

Egocentric Categorization and Product Judgment:

Seeing Your Traits in What You Own (and Their Opposite in What You Don't)

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Previous research finds that consumers classify in-group (but not out-group) members as integral to their *social*-self. The present research is the first to propose and find that consumers also classify owned (but not unowned) objects as integral to their *personal*-self (Experiment 1). Consequently, consumers judge product traits (e.g., masculinity) as consistent with their own traits (assimilation) if they own the product, but as inconsistent with their own traits (contrast) if they interact with the product but do not own it, even when owning the product is non-diagnostic of its properties (e.g., following random ownership assignment; Experiments 2-4). For example, *less* creative consumers who enter a drawing for an iPhone may judge it as *less* creative (assimilation) if they win the product, but as *more* creative (contrast) if they do not win the product. Individual and situational moderators of these effects are identified, and their theoretical and substantive implications are discussed.

Categorization is a fundamental cognitive capacity that pervades all levels of human mental functioning (Lingle, Altom, and Medin 1984). People classify targets, namely products or people in their environment, relative to reference categories and then judge these targets in terms of these categories (Sujan and Dekleva 1987). Accordingly, target judgment depends on the reference category people use and on how these people classify the target relative to that category (Feroni and Rothbart 2011; Goldstone, Lippa, and Shiffrin 2001; Herr, Sherman, and Fazio 1983). Consider, for example, a consumer who is evaluating the computing speed of an iPad using the markedly fast reference category “supercomputers.” The iPad will appear faster if the consumer classifies it as a supercomputer (assimilation), however, it will appear slower if the consumer does not classify it as a supercomputer but instead compares the iPad’s speed to a supercomputer’s speed (contrast). This pattern will be the reverse if the consumer uses a notably slow reference category (e.g., “netbooks”).

Research finds that consumers often use the “self” as a reference category for segmenting, organizing and understanding their surroundings (Rogers, Kuiper, and Kirker 1977), especially when they judge other people (Otten and Wentura 2001). Consumers classify in-groups as ‘us’ and judge them in assimilation with the way these consumers judge themselves but classify out-groups as ‘them’ and judge them in contrast to themselves (Cadinu and Rothbart 1996). While it is well established that consumers use the self to classify human targets, people or groups, the present research examines whether consumers also use the self as a reference category for non-human targets such as goods and products. Furthermore, although ample research asserts that a consumer’s possessions are associated with his or her self (Belk 1988; Cunningham et al. 2008), the possibility that people use the self as a reference category for products has not been examined. The present research begins to address this gap in the literature.

In particular, the present research (1) introduces a theoretical framework proposing that consumers may classify objects with respect to the personal-self, “egocentrically categorizing” owned products as ‘me’ but unowned products as ‘not-me,’ and (2) investigates a unique prediction of this framework for product judgment on traits that can apply to both people and products such as creativity or masculinity. Specifically, we examine the possibility that, under some conditions, consumers judge traits of owned objects in assimilation to, but traits of unowned objects in contrast from, the way these consumers judge themselves on these traits. We expect that consumers will be more likely to use the self as a reference category, namely engage in Egocentric Categorization (EC) and subsequent assimilation and contrast, when ownership is contextually salient. This is because ownership (i.e., what is 'mine') is associated to, and thus can activate, the personal-self (i.e., who is 'me'; Cunningham et al. 2008), and people are more likely to use a category as a reference class when that category is active (Srull and Wyer 1979). Importantly, ownership is likely to be salient, and thus foster EC, whenever consumers face the possibility of getting or ceasing to own a product, as is the case in many consumption contexts such as shopping or gift giving. For instance, if EC ensues during shopping, consumers who feel less reliable may judge products they own as less reliable (assimilation), but judge store products as more reliable (contrast).

In what follows, we first establish the premises of our EC framework with respect to previous research and then develop our predictions. Next, we empirically confirm the premises of EC (Experiments 1A-1B) and show that following EC, people assimilate/contrast product judgment to their self-evaluation, mainly if they use “what is ‘mine’” to determine “what is ‘me’” (Experiment 2). Then, we demonstrate that both assimilation and contrast to the self attenuate when the self is not the center of one’s attention (Experiment 3) or when ownership is not salient (Experiment 4). Finally, we discuss implications for marketers and consumer researchers.

THE PERSONAL-SELF AS A CATEGORY FOR OBJECTS

The present research theorizes that people use the personal-self as a reference category to segment, organize and understand objects in their surroundings. According to this process, which we name Egocentric Categorization (EC), people perceive and classify objects in terms of the personal-self, as “me” or “not-me.” In the category ‘me,’ people include objects they feel they can explore, operate and master as freely as they can manipulate their own bodies. This premise is in line with developmental postulates that sense-of-self emerges when a child experiences contingencies between his or her actions and environmental outcomes (Seligman 1975) and that an object becomes part of self if its state depends on the child’s actions (Furby 1978).

The premise that people classify objects relative to the self is also consistent with findings that people use the self as a predominant organizing category for classifying and understanding different types of targets (Rogers et al. 1977). Social categorization research shows that individuals use the self as a reference category for classifying and judging human targets, people and groups (e.g., Gawronski, Bodenhausen, and Banse 2005). For example, when participants in a study judged how manually skilled another person was, the participants were subsequently faster to report how skilled they were. Presumably, this occurred because they had already assessed themselves as an input for judging the other person, and thus had to merely retrieve (vs. compute) this information (Mussweiler and Bodenhausen 2002, study 1). In line with this research, we theorize that consumers sometimes utilize the personal-self as an organizing category for products, using EC as a cognitive tool that segments, classifies and orders their material environment. Consequently, EC may guide consumers’ appraisals of objects, leading consumers to judge products in assimilation or contrast to the way these consumers judge themselves.

When should assimilation or contrast to the personal-self ensue in product judgment? Ample research shows that, in order to predict assimilation or contrast of a target to a category, one must understand *whether* people classify a target *in or out* of that category once it is selected as the reference category and *when* people use that category to classify that target (Feroni and Rothbart 2011; Goldstone et al. 2001; Herr et al. 1983). In the next section, we elaborate on these two factors with respect to the classification of products relative to the personal-self, and we then use these factors to predict cases in which product judgment will result in assimilation or contrast to the personal-self. We provide a high-level flowchart of the theoretical model in Figure 1.

 Inset Figure 1 around here

What Determines whether Consumers Classify Products in or out of the Personal-Self?

The present research theorizes that the outcome of EC, namely whether a consumer classifies an object in or out of that consumer's personal-self, is determined (at least to some extent) by ownership (legal or psychological). Psychologically or legally owned objects are classified as 'me' but unowned objects are classified as 'not-me.' This view is consistent with the observation that people learn, as infants, to associate "mine" with "me" because they are allowed to control (and thus include in the "self") only objects they can consider their own (e.g., Furby 1980), and with the notion that possessions constitute a "territory of the self" (Edney 1974; Goffman 1972).

This premise is also consistent with research on the association of a person's self to his or her possessions (James 1890). Research in consumer behavior focuses on an exclusive subset of owned objects, termed "special possessions" (Belk 1988) that, over time, become associated with their

owner's self by acquiring personal meanings (Ferraro, Escalas, and Bettman 2011) and emotional attachment (Kleine, Kleine, and Allen 1995). Recent research has also examined the effect of ownership on product-self associations for new products that are randomly assigned to be owned, actually or psychologically (e.g., Turk et al. 2011). This research shows that people more readily recall objects they were randomly assigned to own, presumably because ownership associates the product to the self, and encoding an item with respect to the self makes the item more memorable (Rogers et al. 1977). Nonetheless, research has not gone beyond the product-self association hypothesis. That is, research has not examined the possibility that, just as consumers use the self as a category for understanding and judging people, consumers also may use the self as a reference category for organizing and evaluating inanimate objects such as products, and that ownership determines whether these products are classified as "me" or "not me."

Boundary condition: "Mine-Me" Sensitivity. Although we expect the ownership-to-self-categorization premise to apply for most consumers, it may not hold for consumers who have weak associations between "mine" and "me," possessions and self. These consumers may not classify objects with respect to the self by whether they own these objects; rather they may perceive all objects as part or not part of the self to the same extent, assigning owned and unowned objects the same levels of 'me-ness'. We suggest that the strength of associations between 'mine' and 'me' varies across people, and we refer to this construct as "*Mine-Me*" sensitivity. Consumers who do not use ownership (i.e., "what is mine") to determine whether objects are part of the "self" category (i.e., "what is me") are considered low on "Mine-Me" sensitivity. Thus, individuals for whom---*neither* owned *nor* unowned---objects are "me," as well as individuals for whom---*both* owned *and* unowned---objects are "me," do not use ownership to determine where "me" ends and "not-me" begins and thus are considered low on "Mine-Me" sensitivity.

When do Consumers Use the Personal-Self as a Reference Category for Products?

The present research asserts that spontaneous classification of objects using the self as a reference category occurs only when the personal-self is active. This view is consistent with previous categorization findings that classification of a target (e.g., a product) as belonging or not belonging to a category (e.g., the personal-self) follows from the activation of that category (Higgins, Rholes, and Jones 1977; Srull and Wyer 1979). We provide evidence in support of this assertion in Experiment 1A.

Salience of the concept “ownership” activates the personal-self. Previous research shows that different factors may activate the personal-self, such as describing what makes one different from (vs. similar to) his or her in-group, which requires highlighting self-aspects that differentiate the individual from other group members (e.g., Mussweiler and Bodenhausen 2002). We expect (and show in Experiment 1B) that one such factor is salience of the concept “ownership.” When ownership status of objects (“mine/ not-mine”) becomes salient, this activates the personal-self, leading people to use the personal-self as a reference category for objects, namely classify objects as “me/ not-me” and judge objects with respect to the personal-self. This is expected because “mine” and “me” (or ownership and the personal-self) are associated with one another (e.g., Belk 1988; Gawronski, Bodenhausen, and Becker 2007) and even randomly assigning a person to own a product associates the product with that person’s self (Cunningham et al. 2008; Turk et al. 2011). Further, because low “Mine-Me” sensitivity reflects weaker associations between ‘mine’ and ‘me,’ “ownership” salience should activate the personal-self mainly if “Mine-Me” sensitivity is high.

We focus on the possibility that salience of the concept ‘ownership’ activates the personal-self because it highlights the analogy between the two dichotomies of our theory, “mine/ not mine” and “me/ not-me” (see also James 1890). Further, ownership dilemmas that explicitly bring ownership to mind (e.g., “should I acquire/discard this product?”) are integral to many consumption contexts. This renders ownership salience contexts, such as in-store or on-line shopping, gift giving or receiving and product disposal, central to consumer research. Below, we develop the implications of our premises for judgments on product traits such as creativity or masculinity (e.g., Aaker 1997; Johar, Sengupta, and Aaker 2005).

Boundary condition: Self-Consciousness/-Awareness. Activation of the personal-self relates to higher accessibility of distinctions between self and others (Singelis 1994). However, activation of the personal-self may not be sufficient for guaranteeing that a person will use the personal-self as a reference class. Consider, for example, two people who think of differences between the self and others. While one may ponder how *he* or *she* differs from others (e.g., “I am more complex,” i.e., inward focused), the other may think of how *others* are different from him or her (e.g., “others are simpler,” i.e., outward focused). Although both people may seem equivalent in terms of thought content and activation level of the personal-self, the self is the center of attention for the inward (vs. outward) focused person. Therefore, because people are more likely to use a category when it is in the center of their attention (Bruner 1957; Higgins 1996), the inward focused person should be more likely to use the personal-self (rather than other activated categories, e.g., others) as a reference class. Previous research finds that people’s attention to the self varies as a function of their self-consciousness/-awareness; when self-consciousness/-awareness is low, people’s attention is not directed inward, towards the self, rather it is directed outwards, away from the self (Duval and Wicklund 1972; Fenigstein, Scheier, and Buss 1975; Gibbons 1990). Accordingly, people who are

low on self-consciousness (the trait) or self-awareness (the state), who do not focus on the self, should be less likely to use personal-self as a reference class even when it is active.

Assimilation or Contrast of Product Judgment to Self Evaluation

People judge a target in assimilation to a mentally active reference-category that includes that target. This is because the way people mentally represent the target includes category information that directly affects judgments of the target (e.g., Bless and Schwarz 2010). Our framework uniquely predicts that, if a consumer uses the personal-self as a reference category for judging a product, and classifies the product as part of that category, he or she is likely to judge traits of that product in assimilation to how he or she evaluates the “self” on these traits. In particular, in order to obtain a reference level for judging how creative (or other traits applicable to both people and products) a product is, consumers may assess how they measure on this trait, similarly to the way they obtain a reference level for judging traits of other people (Dunning and Hayes 1996; Gawronski et al. 2005). Thus, if as we suggest above, consumers classify owned products as members of the category “self,” they may intuitively include their self-evaluation in the mental representation of these products and judge the product in assimilation to their self-evaluation.

People also judge a target in contrast to the way they judge a mentally active reference-category that does not include that target. This is because people use category information to mentally represent the standard for evaluating the target, which inversely affects how these people judge the target (e.g., Bless and Schwarz 2010). Our framework uniquely predicts that if a consumer uses the personal-self as a reference category for judging a product, and classifies a product as external to that category, he or she is likely to judge traits of that product in contrast to how he or she evaluates the “self” on these traits. In particular, in order to obtain a reference level for judging how

creative (or other traits applicable to both people and products) a product is, consumers may assess how they measure on this trait, similarly to the way they obtain a reference level for judging traits of other people (Dunning and Hayes 1996; Gawronski et al. 2005). Thus, if as we suggest above, consumers classify unowned products as external to the category “self,” they may intuitively include their self-evaluation in the mental representation of the standard for product evaluation and judge the product in contrast to their self-evaluation. Thus, we hypothesize that:

H1: People judge traits of owned products in assimilation with, but traits of unowned products in contrast to, how they judge themselves on these traits.

Our conceptual framework suggests that the outcome of EC, classification of owned objects in the personal-self and of unowned objects out of the personal self, drives the predicted assimilation and contrast. However, consumers low on “Mine-Me” sensitivity do not classify objects relative to the self based on whether they own them; hence owning or not owning a product should not predict assimilation or contrast for these individuals. If ownership does not determine where ‘me’ ends and ‘not-me’ begins, it cannot predict whether people will include the way they judge themselves in how they mentally represent the product, or in how they mentally represent the standard for judging the product. Further, for people with low “Mine-Me” sensitivity, salience of the concept “ownership” is less likely to activate the personal-self and thus to trigger EC. We develop a method for assessing “Mine-Me” sensitivity to examine our prediction that:

H2 Low “Mine-Me” sensitivity attenuates the predicted assimilation/contrast effects.

In addition, people who have outward (vs. inward) focus (i.e., those low on self-consciousness/-awareness) are less likely to use the personal-self as a reference class for products, namely to engage in EC. Thus, consistent with our view that EC drives the predicted assimilation and contrast, we predict that:

H3: Low self-awareness/-consciousness attenuates the predicted assimilation/contrast effects.

In the four experiments described below, we test these hypotheses across two human-like traits, creativity and masculinity. Experiments 1A and 1B examine our assertions that (a) activating the personal-self facilitates its usage as a category for objects, mainly when self-focus is high, and that (b) salience of the concept “ownership” activates the personal-self, mainly under high “Mine-Me” sensitivity (which we assess via an original measure described below). Experiment 2 then confirms that owning (vs. not owning) a product induces consumers to classify it as in (vs. out of) the personal self, mainly under high “Mine-Me” sensitivity, and along with Experiments 3 and 4, tests the assimilation-contrast hypotheses.

EXPERIMENT 1A: PERSONAL (VS. SOCIAL) SELF ACTIVATION AND SELF-CONSCIOUSNESS FACILITATE USAGE OF THE SELF AS A CATEGORY FOR OBJECTS

The current study aims to confirm the first part of our model, namely that people use the personal-self as a category for objects when it is activated, especially when they are self-focused. Previous research shows that the order in which people think of category members following category activation reflects how strongly these members are associated with that category: items retrieved earlier are more strongly associated to the category (Fazio, Williams, and Powell 2000; Higgins, King, and Mavin 1982). Based on this finding, if activation of the personal-self does lead people to use the self as a category for objects, such activation should lead people to retrieve objects that are more closely related to the personal-self before other objects. Additionally, if usage of the self as a category for objects is more likely when inward-focus is high, such primacy of self-related objects in retrieval should be observed mainly under high self-consciousness.

To test our prediction that consumers use the personal- (but not the social-) self as a category for objects, the ‘personal’ or ‘social’ self of participants in this study was activated and then participants listed the first seven products that came to their mind. In addition, we wanted to tap into the extent that the order of the listed objects captured association strength between the product and the self. For that purpose, participants subsequently completed a filler task and then (1) ranked the products they listed (presented in a randomized order) on the extent to which they were part of their personal-self, and (2) classified the objects into two discrete classes, “part of self” and “not part of self.” Finally, participants’ self-consciousness was measured using a validated scale. Support for the notion of EC---that people spontaneously use the personal-self as a category for objects---would come from finding that products listed earlier (1) rank as being more (vs. less) “part of self” and (2) are more likely to be classified as “part of self” (vs. “not part of self”). This pattern of results should hold when the personal-self is activated, especially among self-conscious people.

Procedure. One hundred and eighteen participants of an on-line panel joined a short online experiment in return for a nominal fee. Following Mussweiler and Bodenhausen (2002), participants in the personal (social) self-activation condition listed five things that make them different (similar) to other people of their gender. Next, following Fazio et al. (2000), participants listed the first seven objects that came to their mind. In particular, they were asked to “enter the first seven durable goods, big or small, that come to your mind. Mention any product or object that is currently popping up. Please refer to a specific example of each object, rather than to a general object type. That is, picture in your mind a specific example of the item you refer to.”

Subsequently, as a manipulation check for the personal (vs. social) self activation, participants played a word-find puzzle game on a 11 X 11 matrix containing 121 letters (for the actual stimulus employed, see Web Appendix A). Participants had 50 seconds to find and write

down as many six-letter or longer words as they could find in the matrix. The instructions required that the words be meaningful and constructed out of letters linked in a straight line (horizontal or vertical) in the letter matrix. The 50-second time limit constrained the number of words the participants could find, leaving them only enough time to identify the words that jumped out at them. This enabled us to determine to what extent the concept of interest, the personal-self or 'me,' was accessible in participants' minds (Parker and Schrifft 2011). Note that, unlike traditional word-find puzzle games, we did not give participants the list of words to be found. The word-find puzzle contained four personal-self related words (individual, myself, personal, identity) and four control words matched in length and frequency of usage (industrial, mostly, physical, ideology). Participants received a full explanation of the task before beginning the task.

Next, participants were presented with the list of seven objects that they had listed earlier (presented in a random order), and were instructed to drag them into a box in the order that reflected their ranking of the objects as being part of the personal-self. In particular, participants read that "if you think of all the objects in the world, you may notice that some are more part of your personal-self than others. Listed below are the 7 objects you mentioned earlier. Please drag and drop each of these objects to the box, putting objects that you see as more part of your personal-self further at the top, and objects that you see as less part of your personal-self further at the bottom." The rank-order (Spearman) correlation between the order in which participants initially listed the products and the order in which they arranged them in the box served as one dependent variable. Subsequently, participants were presented again with a randomly ordered list of the products they named, and classified them into two groups, "part of self" and "not part of self." Specifically, they were asked to "divide the same objects into two groups, the group of objects that you classify as being part of your personal-self ('me') and the rest of the objects which you see as not part of your personal-self ('not me')." The extent to which participants initially tended to list objects they classified as "me," before

objects they classified as “not-me” served as a second dependent variable. Finally, participants responded to the self-consciousness scale (Fenigstein et al. 1975), which includes items such as “I reflect about myself a lot.”

Results. First, as a manipulation check, the number of personal-self related words that participants found in the word puzzle was submitted to a regression with condition (personal-self = 1, social-self = -1), mean centered self-consciousness and their interaction as predictors. The analysis revealed the expected positive effect of the manipulation on activation of the personal-self ($\beta = .21$, $p = .01$; $M_{personal-self} = 1.86$, $M_{social-self} = 1.45$), and no other effect (p 's $> .73$). Further, controlling for the number of non-personal-self related words ($M = 1.28$, $SD = .91$) did not affect the pattern of results. Next, a within-subject rank order (Spearman) correlation between the order in which participants initially listed the products and their ranking of the product as “part of self” was calculated for each subject, converted into Z using Fisher’s transformation, and submitted to the same analysis. We predicted that, when the personal-self was active, it would serve as an organizing category for objects; this would be reflected by a higher correlation between the order in which participants listed the products and their ranking of the products as “part of self,” but mainly among self-conscious individuals. Consistent with that prediction, the analysis revealed a positive effect of activation of the personal-self ($\beta = .10$, $p = .03$), a statistically insignificant effect of self-consciousness ($\beta = .13$, $p = .13$), and most importantly, a significant interaction of the two ($\beta = .22$, $p = .01$; see Figure 2, upper bar, for the untransformed correlations). The predicted nature of the interaction was confirmed by a spotlight analysis (Fitzsimons 2008). The analysis (conducted using the Fisher transformed values, reported using the untransformed correlations) revealed a higher correlation in the personal-self (vs. social-self) activation condition one standard deviation above the

mean of self-consciousness ($M_{personal-self} = .44$ vs. $M_{social-self} = .09$, $p = .0008$), but no effect one standard deviation below the self-consciousness mean ($M_{personal-self} = .14$ vs. $M_{social-self} = .16$, $p = .72$).

 Inset Figure 2 around here

Next, for each participant, we calculated a score that reflects the tendency to name objects he or she classified as “part of self” earlier (vs. later) in his or her initial list of products. This score, the standardized median rank difference (SMRD) of object classification, is defined as $2(MR_n - MR_s)/n$. In this formula, MR_n = median rank (i.e., median location) of objects that are “not part of self” in a participant’s object list, MR_s = median rank of objects that are “part of self” in a participant’s object list, and n = total number of objects in the list, which, based on the task, was set to seven (Johnson, Haubl, and Keinan 2007). The SMRD score can take on values from 1 (all “part of self” objects were listed before any “not part of self” objects) to -1 (all “not part of self” objects were listed before any “part of self” objects). We predicted that when participants use the self as a category for objects, they would list “part of self” items before “not part of self” ones. To examine this prediction, the SMRD was submitted to the same analysis as the correlation above. Consistent with our prediction, the analysis revealed a marginally significant positive effect of activation of the personal-self ($\beta = .1$, $p = .08$), a statistically insignificant effect of self-consciousness ($\beta = .12$, $p = .25$), and most importantly, a significant interaction of the two ($\beta = .33$, $p = .003$; see Figure 2, lower bar). In line with the predicted nature of the interaction, a spotlight analysis revealed higher SMRD in the personal-self (vs. social-self) activation condition one standard deviation above the mean of self-consciousness ($M_{personal-self} = .50$ vs. $M_{social-self} = -.09$, $p = .0009$), but no effect one standard deviation below the mean of self-consciousness ($M_{personal-self} = -.02$ vs. $M_{social-self} = .14$, $p = .35$). Additionally, a repeated measure incorporating the two measures for primacy of self-related over self-unrelated

products in the product list (i.e., individual spearman correlations and SMRD scores) indicated that both the main effect of personal-self activation ($p = .03$), and its interaction with self-consciousness ($p = .002$) were statistically significant. Overall, the results are consistent with the idea that people use the personal-self as a category to classify objects when the personal-self is active, especially when self-consciousness is high. Notably, because the main effect of personal-self activation is significant in addition to its interaction with self-consciousness, it suggests that although self-consciousness facilitates the usage of the personal-self as a category for objects, it is not a necessary condition for EC to ensue. However, a limitation of this study is that the results may reflect how participants retrospectively rated objects relative to the self, rather than the order in which “part of self” objects were retrieved. Experiments 3 and 4 alleviate this limitation by demonstrating downstream effects of self-consciousness and self-activation that are consistent with a self as a category (vs. a retrospective rating) account.

EXPERIMENT 1B: THE SALIENCE OF THE CONCEPT “OWNERSHIP” ACTIVATES THE PERSONAL-SELF

The current experiment aims to confirm our assumption that the salience of the concept “ownership” activates the personal-self. To test this premise, we made ownership salient for half of the participants, and then asked all participants to find words in the word-puzzle used in Study 1A. Subsequently, to test the boundary condition that low “Mine-Me” sensitivity diminishes the effect of ownership salience on self-activation, participants rated the extent to which they saw several objects as “part of self,” and then indicated whether they owned each object. These ratings were used to compute “Mine-Me” sensitivity scores for each participant. Our assumptions would be supported by finding that the number of personal-self related words that participants find in the puzzle is greater in

the ownership (vs. no-ownership) salience condition, but this effect attenuates under low “Mine-Me” sensitivity.

Procedure. One hundred and thirty six members of an on-line panel joined a short online experiment in return for a nominal fee. There were two conditions in the experiment, ownership salience and control. In the first part of the experiment, participants listed two sets of three durable goods, under instructions to “state specific products (e.g., a Fossil wrist watch), rather than merely a product category (e.g., watch) or brand (e.g., Fossil).” In the ownership salience condition, participants listed three goods they came to own recently and three goods they disposed of recently. In the control condition, participants listed three goods they had seen ads for recently and three goods they had not seen ads for recently. Then, in the second (ostensibly unrelated) part of the experiment, participants completed a word-puzzle (containing personal-self related and control words) with the same content, instructions and time constraints as used in experiment 1A.

Subsequently, the third seemingly unrelated part of the experiment assessed participants’ “Mine-Me” sensitivity. Participants rated the extent to which they saw each of 13 objects (e.g., laptop, running shoes, car, ladder, etc.) as part of their selves (1-not at all part of my self to 7-very much part of my self). In particular, participants read that “people vary on the extent to which they see different objects as part of their personal self identity. For this study, please indicate the extent to which each of the objects below is part of your personal self-identity. For each object, think of a specific example of the object. For example, when you respond to the item car, think of a specific car (i.e., not of cars in general). Have a specific and concrete image of that car in your mind and refer to it in your response.” Afterwards, participants indicated whether they owned each of the objects they rated. Specifically, they were informed that “we are not interested in whether you own the product in general, rather in whether you own the product you rated in the previous question set.

Thus, for example, your response to the item ‘Car’ should be ‘yes’ if you personally own the specific car you thought of in your response to the item in the previous question set. It should be ‘no’ if you do not personally own that specific car (even if you personally own a different car).” To verify attention, the list of objects included five objects that participants did not rate on whether they are “part of the self.” Participants were informed that there are additional objects in the list and were asked to indicate “N/A” when an object in the latter list was not in the list of objects they initially rated on the extent to which they are “part of self.” The specific set of 13 objects was selected from an initial set of 20 objects based on a pretest among 150 participants; the final list excluded items that were owned by less than 20% or by more than 80% of the pretest participants (see Web Appendix B).

To assess individual differences on “Mine-Me” sensitivity (i.e., the extent that ‘mine is ‘me’), we took the following steps. First, we wanted to verify that the low “Mine-Me” sensitivity is not driven by product specific effects (i.e., some participants may own only products that are generally rated as less “part of self,” e.g., own a ladder and a toolbox but not a laptop and a car). Accordingly, we subtracted from each product’s “part of self” rating the mean of the “part of self” ratings of participants with the same ownership status over the product (e.g., rating of a car by a car owner was centered by the mean ratings of car owners only). Then we subtracted the mean centered average rating of unowned objects from the mean centered average rating of owned objects ($M = .09$, $SD = 1.19$; using centered “part of self” rating is a conservative measure that accounts for product specific effects). For individuals with higher (vs. lower) “Mine-Me” sensitivity, ownership (but not lack of ownership) over a product leads to a greater increase in the perception of that product as “part of self.”

We predict an interaction effect between ownership salience and “Mine-Me” sensitivity such that, participants in the ownership salience conditions should find more personal self-related words than participants in the control condition, but only when “Mine-Me” sensitivity is high (vs. low).

Results. ANOVA with ownership salience (yes vs. control) as a predictor verified that, consistent with our view of “Mine-Me” sensitivity as an individual difference measure, it was not affected by condition ($p > .26$). Further, confirming that “Mine-Me” sensitivity was not driven by low attention, it did not correlate with the frequency of participant’s incorrect usage of the “N/A” option (i.e., chose “N/A” for products they initially rated or did not choose “N/A” for products they did not initially rate; $CORR = -.04, p = .67$). Next, the number of self-related words participants found in the word puzzle was submitted to a regression with condition (ownership salience = 1, control = -1), mean centered “Mine-Me” sensitivity and their interaction as predictors. Consistent with our assumption that ownership salience can activate the personal-self, the analysis revealed a positive effect of ownership salience on self-activation ($\beta = .15, p = .03$). Further, consistent with our theorizing that ownership salience activates the self mainly when ‘mine’ equals ‘me,’ the effect of ownership salience on self-activation was qualified by a significant interaction with “Mine-Me” sensitivity ($\beta = .13, p = .05$, see Figure 3). The predicted nature of the interaction was further confirmed by a spotlight analysis (Fitzsimons 2008). The analysis revealed higher self-activation in the “ownership salience” condition one standard deviation above the mean of “Mine-Me” sensitivity ($M_{control} = 1.35$ vs. $M_{own} = 1.96, p = .004$), but no effect one standard deviation below the mean of “Mine-Me” sensitivity ($M_{control} = 1.49$ vs. $M_{own} = 1.50, p > .96$). Controlling for the total number of words each participant found or for the number of objects each participant owned did not affect the pattern of results.

Inset Figure 3 around here

The results of the two first experiments confirmed the assertions that activating the personal-self increases its usage as a category for objects, that ownership salience can serve to activate the personal-self, and that low self-consciousness and low “Mine-Me” sensitivity are boundary conditions for these effects. Experiment 2 moves on to confirm that owning (vs. not owning) a product induces consumers to classify it as in (vs. out of) the personal-self mainly under high “Mine-Me” sensitivity, and to directly test these implications of EC for product judgment as specified in the hypotheses.

EXPERIMENT 2: CLASSIFYING PRODUCTS RELATIVE TO THE “SELF” MEDIATES THE PREDICTED ASSIMILATION AND CONTRAST PATTERNS

This experiment examined the prediction that people judge traits of an owned product in assimilation with, but traits of an unowned product in contrast to, their self-evaluation (H1). This experiment also examined whether this effect is moderated by “Mine-Me” sensitivity (H3) and mediated by the extent participants classified the product as “part of self.” As a product attribute we used creativity. As a product category to be judged on creativity we chose pens, positioning them as moderately creative by presenting them as ‘space’ pens that can write in zero gravity (see Web Appendix C). The experiment manipulated ownership of the pen (yes vs. no) and measured creativity self-evaluation and “Mine-Me” sensitivity as factors. Activation of the personal-self via ownership salience (see Experiment 1B) was kept high across conditions to ensure categorization with respect to the self.

Procedure. One hundred and twelve students of a large East Coast University arrived at the lab to take part in a series of apparently unrelated experiments for a \$7 participation fee. They first responded to a survey about how descriptive the traits creativity, innovativeness and originality were of them (anchored by 1-not at all to 5- very much so). Then, after completing a 15-minute filler task, participants were informed (as a cover story) that the business school needed their input in choosing a pen that it would hand out to invited visitors. As additional compensation for their input, participants in the ownership (no-ownership) condition were notified that they would get to own the pen they evaluated (a luxurious mechanical pencil not featured in the experiment). This information served to increase ownership salience as a means to activate the personal-self in all conditions and to establish a randomly assigned ownership (yes or no) of the pen. Next, each participant read a booklet that portrayed the evaluated pen as moderately creative, and completed a series of tasks using the evaluated pen, including copying a drawing and answering unrelated questions.

Subsequently, participants rated the pen on four semantic differential items that pertained to the pen's creativity (creative – not creative, original – not original, unique – not unique, fresh – not fresh), anchored at -3 and 3. Then, to capture the presumed mediator---how participants egocentrically categorized the pen---participants rated the pen on the extent to which it was part of the self. Next, to assess participants' "Mine-Me" sensitivity, using a variation of Exp. 1B's measure, participants provided "part of self" ratings for a specific object they owned (the shirt they were wearing) and for a specific object they did not own (their lab seat). This measure was followed by two control questions about involvement (four items: interested, attentive, active and alert anchored between 1-not at all and 7-very much so) and positive affect (Watson, Clark, and Tellegen 1988).

Support for H1 would come from finding that, when people are assigned to own the pen, they judge its creativity in assimilation with, but when people are assigned not to own the pen, they judge its creativity in contrast from, the way these people judge their own creativity. Support for H3 would

come from finding that this effect attenuates when participants are low on “Mine-Me” sensitivity. Finally, we theorize that assimilation and contrast to the self are linked to the classification of the product relative to the self. If our theorizing holds true, then (i) the extent to which pen creativity judgments and self-creativity judgments are close to or far from one another (i.e., assimilation or contrast) should be predicted by ownership, and (ii) this relationship should be mediated by “part of self” ratings.

Results and Discussion. We first analyzed how pen creativity judgment was affected by people’s own creativity evaluation, whether they owned the pen and their “Mine-Me” sensitivity. Then, to examine the link to EC, we combined self and product judgments into a product-self similarity measure and examined whether the effect of ownership on it was mediated by “part of self” ratings, as predicted by our model.

The three personal creativity items were averaged into a single measure ($\alpha = .78$). A regression analysis verified that, consistent with our view of “Mine-Me” sensitivity ($M = 2.72$, $SD = 2.00$) as an individual difference measure, it was not affected by ownership, self-described creativity (continuous and mean-centered) and their interaction (all p 's $> .27$). A second regression analysis revealed no effects of ownership, self-described creativity, “Mine-Me” sensitivity and their two- and three-way interactions on involvement ($\alpha = .69$) and positive affect ($\alpha = .85$), except a positive relationship between self-described creativity and positive affect.

Pen creativity ($\alpha = .90$) was submitted to a regression analysis with ownership (contrast coded), mean-centered personal creativity, mean-centered “Mine-Me” sensitivity, and their two-way and three way interactions as predictors. Consistent with the prediction that ownership leads to assimilation of product judgment with self-evaluation (H1), but lack of ownership leads to contrast, the analysis revealed a significant two-way interaction between self-described creativity and

ownership ($\beta = .68, p = .05$) and no main effects. Further, consistent with the prediction that this pattern is mainly expected among people for whom ‘mine’ equals ‘me’ (H3), this effect was also qualified by “Mine-Me” sensitivity, resulting in a three-way interaction ($\beta = .44, p = .009$; see Figure 4).

 Inset Figure 4 around here

A spotlight analysis at one standard deviation above the mean of “Mine-Me” sensitivity showed that the interaction between ownership and self-evaluation was significant ($t = 1.57, p = .001$). Consistent with the ownership-to-assimilation prediction, the personal creativity slope of owners was significant and positive ($\beta = .81, p = .02$). Further, consistent with the no-ownership-to-contrast prediction, the personal creativity slope of non-owners was significant and negative ($\beta = -.76, p = .02$). Finally, consistent with the prediction that assimilation and contrast are mainly expected when ‘mine’ equals ‘me’ (H3), a spotlight analysis at one standard deviation below the mean of “Mine-Me” sensitivity revealed that the interaction between ownership and personal creativity and the other planned contrasts was not significant (all p 's $> .23$).

Next, in order to examine the prediction that the similarity between product and self creativity judgments was a result of classification of the product relative to the self, we ran an additional analysis with product-self similarity as a dependent variable. As a similarity score between self and pen judgment, we used the distance (i.e., absolute difference) between the normalized creativity ratings of pen and of self; a higher distance is consistent with higher dissimilarity and contrast, and a smaller distance is consistent with higher similarity and assimilation. We predicted that assigning participants to own the pen would make them view the pen as more part of the self, which in turn, would make them rate the pen's creativity closer to the way

they rated their own creativity. Consistent with this prediction, following the analysis methods recommended by Zhao, Lynch, and Chen (2010), we found the mean indirect effect from a bootstrap analysis (Preacher and Hayes 2004) was negative and significant ($a \times b = -.0434$), with a 95% confidence interval excluding zero (-.1067 to -.005). In the indirect path, ownership (vs. no-ownership) increased “part of self” ratings by $a = .37$ units. Further, holding ownership constant, a unit increase in “part of self” rating reduced product-self distance by .12 units (i.e., $b = -.12$). The direct effect (-.006) was not significant ($p = .95$), indicating full mediation.

To shed light on the interrelation between the mediating role of the pen’s “part of self” rating and the moderating role of “Mine-Me” sensitivity, we used a mediated moderation analysis using the pen-self distance as a DV. Based on the criteria laid-out by Muller, Judd, and Yzerbyt (2005), Table 1 shows that the classification of the pen as part of the self fully mediated the “Mine-Me” sensitivity moderation effect. This was revealed by the existence of three conditions (Muller et al. 2005). First, the interaction effect between the treatment (ownership) and the moderator (“Mine-Me” sensitivity) on the DV (distance score), was significant ($\beta_{13} = -.091$; $p = .04$). Second, the interaction of the treatment and the moderator on the mediator (“part of self” ratings) was significant ($\beta_{23} = .161$; $p = .03$). Third, when the mediator and its interaction with the moderator were added to the regression, the mediator was significant ($\beta_{34} = -.126$; $p = .03$) and the effect of the moderator on the DV dropped to insignificance ($\beta_{33} = -.067$, NS). Thus, consistent with the theorized nature of the moderation, as “Mine-Me” sensitivity grew, assigned ownership (vs. no-ownership) more strongly increased the pen’s “part of self” ratings, which in-turn decreased the pen-self distance on creativity.

 Inset Table 1 around here

The results of this experiment support Hypotheses 1 and 3 and provide support for the underlying process of egocentric categorization. It is possible that the absence of assimilation and contrast for participants with low “Mine-Me” sensitivity may have benefited from a weaker effect of ownership salience on self-activation (as observed in Experiment 1B), and was not solely driven by determining whether people classified products relative to the self based on whether they owned them. However, Equation 2 in Table 1 is consistent with our premise that “Mine-Me” sensitivity did diminish the effect of product ownership on classification of a product as “part of self” (i.e., β_{23} in Table 1 is statistically significant), and the mediated moderation analysis provides positive evidence that this effect drove a substantial part of the observed attenuation. Notably, because the two-way interaction between ownership and self-evaluation is significant in addition to its three-way interaction with “Mine-Me” sensitivity, although “Mine-Me” sensitivity facilitates the assimilation and contrast effects, it is not a necessary condition for them to ensue. Next, Experiment 3 extends the empirical support for the framework to include situations of psychological (vs. legal) ownership, defined as a sense of possession prior to purchase (Pierce, Kostova, and Dirks 2003). We expect our predictions to hold under psychological ownership because previous research finds that implications of legal ownership extend to cases of psychological ownership (e.g., Peck and Shu 2009). While legal ownership is determined by rules and customs, psychological ownership is less tangible, and thus can vary by situation. Consumers may feel psychological ownership as a result of marketing practices such as mass customization (Franke, Schreier, and Kaiser 2010), tryouts, test-drives or other efforts (e.g., advertising messages, forms of product display) which cause consumers to touch a product or imagine its usage (Peck and Shu 2009).

EXPERIMENT 3: SELF-ATTENTION FACILITATES THE PREDICTED ASSIMILATION AND CONTRAST PATTERNS

Experiment 3 examined the prediction that assimilation and contrast can also follow from psychological (vs. legal) ownership. The experiment also tested the prediction that the assimilation and contrast are likely to be attenuated when self-consciousness is low (H2), verified that product trait evaluations are formed spontaneously (vs. upon experimental elicitation) and manipulated (rather than measured) participants' creativity. The experiment used a 2 (psych-ownership: no, yes) x 2 (perceived personal creativity: low, high) between-subjects design and measured self-consciousness as an additional variable. The dependent variable was self-rated likelihood of recommending the pen to creative people, a more indirect measure of product creativity judgment. We predicted that assimilation and contrast would manifest through recommendation likelihood to creative individuals but only for self-conscious participants.

Development of Manipulations and Measures

Perceived Personal Creativity. Building on meta-cognitive ease-of-retrieval principles (Schwarz et al. 1991), we developed a manipulation of the extent to which people feel creative (for details, see Web Appendix D). The manipulation consists of two levels of perceived personal creativity, high and low. In both conditions, participants are asked to (i) provide two creative usages for a brick, each from a different usage category, (ii) indicate the category of each usage (e.g., construction, art, etc.), and (iii) avoid naming usages from six specific prohibited categories. In the easy- (vs. difficult-) to-retrieve condition, the prohibited categories excluded roughly 15% (vs. 80%) of the usages that participants in the examined population tend to identify (based on a pretest with a different set of 110 participants). Participants who find it easy to think of usages are expected to perceive themselves as high on creativity. Compared to participants in the easy-to-retrieve condition,

we expected those in the difficult-to-retrieve condition to find the task to be relatively hard, which would make them perceive themselves as less creative. A pretest of the manipulation among 41 students supported this expectation--participants in the high task difficulty condition reported greater task difficulty ($M = 6.03$) and lower perceived personal creativity ($M = 5.15$) than those in the low task difficulty condition ($M = 4.97$, $F(1, 39) = 4.49$, $p = .04$; $M = 6.52$, $F(1, 39) = 4.90$, $p = .03$, respectively).

Psychological Ownership. We developed a psych-ownership treatment that manipulates whether participants have a chance to own a product. This is similar to consumption circumstances, where products are in a consideration set, a wish list or registry, and consumers may or may not end up owning them. To verify that a chance (vs. no chance) to own a product increases psych-ownership, 35 students evaluated a pen and were entered into a drawing for ownership of the pen. Participants rated their psych-ownership of the pen on a three-item scale (e.g., "I feel like the pen I evaluated is mine," adapted from Peck & Shu 2009, anchored between 1-not at all and 7-very much so) either before or after the draw. As predicted, participants who did so before (vs. after) learning they would *not* own the pen had stronger psych ownership of it ($M = 4.80$ vs. $M = 2.88$, $t \leq .01$).

Recommendation Likelihood and Product Evaluation. We also composed an indirect measure of product creativity, the likelihood of recommending the product to creative people. We expected recommendation likelihood to creative individuals (but not to uncreative ones) to reflect pen creativity judgments. In a pretest, 28 students evaluated the pen used in the experiment on creativity (innovative and creative, $r = .79$), overall valuation (valuable and desirable, $r = .56$) and likelihood of recommending it to creative (journalist, sketch-artist and a copywriter, $\alpha = .87$) and non-creative (a teacher and a clerk, $r = .86$) individuals. Results show that, as predicted, pen creativity evaluations

were positively correlated with recommendation likelihood, but only when they were to creative people ($r_{\text{creative}} = .43, p = .02$; $r_{\text{uncreative}} = .08, \text{NS}$). A one-sided Fisher's Z test confirmed that the correlations significantly differed ($p < .05$). Importantly, correlations of pen valuation with recommendation likelihood to creative and to non-creative individuals did not differ ($r = .56, p = .001$ and $r = .57, p = .001$). That is, higher valuations correlated with higher recommendation likelihood regardless of the recommendation target. This reduces concerns that people recommend the pen to creative (vs. non-creative) individuals because they think that creative individuals deserve a more valuable pen, rather than as we suggest, because the pen is perceived as more creative.

Method

One hundred and twenty one students of a large East Coast university arrived at the lab to participate in a series of supposedly unrelated studies in return for \$7. The first part of the experiment manipulated participants' perceived personal creativity, using the procedure described above. Next, participants received the same cover story as in Experiment 2 (i.e., helping the business school in choosing a pen to hand out as a gift for special guests). Then participants were informed that later in the experiment the computer would randomly assign them to own either the pen they would evaluate or a mechanical pencil that was featured on an adjacent shelf. This information served to induce psych-ownership over the pen and to activate the personal-self by increasing ownership salience. Subsequently, participants decided which pen to evaluate out of three pens on their table and, as in Experiment 2, participants copied a geometric sketch using that pen. Next, participants in the psych-ownership condition rated the likelihood of recommending the pen to creative and non-creative individuals (see pretest) without knowing whether they would own the pen. By contrast, participants in the no-ownership condition rated the likelihood of recommending

the pen only after learning that they would own a mechanical pencil rather than the evaluated pen. Finally, participants completed the private self-consciousness scale (Fenigstein et al. 1975) as in Experiment 1A.

Results

Pen recommendation likelihood to creative individuals ($\alpha = .67$) was submitted to a regression analysis with contrast-coded ownership and personal creativity as well as mean centered self-consciousness and their two-way and three-way interactions as predictors. Consistent with the assimilation and contrast predictions (H1), the analysis revealed a predicted psych-ownership by creativity interaction ($\beta = 1.01, p = .02$) and no significant main effects. Further, consistent with the prediction that assimilation and contrast are attenuated when self-consciousness is low (H2), the interaction was qualified by self-consciousness, resulting in a significant three-way interaction ($\beta = 1.63, p = .006$; see Figure 5, left column).

 Inset Figure 5 around here

A spotlight analysis at one standard deviation above the mean of self-consciousness revealed that the interaction between ownership and perceived personal creativity was significant ($\beta = -2.22, p = .0005$). Consistent with the ownership-to-assimilation prediction (H1), psych-owners who were induced to feel more creative were *more* likely to recommend the pen to creative individuals ($M = 4.92$) than those assigned to feel less creative ($M = 4.19, F(1, 113) = 4.04, p = .05$). By contrast, consistent with our no-ownership-to-contrast prediction (H1), non-owners who were induced to feel

more creative were *less* likely to recommend the pen to creative individuals ($M = 4.07$) than those assigned to feel less creative ($M = 5.55$, $F(1, 113) = 8.98$, $p = .003$).

A spotlight analysis at one standard deviation below the mean of self-consciousness revealed that the ownership and self-evaluation interaction and the other planned comparisons were not significant (all p 's $> .68$). Further, the same analyses on recommendations to *non*-creative people ($r = .62$) yielded no significant main, two-way, or three-way interaction effects (all p 's $> .47$; see Figure 5, right column). Using recommendations to more (vs. less) creative professions as a repeated measures factor confirmed these results.

To sum, the current experiment further supported the predicted assimilation/contrast effects (H1) and showed that psychological (as opposed to legal) ownership is sufficient for yielding assimilation. The study showed that assimilation and contrast to self-evaluation also manifest through indirect measures such as recommendation likelihood to creative people. This implies that product judgment on human-applicable traits can be initiated spontaneously (rather than only due to explicit elicitation). Further, the finding that personal perceived creativity affects recommendations to creative, but not to non-creative, others rules out alternative explanations that are not trait-specific (e.g., overall affect or mood). Moreover, replicating the predicted pattern of results following product choice (i.e., although participants were randomly assigned whether to own the pen, they chose which pen to evaluate, and thus to potentially own), further verifies that our framework is not limited to random allocation of products. Finally, finding the assimilation/contrast effects only among self-conscious people (H2) confirms our assertion that individual differences that foster the usage of the self as a reference category, such as attention to the self, facilitate the observed effects. The next experiment examined the possibility that self-evaluation can serve as a relatively stable source of bias in product judgment, and verified that these effects are mainly expected when ownership is salient and thus the personal-self is active.

EXPERIMENT 4: INDIVIDUAL TESTOSTERONE LEVELS PREDICT PERCEPTIONS OF PRODUCT MASCULINITY

This experiment examined our assimilation and contrast predictions for a different trait, using an unobtrusive measure for self-judgment, which allowed us to estimate participants' perceptions of their own masculinity without artificially inducing participants to form such self-judgments. Specifically, we examined whether the extent that a consumer judges a product as masculine (e.g., adventurous, daring; Grohmann 2009) can be predicted by that consumer's testosterone levels (a physiological proxy for personal masculinity). Further, to test the possibility that consumers' self-judgment may consistently bias product judgment across time and contexts, testosterone levels were measured in classroom settings, while product judgments were measured using on-line survey settings, 10 months later. The study also verified that self-evaluation on masculinity (as reflected in testosterone) predicts product judgments mainly when ownership is salient (and the personal-self is therefore activated). Testosterone is a stable hormone (Sellers, Mehl, and Josephs 2007) that correlates with masculinity traits among men (Penton-Voak and Chen 2004). We confirmed that self reports of personal masculinity (ambitious, analytical, dominate, competitive, forceful; $\alpha = .85$) of 18 male subjects from the same population positively correlated with testosterone levels collected 10 months earlier ($r = .63, p = .005$).

Method. Seventy-six male MBA students of a large East Coast University participated in an on-line survey in exchange for the chance to win a \$500 lottery. The design included two levels of ownership (no, yes). In the no-ownership condition, ownership salience was either heightened or not. A second independent variable was the salivary testosterone-level collected 10 months earlier (see

description of saliva collection and processing in Web Appendix E). Participants in the no-ownership condition (including the ownership salient and not salient conditions) evaluated a portable music player they did not own (a 120GB Microsoft-Zune player presented in a picture; see Web Appendix F). In the heightened ownership salience condition, they did so after completing a task that activated the personal-self by implicitly increasing ownership salience whereas in the condition where ownership salience was not heightened, they performed a control task. The ownership-salience (control) task was to unscramble five sentences that included (did not include) ownership status words (e.g., “Danny owns (lives in) a small apartment in Brookline”). In the ownership condition, ownership salience was embedded in participants’ task to evaluate the music player *they personally owned*, and thus they evaluated the player’s masculinity following the control task. Self-awareness of participants in all conditions was heightened by asking participants to “take a minute and imagine yourself looking at a small mirror, what are the three first things that you notice?” (adapted from Pham et al. 2010). The dependent measure was music player masculinity (brave, daring, adventurous) measured on a 1-not-at-all to 9-very-much-so scale.

Results. Screening questions (Schultheiss and Stanton 2009) indicated that testosterone measures of eight participants were invalid (four for gum bleeding or oral infection/lacerations and four for consuming caffeine within an hour before saliva collection), and they were excluded from analysis. The qualitative pattern of results does not change if we do not drop responses. The music-player’s masculinity measure ($\alpha = .93$) was submitted to a regression with ownership (ownership, no-ownership-high-ownership-salience, and no-ownership-low-ownership-salience) and mean-centered testosterone level and their interaction as predictors. To represent the three ownership levels, we created two contrast-coded variables for the ownership and no-ownership-high-ownership-salience conditions contrasting with the no-ownership-low-ownership-salience condition.

Consistent with the prediction that ownership leads to assimilation, but lack of ownership to contrast (H1), the “omnibus” interaction ($F(2, 62) = 5.37, p = .007$) and the interaction contrast excluding the low-ownership-salience condition ($F(1, 62) = 10.58, p = .002$) were significant (see Figure 6). Further, when participants rated their own personal player, their testosterone level *directly predicted* their player masculinity judgment, as reflected in a positive significant testosterone slope ($\beta = .023, p = .02$). When participants rated an unowned player following ownership salience, their testosterone level *inversely predicted* their player masculinity judgments, as reflected in a negative significant testosterone slope ($\beta = -.017, p = .03$). Finally, when participants rated an unowned player in the absence of ownership salience, their testosterone level *did not predict* their player masculinity judgment, as reflected in a statistically insignificant testosterone slope ($\beta = -.006, p = .52$). That is, participants’ product judgments were not linked to their testosterone levels in the no-ownership-salience condition.

 Inset Figure 6 around here

GENERAL DISCUSSION

Categorization is a rudimentary mental capacity. People classify targets, such as people and objects in their environment, relative to reference categories, and consequently perceive targets in assimilation or contrast to these categories (Sujan and Dekleva 1987). Ample research finds that the “self” is a predominant category people use for organizing and interpreting their environment (Rogers et al. 1977), especially for segmenting and judging human targets, people and groups (Gawronski et al. 2005). Other research has suggested that people’s selves are associated with their

possessions (Belk 1988; Gawronski et al. 2007). However, research has not gone beyond the self-possession association hypotheses to suggest that people use the self as a framework for classifying and judging not only human targets, but also inanimate ones, such as products and goods, and that people “egocentrically categorize” objects by whether they own these objects. Building on this gap in the research, the present research theorizes that people do use the personal-self as a reference class for products, especially when the personal-self is active, and that people “egocentrically categorize” objects by whether they own them. The authors then explore the implications of these assertions for product judgment on traits such as creativity or masculinity. In particular, the authors explore the possibility that, following egocentric categorization, people judge owned objects in assimilation with, but unowned ones in contrast to, the way these people judge themselves.

Key Results. Three experiments supported the premises of EC. Experiment 1A confirmed that activation of the personal (vs. social) self leads consumers to use the personal-self as a category for objects, and that this effect is attenuated by low self-consciousness. Experiment 1B verified that ownership is associated with, and thus can activate, the personal-self, and that “Mine-Me” sensitivity captures the strength of this association. Experiment 2 established that assigned ownership affects how consumers classify a product relative to the self and that this effect is moderated by “Mine-Me” sensitivity.

Experiments 2-4 also demonstrated that using the self as a reference category for products induces consumers to judge owned objects in assimilation with, but unowned objects in contrast to, the way these consumers’ judge themselves. These results were obtained based on ownership that was induced experimentally (legal ownership in Exp. 2 and psychological ownership in Exp. 3) or naturally (Exp. 4). The results were replicated based on self-evaluation that was either manipulated (Exp. 3) or measured (Exp. 2, 4). Self-evaluation was measured either explicitly, just before product

judgment (Exp. 2), or implicitly, based on salivary hormonal levels measured 10 months prior to product judgment (Exp. 4). Results were replicated across two sets of product categories and attributes including pens with creativity (Exp. 2, 3) and a music-player with masculinity (Exp. 4). Judgments were elicited using explicit product ratings (Exp. 2, 4) or implicit ones, via recommendation likelihood by people high (but not low) on the trait (Exp. 3). Further, consistent with EC as the underlying process, these effects were mediated by the outcome of EC (product's "part of self" ratings, Exp. 2), and facilitated by "Mine-Me" sensitivity (Exp. 2), by self-focus (as measured in Exp. 3 and manipulated to be at a high level in Exp. 4), and by activation of the personal-self via ownership salience (Exp. 4).

Taken together, our experiments help rule out several alternative explanations for the observed pattern of results. In particular, the observed results could have been amplified, or even alternatively explained by consumer inference (see Kardes, Posavac, and Cronley 2004 for a review). According to an inference account, consumers may think that a product is low or high on a trait because they chose it and they think of themselves as respectively low or high on that trait. However, an inference account cannot hold in cases of random assignment of ownership (Exp. 2, 3), because in such cases, owning a product is not informative. In addition, an inference driven result should not be moderated by "Mine-Me" sensitivity or mediated by EC (Exp. 2).

Contributions. The current work extends research in social-categorization, which asserts that the social (relational or collective) self is an organizing concept for social categories. This research finds that people use the social-self to classify others with respect to the self and maintain a subjective notion of 'we' (Aron et al. 1991; Brewer and Gardner 1996; Tajfel et al. 1971). From that perspective, the personal-self is a 'stand-alone' concept that underlies no category (Brewer 1991). The present research extends this view by theorizing that the personal-self is an organizing concept

for a category of objects. Accordingly, people may use the personal-self to classify objects with respect to the self and to maintain a subjective notion of ‘me’.

The findings also extend previous “mine-is-better” research, namely that owning a product always leads consumers to judge it as more attractive (Huang, Wang, and Shi 2009) and valuable (Kahneman, Knetsch, and Thaler 1991), as a means to enhance the self (Beggan 1992). Our Egocentric Categorization framework suggests that under some conditions, ownership moderates how consumers’ judgment of their own traits affects the way they judge products in their environment, rather than directly and positively affecting how consumers judge a product. Consequently, ownership can also hurt (rather than always improve) product judgment when people judge themselves low on important product traits. Thus, beyond the theoretical significance of understanding the consequences of inducing consumers to feel ownership over a product, this topic has important practical implications for marketing practices that induce consumers to feel ownership of products before purchase, such as product touch (Peck and Shu 2009) or mass customization (e.g., Franke et al. 2010). Marketers should verify that prospective customers have positive self-evaluations on relevant personality traits before they induce them to feel product ownership. By doing so, marketers can improve product evaluations and reduce the likelihood that inducing product ownership will backfire.

The predicted evaluative implications of EC for owned and unowned objects rely on previous assimilation and contrast research (Bless and Schwarz 2010). That research suggests that when a target was initially part of a category and subsequently excluded from it, category valence is removed from target valence, yielding contrast via *subtraction*. Further, contrast can also ensue via *comparison* when the target was never part of the category, and category valence serves as a standard for judging the target’s valence. In the present research, objects that people are assigned not to own were never part of the self. Consequently, no-ownership should not induce contrast via

exclusion and subtraction, rather via lack of inclusion and comparison. Future research may benefit from looking at cases where consumers initially own an object. In such cases, assignment of no-ownership may yield exclusion of the product from the self and subsequent contrast via subtraction.

The identified assimilation and contrast moderators, self-focus and “Mine-Me” sensitivity, may operate via multiple processes and not only via the ones implicated in the present research. For example, it is possible that self-focus not only renders people more likely to use the activated self as a reference category, but also makes people more attuned to how they judge themselves, making this information more likely to be used as an input for product judgment. Further research is needed to identify other ways through which the identified moderators operate, as well as other theoretically driven moderators.

Future research can also leverage the suggested analogy between group membership and product ownership and can draw on the rich psychological research in the domain of person perception. For example, just as different social identities determine whether an individual is an in-group member, different personal identities may determine whether an object is an ‘in-good’ or an ‘out-good’, namely is part of or external to the self. This may lead to potential contrast effects in the evaluations of possessions that are external to one’s active identity. As another example, research can examine effects of previously identified additional sources for evaluative self-information beyond the actual-self, such as the ideal, ought or future self (Higgins 1987). Under some conditions, these self-evaluations may also affect product evaluation through assimilation or contrast. Future research should examine this and related predictions.

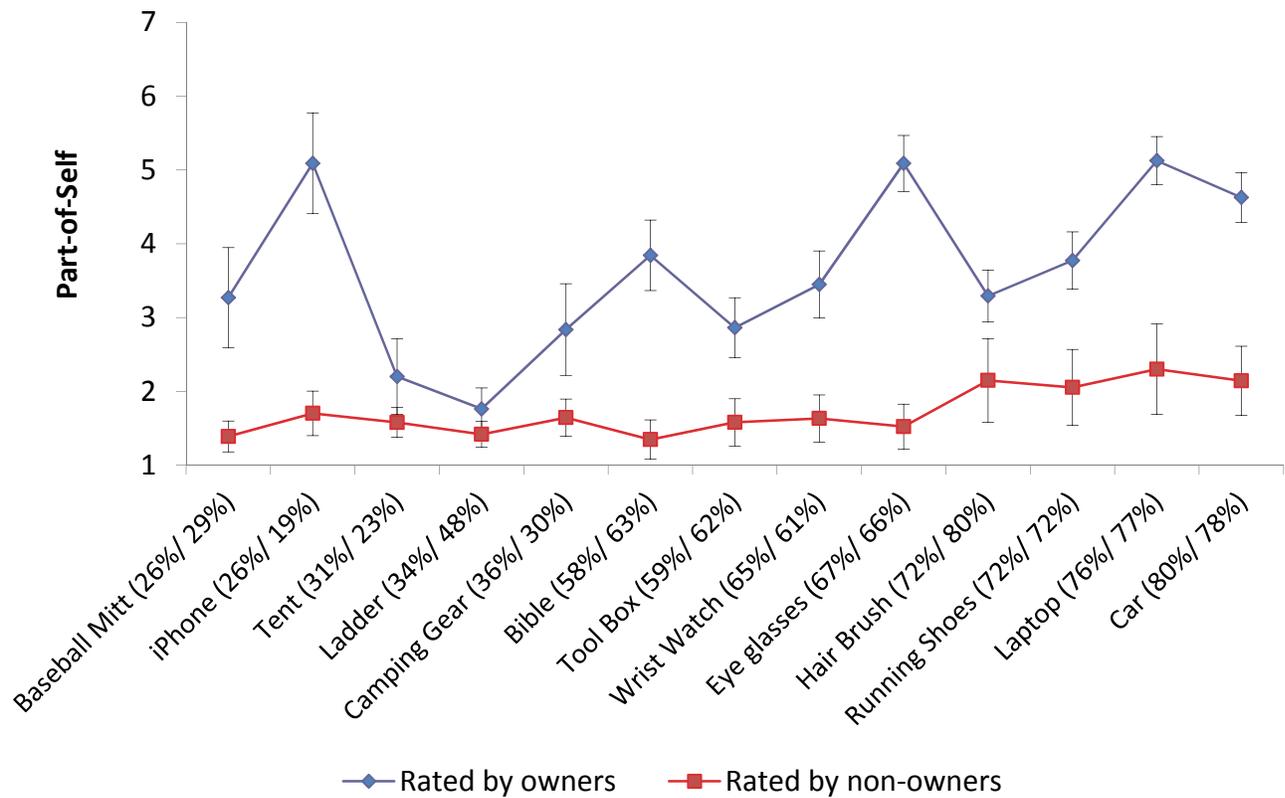
To summarize, the present research theorizes that consumers use the self as a reference category to judge objects, mainly when the personal-self is active, and classify objects relative to the self based on ownership. Consequently, consumers judge owned objects in assimilation with, but unowned ones in contrast to the way these consumers judge themselves.

WEB APPENDIXES

WEB APPENDIX A: WORD-FIND PUZZLE, EXP. 1

s	i	l	f	e	e	p	s	d	i	m
m	l	i	p	e	n	e	i	s	n	o
y	i	y	h	a	v	r	s	t	d	s
s	d	t	y	a	i	s	s	p	u	t
e	u	i	s	r	g	o	l	d	s	l
l	o	i	i	d	e	n	t	i	t	y
f	m	h	c	i	t	a	l	n	r	o
u	d	s	a	y	l	l	i	d	i	o
c	i	r	l	i	n	n	i	r	a	i
i	n	d	i	v	i	d	u	a	l	i
m	o	i	n	f	i	n	i	t	y	t

WEB APPENDIX B: “PART OF SELF” RATINGS BY OWNERS/NO-OWNERS, EXP. 1B



-
- i. In parentheses are percentages of participants who reported owning the product (pretest/ study)
 - ii. Bars represent 95% confidence Intervals
 - iii. Items owned by more than 80% or by less than 20% of pretest participants were excluded from the main study (lacrosse stick 3%, golf clubs, 13%, headphones 81%, sofa 81%, camera 83%, bed 91%, TV 94%)

WEB APPENDIX C: PEN DESCRIPTION, EXP. 2-3

Five Facts about the Atmosphere Pen™

1. The *Atmosphere Pen™* can write in zero gravity.
2. The *Atmosphere Pen™* uses an ink-feeding mechanism that forces the ink out using compressed nitrogen at a pressure of nearly 35 pounds per square inch.
3. The *Atmosphere Pen's™* ink-feeding mechanism allows people to use the pen lying on their back or writing upside down.
4. The *Atmosphere Pen™* was a nominee for the 'Most Creative Industrial Design of the Year' award of 2008.
5. The *Atmosphere Pen™* was considered by the American and Russian space agencies to substitute the currently in use Space-Pen.



*One of the above pens was presented to participants as the one to which the information refers.

WEB APPENDIX D – CREATIVITY MANIPULATION DEVELOPMENT, EXP. 3

To develop the manipulation, 110 participants provided as many creative usages for a brick as they could in three minutes. Then, two research assistants categorized the usages into 13 categories. Next, the two research assistants separately classified each usage into one of the categories. Following that, based on the frequency of each category in participants' answers, averaged across the two RAs, we calculated relative frequency for each category by taking its proportion of appearance.

Six of the categories, namely body care tool (e.g., weight for working out), art (e.g., abstract art exhibit), counter weight (e.g., paperweight), support (e.g., sitting on it), violence (e.g., breaking windows), and construction (e.g., build a wall) covered roughly 80% of the usages. An additional six categories, namely commodity (e.g., trading it), writing tools (e.g., use it as a chalk), shop/hardware tools (e.g., pound something into place), kitchen (e.g., knife sharpener), measuring (e.g., length/weight standard), aesthetic (e.g., Home décor) covered roughly 15% of the usages.

In the pretest and later studies, we prohibited participants in the difficult condition from using the first (more common) set of categories, leaving them only with relatively rare and difficult categories to generate usages, and prohibited participants in the easy condition from using the later (more rare) ones. The category “games,” which covered 5% of the usages, was not excluded in either condition.

WEB APPENDIX E – TESTOSTERONE COLLECTION AND PROCESSING, EXP. 4

Saliva samples were obtained during afternoon hours to minimize variations in neuroendocrine responses due to circadian changes (Sellers et al. 2007). After a 20-minute rest period, participants provided a saliva sample that was later assayed for testosterone levels. Saliva was obtained in sterile tubes using the passive drool method, which required participants to expectorate into a cryovial tube via a plastic straw.

To measure neuroendocrine responses, saliva samples were obtained using IBL SaliCap sampling devices. Upon completion of the study, saliva samples were stored immediately at -80°C until they were shipped overnight on dry ice to a laboratory in College Park, PA. Saliva samples were assayed for testosterone using a highly sensitive enzyme immunoassay (Salimetrics, PA). The testosterone test used 25 μl of saliva per determination, has a lower limit of sensitivity of 1 pg/mL , and average intra-assay coefficient of variation is 3.8%.

WEB APPENDIX F – MUSIC PLAYER DESCRIPTION, EXP. 4

Zune: Product information

120GB hard drive

Built-in FM tuner

Wireless sync

Size: 61.1 mm x 108.2 mm x 12.9 mm (w x h x d)

Weight: 4.5 ounces (128 grams)

Music, up to 30 hours (wireless off); video, up to 4 hours

Charge time: 3 hours; 2 hours to 90 percent



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TABLES

Table 1: Mediated Moderation, Experiment 2

Y: Distance between Normalized Creativity Ratings of Pen and of Self	Equation 1 (Predicts Y)	Equation 2 (Predicts <i>Me</i>)	Equation 3 (Predicts Y)
X: ownership	-.099 (β_{11})	.313* (β_{21})	-.042 (β_{31})
<i>Mo</i> : "Mine-Me" sensitivity	.034 (β_{12})	.028 (β_{22})	.033 (β_{32})
<i>X x Mo</i>	-.091 * (β_{13})	.161* (β_{23})	-.067 (β_{33})
<i>Me</i> : pen is "part of self"			-.126 * (β_{34})
<i>Me x M</i>			-.029 (β_{35})

Notes:

1. * $p < .05$
2. The equations are equivalent to the ones laid out by Muller, Judd, and Yzerbyt (2005)
3. A "full" mediated moderation, which supports that the moderator affects the relation between the treatment and the mediator, ensues when β_{13} , β_{23} , β_{34} are significant and β_{33} is smaller than β_{13} and is not significant.
4. β_{13} is the change in overall effect of ownership on self-pen distance as "Mine-Me" sensitivity increases.
5. β_{23} is the change in the effect of ownership on the pen's "part of self" ratings as "Mine-Me" sensitivity increases.
6. β_{34} is the average effect of "part of self" of the pen on pen-self distance.
7. β_{21} is the effect of ownership on the "part of self" of the pen at the average level of "Mine-Me" sensitivity.

FIGURES

FIGURE 1: HIGH-LEVEL FLOWCHART OF THE THEORETICAL MODEL

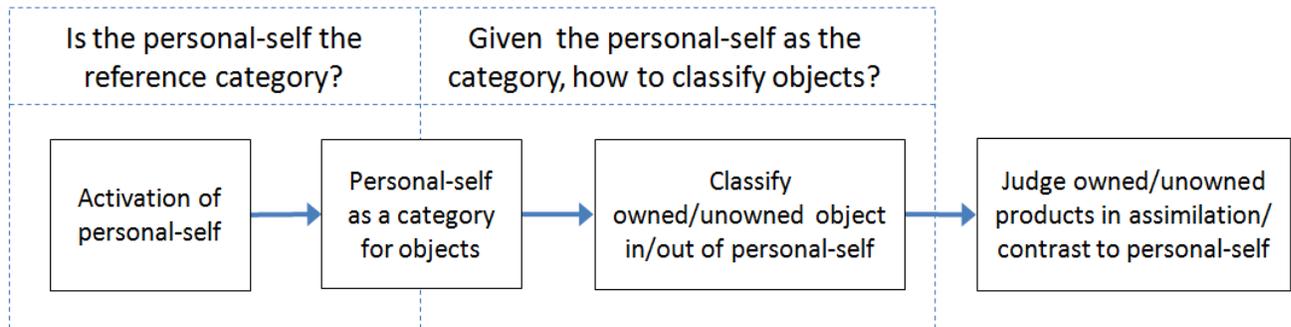
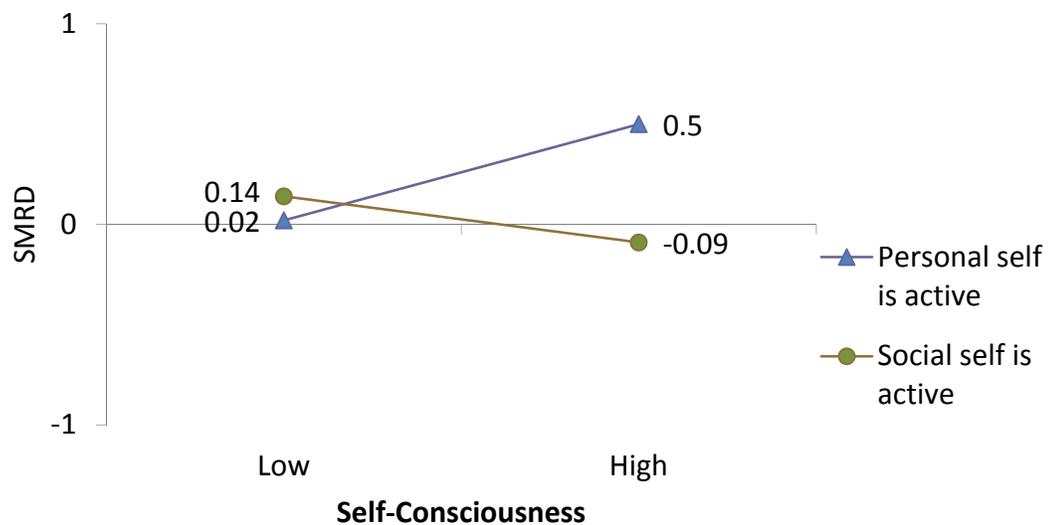
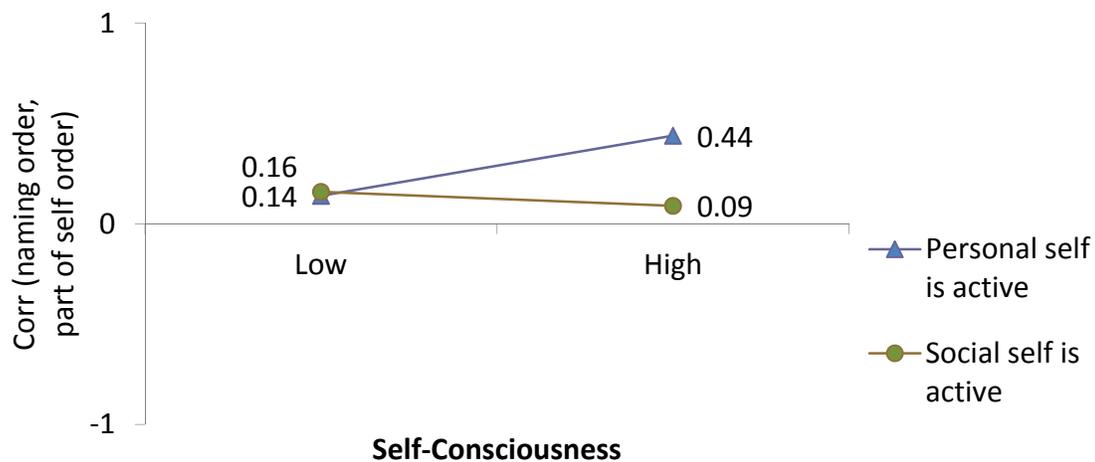


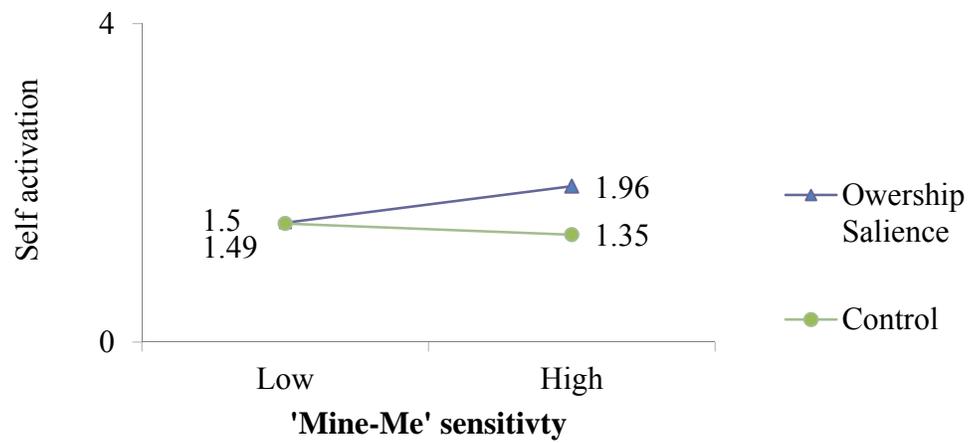
 FIGURE 2: PERSONAL-SELF AS A CATEGORY FOR OBJECTS, EXPERIMENT 1A



 Notes:

1. Low is one standard deviation below, and high is one standard deviation above, the mean of the Self-Consciousness scale
2. In the upper bar, the DV is a within subject correlation between the order in which products were named and the order in which they were ranked as part of the person's self (i.e., the first is the most part of the self)
3. In the lower bar, the DV is the standardized median rank difference (SMRD), which reflects people's tendency to list "part of self" objects before "not part of self" ones

FIGURE 3: OWNERSHIP SALIENCE AND “SELF” ACTIVATION, EXPERIMENT 1B



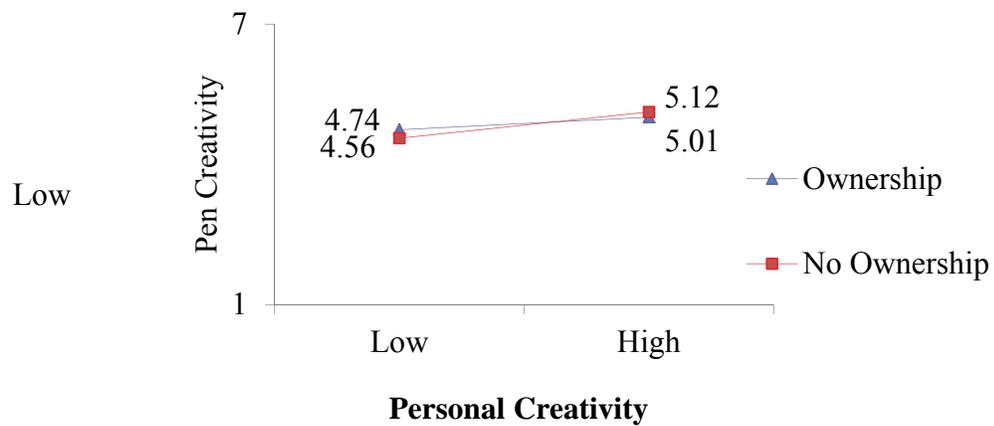
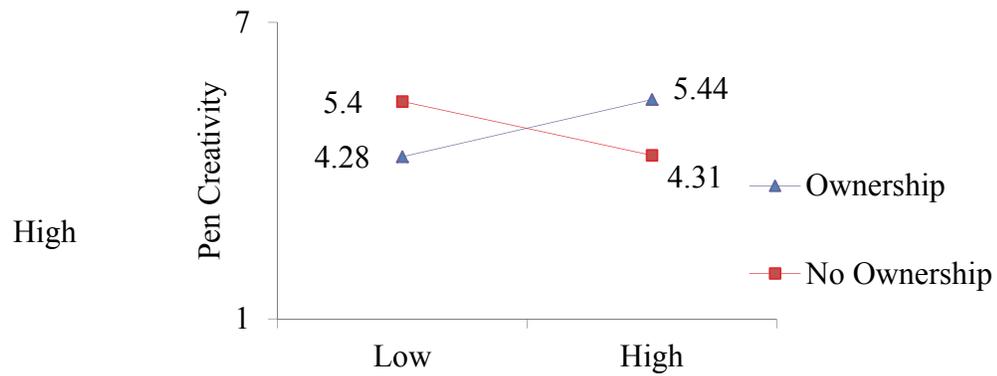
Notes:

1. Low is one standard deviation below, and high is one standard deviation above, the mean “Mine-Me” sensitivity
2. “Self activation” reflects the number of self-related words participants found in a word-puzzle (the puzzle is presented in Web Appendix A)

FIGURE 4: PEN CREATIVITY RATINGS, EXPERIMENT 2

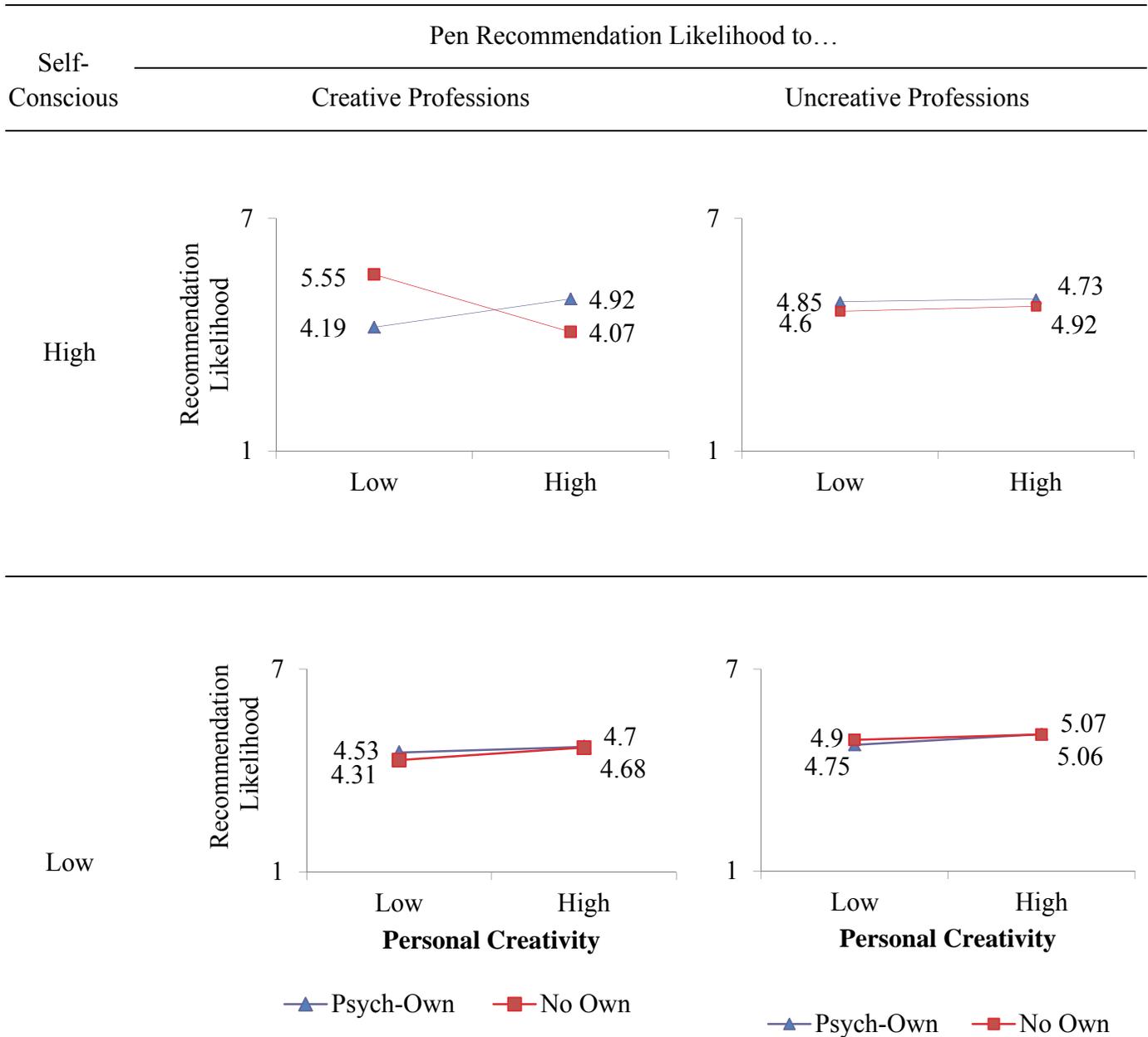
“Mine-Me”
Sensitivity

Pen Creativity Ratings



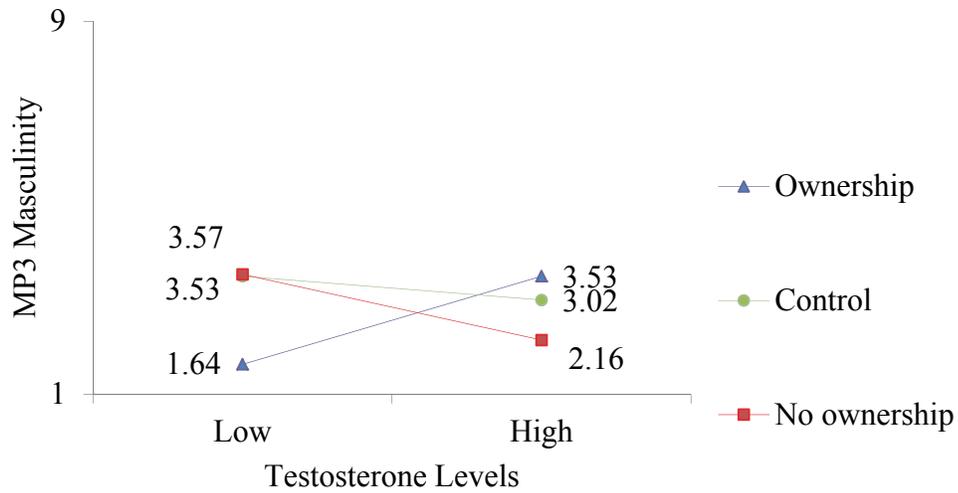
Note: Low is one standard deviation below the mean, and high is one standard deviation above the mean (this applies for both “Mine-Me” sensitivity and personal creativity)

FIGURE 5: PEN RECOMMENDATION LIKELIHOOD, EXPERIMENT 3



Note: On the vertical axis, low and high are respectively one standard deviation below and above the mean of self-consciousness. On the horizontal axis, low and high follow from a manipulation of perceived personal creativity.

FIGURE 6: MP3 MASCULINITY, EXPERIMENT 4



Notes:

1. Low is one standard deviation below the mean, and high is one standard deviation above the mean of Testosterone levels
2. Participants in the ownership condition owned the MP3 player, while those in the no-ownership and control condition did not own the player.
3. Ownership salience was high under the conditions "ownership" and "no ownership," but low under the control condition