs featured significantly less language indicating physically embodied activities (e.g. sex or movement) suggests disinclination to acknowledge the avatar as an embodied social actor. We interpret these findings to mean that as PAR sociality increases, so do players' tendencies to suspend disbelief in the gameworld and avatars as fictional.

Although there were no specific findings in this study that suggest a direct association between sense of care and responsibility (CA) and the conceptually related emotional intensity (PAR), one language pattern does offer a clue. Reduced family language among non-social PARs and increased family language among highly social PARs is interpreted to mean that care-taking, responsibility, and emotional closeness are associated latent factors that players articulate according to family roles. In facing the counterintuitive and perceptibly non-normative notion of having an emotional connection with an avatar, players may find it more comfortable to say they view avatars like sons or sisters. The prevalence of family language suggests that CA's care/responsibility dimension may be more useful than PAR's emotional intensity dimension in addressing the importance of emotion in the relationship, in that family roles can be understood as an amalgam of care and responsibility (McHale and Landahl, 2011).

Similarly, there were no specific findings in this study to support a positive association between sense of control (CA) and the conceptually related player agency (PAR). Rather, findings reveal the inverse—highly social PARs are associated with low player control manifesting in more anxious and less causal language. We interpret this to mean that anxious players may be more likely to perceptually relinquish or diminish their own agency and imbue avatars with agency (Banks, 2013). Since such patterns were present in more social PARs and not in less-social PARs, it may be that avatar-as-Me relationships represent the point in the sociality spectrum at which this agency shift occurs.

Overall, language patterns suggesting variance in CA dimensions among variably social PARs suggest that the two theoretically divergent approaches may be synthesized into a more comprehensive model of PAR. Because CA dimensions of identification, SoD, and sense of control appeared to increase only in the less social end of the PAR sociality spectrum (see Figure 4), we suggest that CA as a psychological merging is not theoretically counter to the notion of a social relationship between player and avatar but a subset of the broader PAR model. Specifically, the construct of CA appears to account only for the non-social or less social relations, in which the most intimate player–avatar connection is strong identification and control. Identification (CA) and self-differentiation (PAR) may be collapsed into a single curvilinear dimension and paired with increasing anthropomorphism; SoD (CA) increases with sociality; care/responsibility (CA) and emotional intimacy (PAR) are collapsed into a single dimension increasing with sociality; sense of control (CA) is folded into the curvilinear spectrum of player agency (PAR) paired with avatar agency, increasing with self-differentiation (see Figure 4). In this integrated model, PAR sociality may be understood as a spectrum of increasing parasociality (psychological merging) followed by increasingly sociality (psychological differentiation).

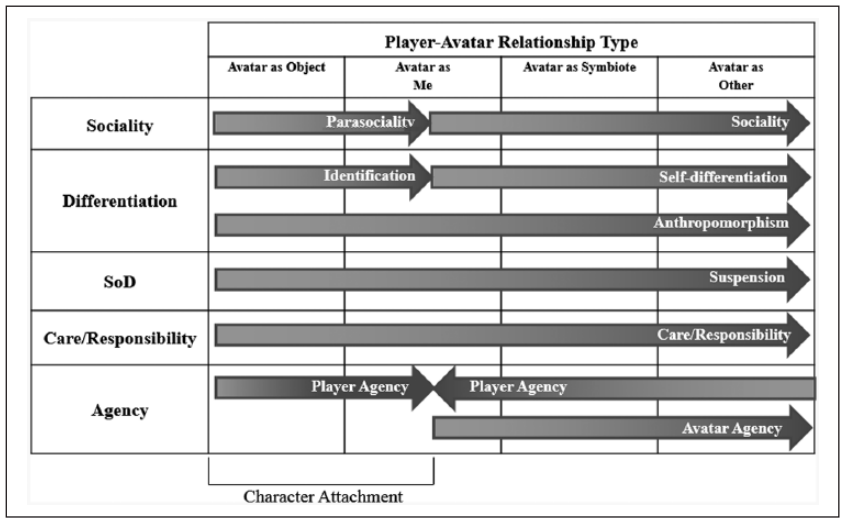

Figure 4. Model of player–avatar relationships, integrating dimensions of both parasocial interaction and social relationships.
SoD: suspension of disbelief.

Implications of an integrated PAR sociality model

This study's findings show that the parasocial CA and social PAR approaches to PARs are incomplete when considered independently. CA stems from a parasocial media studies perspective that focuses principally on how avatars are engaged functionally and narratively as screen-based content. PAR stems from interpersonal and technological agency principles, focusing mainly on how players and avatars influence each other as social actors. Yet avatars can neither be divorced from the story and mechanics of their native game environments lest they lose meaning as characters (a media perspective); nor can they be wrested from social interactions with players lest they lose their role as meaningful social actors (a relational perspective). That is, the ludo-narrative and social components of gameplay are equally foundational to PARs. The proposed integration of CA and PAR accommodates these dimensions in a more comprehensive model that integrates these components.

Although additional studies are required to validate the integrated model, it offers a promising framework for synthesizing the various ways that avatars have been characterized in scholarly literature. These characterizations may be situated along a continuum of low to high sociality, according to the integrated factors of differentiation, SoD, care/responsibility, and agency. For example, engaging avatars as resources (Castronova, 2005) is low anthropomorphism and high differentiation; mask or role characterizations (Galanxhi and Nah, 2007) are more anthropomorphic and differentiated. Doing so highlights the prevalence of non-social characterizations and the lack of attention to highly social PARs and reveals promising research directions in understanding how the avatar as a social other may influence a range of play phenomena as players and avatars—and humans and technologies more broadly—may engage each other as a "we."

Limitations and future research

Although the LIWC analysis performed here was copacetic with prior interpretive work (Banks, 2013; Banks and Bowman, 2013), we recognize that a sample of 25 gamers (two familiar to the research team) is not representative of the broader gamer population. In terms of statistical power, we overcame this limitation by using moderate and large effect size measures in lieu of statistical significance tests, but we acknowledge that sample size and representativeness are different threats to internal validity. This limitation is somewhat mitigated given the heterogeneity of our sample with respect to social and demographic of known importance to avatar identity and video gameplay (e.g. Dunn and Guadagno, 2012). Indeed, uncovering stable findings using such a small sample offers a conservative evaluation of our research question, as it suggest that between-subjects personological differences are less important to recollection and discussion of PARs than within-group PAR similarities. Nonetheless, the scope of personological variables considered was limited and should be expanded to ensure that the associations reported here are not spurious. For example, players with narcissistic personalities—especially grandiose narcissists prone to exhibitionism and self-importance (Miller et al., 2001)—might be more inclined to use self-referent language when discussing *any* relationship. Such a tendency could be even stronger in online activities involving an embodied representation such as an avatar. Of course, such narcissists might also be more likely to ascribe greater agency to themselves; so, we suspect they would still align with an avatar-as-Me orientation: talking about themselves in relation to others and expressing high levels of control over avatars. Research-in-progress extends this line of inquiry to include a larger and more representative sample of MMO gamers and to other genres of avatar-centric video games.

Additionally, given that a researcher played an active role in soliciting player language through voice interviews, it is possible that researcher language could have influenced player language. The interviewer mitigated this potential by carefully matching question language to the participant's own language. For example, if a participant said, "I love my avatar—it is like a child," the interviewer would then use "avatar" and/or "it" in the follow-up question. Likewise, because interviewer and participant played the game together in the second interview, it is possible that the dynamic between the two could have influenced participants to speak differently than they might with familiar players. However, because cooperating with strangers is a common play practice in WoW—as in public chat or randomized dungeon groups—this dynamic does not necessarily invalidate language from the cooperative play interview. It is also possible that because participants' PAR types were established in prior analysis through interpretive thematic analysis, the language patterns analyzed in that emergent coding could be related to the language patterns in this study's more objective, quantitative word counts and so merely confirming what previously emerged from the data. Indeed, this study was designed to serve as an objective validation of the prior interpretive findings. Here, the analytical methods and units of analysis are unique so that this study's word-count analysis should be considered a triangulation of previous interpretive analysis, bolstering the claim that PAR types are meaningfully distinct.

Conclusion

The potential importance of the player–avatar dyad as a social pair departs from current literature holding that strong, monadic identification with game characters is required for self-efficacy, learning, and appreciation (e.g. Peng, 2008). Specifically, since high levels of care/responsibility (CA) have been associated with more meaningful play (Bowman et al., 2013), it is possible that meaningfulness may be even stronger for players who self-differentiate and suspend disbelief. This makes sense if we consider that greater differentiation appears to be a function of seeing avatars as a human-like social others *for whom* one is responsible. It may be that when the game is approached as "we" (perhaps with empathy, loyalty, and protection cues) rather than as "I," humans may enter into interactive media toward more meaningful experiences *with* digital bodies. As such, we argue that considering PARs along a continuum of non-social to parasocial to fully social may advance our understanding of how that relation—as the primary conduit of meaning between digital and physical worlds—moderates various gameplay phenomena.

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Appendix 1

LIWC language categories analyzed

Category	Example words	Highest frequency expected in		Min	Max	*M*	*SD*
		CA factor	PAR type				
First-person singular	I, me, mine	Identification	Me	4.75	10.09	7.52	1.41
First-person plural	We, us, our	Identification	Me	0.24	1.47	0.80	0.31
Second person	You, your	Identification	Object/Me	0.61	3.33	1.83	0.73
Third-person singular	**She, her, him**	**Identification**	**Other**	**0.15**	**2.72**	**1.17**	**0.65**
Third-person plural	**They, their**	**Identification**	**Me/other**	**0.45**	**1.13**	**0.95**	**0.23**
Impersonal	**It, those**	**Identification**	**Object**	**6.69**	**9.85**	**8.32**	**0.90**
Prepositions	To, with, above	Identification	Other	8.75	13.96	10.97	1.23
Negations	Not, never	SoD	Object	1.57	2.95	2.23	0.37
Quantifiers	Some, many, few	SoD	Object	2.21	4.12	3.04	0.48
Numbers	Second, thousand	SoD	Object	0.77	1.40	1.06	0.20
Social processes	**Talk, ask, buddy**	**SoD**	**Other**	**5.82**	**12.06**	**8.61**	**1.69**

(Continued)

Appendix 1. (Continued)

Category	Example words	Highest frequency expected in		Min	Max	*M*	*SD*
		CA factor	PAR type				
Family	**Marry, husband, son**	**Control**	**Other**	**0.00**	**0.40**	**0.10**	**0.12**
Friends	Buddy, friend	Responsibility	Me/other	0.03	0.49	0.19	0.12
Humans	**Baby, person, people**	**SoD**	**Me**	**0.46**	**1.30**	**0.86**	**0.23**
Affective processes	Happy, cried	Responsibility	Other	3.25	6.51	5.18	0.64
Positive emotion	Love, nice, sweet	Responsibility	Other	2.55	4.56	3.72	0.51
Negative emotion	Hurt, ugly, nasty	Responsibility	Object	0.65	2.36	1.43	0.40
Anxiety	**Worried, nervous**	**Control**	**Other**	**0.05**	**0.27**	**0.14**	**0.06**
Anger	Hate, kill	Responsibility	Object	0.26	1.14	0.68	0.26
Sadness	Cry, grief, sad	Responsibility	Other	0.07	0.52	0.21	0.10
Cognitive processes	Cause, know, ought	Control	Object/Me	16.27	21.22	19.17	1.49
Insight	Think, know	Control	Object/Me	1.08	3.51	2.49	0.61
Discrepancy	Should, would	Control	Symbiote	1.14	2.46	1.90	0.29
Causation	**Because, effect**	**Control**	**Object**	**1.23**	**2.40**	**1.90**	**0.29**
Tentative	**Maybe, perhaps**	**Control**	**Other**	**2.02**	**5.23**	**3.61**	**0.84**
Certainty	Always, never	Control	Object	1.12	2.16	1.62	0.25
Inhibition	Block, stop	Control	Object	0.20	0.45	0.32	0.06
See	View, seen	SoD	Other	0.37	1.04	0.74	0.16
Hear	Listen, hear	SoD	Other	0.19	0.71	0.44	0.13
Feel	Feel, touch	SoD	Other	0.19	0.87	0.45	0.16
Biological processes	Eat, blood, pain	SoD	Me	0.39	1.75	0.87	0.30
Body	Cheek, spit	SoD	Me	0.09	0.92	0.31	0.18
Sexual	**Love, sex, butt**	**SoD**	**Other**	**0.03**	**0.43**	**0.13**	**0.10**
Motion	**Arrive, go, carry**	**SoD**	**Other**	**1.21**	**2.43**	**1.75**	**0.30**
Space	Down, into	SoD	Other	4.54	7.85	5.83	0.77
Time	End, season, until	SoD	Other	4.75	7.30	5.75	0.77
Work	**Job, meeting**	**SoD**	**Object/Me**	**0.57**	**1.47**	**0.97**	**0.26**
Achievement	Earn, hero, win	Control	Object	0.81	1.89	1.34	0.28
Home	**Kitchen, family**	**SoD**	**Me**	**0.05**	**0.32**	**0.17**	**0.07**
Religion	Angel, bless, church	Identification	Me	0.08	0.68	0.25	0.15
Death	Bury, kill	SoD	Other	0.06	0.60	0.27	0.14
Nonfluencies	Er, umm, hm	SoD	Symbiote	0.13	0.84	0.33	0.14
Fillers	I mean, you know	SoD	Symbiote	0.49	2.18	0.93	0.36

LIWC: Linguistic Inquiry and Word Count; CA: character attachment; PAR: player–avatar relationship; SoD: suspension of disbelief.

Note: Bold-faced values represent language categories with effect sizes greater than .40, with highest frequencies in the expected PAR types.