

Online and On My Mind: Temporary and Chronic Accessibility Moderate the Influence of Media Figures

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To investigate the influence of media figures on self-perception, on-line gamers reported how central their main videogame character (avatar) is to their own identity and answered questions about their avatar's body size either before or after questions about their own body size. When the avatar was not central to the gamer's identity, the avatar's body size influenced gamer's own body judgments only when the avatar was brought to mind by preceding questions. When the avatar was central to the gamer's identity, it influenced gamers' own body judgments independent of question order. In both cases, accessible avatars elicited assimilation effects on self-judgment. We conclude that media figures exert a chronic influence on self-judgment when they are central to the self.

Your avatar can look any way you want it to, up to the limitations of your equipment. If you're ugly, you can make your avatar beautiful. If you've just gotten out of bed, your avatar can still be wearing beautiful clothes and professionally applied makeup. You can look like a gorilla or a dragon or a giant talking penis in the metaverse.

~Neal Stephenson, *Snow Crash*, p. 36

Turning off a computer is not fatal for the characters that inhabit it. They continue to exist both in the memory of the computer and the memories of their users. While the computer memory will recall information about the character only when deliberately prompted to do so, numerous incidental

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influences can bring information about the avatar back to the user's mind, potentially influencing judgments the user forms at that time. The present research addresses this possibility by examining the computer characters used by gamers in virtual worlds ("avatars").

Avatars may be a type of media figure that is particularly likely to come to their user's mind when the user thinks about the self. Avatars are owned by their users and highly customizable, allowing gamers to use them as expressions of individual identity. However, like other media figures, avatars can also influence judgments about the self. Whether a given avatar comes to mind when a gamer is asked to answer questions about the self, however, may depend on how central the avatar is to the gamer's identity. Much like close others in the real world are more likely to influence self-perception than distant others (Biernat, 2005), close others in the virtual world may exert a disproportionate influence. Drawing on measures developed in the social relationship literature (Aron, Aron, & Smollan, 1992), we assess the centrality of the avatar to its owner's identity. Our key hypotheses hold that (a) accessible avatars influence their owners' self-related judgments; (b) whether an avatar is accessible depends on its centrality to the owner's identity as well as contextual influences; specifically, (c) that avatars central to the owner's identity come to mind whenever the owner makes judgments about the self along dimensions on which features of the avatar can be brought to bear. Hence, their influence can be observed even in the absence of prompts that render the avatar temporarily accessible. (d) In contrast, when the avatar is not central to the owner's identity, its influence can only be observed when it is rendered temporarily accessible by preceding questions about relevant features of the avatar. In either case, (e) accessible avatars are likely to result in assimilation (rather than contrast) effects on judgments of the self, reflecting that gamers' ownership of their avatars establishes a unit relationship between avatar and self.

Next, we develop our rationale in more detail. We first review findings from the literature on close interpersonal relationships that highlight that information about close others is more accessible when the other is central to the self than when it is not. Subsequently, we discuss the implications for chronic and temporary accessibility and review the conditions under which accessible information results in assimilation or contrast effects in judgment. We conclude with predictions about the impact of avatars on self-related judgments of their users and test these predictions by examining how the size of avatars affects users' reports of their own body image.

SELF, CENTRALITY, AND ACCESSIBILITY

Memory research has consistently shown an advantage of self-referential processing (e.g., Rogers, Kuiper, & Kirker, 1977; see Symons & Johnson,

1997, for a meta-analytic review). For example, Bower and Gilligan (1979) observed that words studied in relation to the self (“Does it describe me?”) are more likely to be remembered and come to mind faster than words studied in relation to a close other (“Does it describe my friend?”), which, in turn, enjoy an advantage over words studied in relation to a media figure (“Does it describe Bill Cosby?”). However, the advantage of self-referent processing over close other-referent processing diminishes with increasing closeness of the other and information processed with regard to very close others may even be confused with information processed with regard to the self (e.g., Aron & Fraley, 1999; Aron, Aron, Tudor, & Nelson, 1991).

As research into intimate relationships illustrates, psychological closeness can be conceptualized as inclusion of the other in representations of the self (Aron et al., 1991). Empirically, this construct can be measured with the Inclusion of Other in the Self scale (IOS; Aron et al., 1991), which is a widely used measure of psychological closeness in relationship research. The IOS depicts a set of seven Venn-like diagrams with gradually increasing levels of overlap; participants indicate which level of overlap reflects the closeness between self and other. Closeness predicts how likely other-relevant information comes to mind when people make judgments about the self (e.g., Aron et al., 1991; Aron & Fraley, 1999; Mashek, Aron, & Boncimino, 2003; Smith, Coats, & Walling, 1999). For example, Aron and colleagues (1991, 1999) observed that people who feel high psychological overlap with their romantic partners display greater semantic confusion between information descriptive of themselves and information descriptive of close others. People who report high overlap with their partner take longer to decide that traits that are descriptive of their partner are nondescriptive of themselves, indicating that the unique traits of the partner intrude when making assessments of the self. Similarly, Mashek and colleagues (2003) asked participants to rate themselves, a close other, and a distant other on a variety of unique traits. Participants were then given a surprise recall task in which they had to remember for whom they made each trait rating. Participants were more likely to confuse trait ratings made for others with ratings made for the self when the other was close rather than distant.

Throughout, the findings cannot be traced to differences in the similarity of self and other or to mere familiarity with the other, but uniquely reflect the degree to which the other is brought to mind when thinking about the self (for a review, see Mashek et al., 2003). The underlying processes can be modeled in a connectionist network (see Smith et al., 1999, for a localist PDP (parallel distributed processing) model) that represents self and close other as directly linked nodes. Activation of either node automatically activates both person nodes along with other information connected to them. Hence, thinking about the self not only brings to mind information about the self, but also information about close others who are included in the self.

The present research builds on this conceptualization and treats the avatar as a psychologically close other. We assess the centrality of the avatar in the self-concept of its owner with an adaptation of Aron and colleagues' (1991) IOS. We predict that avatars that are central to their owner's identity come to mind whenever the owner thinks about the self and hence influence self-related judgments in ways discussed below. In contrast, avatars that are not central to their owner's identity only come to mind when contextual information renders them highly accessible. Next, we elaborate on the distinction between chronic and temporary accessibility.

CHRONIC VERSUS TEMPORARY ACCESSIBILITY

The above reasoning has important implications for the conditions under which media figures exert an influence. When a media figure, like the avatar in the present research, is psychologically close and included in the representation of the self, information about the media figure should come to mind whenever the person thinks about the self, consistent with the relationship findings reviewed above (see also Chen, Boucher, & Parker-Tapias, 2006). In the terminology of knowledge accessibility research (for reviews, see Förster & Liberman, 2007; Higgins, 1996), such information is considered chronically accessible in the context of thinking about the self.¹ Conversely, when the media figure is not included in the representation of the self, information about the media figure should only come to mind when it is rendered accessible by other contextual influences, like the content of preceding questions. In the terminology of knowledge accessibility research, such information is considered temporarily accessible. Accordingly, chronic accessibility is primarily a function of knowledge representations, whereas temporary accessibility is primarily a function of contextual influences.

A key determinant of temporary accessibility is the recency of exposure (for reviews, see Förster & Liberman, 2007; Higgins, 1996). Most media studies capitalize on this variable by exposing participants to media and measuring their effects immediately afterward, although some researchers have found that media effects can persist for several days (Malamuth & Check, 1981; Zillmann & Weaver, 1999). As time passes, temporary accessibility decays, rendering it less likely that the information will come to mind at the time of judgment. Recency of exposure exerts no additional influence when the information is chronically accessible in the given judgment context (Förster & Liberman, 2007; Higgins, 1996; Schwarz & Bless, 2007). For the reasons discussed above, there should be no additional influence of temporary exposure when the judgment pertains to the self and the media figure is closely linked to the self-concept. Accordingly, the distinction between chronic and temporary accessibility may predict who is affected by a given media figure under which conditions.

Finally, it is worth noting that representation-based (chronic) and context-based (temporary) accessibility can sometimes exert an additive influence. Whether additive effects are obtained depends on the extent to which the information rendered temporarily accessible by a given manipulation is redundant with the chronically accessible information on which people spontaneously draw (Johar, Moreau, & Schwarz, 2003; Schwarz & Bless, 2007).

THE INFLUENCE OF ACCESSIBLE INFORMATION

A large body of social cognition research indicates that accessible information can elicit assimilation as well as contrast effects in judgment (for reviews, see Biernat, 2005; Schwarz & Bless, 2007). Which of these effects emerges depends on how accessible information is *used* (see Schwarz & Bless, 1992a, 2007, for a comprehensive model). On the one hand, accessible information (say, a feature of the avatar) may be used in constructing a representation of the target of judgment (here, the self), resulting in an assimilation effect. In this case, judgments of the target will be more positive when positive rather than negative information has been brought to mind, reflecting that the judgment is based on the features included in the mental representation of the target. On the other hand, accessible information may be used to construct a standard of comparison relative to which the target is evaluated; this results in a more positive standard, relative to which the target is evaluated less positively. Hence, the same piece of accessible information can result in assimilation as well as contrast effects on subsequent judgments, depending on whether the information is used in constructing a representation of the target or of the standard (e.g., see Schwarz & Bless, 1992b; Stapel & Schwarz, 1998).

While numerous variables can influence how information is used in forming these representations (see Schwarz & Bless, 2007), one of the most powerful determinants is the existence of a unit relationship between the contextual and target stimuli (Heider, 1958). A unit consists of people or objects “perceived as belonging together” (p. 176). Unit relationships can be formed in a variety of ways including ownership, affiliation, shared group membership, and feature similarity. Unit relationships ensure that the contextual information is included in the representation formed of the target and hence give rise to assimilation effects. For example, Brown, Novick, Lord, and Richards (1992) found that people typically contrast their appearance against the appearance of others. However, when told that they shared a feature (such as a birthday) with the person in the photograph, assimilation occurred.

Assimilation effects are of particular interest to researchers who study the effects of violent media (for a review, see Anderson & Bushman, 2001) but have been observed across a variety of domains, including product preferences and body image (Austin, Chen, & Grube, 2006; Myers & Biocca, 1992; Russell & Stern, 2006; Wilcox & Laird, 2000). The influence of media figures is particularly strong when people identify with them (e.g., Basil,

1996; Huesmann, Lagerspetz, & Eron, 1984; Konijin, Bijvank, & Bushman, 2007) or when the media figure is similar to the self (e.g., Maccoby & Wilson, 1957; Mills, Polivy, Herman, & Tiggemann, 2002), both of which facilitate assimilation effects under most circumstances (Schwarz & Bless, 2007; but see also Gardner, Gabriel, & Hochschild, 2002; Pelham & Wachsmuth, 1995).

The present research uses a type of media figure that meets the conditions of a unit relationship, namely a gamer's avatar, which is constructed and owned by its user. It further addresses how directly this media figure represents the self by assessing how central it is to the gamer's identity.

PREDICTIONS

Building on the above rationale, we explore how the body size of a gamer's avatar influences the gamer's own body image. Because avatars are owned by the gamers who use them, a unit relationship between avatar and self can be assumed, consistent with the general observation that ownership facilitates the formation of unit relationships (Belk, 1988). Accordingly, (a) accessible avatars should result in assimilation rather than contrast effects on self-related judgments (Schwarz & Bless, 2007). Hence, gamers with large avatars should perceive their own body as larger than gamers with small avatars, controlling for the gamers' actual body size (as indicated by BMI). However, (b) the predicted assimilation effect should only be observed when the avatar's features come to mind at the time of judgment. Specifically, (c) when the avatar is *not* central to the gamer's self-concept (low self-avatar overlap as assessed by the IOS scale), an assimilation effect should only be observed when the avatar is rendered temporarily accessible, that is, when questions about the avatar's body precede questions about the gamers' own body image. In contrast, (d) when the avatar *is* central to the gamer's self-concept (high self-avatar overlap as assessed by the IOS scale), information about relevant features of the avatar should come to mind whenever the gamer thinks about the self and should hence exert an influence independent of question order. Finally, (e) we do not expect additive effects of temporary and chronic accessibility. Additive effects are obtained when the manipulation of temporary accessibility brings information to mind that is not redundant with chronically accessible information (Schwarz & Bless, 2007), and the avatar's body, which is visible throughout avatar use, seems highly likely to come to mind under high self-avatar overlap.

METHOD

Participants

A total of 442 participants (257 men, 185 women) who played online games took part in the study. Participants responded to ads placed on fan-site

discussion boards for online role playing games (including *The Sims Online*, *Everquest*, *Ultima Online*, *World of Warcraft*, and *Asheron's Call*). One of the boards was dedicated specifically to female gamers, accounting for the relatively large proportion of females in our sample relative to the online gaming community more generally (e.g., Griffiths, Davies, & Chappell, 2004).

Thirty-nine participants (30 men, 9 women) who primarily used a gender incongruent avatar were excluded from further analysis.² Little is known about why people chose to play with gender incongruent avatars and how this would affect the assimilation of an avatar's body into one's body image. The final sample consisted of 227 men and 176 women (mean age = 27.44).

Measures and Procedure

First, participants provided basic demographic information including occupation, income, height, and weight (to calculate body mass index; BMI), and gender. Next, they provided information about their gaming habits, including how many avatars they used and the gender of their primary avatar. This was followed by a version of the IOS (Aron et al., 1992), modified to represent the self and the avatar. Specifically, the scale presented a set of seven Venn-like diagrams with gradually increasing levels of overlap and participants were asked to "select the diagram that best describes their relationship to their avatar."

Next, participants completed the Body Image Assessment for Obesity scale (BIA-O; Williamson et al., 2000), which is a series of 18 pictures of bodies of increasingly large sizes, from which participants selected the one that "most accurately depicts your own body as you perceive it to be." Participants also selected a body size from a modified version of the BIA-O to indicate the size of their avatar's body. The order in which these two questions were presented was counterbalanced and participants rated their own body either before or after making a rating of their avatar's body. This order manipulation bears on the chronic versus temporary accessibility of information about the avatar's body. When the self-judgment of body size precedes the avatar-judgment of body size, the avatar's body size can only influence self judgments when it was chronically accessible and came to mind spontaneously; when the avatar-judgment of body size precedes the self-judgment of body size, information about the avatar's body is rendered temporarily accessible for all participants.

RESULTS

Do Gamers Pick Avatars That Look Like Themselves?

Before testing our hypotheses, we needed to ensure that several prerequisites were met. First, avatar bodies should be similar to body image, and this

similarity should not merely reflect the actual body of the gamer. Accordingly, we assessed gamers' objective body size by calculating their BMI on the basis of self-reported height and weight data, using the standard formula:³

$$\text{BMI} = 704 \times \text{weight (in pounds)} / \text{height (in inches)}^2.$$

Not surprisingly, participants' subjective body image reflected their objective BMI, $r(382) = .84, p < .01$. Also, as expected, participants' perceptions of their avatar's body and of their own body image were positively correlated, $r(394) = .31, p < .001$; this relationship increased to $r(368) = .52, p < .001$ when participants' BMI was controlled for. In contrast, participants' BMI per se was only weakly related with the reported avatar body image, $r(380) = .14, p < .01$. Avatar body size was significantly more related to the gamers' body image than to their BMI, $z = 6.04, p < .001$. This pattern of findings indicates that BMI is a poor predictor of the bodies that gamers choose for their avatars, although both BMI and the avatar's body are highly related to the gamer's own body image. In other words, avatars resemble their owner's body image more than their owner's actual body.

Do Gamers Feel Closer to Avatars That Look Like Themselves?

Next, we examined whether gamers report more overlap with avatars whose body resembles their own. For this purpose, we first calculated the difference between avatar body size and the owner's BMI. If gamers felt closer to avatars that resemble their actual body size, we should observe a negative correlation between the absolute value of the difference and self-reported overlap, which was not the case, $r(377) = .07, ns$. We repeated this analysis for the difference between the avatar's body size and the owner's subjective body image, with the same result, $r(377) = .07, ns$. Taken together, these findings indicate that gamers do not report more overlap with avatars that match their own body size or body image.

Does Avatar Body Image Influence Self Body Image?

We can now turn to our key hypotheses. Recall that we predict (a) that controlling for gamers' actual body size (BMI), gamers with large avatars perceive their own body as larger (as assessed by self body image ratings) than gamers with small avatars. (b) When the avatar is not central to the gamer's self-concept (low self-avatar overlap), this assimilation effect should only be observed when the avatar is rendered temporarily accessible, that is, when questions about the avatar preceded the self-judgment. (c) When the avatar is central to the gamer's self-concept (high self-avatar overlap),

however, the avatar should be chronically accessible and exert an influence independent of question order. These hypotheses predict a three-way interaction of self–avatar overlap, avatar body size, and judgment order; using analysis of covariance (ANCOVA), with overlap, avatar size, judgment order and gender as between subject factors and BMI as a covariate, this interaction was obtained, $F(1, 361) = 4.84, p < .03, \eta^2 = .005$.⁴ Table 1 shows participants' body image as a function of these variables.

To examine the simple effects underlying this three-way interaction, we used ANCOVA to test the predicted effects for gamers with low and high self–avatar overlap. We first consider participants with low self–avatar overlap, that is, gamers for whom their avatar is not a central aspect of self. *After* thinking about their avatar, these gamers perceived their own body as heavier when they played with large rather than small avatars, $F(1, 362) = 14.35, p < .001, \eta^2 = .007$, for the simple effect. However, no mean difference was observed when the self-judgment preceded the avatar questions, $F < 1$ for the simple effect. This pattern is reflected in a significant simple interaction of avatar body size and judgment order for low overlap gamers, $F(1, 362) = 6.60, p < .02, \eta^2 = .005$. These differential relationships are also apparent in correlational analyses. After controlling for BMI, participants' perception of their own body was unrelated to their perception of their avatar's body when own body was assessed first, $r(74) = .04, ns$. However, a significant relationship was observed when the judgment order was reversed, $r(76) = .34, p < .01$, indicating that thinking about their avatar's body influenced gamers' perceptions of their own body. Finally, when gamers' BMI, avatar body, judgment order, and the interaction between judgment order and avatar body are regressed on gamers' body image, there is no main effect of avatar body, $t < 1$, whereas the interaction between avatar body and judgment order is significant, $\beta = .15, t(160) = 2.06, p < .05$. In sum, these findings support our predictions for gamers with low self–avatar overlap.

TABLE 1 Self-Reported Body Image on the BIA-O

	Low overlap with avatar		High overlap with avatar	
	Before thinking about avatar	After thinking about avatar	Before thinking about avatar	After thinking about avatar
Small avatar	7.06 (.31) ^{abc}	6.67 (.31) ^{abc}	6.55 (.26) ^c	6.79 (.26) ^{abc}
Large avatar	6.99 (.31) ^{abd}	8.26 (.32) ^{de}	8.22 (.32) ^{bde}	8.20 (.27) ^{de}

Note. Low overlap refers to participants who scored equal to or less than three on the IOS. High overlap refers to participants who scored above three. Small avatars refer to those with a body size equal to or less than image five on the BIA-O. Large avatars refer to those with bodies larger than image five. Higher means indicate larger self-reported body image after controlling for BMI. Standard errors are indicated in parenthesis. Means sharing subscripts do not differ, $p < .05$ using Fisher's least significant difference (LSD) test.

In contrast to gamers with low self–avatar overlap, gamers with high self–avatar overlap were not influenced by judgment order. This is consistent with the assumption that their avatar is chronically accessible and comes to mind whenever they think about the self. These gamers perceived their own body as heavier when they played with a large rather than small avatar, $F(1, 362) = 28.37, p < .001, \eta^2 = .031$ for the main effect, independent of judgment order, $F < 1$ for the simple interaction. Accordingly, the correlation of own body image and avatar body image (again controlling for BMI) did not differ between the own body first condition, $r(106) = .34$ and avatar body first condition, $r(98) = .41$. Moreover, the regression of BMI, avatar body, judgment order and the interaction between judgment order and avatar body on body image, shows a main effect of avatar body, $\beta = .23, t(214) = 3.89, p < .01$, but no interaction between avatar body and judgment order, $t < 1$. In sum, these findings support our predictions for gamers with high self–avatar overlap.

The remaining effects are of little theoretical interest and qualified by the above triple interaction. Gamer's BMI had a predictably large effect on their body image, $F(1, 361) = 503.91, \eta^2 = .59$. A main effect of avatar body size, $F(1, 361) = 27.8, p < .001, \eta^2 = .03$ reflects the relationship between avatar body image and self body image discussed above and a two-way interaction between avatar body size and overlap, $F(1, 361) = 3.97, p < .05, \eta^2 = .004$, indicates that the effect of avatar body size was particularly strong for those who felt close to their avatar. Gender did not influence body image, nor did it interact with any of the above variables.

DISCUSSION

Taken together, these findings shed some light on the relationship between avatars and the self and bear on the influence of media figures more broadly. We address both aspects in turn.

Avatar and Self

People tend to select avatars that are similar to how they see their own body, but do not necessarily feel closer to avatars that are the same size as them (as assessed both by participants' reported actual height and weight (BMI) and perceived self body image). More important, our findings indicate that gamers' perceptions of their avatar's body influence their perceptions of their own body. Central to this conclusion is an experimental manipulation of judgment order, designed to vary the temporary accessibility of information about an avatar's body, and the observation that the influence of chronic accessibility parallels the temporary effects.

As theoretically predicted, the self-judgments of participants with *low* self–avatar overlap were *only* influenced by characteristics of the avatar when those characteristics were brought to mind by preceding questions. When questions about the avatar’s body preceded questions about the self, these participants perceived their own body as larger when they owned a large rather than small avatar; however, when the self-judgment preceded the avatar-judgment, no relationship was observed. Thus, temporarily accessible information about the avatar’s body resulted in assimilation effects on participants’ own body image, consistent with the unit relationship between the avatar and its owner (Schwarz & Bless, 2007). This observation is also compatible with prior media studies that observed assimilation effects following exposure to media figures that may represent the self (e.g., Myers & Biocca, 1992; Mills et al., 2002).

In contrast, the self-judgments of participants with *high* self–avatar overlap were influenced by characteristics of the avatar independent of judgment order. These participants perceived their own body as larger when they owned a large rather than small avatar, even when the self-judgment preceded questions about the avatar. Thus, chronically accessible information about the avatar’s body resulted in assimilation effects that parallel the influence of temporary accessibility observed under low overlap conditions. This finding is consistent with research on self–other overlap in the social relationships literature reviewed above (e.g., Aron et al., 1991; Mashek et al., 2003). Under conditions of high self–other overlap, other–related information is likely to come to mind whenever the person thinks about the self, a regularity that can be modeled by assuming a direct self–other link in the knowledge representation (Smith et al., 1999). These processes did not differ as a function of gender, reflecting both the nature of the variable measured (an estimate of body size, rather than its affective consequences or personal relevance) and the ubiquitous influence of media images on both women (Groesz, Levine, & Murnen, 2002) and men (Barlett, Vowels, & Saucier, 2008).

Finally, we observed no additive effects of chronic and temporary accessibility. Additive effects are only expected when the manipulation of temporary accessibility brings information to mind that is not redundant with the implications of chronically accessible information (Schwarz & Bless, 2007). In the present case, additive effects would require that participants with high self–avatar overlap do not think of their avatar’s body when thinking about the avatar. This seemed unlikely a priori, and was not observed.

In sum, our findings indicate that information about media figures that are central to the self is likely to spontaneously intrude when people make judgments about the self. In contrast, media figures that are less central to the self only affect self-related judgments when they are brought to mind by contextual influences. Our findings further suggest that the IOS (Aron et al., 1991) is a parsimonious one-item instrument for assessing the centrality of media figures. Future research may fruitfully address if the overlap between

self and a media figure, as assessed by the IOS, captures the key ingredient underlying a variety of related concepts that describe how “close” perceivers are to a given media figure (e.g., identification, Cohen, 2001).

In addition, we were able to rule out a number of alternative explanations for these findings. Although there was some evidence to suggest that people select avatars that are similar to their body image, this does not account for the observed distortions of judgment. If people simply selected avatars that looked like them, avatar size should not interact with the centrality of their avatar to their self-concept. We were also able to rule out the possibility that people simply feel closer to avatars that have the same body as them as there was no relationship between the overlap measure and the absolute value of the difference between avatar body and BMI or avatar body and own body image. Nevertheless, reliance on an individual difference variable, like self–avatar overlap, is necessarily open to the influence of unobserved variables and future research may fruitfully manipulate the level of perceived overlap in a laboratory setting.

Assimilation Versus Contrast in Perceptions of Body Image

Numerous studies explored the impact of exposure to thin media images on perceivers’ body satisfaction (see Barlett et al., 2008 and Groesz et al., 2002, for meta-analytic reviews). While some researchers observed assimilation effects, the majority observed contrast effects, as Groesz and colleagues (2002) noted. Which of these effects is obtained should depend on how the information that is rendered accessible by the media image is *used*. In general, accessible information results in assimilation effects when it is used to construct a mental representation of the target of judgment, but in contrast effects when it is used to construct a standard against which the target is evaluated (see Schwarz & Bless, 1992a, 2007, for a comprehensive model). Numerous variables can influence the use of accessible information and the present research relied on the unit relationship evoked by ownership (Belk, 1988) to predict the observed assimilation effects. In contrast to avatars, however, other media figures are not “owned” by the perceiver and may be more likely to serve as standards of comparison, unless other variables—like high similarity or shared category membership—set the stage for assimilation effects (Schwarz & Bless, 2007).

On theoretical grounds, centrality of the media figure to the self *per se* should be insufficient to elicit assimilation effects. Centrality to the self merely guarantees that the media figure is linked to the representation of the self and hence comes to mind whenever the person makes self-related judgments on which features of the media figure can be brought to bear. Whether perceivers compare the self to the media figure (giving rise to contrast) or include attributes of the media figure in the representation formed of the self

(giving rise to assimilation) should depend on the variables that govern information use (Schwarz & Bless, 2007), not the variables that govern information accessibility (Higgins, 1996). While this prediction awaits further testing, it is consistent with several observations in the literature. Most important, self-reports of comparisons between the self and a thin media figure predict body dissatisfaction, whereas the absolute level of media exposure does not (Botta, 1999; Jones, 2001). Moreover, people tend to spontaneously compare themselves more to close others rather than strangers (Locke & Nekich, 2000) and the evaluative consequences of social comparisons with close others can be more negative than the consequences of social comparisons with more distant others (Tesser, Miller, & Moore, 1988). Information about close others produces *both* more extreme contrast and more extreme assimilation effects than information about distant others, depending on how the information about the close other is used (Gardner et al., 2002; Pelham & Wachsmuth, 1995). Indeed, even information about the self—such as past behavior—can be used as a standard against which the current self is evaluated (Higgins, 1987; Strack, Schwarz, & Gschneidinger, 1985; Wilson & Ross, 2001). In combination, these observations suggest that centrality to the self per se is not sufficient to predict the direction of influence. Focused tests of this assumption provide a promising avenue for future research.

In addition, it is worth noting that different features of media figures are likely to be differentially salient during exposure, resulting in differential encoding and accessibility downstream. The present study focused on an avatar's body, that is, a characteristic that remains constant over many exposures and is visible for almost the entire time of a game. Hence, it should be well encoded and easy to retrieve. Other features of media figures may be less well encoded or not attended to at all, thus attenuating their likely impact. Finally, self-related judgments differ in their malleability and aspects of the self on which the person is schematic are less subject to contextual influences than more peripheral aspects of the self (e.g., Sedikides, 1995). As Rudiger, Cash, Roehrig, and Thompson (2007) observed, perceptions of one's own body image show pronounced day-to-day fluctuation for most people. Body image judgments may therefore be more susceptible to the influence of media figures than other, more stable, self-judgments. By the same token, individuals who hold a well-developed body schema may be less affected by exposure to media figures than the present results suggest. Unfortunately, we did not include relevant individual difference measures and future research may fruitfully address the generality of our findings across different self-judgments and different media figure characteristics.

In sum, understanding the influence of media figures on perceivers' judgments requires the joint consideration of information accessibility and use. For most perceivers, the accessibility of the media figure will fade as soon as the computer or television is turned off, rendering any influence of the media figure temporary. For other perceivers, however, the media

figure may become a “close other,” who occupies a central place in the perceiver’s self-concept. For these perceivers, information about the media figure becomes chronically accessible in the context of thinking about the self and is hence likely to influence self-related judgments along any dimension on which the media figure can be brought to bear. The specific form of this influence depends on whether attributes of the media figure are used in constructing a representation of the self or of a standard of comparison against which the self is evaluated.

NOTES

1. Note that the term *chronic accessibility* is sometimes used to refer to the baseline likelihood of a concept coming to mind, independent of context. Here, we follow its use in much of social cognition research where chronic accessibility is context sensitive and implies that the information comes to mind whenever the person thinks about an object to which it is linked in memory without requiring additional situational cues.
2. Gamers who used different sex avatars did not differ in age, reported income, the number of avatars they currently used, how long they had used their avatar, and how many hours per week they reported using their avatar, $F_s < 1$. They did however, report that their avatar was somewhat less central to their identity ($M = 3.13$) than gamers who used same-sex avatars ($M = 3.64$), $F(1, 427) = 3.46, p < .07$.
3. Eighteen participants did not report their height ($N = 1$), weight, ($N = 5$) or height and weight ($N = 12$). In addition to these participants, 1 did not report their body image and 3 did not report their avatar’s body. Where possible, these participants were included in our analyses. Results do not change if they are excluded.
4. These results are the same regardless of whether the data are analyzed using regression or analysis of variation (ANOVA). ANOVA results are presented for ease of interpretation.

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